CASE STUDY

CS-001

Addressing Infection Risk and Pain in Hard-to-Heal Wounds with a Bioresorbable Antimicrobial Matrix Containing Lidocaine HCL

Raymond J. Abdo, DPM

Introduction: Individuals with diabetes are prone to wound-healing challenges such as infection and dehiscence, and advanced diabetic foot ulcers may persist for months without intervention. A fully synthetic, resorbable antimicrobial matrix incorporating both ionic and metallic silver has demonstrated the ability to promote closure of diabetic ulcers and may help lower infection rates following surgery. Its thin, porous architecture conforms closely to the wound surface, which could enhance microbial disruption compared with conventional antimicrobial dressings. Recently, lidocaine HCl was added to provide initial pain relief, addressing another costly aspect of chronic wound care. This three-patient case series reports on the use of this matrix to mitigate infection risk and alleviate pain in nonhealing diabetic foot ulcers.

Methods: Three patients aged 53–63 years presented with Wagner grade 2 or 3 ulcers and multiple comorbidities known to impair healing, including diabetes, cardiovascular conditions, and the use of anticoagulants. Bacterial presence was identified via non-contact fluorescence imaging before debridement. Following excisional debridement, the matrix was applied per manufacturer instructions and secured with petrolatum gauze and adhesive strips. The matrix was then applied following manufacturer guidelines and secured with petrolatum gauze and adhesive strips. Alginate, dry gauze, and compression dressings were placed, and patients were instructed to offload. At weekly visits, clinicians reassessed and re-debrided wounds as needed, reapplied the matrix, and measured local tissue oxygenation using near-infrared spectroscopy.

Results: Across all three patients, wound depth and surface area progressively decreased, accompanied by visible granulation tissue formation. In the two cases with initial positive fluorescence, bacterial signal was no longer detectable after treatment after management with the matrix. In the non-neuropathic patient, reported pain decreased from 5 to 2 on a 10-point scale at 45 minutes and three hours post-application. Tissue perfusion remained sufficient throughout follow-up.

Discussion: Over a three-week period, the bioresorbable antimicrobial matrix with lidocaine HCl supported wound improvement in high-risk diabetic patients, while addressing both microbial burden and early pain. These initial clinical observations suggest that this technology may offer a dual-benefit approach for managing chronic ulcers where both infection risk and patient discomfort hinder recovery.

CS-002

Parenteral Nutrition for Chronic Wound Healing: a Case Study

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Introduction: Pressure ulcers significantly impact patient quality of life, increase mortality risk, and lead to substantial costs on healthcare systems. Approximately 60,000 patients die annually from pressure ulcers. Nutritional deprivation and inadequate dietary intake are key contributors to impaired wound healing. Protein is the most important macronutrient as it is indispensable for the repair of tissues, proteins are vital in all stages of the wound healing process with the body requiring nearly double the daily protein intake to promote wound healing (Mahmoodpoor et al., 2018). This case study highlights the clinical impact of home parenteral nutrition (HPN) in a 60-year-old male with a chronic stage IV sacral pressure ulcer and multiple comorbidities, including osteomyelitis, atypical hemolytic uremic syndrome, cerebrovascular accident, and quadriplegia. Despite 16 weeks of self-management and 40 weeks of advanced wound care at a specialized facility, healing remained minimal.

Methods: A comprehensive nutrition assessment revealed the patient was receiving 112% of protein and 151% of calculated caloric requirements via oral and enteral nutrition. Laboratory studies showed albumin levels of 3.7 g/dL, the low end of normal. Despite this, wound healing was limited, suggesting possible malabsorption or altered metabolic needs. In April 2025, HPN was initiated via a central venous catheter, infused overnight for 12 hours daily. The HPN formula was customized to the patient's needs and monitored by a multidisciplinary team of registered dietitians, pharmacists, and home healthcare professionals. Weekly lab monitoring guided individualized adjustments.

Results: After seven weeks of daily HPN, the stage IV sacral pressure ulcer was fully healed, HPN was discontinued, and the patient was discharged from the wound clinic. No complications related to HPN were reported. The success was attributed to targeted IV nutrient delivery and coordinated care.

Discussion: HPN may be a pivotal intervention for chronic, non-healing wounds in nutritionally compromised patients. This case demonstrates the role of individualized nutrition strategies in chronic, non-healing wound management, particularly when conventional approaches such as oral and enteral feeding fail to produce measurable clinical improvement. The integration of HPN into wound care protocols may offer a valuable solution for select chronic wound patients.

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CS-003

Micronized Porcine Urinary Bladder Matrix for Management of Recurrent Pilonidal Disease: a Retrospective Case Series

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Introduction: Pilonidal disease affects over 70,000 people each year and commonly recurs following an initial surgical or conservative intervention. Recurrent cases are often managed with a deep and wide surgical excision—an approach associated with substantial postoperative downtime, prolonged wound care, delayed return to normal activities, and higher risk for complications. The Gips procedure that includes using trephines to core out mid-line pores and infected tracts offers a minimally invasive alternative. However, optimal strategies to support wound healing and reduce re-recurrence with this approach continue to evolve. Micronized porcine urinary bladder matrix (UBM) has been shown to support the management of complex and surgical wounds including those with tunneling and undermining aspects.

Methods: A retrospective review was performed on three patients presenting with recurrent pilonidal disease after prior index procedures, one patient in particular had experience several recurrences. All patients underwent a Gips procedure in the ambulatory surgery center; wounds were treated with methylene blue to aid sufficient excision and resultant wounds were treated with the application of micronized UBM placed within the cavity, followed by primary closure. Postoperative recovery, time to wound closure, return to daily activities, and recurrence through 12 months of follow-up were evaluated.

Results: All patients tolerated same-day surgery without complications and returned to normal activities the following day. None required home-health nursing or extended time off work for wound care, which is typically necessary following wide excision. Complete wound closure occurred within 4 weeks for all three patients. No recurrences were observed during 12 months of postoperative monitoring.

Discussion: Adjunctive use of micronized UBM with the minimally invasive Gips procedure may offer a promising, same-day surgery treatment option for recurrent pilonidal disease, supporting functional recovery and eliminating the prolonged wound care burden associated with wide excision. These preliminary findings support further evaluation in larger cohorts and comparing against standard of care cohorts to assess long-term efficacy and broader applicability.

CS-004

Initial Experience with Novel Negative Pressure Wound Therapy Peel and Place Seven-Day Dressing

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Introduction: While reticulated open cell foam (ROCF) is a well-established dressing for negative pressure wound therapy (NPWT),1,2 granulation tissue ingrowth can occur if the dressing is left in place longer than 72 hours, potentially causing wound bed disruption, bleeding, and pain upon dressing removal. Additionally, dressing change frequency and sizing the foam to fit the wound can be time-consuming. A novel encapsulated peel-and-place dressing with a polyurethane foam manifolding core and hybrid silicone-acrylic adhesive drape3 has been developed to remain in place for longer wear time. We report our initial experience with NPWT and the peel and place dressing.

Methods: Excisional debridement was performed as appropriate to remove devitalized tissue. Antibiotics were prescribed as needed. Dressing release liners were removed, and the peel and place dressing was applied with foam core portion extending ≥1 cm past the wound perimeter. The dressing was connected to the NPWT device via multi-lumen tubing, and -125 mmHg continuous pressure was applied. Peel and place dressings were changed at least once per 7 days.

Results: Four patients (2 female and 2 male; age range: 23-69) with 6 complex lower extremity wounds were treated. Compared to traditional ROCF dressings, peel and place dressings were easier and faster to apply and remove. The dressings remained sealed without leakage for the intended dressing duration. Patient satisfaction was higher with peel and place dressings due to fewer dressing changes. All wounds exhibited a positive wound healing progression during therapy, as evidenced by granulation tissue formation, reduction in wound dimensions, and epithelialization.

Discussion: The extended wear time of the peel and place dressing reduced cost and application time, compared to traditional ROCF dressings. The simplicity of peel and place dressing application also saved time. NPWT with the peel and place dressing was favored over NPWT with ROCF by patients due to quicker dressing changes and lower dressing change frequency. Use of peel and place dressings in appropriate wounds may improve patient and clinician experience with NPWT.

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CS-005

Utilization of Dynamic Pressure Control Mode in Negative Pressure Wound Therapy: Initial Experience

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Introduction: Negative pressure wound therapy with instillation and dwelling (NPWTi-d) of a topical wound solution assists in removing nonviable tissue in infected wounds and has been shown to promote faster rates of wound granulation compared to traditional NPWT without instillation.[1] There is also evidence that intermittent cycles of negative pressure may result in enhanced rates of granulation tissue formation compared to continuous negative pressure.[2] However, reports of pain and increased solution leaks have limited the use of intermittent mode during NPWT and NPWTi-d.[3,4] Dynamic pressure control (DPC) mode is an evolution noncontinuous mode that provides a high and low pressure (above 0) for a customized time interval.[5] The purpose of this series was to assess the feasibility of using DPC mode in conjunction with NPWTi-d, a combination that has not been documented in prior publications.

Methods: Adjunctive NPWTi-d was applied with hypochlorous acid via a reticulated open-cell foam (ROCF) dressing. Systemic antibiotics were administered, and sharp surgical debridement was performed prior to or in conjunction with NPWTi-d application. NPWTi-d settings included instillation of 20-90 mL hypochlorous acid every 2 to 3.5 hours with a 10-20 minute dwell time between cycles of negative pressure at -75 to -150 mmHg. NPWTi-d units operated in DPC mode; cycle rise times were 3 minutes for 9/11 wounds and 8 minutes for 2/11 wounds; cycle fall times were 3 minutes for 9/11 wounds and 4 minutes for 2/11 wounds. Dressings were changed 2-3 times/week. Therapy was stepped down to traditional NPWT when patient was discharged and/or wound bed was covered with clean granulation tissue.

Results: Four male patients (age range: 20-63) with 11 complex wounds (surgical [n=4] and arterial/diabetic ulcer [n=7]) were treated. Duration of NPWTi-d ranged from 3-28 days. All wounds exhibited a positive wound healing progression during therapy, as evidenced by reduction in nonviable tissue and increased granulation tissue formation. In DPC mode, there were fewer observed leaks compared to prior use of intermittent mode.

Discussion: Use of DPC was a safe and viable operating mode during NPWTi-d in these 4 cases. Compared to our experience with continuous and intermittent modes, clinical results were similar with DPC mode. The decreased risk of leaks in DPC mode reduced the necessity for dressing replacement or reinforcement between dressing changes. More research is needed to define wound characteristics that would most benefit from NPWTi-d and DPC mode.

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CS-007

Limb Salvage of Large Pretibial Wound with Exposed Bone Using Theragenesis

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Introduction: Distal lower extremity soft-tissue defects are difficult to manage secondary to limited soft-tissue coverage, marginal vascularity, and prevalence of exposed bone, which are further amplified in elderly patients with comorbidities like diabetes and peripheral arterial disease (PAD). Advanced treatment options include bioengineered templates, negative pressure therapy, fasciocutaneous/myocutaneous flaps, split-thickness skin grafts (STSG), and dermal regeneration templates intended to convert non-graftable wounds into vascularized granulation beds capable of supporting split-thickness skin grafts (STSG). Prior literature demonstrates improved wound bed preparation and reduced need for flap-based reconstruction when dermal matrices are used in a staged approach to prepare for STSG. This case describes successful use of Theragenesis to achieve granulation over exposed tibia in a complex pretibial wound.

Methods: A 73-year-old woman with diabetes, PAD, hypertension, and hyperlipidemia presented with a 24 × 12 cm full-thickness pretibial wound with exposed tibia. Management included initial operative debridement, followed by angioplasty and stenting of high-grade distal superficial fem-

oral artery stenosis one week later. Cleanse Choice™ negative-pressure wound therapy (NPWT) was applied. After two weeks, repeat excisional debridement and the first application of Theragenesis were performed. A subsequent debridement with re-application of Theragenesis occurred two weeks later. Serial NPWT and clinical monitoring guided progression toward definitive reconstruction and STSG 6 weeks after initial treatment.

Results: Forty-three days following initial debridement, the wound demonstrated robust granulation tissue with complete coverage of previously exposed tibial bone. A split-thickness skin graft harvested from the right thigh was placed. The graft exhibited excellent adherence and near-complete take without postoperative complications. Despite the challenging nature of this wound, the patient achieved full epithelialization and functional recovery.

Discussion: This case demonstrates the effectiveness of Theragenesis as part of a staged reconstruction protocol to aid in coverage and formation of granulation tissue of threatened areas with exposed bones, even in an elderly patient with multiple comorbidities. Dermal regeneration matrices can reliably convert compromised wound beds into graft-ready surfaces, reducing reliance on flap reconstruction, and optimizing outcomes in limb salvage settings.

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CS-008

Case Studies Using a Disposable Whirlpool Hydrotherapy Set Up for Reduced Pain and Wound Debridement That Is Powered by and Combined with Topical Oxygen.

Jason Ayers, RN WCC; David Haverly, MPD; Josie Smith, RN

Introduction: Cleansing and debridement of diabetic foot, peripheral artery disease (PAD), stasis ulcers and pressure injuries to clear slough and biofilm, is often painful and time consuming. Removal of slough, crusting and biofilm can greatly expedite healing times1. Hydrotherapy is an effective approach2 but also has issues with time consuming set ups, post therapy disinfection of equipment, and concerns of cross-contamination between patients. We have demonstrated improved wound cleansing and outcomes by using an improved version of hydrotherapy.

Methods: To address this challenge, we combined hydrotherapy with oxygen supply to power a disposable bubbler device. This novel approach provides oxygen bubbles that pass over wound tissues providing a cleansing whirlpool effect in a warm solution. Patient soaks the wound about 10-15minutes in an antiseptic solution with the oxygen bubbling across the wound bed. Providing a soothing and hydrating effect will enable better cleansing with the foam debridement pad.

Results: The use of hydrotherapy powered by oxygen was essential in softening biomaterial and aiding in a gentle cleansing of tissues. Photos of one of our case studies; a homeless pt with PAD, history of frost bite, amputations, and maggot infestation. On admission the foot wounds were coated with dried blood and feces. The wound beds showed significant improvement with only one treatment, thick scale crust and eschar were removed exposing clean wound beds. Photos showed a great reduction in yellow slough covering the wound base demonstrating effectiveness. A patient with PAD showed a reduction in purple tissue around wound edges, lighting to a pink color. Others showed great reduction in eschar and slough visible in photos presented.

Discussion: Having the ability to remove slough and biofilm in a method that provides pain relief would present a great improvement for patient care. This demonstrates improved outcomes over that of standard treatments of sharp, autolytic, or enzymatic debridement. The three case studies with this presentation demonstrate positive outcomes of hydrotherapy with oxygen. They showed reduction in slough and biofilm with the added benefit of being staff friendly, easy disposable setup that prevents possible cross-contamination. This has potential to be an exciting new tool for use in wound care.

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CS-009

Combined Silver Alginate and Hydrocolloid Dressing Approach for a Large Infected Diabetic Foot Ulcer: a Case Report

Khaerul Azmi; Shuhua Yang; Mingfang Cai; Nur Alifah

Introduction: Diabetic foot ulcer (DFU) presents a significant(remains a major) clinical challenge due to prolonged healing time, infection risk, and tissue deterioration. Effective wound bed preparation and maintaining peri-wound integrity are critical steps to facilitate granulation formation and epithelial advancement. This case report describes the management of a large full-thickness DFU in a 60-year-old male with uncontrolled type 2 diabetes. The wound measured approximately 15.0 × 6.0 cm with extensive slough, hypergranulation, heavy exudate, and clinical signs of local infection.

Methods: Following sharp debridement, a silver alginate dressing was selected to help reduce microbial burden and maintain appropriate moisture balance at the wound bed. A hydrocolloid dressing was applied to protect the peri-wound skin from maceration and provide a stable environment that supports epithelial recovery. Dressing changes were performed three times per week in conjunction with systemic glycemic management.

Results: Within three weeks of treatment, the wound showed a noticeable reduction in slough and odor, accompanied by healthier granulation tissue formation and improved peri-wound integrity. Early epithelial migration was evident at the wound margins, indicating progressive healing.

Discussion: This case highlights the clinical value of using silver alginate and hydrocolloid dressings in combination for complex DFU management. The approach is consistent with wound care principles that emphasize microbial control, maintenance of peri-wound health, and support for epithelial advancement.

CS-010

Noticeable Reduction of Slough and Improved Periwound Integrity with Hydrophilic Fiber and Hydrocolloid Dressings: a Case Report

Khaerul Azmi; Shuhua Yang; Mingfang Cai; Nur Alifah

Introduction: Chronic wounds with heavy exudate and slough accumulation present significant clinical challenges due to persistent moisture imbalance, increased bacterial activity, and compromised periwound integrity. These factors often impair healing progression and delay the transition from the inflammatory phase to granulation and epithelialization. This case report describes the combined use of a hydrophilic fiber dressing and hydrocolloid periwound protection in the management of a large exudative ulcer located on the upper back of a 60-year-old male patient.

Methods: At baseline, the wound showed extensive slough covering

approximately 70% of the wound bed, accompanied by noticeable maceration and fragility of the surrounding skin. The intervention involved applying a hydrophilic fiber dressing to effectively manage heavy exudate and support autolytic debridement, while a hydrocolloid barrier was applied around the wound margins to minimize periwound maceration and protect fragile surrounding tissue. Dressings were changed every 48–72 hours according to exudate level.

Results: Over a two-week period, the treatment led to a noticeable reduction in slough, improved moisture balance, progressive granulation tissue formation, and restoration of periwound skin integrity. The patient additionally reported reduced discomfort and improved tolerance during dressing removal.

Discussion: These findings suggest that the combination of hydrophilic fiber dressing and hydrocolloid periwound protection may provide an effective approach for managing highly heavily exudative chronic wounds. The positive clinical response suggests highlights clinical value of this dual-dressing strategy, particularly in early wound bed preparation and periwound preservation. Further controlled studies are warranted to confirm these outcomes in larger patient populations.

CS-011

Silicone Foam Dressing for Optimizing Moisture Balance and Healing in Complex Plantar Diabetic Foot Ulcers: a Case Study

Khaerul Azmi; Shuhua Yang; Mingfang Cai; Nur Alifah

Introduction: Bilateral Diabetic foot ulcers (DFU) remain a major clinical challenge due to poor perfusion, neuropathy, and moisture imbalance. Excess exudate and necrotic tissue prolong the inflammatory phase and delay autolytic debridement and granulation. Optimizing moisture balance is therefore essential to restore physiologic wound progression. This case report describes the management of bilateral Wagner Grade 2 necrotic heel ulcers in a 61-year-old man using a moisture-focused regimen incorporating silver hydrogel and hydrocolloid dressing.

Methods: A four-week prospective evaluation was conducted with once-weekly treatments. Management included wound cleansing, selective debridement, application of silver hydrogel to hydrate and soften necrotic tissue, and hydrocolloid dressing to maintain controlled moisture balance that supports autolysis and granulation. Weekly assessments documented wound area, tissue composition, exudate level, malodor, and periwound condition.

Results: At baseline, both ulcers were fully necrotic, measuring 4.5 × 4.5 × 0.5 cm (right heel) and 1.5 × 1.5 × 0.5 cm (left heel). Moisture optimization effectively converted necrosis into healthy granulation by Week 2, accompanied by reduced exudate and complete odor resolution. By Week 4, the left ulcer achieved 100% closure, and the right ulcer demonstrated approximately 82% area reduction with ongoing epithelialization. Both ulcers improved from Wagner Grade 2 to Grade 0 and Grade 1, respectively.

Discussion: The combined use of silver hydrogel and hydrocolloid dressing effectively restored moisture balance, accelerated autolytic debridement, and produced substantial wound area reduction. This approach demonstrated rapid, meaningful clinical improvement in bilateral necrotic DFU within four weeks.

CS-014

Hybrid Reconstruction of UT Grade 2 and 3 Diabetic Ulcers with External Fixation and Piscine Xenograft

Ian Barron, DPM, FACFAS; Kimberly Barron, DPM, FACFAS; Collin Pehde, DPM, FASPS

Introduction: Diabetic foot ulcers often require more than local wound care, particularly when correction of mechanical forces and/or advanced offloading is necessary in conjunction with soft tissue reconstruction. This study evaluates a hybrid approach performed at an academic medical center, utilizing external fixation and piscine xenograft in UT Grade 2 and 3 diabetic ulcers.

Methods: A retrospective review was conducted at an academic medical center on patients with UT Grade 2 and 3 diabetic foot ulcers requiring correction of mechanical forces and/or advanced offloading. Circular external fixation was utilized to achieve limb realignment and sustained offloading of the ulcerated region. Following mechanical correction, piscine xenograft was applied to the ulcer bed to facilitate soft tissue regeneration. Patients were followed through the postoperative period until clinical wound closure. Primary outcomes included time to complete epithelialization and occurrence of ulcer recurrence. Secondary outcomes included need for flap coverage, progression to amputation, and fixation-related complications.

Results: The staged reconstruction protocol combining mechanical offloading and local biologic therapy resulted in progressive granulation and successful wound closure. Superficial pin tract irritation occurred in a limited number of cases and was managed with local care. At follow-up, patients maintained closure of the ulcer site with a plantigrade foot and adequate soft tissue coverage. Patients transitioned to protected weightbearing in accommodative footwear and demonstrated satisfactory functional outcomes without recurrent ulceration at the original site.

Discussion: Hybrid reconstruction using external fixation for correction of mechanical forces and/or advanced offloading alongside piscine xenograft for soft tissue restoration appears to be an effective limb-salvage strategy at an academic medical center for complex UT Grade 2 and 3 diabetic foot ulcers. This combined approach promotes durable wound closure and may reduce reulceration.

CS-015

Use of Acellular Fish-Skin Particulate for the Management of Complex Diabetic Foot Ulcerations: a Case Series

Kimberly Barron, DPM, FACFAS; Collin Pehde, DPM, FASPS; Arthur Tarricone, DPM

Introduction: Chronic diabetic foot ulcerations (DFUs) remain a significant cause of morbidity and limb loss. Deep or irregularly contoured wounds with exposed tendon, capsule, or bone present particular reconstructive challenges. Biologic dermal substitutes have improved healing outcomes in selected cases, but there is limited evidence addressing particulate formulations specifically designed for complex wound geometries. Acellular fish-skin matrices possess structural and biologic properties favorable for tissue regeneration, including intact collagen architecture and naturally occurring omega-3 fatty acids that promote resolution of chronic inflammation. A particulate form allows direct contact with irregular or tunneled wound beds. This study presents an updated institutional case series expanding on prior published work, evaluating outcomes following use of acellular fish-skin particulate in complex diabetic UT grade 2 and 3 foot ulcerations within a tertiary academic limb salvage program.

Methods: A retrospective review was conducted of patients with diabetic lower-extremity ulcerations treated with acellular fish-skin particulate between January 2023 and October 2025. All patients underwent sharp debridement prior to application, with particulate material used to fill depth and undermined areas. Wound progression was documented at each visit. The primary outcome was time to complete epithelialization; secondary outcomes included granulation quality, percent wound reduction, and complication rates.

Results: Preliminary review demonstrates consistent granulation and progressive wound contraction across a spectrum of deep and irregular ulcerations. Early findings suggest successful soft-tissue coverage in many cases without flap reconstruction or negative pressure therapy.

Discussion: Acellular fish-skin particulate appears to be a promising adjunct for managing complex DFUs with depth or exposed structures. Its ability to conform to irregular wound geometries may facilitate closure, decrease reliance on more invasive reconstructive options, and support cost-conscious, value-based limb preservation strategies. Further prospective study is warranted.

CS-016

Impact of Negative Pressure Wound Therapy All-in-One Dressings on Pain and Care Setting Transition

Karen Bauer, DNP, APRN-FNP, CWS, FAPWCA

Introduction: Accelerated wound healing has been reported with adjunctive use of negative pressure wound therapy (NPWT) and a reticulated open-cell foam (ROCF) dressing interface across various wound types.[1,2] However, wound care and dressing changes with ROCF-interface dressings can be painful.[3,4] An all-in-one dressing[5] composed of encapsulated ROCF, a perforated nonadherent layer, and hybrid acrylic-silicone drape is available with an extended wear time, expanded wound type utilization, and potential to reduce pain during therapy and dressing changes.

Methods: Wounds were appropriately debrided, and antibiotics prescribed as needed. Patients initially received adjunctive treatment with NPWT using traditional ROCF-interface dressings or NPWT with instillation and dwelling of a topical wound solution (NPWTi-d). Once the wounds reached appropriate size, therapy was switched to NPWT with all-in-one dressing. An all-in-one wound dressing with drape was applied over the wound, extending at least 5 cm beyond the wound edge, and connected via tubing to an NPWT unit. Negative pressure was applied at -125 mmHg. All-in-one dressings were changed at least once per 7 days.

Results: Four patients (3 female and 1 male; age range: 41-72) with 5 wounds (surgical (n=4) and atypical vasculitis (n=1)) were treated. Patients' prior treatments included alginate dressings, NPWT using reticulated open cell foam (ROCF), NPWTi-d, collagenase, and non-adherent dressings. Duration of NPWT using all-in-one dressings ranged from 27-40 days. All wounds exhibited a positive wound healing progression during therapy, as evidenced by tapered, advancing wound edges. Both patients who reported intense wound and periwound pain during traditional NPWT with ROCF dressings reported significantly reduced pain during therapy when switched to all-in-one dressings. Simplicity of dressing application and extended wear time eased patient transition between care settings.

Discussion: All complex wounds in this series progressed in a positive wound healing trajectory during use of NPWT and all-in-one dressings. A limitation was the lack of all-in-one dressing availability in the extended care facility. Minimal to no pain was noted during therapy as well as dressing application and removal. Use of all-in-one dressings, versus ROCF-interface dressings, eased patient transitions between care settings.

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CS-017

CREST-SYNDROME Scleroderma - Eight Years of Wound Management and Pain Control with Polymeric Membrane Dressings

Linda Benskin, PhD, RN, SRN (Ghana), CWS, CWCN, DAPWCA, WOCNF

Introduction: A 65-yr-old woman ("AM") with CREST-syndrome scleroderma had routine surgical debridement of calcifications from calcinosis in the soft tissues of her left thumb and index finger. Post-operative healing had always been slow, but this time her comorbidities and chronic prednisone use led to two years of progressive wound enlargement. OnabotulinumtoxinA to increase circulation was unsuccessful. Amputation of AM's left index finger seemed inevitable. Meanwhile, AM's multiple non-healing foot fractures were becoming so painful and inflamed that she could rarely bear weight on them. Next, she suffered from two traumatic lower leg wounds; one enlarged to expose tendon despite 10 months of local wound clinic treatment, including CAMPS. AM's comorbidities ruled out grafting and HBO.

Methods: A mutual friend connected AM to the author for guidance in using polymeric membrane dressings (PMDs) to rescue her finger from amputation. PMDs alter the nociceptor response, even when used over intact skin.[1–3] The resultant inflammation control makes the wound milieu more favorable to healing, relieves pain, and decreases inflammation-related edema, increasing circulation.[4–6] Synergism between PMDs and the body leads to balanced wound moisture and powerful continuous atraumatic wound debriding, as well.[3,7–10] All of these functions improve wound healing.4,10 After an initial rinse, AM applied PMD cavity filler and a finger-cot shaped PMD to prevent finger amputation beginning on 2016.08.16. AM began wrapping her feet with PMDs to control pain and inflammation on 2017.06.07. Management of the two leg wounds began on 2022.07.26. PMDs eliminated the need for rinsing; excessive dryness from scleroderma was addressed with drips of water at dressing changes. Prayer, nutrition, lymphedema control, and exercise were integral in AM's treatment.

Results: PMDs led to steady closure of all of four wounds, despite the CREST-syndrome scleroderma and prednisone. AM credited PMDs with controlling her foot pain and inflammation enough to allow her to walk short distances until shortly before her death at age 74.

Discussion: PMDs solved a wide variety of wound problems in a patient who had exhausted all other options. They also provided moderate pain and inflammation relief for AM's extremely damaged feet, significantly improving her quality of life.

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CS-018

Management of a High-Tension Scalp Vertex Defect Using Lyophilized Human Amnion Chorion Membrane Following Mohs Micrographic Surgery: a Case Report

Ashish C. Bhatia, M.D., FAAD; sara shahbazi, PhD; Melina Butuci, PhD

Introduction: Mohs micrographic surgery (MMS) for nonmelanoma skin cancer can result in postoperative defects that are challenging to manage, particularly on the scalp vertex where high tension, limited tissue mobility, and reduced vascularity may impair healing. Lyophilized Human Amnion Chorion Membrane (LHACM) is a tri-layer placental allograft composed of amnion, intermediate, and chorion layers, preserving its native extracellular matrix and more than 300 naturally occurring regulatory proteins. LHACM has shown promise in facilitating closure of complex wounds; however, data describing its use in post-Mohs defects remain limited. The objective of this report is to describe the healing trajectory of a high-tension scalp vertex defect treated with a single application of LHACM following MMS.

Methods: A retrospective clinical review was performed on an 84-year-old male with cardiovascular disease, a history of hip and knee replacements, asthma, and osteoporosis who underwent MMS for a superficial basal cell carcinoma of the scalp vertex. Wound measurements, photographic records, and postoperative clinical notes were evaluated from Day 0 through complete epithelialization. LHACM was applied once on Day 0, followed by a standardized dressing protocol. Wound area and percent reduction were calculated at each follow-up visit.

Results: The post-Mohs defect measured 2.0 × 2.0 cm (4.0 cm^2) on Day 0. Following a single LHACM application, the wound contracted to 1.5 × 1.3 cm (1.95 cm^2; 51.3% reduction) by Day 8, and to 1.0 × 1.1 cm (1.10 cm2; 72.5% reduction) by Day 30. By Day 44, the wound was approximately 95% epithelialized (0.20 cm^2), requiring no further wound care. Healing was uncomplicated, and no additional biologic applications or surgical interventions were needed.

Discussion: A single application of LHACM supported rapid and progressive healing of a high-tension scalp vertex defect following MMS in an elderly patient with multiple comorbidities. Significant wound size reduction and near-complete epithelialization by six weeks suggest that LHACM may serve as a valuable adjunct for optimizing outcomes in post-Mohs defects where traditional closure options are limited. Larger studies are warranted to better define its role in dermatologic surgery.

CS-019

Bovine-Derived Collagen Matrix as an Adjunct for Post-Amputation Diabetic Foot Wound Dehiscence: a Two-Case Review

Scott R. Boynton, DPM, FACFAS; Melina Butuci, PhD; sara shahbazi, PhD

Introduction: Post-operative wound dehiscence following partial foot amputation is a common and challenging complication in patients with diabetes and peripheral arterial disease (PAD), occurring in approximately 29% of cases according to a recent meta-analysis. These wounds often present with depth, tunneling, impaired tissue quality, and early chronicity, contributing to delayed healing and increased risk for infection and higher-level amputation. Bovine-derived collagen matrices have emerged as adjunctive therapies to support wound progression; however, evidence describing their use specifically in post-amputation dehiscence remains limited.

Methods: A retrospective review was conducted of two medically complex patients who presented with dehisced post-amputation diabetic foot wounds. Both wounds demonstrated significant depth and impaired tissue quality, and one exhibited deep tunneling. Standardized assessment was performed at presentation, followed by surgical sharp debridement and application of a single 500 mg bovine-derived collagen matrix. Mechanical offloading was maintained using a Charcot Restraint Orthotic Walker (CROW) or Controlled Ankle Motion (CAM) boot, with standard wound care continued throughout follow-up.

Results: Both wounds demonstrated rapid improvement following a single collagen matrix. application. In Case 1 (Chopart stump dehiscence), the wound achieved approximately 83% reduction by Day 6, complete granulation and resolution of tunneling by Day 27, and full epithelial closure by Month 4. In Case 2 (right transmetatarsal stump dehiscence), ~99% reduction was observed by Day 12 and ~99.9% by Day 19, with full epithelial closure later documented at follow-up. No infections, adverse events, or recurrences were noted.

Discussion: This two-case series suggests that a single application of bovine-derived collagen matrix may serve as an effective adjunct to debridement and standard wound care in complex dehisced post-amputation diabetic foot wounds, including those with depth and tunneling. Both cases showed rapid wound progression despite significant comorbidities and chronic wound characteristics. Further prospective evaluation in larger cohorts is warranted to better define the role of collagen matrices in managing postoperative wound dehiscence.

CS-020

Refractory Neuropathic Foot Wounds in Comorbid Patients: Achieving Durable Closure and Function

Melina Butuci, PhD; sara shahbazi, PhD

Introduction: Neuropathic foot wounds in medically complex patients can be difficult to progress under standard care because sensory loss, deformity, and systemic comorbidities impair the wound's ability to advance toward closure. When improvement plateaus, adjunctive biologic therapies may help support further advancement toward closure. This case series describes outcomes following the use of Lyophilized Human Amnion Chorion Membrane (LHACM) in two high-risk neuropathic foot wounds.

Methods: Two neuropathic male patients with complex foot wounds and substantial medical and structural comorbidities, including diabetes, hypertension, hyperlipidemia, atrial fibrillation, depression, prior digital amputations, and Charcot neuroarthropathy, were retrospectively reviewed. Wound bed preparation included serial sharp debridement, with operative debridement performed in one case. Management incorporated moisture-balanced dressings, strict off-loading using either a Controlled Ankle Motion boot or a Charcot Restraint Orthotic Walker, and a course of Negative Pressure Wound Therapy adjusted according to wound progression. LHACM was introduced as adjunctive therapy when improvement slowed under standard care. Wound dimensions were tracked serially to calculate percent reduction and time to epithelial closure.

Results: Both wounds demonstrated minimal early progression under standard care. Following the introduction of LHACM, each wound showed accelerated reduction and complete epithelialization. In Case 1 (open transmetatarsal amputation wound), wound area decreased by 90% by Day 29 and fully closed by Day 49. In Case 2 (postoperative dehiscence in a Charcot foot), wound area decreased by 90% by Day 31 and closed by Day 39. Durable epithelial integrity and functional ambulation were maintained at follow-up, with no recurrence or drainage.

Discussion: Adjunctive LHACM, integrated into a structured regimen of off-loading and wound bed optimization, was associated with progressive wound reduction and complete closure in two neuropathic, comorbid patients whose wounds had shown limited improvement under standard care. These findings support the potential role of LHACM as part of an escalated treatment strategy for complex neuropathic foot wounds.

CS-021

Decreasing Bacterial Burden in Infected Wounds Using a 3d Biomimetic Matrix

Mary Bridge, MD; Garismar Ramirez, BS; John Lantis, MD

Introduction: Chronic infected wounds present a significant challenge due to persistent bacterial colonization that impedes granulation and closure. Traditional debridement and antimicrobial strategies often fail to achieve adequate bacterial control in deep, irregular, or anatomically

complex wounds such as sinus tracts or amputation stumps. Advanced biomaterials that can physically protect the wound bed and support tissue regeneration may offer substantial advantages in managing bioburden. A Biomimetic Matrix* is a non-immunogenic, flowable, 3D scaffold engineered to emulate human extracellular matrix and provide a protective antibacterial barrier. Its viscosity and flexible applicator tip allow precise delivery into tunnels and cavities, potentially supporting granulation while limiting bacterial proliferation. This study evaluates early clinical outcomes following biomimetic matrix application in three chronically infected wounds treated in the operating room (OR) after surgical debridement.

Methods: A Biomimetic Matrix* was applied intraoperatively after surgical debridement. The first patient, with paraplegia and longstanding decubitus ulceration, had a large infected right-hip hematoma containing multiple sinus tracts. The biomimetic matrix was delivered throughout each tract using the flexible applicator tip. The second patient who had completion of a Chopart amputation for a chronic diabetic foot ulcer underwent application to support stump granulation and closure. The third patient received the product after removal of infected hardware from the right foot. Postoperative wound assessments included granulation quality and relative wound-size changes.

Results: In the complex right-hip wound, the biomimetic matrix reached the full extent of each sinus tract and resulted in visible granulation by the first postoperative visit. The diabetic foot ulcer demonstrated decreased wound size and eventual full granulation. The third patient similarly showed improved granulation after hardware removal and product application. The product was easy to apply and conformed well to deep and irregular wound spaces.

Discussion: A Biomimetic Matrix* applied after OR debridement appears to support granulation in chronically infected wounds, particularly those with complex sinus tracts. We found that the flexible applicator tip in combination with the smooth viscosity of the flowable matrix allowed for easy application of this product into deep sinus tracts.Larger controlled studies are needed to determine whether biomimetic matrix facilitated wound closure.

CS-022

Efficacy of Antimicrobial Wound Spray on Healing Chronic Lower Extremity Wounds

Mary Bridge, MD; Garismar Ramirez, BS; John Lantis, MD

Introduction: Antimicrobial Wound Spray*, a novel non-contact formulation of the Antimicrobial Wound Gel CoActive+ technology**, was designed to provide potent antimicrobial activity while minimizing wound disruption. This study assesses its clinical effectiveness in accelerating wound closure, reducing bacterial burden, and improving patient-reported outcomes in individuals with chronic, atypical, and difficult-to-treat lower-extremity wounds.

Methods: Antimicrobial Wound Spray* was applied once per week for 4 weeks. Wound size, pain score (scale of 1-10), Wound Quality of Life (QoL) score were evaluated weekly. In addition, Moleculyte Dx imaging technology which utilizes violet fluorescent light and detects bacterial loads of >104 CFU/g was used weekly to evaluate the bacterial burden in each wound.

Results: Thirteen lower extremity wounds (7 total subjects) were included. Mean wound area reduction in the 13 included wounds after 4 applications of Antimicrobial Wound Spray* was 63.91%. Mean wound area decreased steadily over time with an average healing rate of 16.74% per week (95% CI 9.70-23.78, p< 0.05).Two wounds achieved complete closure at 4 weeks. Average pain score for all wounds (scale of 1-10) at week 1 was 7.7 and at week 4 was 4.7. Wound QoL questionnaires scored using the Likert Scale had a mean score of 2.3 at week 1, indicating quite a lot of impairment to quality of life, and a mean score of 1.67 at week 4, indicating a moderate impairment to quality of life. Moleculyte DX images showed decreased bacterial load in 7 of the 13 wounds.

Discussion: While our sample size was limited, Antimicrobial Wound Spray* appears to be effective in wound area reduction, decreasing bacterial load, and improving quality of life in patients with chronic lower extremity wounds. We found that patients who normally experience a significant amount of pain had a decrease in overall pain score after using antimicrobial wound spray* for 4 weeks. This may be because this spray allows for no direct contact with the wound, reducing handling and disturbance during weekly dressing changes. While our findings were clinically significant, additional evaluation of Antimicrobial Wound Spray* compared to placebo may be beneficial to make definitive conclusions regarding this treatment modality.

CS-023

Intact Fish Skin Grafting for Limb Salvage After Infected Bone Resection: a Case Series

Mary Bridge, MD; Garismar Ramirez, BS; John Lantis, MD

Introduction: Limb salvage in the setting of osteomyelitis often requires osseous resection, yet the resulting structural voids and compromised soft-tissue environment can predispose patients to recurrent infection, delayed healing, and progressive deformity or shortening of the foot. Biological grafts that mimic native extracellular matrix may help stabilize the post-resection space, support tissue regeneration, and maintain foot architecture. Intact fish skin grafts*, rich in omega-3 fatty acids, represent a promising biomaterial for promoting healing in contaminated or previously infected fields. This study evaluates the utility of placing fenestrated intact fish skin graft* into osseous defects immediately after infected bone removal in limb-salvage procedures.

Methods: Patients who were identified with osteomyelitis that were going to undergo primary bone resection and closure over that wound were enrolled longitudinally. All patients were treated in the operating room with regional or general anesthesia. All patients had perioperative antibiotics tailored to the residual bone margin pathology. All patients underwent a single stage surgical incision and removal of the infected bone(s). Fenestrated intact fish skin* graft was then rolled and placed into the defect left by the excised bone. The primary incision was closed with vertical mattress nonabsorbable suture. Negative pressure was not employed.

Results: We present postoperative post-operative radiographs and MRIs of 3 of 13 patients treated in this manner. All 13 patients went on to complete healing over the course of 8 weeks. Interestingly digit and foot length was maintained with this technique. No patient required repeat bone resection or additional surgical intervention for infection control. These outcomes suggest that adjunctive acellular fish skin graft* placement may help stabilize the post-resection environment, supporting soft-tissue regeneration and preventing infection. In some radiographs what appears to be bony replacement of the margins of the fish skin can be seen.

Discussion: The preserved extracellular matrix structure and omega-3–rich lipid content of the fish-skin graft may contribute to angiogenesis, modulation of local inflammation, and enhanced cellular ingrowth, which are mechanisms that may be especially beneficial following osseous resection in contaminated or compromised fields. The fact that digital and foot length is maintained even at 16 weeks post-resection is notable.

CS-024

Using a Biomimetic Matrix in Treatment-Resistant Wounds with Autoimmune Etiologies

Mary Bridge, MD; Garismar Ramirez, BS; John Lantis, MD

Introduction: Chronic wounds driven by autoimmune conditions such as rheumatoid arthritis and pyoderma gangrenosum are characteristically refractory to standard wound care modalities due to persistent inflammation, impaired extracellular matrix (ECM) remodeling, and heightened susceptibility to infection. These patients often experience prolonged healing trajectories and multiple treatment failures. A Biomimetic Matrix* engineered to emulate the architecture of native human ECM, while also forming a protective antibacterial barrier is an approach to healing these types of wounds. By offering a non-immunogenic 3D matrix,

this product may facilitate cellular migration, granulation, and progressive wound closure in environments where conventional therapies are insufficient. This study aimed to evaluate whether weekly application of the Biomimetic Matrix* could accelerate healing in two chronic, treatment-resistant wounds of autoimmune etiology.

Methods: Biomimetic Matrix* was applied once weekly to two refractory lower extremity wounds, one caused by rheumatoid arthritis and the other by pyoderma gangrenosum. Patients underwent wound debridement and irrigation in a vascular office setting, followed by application of the matrix using the pre-filled syringe. Wounds were covered with a non-adherent dressing, and weekly assessments were performed for up to six weeks, including wound measurements and qualitative tissue assessment.

Results: Both patients demonstrated a clinically meaningful acceleration in wound healing. The pyoderma gangrenosum wound achieved a 40.8% reduction in area after five weekly applications. The rheumatoid arthritis associated wound also showed a marked decrease in surface area and improvement in granulation tissue. In both cases, slough burden diminished visibly over the treatment period. The product was well tolerated, and neither patient experienced increased pain between applications despite significant baseline chronic pain.

Discussion: Treatment with a Biomimetic Matrix* in two difficult-to-treat wounds resulted in wound area reduction and improved granulation. Despite multiple prior treatment failures, weekly application of this product resulted in progression toward closure, representing a major clinical improvement for both patients. This may be due to the biocompatibility of the ECM that emulates native human skin, or the non-immunogenic antibacterial barrier that prevents biofilm reformation. Further use of this product on other non-healing wounds with similar etiologies is necessary to better understand the benefits and limitations of this product.

CS-025

Protective Dressing Use Following Wound Epithelialization: a Case Series Utilizing a Silicone Border SAP Dressing

Trent Brookshier, DPM; Chrystalbelle Rogers, RN, MSN, CWCN, CENP

Introduction: Wound epithelialization is commonly used as a clinical endpoint to define healing; however, emerging evidence suggests that newly epithelialized tissue may remain functionally fragile and susceptible to breakdown, particularly in high-risk patients or anatomical locations. Mechanical stress, friction, microclimate imbalance, and residual inflammation may contribute to wound recurrence despite apparent closure. Protective dressings may play a role in supporting tissue maturation and reducing early post-closure complications. The objective of the case series is to describe clinical outcomes associated with the use of a silicone border superabsorbent polymer (SAP) dressing applied after wound epithelialization for protective purposes.

Methods: This retrospective case series included patients with recently epithelialized wounds of varying etiologies who were transitioned to a novel silicone border SAP dressing following confirmed surface closure. Dressings were selected to provide atraumatic adhesion, cushioning, shear reduction, and microclimate management during the early post-epithelialization period. Clinical outcomes assessed included maintenance of epithelial integrity, incidence of wound recurrence or breakdown, patient tolerance, and duration of protective dressing use. Follow-up occurred during routine clinical visits.

Results: Across cases, protective dressing use following epithelialization was associated with maintenance of wound closure during the observation period. No cases of immediate wound breakdown were observed while the dressing was in place. Favorable conformability, atraumatic removal, and patient comfort, supporting continued adherence during daily activities were noted. Dressing wear times were consistent with routine outpatient use, and no adverse skin reactions were reported.

Discussion: This case series highlights the potential role of protective silicone border SAP dressings following wound epithelialization to support fragile newly healed tissue. Use of the novel silicone border SAP dressing may offer a practical strategy to reduce mechanical stress and support tissue maturation during the early post-closure phase. Further prospective studies are warranted to better define patient selection criteria and optimal duration of protective dressing use following epithelialization.

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CS-026

Bridging the Gap: Synthetic Borate-Based Bioactive Glass Fiber Matrix as a Catalyst for Successful Closure in Complex Surgical Wounds

Donald Buck, II, MD, FACS

Introduction: Complex surgical wounds remain a significant source of morbidity, frequently leading to high rates of postoperative infection, wound dehiscence, prolonged hospitalization, and repeat surgical intervention.[1,2] These challenges are markedly amplified in patients with contaminated wounds or those requiring deep surgical debridement, where compromised vascularity, fluid accumulation, and bacterial burden undermine successful closure attempts.[3,4] The case highlighted illustrates the clinical burden of such wounds and the potential role of a borate-based bioactive glass fiber matrix (BBGFM) in optimizing wound bed preparation prior to definitive surgical closure.

Methods: The case describes a 63-year-old male admitted with a severely complicated left knee wound following a fall shortly after total knee replacement surgery. The patient presented with wound infection, skin necrosis, and a hematoma, conditions that required surgical revision and placed the patient at high risk for further complications and graft failure. After thorough debridement, the BBGFM was applied to support the development of healthy, vascularized granulation tissue and to reduce wound depth prior to grafting.

Results: Over subsequent dressing changes, residual material was left in place, eliminating the need for repeated debridement and enabling progressive wound improvement. By the time of the planned skin graft procedure, the wound bed had fully filled in, demonstrating a flatter surface with a significantly reduced footprint. At one-month follow-up, the patient achieved complete graft take, indicating successful integration and closure, an outcome often challenged by infection, fluid accumulation, and compromised tissue integrity in similar cases.

Discussion: This case exemplifies the high-risk nature of complex surgical wounds and the systemic burden they place on both surgical teams and inpatient resources. It further highlights how the BBGFMs synthetic composition, fluid-handling capacity, and ability to facilitate robust granulation tissue, increased the likelihood of successful reconstructive closure in this case. Such outcomes suggest a valuable role for BBGFM as a bridging therapy in complex surgical wounds, particularly where enhanced wound bed preparation is critical to reducing reoperation and improving surgical success rates across disciplines.

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CS-027

Evaluating the Impact of PHMB Foam Dressings on Wound-Related Pain: a Case Series Analysis

Rachel Burns, RN; Alex Lawton, MMATH

Introduction: Wound pain is a frequent and complex challenge in clinical practice, that negatively affects healing outcomes, reduces mobility and impacts on quality of life. The level of pain can be intensified by factors such as elevated bioburden/ infection, inflammation, high exudate, and trauma linked with dressing changes. Polyhexamethylene biguanide (PHMB) foam dressings offer a combined approach to pain management by providing rapid antimicrobial activity while maintaining a moist, atraumatic healing environment, potentially reducing both infection-related pain and trauma-associated discomfort. This study aimed to examine the effect of PHMB foam dressings on wound pain in patients presenting with moderate to severe pain.

Methods: A series of clinical case studies was conducted over 4 weeks, involving patients reporting wound pain with a baseline Visual Analogue Scale (VAS) score of ≥5. Each patient was treated with a PHMB foam dressing as part of a wound management plan. Pain levels were assessed at baseline and monitored on a weekly basis. Additional qualitative observations were recorded e.g. exudate control, wound condition, and tolerance of dressing changes.

Results: Patients demonstrated a marked reduction in VAS pain scores within the first 7 days, several cases showed reductions from moderate–severe pain to mild levels. Clinicians noted improvements in exudate management, and decreased local inflammation, contributing to an enhanced patient experience.

Discussion: The findings suggest that PHMB foam dressings can be effective in reducing wound-related pain. The combination of rapid antimicrobial action, exudate management, and atraumatic removal may address some of factors of wound pain. The author acknowledges that larger controlled studies are required to validate these outcomes. This case series highlights the potential role of PHMB foam in improving patient comfort, supporting wound progression, and improving quality of life.

CS-028

Recurrent Groin Lymphocele Following Bilateral Rectus Femoris Flap Reconstruction

Karina Butani, BA; Jessica Reid, MS; James Pai, MS; Eva Murphy, BS; Alexis Edmonson, MD; William Aukerman, MD; Abigail Chaffin, MD

Introduction: Lymphatic leaks represent significant complications following vascular surgery, contributing to delayed wound healing and increased patient morbidity and infection rates. Management includes conservative measures and operative techniques, such as lymphatic ligation and muscle flaps.*1,2* Muscle flaps are frequently employed for obliterating dead space and demonstrate high success rates, reported at approximately 95%.*3*

Methods: A 60-year-old male with significant comorbidities, including peripheral artery disease, coronary artery disease, poorly controlled COPD, tobacco use, and alcohol dependence, presented with right lower extremity pain and bilateral thigh claudication. He subsequently underwent an open aortobifemoral bypass, which was complicated by bilateral groin lymphoceles. His treatment course involved bilateral muscle flap reconstruction, intraoperative lymphatic channel localization using blue dye, LigaSure sealing, and negative pressure wound therapy.

Results: Postoperatively, the patient experienced persistent drainage from the right groin wound, requiring prolonged negative-pressure therapy. Despite oral supplementation and a course of intravenous total parenteral nutrition, objective markers of malnutrition failed to normalize, and wound healing remained delayed. At two-month follow-up, distal perfusion was intact; however, ongoing right-sided lymphatic leakage and poor nutritional recovery continued to impede full resolution. During this evaluation, he was found to have a delayed, recurrent right-sided lymphocele that required operative exploration; the rectus femoris flap was viable and intact, the anastomosis remained well-covered, and the superficial wound tract was excised. Following this procedure, the wound gradually granulated and ultimately healed with continued negative-pressure therapy and improved nutritional support.

Discussion: This case highlights the paramount importance of metabolic optimization when managing complex surgical patients. Adequate wound healing is contingent upon a patient's nutritional status. Chronic alcohol use and malnutrition are known to impede crucial physiological processes, including fibroblast maturation and collagen synthesis.*4* This case illustrates that severe, persistent metabolic dysfunction can result in the failure of otherwise reliable surgical reconstructions. Optimizing patient outcomes in this population necessitates a comprehensive, multidisciplinary approach to management.

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CS-029

Surgical Excision and Wound Care Management of Zuska's Disease: a Case Report

Karina Butani, BA; Alexis Edmonson, MD; James Pai, MS; Jessica Reid, MS; Abigail Chaffin, MD

Introduction: Zuska's disease, also known as squamous metaplasia of the lactiferous ducts, is a rare condition characterized by recurrent central or periareolar breast abscesses, lactiferous fistula formation, and chronic draining wounds.[1,2] The condition is most frequently observed in middle-aged females with a history of tobacco use.1 Multiple treatment methods, such as antibiotic therapy, drainage of the abscess, and excision, have been utilized, but fistula formation and lesion recurrence remain common complications.[3]

Methods: A 35-year-old female with a history of hidradenitis suppurativa, pilonidal cyst with abscess, chronic subareolar nonpuerperal abscess, prior alcohol use disorder, prior tobacco smoking with current e-cigarette use, presented with chronic non-healing subareolar wound of the left breast, characterized by persistent drainage and erythema despite incision and drainage in 2020. Clinical examination revealed a 3-mm ulceration at the 9:00 position with associated induration extending to the left nipple, with nipple retraction. Mammography detected no suspicious masses or calcifications and no evidence of malignancy. The patient underwent complete excision of the sinus tract and involved lactiferous ducts using methylene blue guidance, followed by irrigation of the defect and reconstruction with an adjacent parenchymal flap and concurrent nipple reconstruction.

Results: Postoperative wound healing progressed without major complications. The wound was managed with regular wound care follow ups with use of abdominal pads, silver alginate, and non-adherent oil emulsion gauze dressings. At one-month follow-up, the patient reported marked improvement in pain and demonstrated no evidence of recurrence. She has continued with conservative wound management and remains disease free.

Discussion: Zuska's disease is rare, accounting for only 1-2% of breast pathologies, leading to increased misdiagnosis and morbidity rates. While surgical excision is the definitive form of management, recurrence is fur-

ther complicated by hormonal changes, comorbidities, and tobacco use. This case demonstrates that meticulous wound care following excision and flap reconstruction are optimal for healing and preventing complications. Further research is needed to investigate personalized treatment plans in patients with complex comorbidities, autoimmune conditions, or ongoing tobacco use.

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CS-030

Defying Pathergy: Excisional Sharp Debridement and Skin Grafting in Advanced Pyoderma Gangrenosum

Hallie N. Cao, BS; Abigail Chaffin, MD, FACS, CWSP, MAPWCA; Eva Murphy, BS; James Pai, MS; Jessica Reid, MS

Introduction: Pyoderma gangrenosum (PG) is a rare autoinflammatory ulcerative dermatosis driven by neutrophil dysfunction. It typically begins as a pustule that rapidly progresses to a painful, necrotic ulcer with undermined borders. Surgical intervention in PG is controversial due to the risk of pathergy, an exaggerated inflammatory response to trauma that can worsen disease severity. Consequently, limited guidance exists regarding operative management in medication-refractory or limb-threatening cases. We report a case demonstrating successful surgical reconstruction in advanced PG using a multidisciplinary approach.

Methods: A 38-year-old woman with extensive PG of the right lower extremity was referred after failing maximal immunosuppressive therapy and experiencing progressive ulcer expansion. Her course was complicated by dense fibrosis, chronic wound colonization, massive edema in the setting of prior deep venous thrombosis, and failure of conservative wound care. Given the limb-threatening nature of the wound, dermatology and plastic surgery jointly determined that surgical intervention was warranted despite the theoretical risk of pathergy. The patient underwent aggressive sharp excisional debridement to viable subcutaneous adipose tissue to remove inflamed and nonviable tissue. Post-debridement, irrigating negative-pressure wound therapy was applied to reduce bioburden and promote granulation. An extracellular matrix scaffold was then placed to optimize the wound bed, followed by immediate split-thickness skin grafting to achieve definitive closure and re-epithelialization. Postoperative care emphasized edema control and close dermatologic surveillance.

Results: At one month postoperatively, approximately 95% graft take was observed with no evidence of infection, cellulitis, or graft loss. The patient reported significant pain reduction and satisfaction with the aesthetic outcome. Follow-up demonstrated durable wound closure and stable edema. No pathergic reaction occurred at the graft site, though a limited donor-site reaction was monitored without complication. No disease recurrence has been observed to date.

Discussion: This case illustrates that excisional sharp debridement with immediate split-thickness skin grafting can be a viable option for select patients with severe, refractory PG. Careful patient selection, meticulous surgical technique, aggressive postoperative management, and close multidisciplinary coordination are critical to minimizing pathergy risk and achieving favorable outcomes. Further studies are needed to identify PG phenotypes most likely to benefit from surgical intervention.

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CS-031

A Bordered Silicone Foam Dressing as Secondary Coverage Over Collagen-Based Primary Treatments in Chronic Full-Thickness Pressure Injuries: a Prospective Case Series

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Introduction: Chronic full-thickness pressure injuries (PIs) open beyond 90 days often demonstrate stalled healing despite advanced primary treatments. Collagen-based primary treatments—ranging from collagen dressings to cellular tissue-based products (CTPs) and platelet-rich plasma (PRP)—stimulate extracellular matrix deposition but require effective secondary coverage to manage exudate and protect developing tissue. Recent Medicare coverage policy changes for CTPs and Coverage with Evidence Development requirements for PRP have created variable access to advanced therapies across clinical settings. Clinicians need versatile secondary dressings that perform consistently regardless of which collagen-based primary treatment is accessible. This prospective case series evaluates a three-dimensional conforming bordered silicone foam dressing* as secondary coverage over various collagen-based primaries in chronic PIs with depths of 0.5-2.0 cm.

Methods: Ten patients with PIs open >90 days were enrolled. Baseline assessments included wound depth, tissue type, periwound condition, pain scores, and subcutaneous perfusion using infrared thermography†. Collagen-based primary treatments were applied to debrided wound beds, followed by the bordered silicone foam dressing* as secondary coverage. Dressing changes occurred three times weekly. Weekly assessments documented wound depth, granulation tissue formation, periwound status, wound bed temperature, patient-reported pain, dressing adherence, and wear time over six weeks.

Results: All ten patients demonstrated measurable wound depth reduction, with mean decrease of 1.1 cm over six weeks. Eight patients (80%) achieved ≥50% depth reduction; three wounds (30%) closed completely. Infrared thermography† documented stable wound bed temperatures within optimal healing range (30.2-33.0°C). The secondary dressing demonstrated minimal strike-through and no periwound maceration. Patient-reported pain scores decreased from mean 5.2 at baseline to 2.1 at week six (59% reduction). No adverse events were observed.

Discussion: This case series demonstrates promising outcomes using a bordered silicone foam dressing as versatile secondary coverage over collagen-based primary treatments in PIs with significant depth. The three-dimensional conforming properties accommodated wound depths while maintaining periwound integrity and thermoregulation supporting wound healing. Given variable access to advanced collagen-based therapies across clinical settings, a secondary dressing performing consistently across available primary modalities offers practical value. This approach achieved substantial depth reduction and 30% complete closure. These findings support further controlled studies validating this dressing combination in stalled PIs.

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CS-033

A Three-Step Multimodal Biofilm Management Enhancing Healing in Acute and Chronic Wounds: Case Series

Cernica Chausha Weitman, RN MA; Irina Greenberg, RN MPH

Introduction: Complex wounds such as traumatic soft-tissue injuries, osteomyelitis-associated tunnels, maceration with fungal overgrowth, and contaminated blast wounds present significant barriers to healing due to rapid biofilm reformation, persistent inflammation, and moisture imbalance. Standard modalities including irrigation and cleansing provide known benefits but often result in only temporary improvement and cannot maintain acidic pH that inhibits bacterial growth. This case series evaluates a structured multimodal protocol combining pure hypochlorous-acid* (HOCL), Prontosan* (polyhexamethylene biguanide (PHMB) plus betaine), and a pH-neutral synergistic ionic silver (0.01%)–menthol liquid (Silverstream*) dressing applied for continuous 24-hour contact.

Methods: Six patients with acute and chronic complex wounds underwent a three-step wound treatment protocol. Step 1 involved extended HOCL irrigation for at least 30 minutes to reduce surface contamination. HOCL solution has 2.5 pH; neutralizes odors; reduces pain and itching. HOCL is non-toxic for granulation tissue. Step 2 consisted of PHMB plus betain application for an additional 30 minutes to suppress microbial activity, detach deeper debris and break down biofilm, followed by mechanical cleansing. Step 3 involved application of Silverstream solution, which possesses unique properties including biofilm destruction, cleansing, removal of slough, moisture balance and protection of viable tissue. Wet pads soaked in the solution were left in the wounds for 24 hours, deep wounds were packed. All three solutions exhibit broad-spectrum antibacterial activity, effectively target Candida and fungi, and contribute to accelerating the healing process.

Results: All wounds showed rapid stabilization and consistent progression toward healing. Traumatic and blast injuries achieved full closure within approximately three weeks. An osteomyelitic tunnel reduced from 16 cm in length to 0.5 cm depth within 25 months. Severe bilateral fungal heel maceration improved markedly within the first 48 to 72 hours and progressed to full restoration of the skin barrier within 17 days. In a case of extensive necrosis of the abdominal wall and thighs after a liposuction procedure, surgical resection was performed with partial improvement and return of fibrin tissue and slough. The three-step treatment over 10 days reduced the fibrin tissue and slough, promoted good granulation tissue, and allowed skin grafting. There were no side effects associated with the three-step wound treatment protocol.

Discussion: The three-step method was subsequently applied to the treatment of complex wounds of various origins. This multimodal protocol promoted elimination of infection, enhanced granulation tissue formation, prevented amputations and life-threatening infections, accelerated recovery, and improved quality of life.

CS-034

Improving Healing Outcomes in Peristomal and Other Wounds Using Chitosan-Based Therapy: a Case Series

Cernica Chausha Weitman, RN MA

Introduction: Peristomal complications can significantly impair quality of life, leading to skin breakdown, leakage, infection, odor, pain, and discomfort. Timely and effective wound management is essential to reduce morbidity and improve patient outcomes. The objective of this case series was to evaluate the effectiveness of chitosan* dressing in managing peristomal wound complications of various origin and wounds at other sites.

Methods: Four patients presenting with stoma-related wounds of various etiologies were assessed and treated by a specialist nurse over 6-week period. Cases included mucocutaneous separation, tracheostomy site wound and wound at pleural drainage insertion site. All patients had undergone emergency surgery, resulting in tension at the stoma-skin suture line. Additional risk factors included malnutrition and poor tissue perfusion. Standard wound care protocols were followed, including cleansing prior to the application of chitosan dressing as the primary contact layer. The dressings were changed daily in tracheostomy case, once in 48-72 hours in other cases. Chitosan* is a bioactive material that accelerates the natural healing process through a unique combination of hemostatic, antibacterial, and tissue-regenerative properties. Wound assessments were conducted at each dressing change, evaluating wound appearance, exudate level, periwound skin condition, and patient comfort.

Results: All patients demonstrated marked improvement in wound healing parameters, including cleaner wound beds, reduced leakage, decreased pain and discomfort, and formation of granulation tissue leading to complete closure of all four wounds in 6-week period.

Discussion: These cases support the use of chitosan* dressings as an effective primary contact layer for managing a range of peristomal and other wound complications. Positive outcomes were observed across diverse wound types and patient profiles, including those with significant comorbidities. The findings suggest that chitosan*-based therapy may offer a beneficial treatment approach for complex peristomal wounds in clinical practice.

CS-035

Beyond Debridement: Limb Salvage in Severe Necrotizing Fasciitis Using Soft Tissue Expansion and Bioabsorbable Temporizing Matrix

Hayley B. Collins, DPM; Ilya Makarovskiy, DPM

Introduction: Diabetic foot infections remain a major cause of morbidity, often progressing rapidly to deep soft tissue involvement and threatening limb viability. Early recognition and aggressive surgical management are essential to prevent systemic deterioration and preserve function. Despite advances in wound care, achieving durable closure in the setting of extensive infection and tissue loss remains challenging. This case highlights the role of aggressive early and closely spaced debridements, combined with adjunctive reconstructive modalities, in successfully achieving limb salvage and accelerated healing.

Methods: A 65-year-old male with poorly controlled diabetes mellitus (A1C 13.9%) and prior left foot amputations presented with progressive pain, swelling, and ulceration of the left foot. Laboratory evaluation confirmed diabetic ketoacidosis with hyperglycemia, elevated anion gap, and markedly elevated inflammatory markers (CRP 398.8, WBC 16.9). Imaging revealed a plantar ulcer with rim-enhancing abscess extending into the abductor hallucis and extensor tendons with fascial fluid tracking concerning for early necrotizing infection. On physical examination, there was a plantar forefoot ulcer with necrotic tendon exposed, purulent drainage, malodor, and increased warmth. The patient was initiated on broad-spectrum intravenous antibiotics, insulin infusion, and admitted to the intensive care unit for management of diabetic ketoacidosis and severe infection.

Results: A staged surgical approach was undertaken for limb salvage. Initial treatment consisted of emergent incision and drainage with sharp debridement. Repeat debridement to fascia and tendon was followed by transmetatarsal amputation. Subsequent procedures included anterior and lateral compartment fasciotomies, placement of a soft tissue expander* with negative pressure therapy, revision of the amputation with expander adjustment, and delayed primary closure with biodegradable matrix**. Over two weeks, five procedures spaced two to six days apart combined aggressive debridement, amputation, compartment release, tissue expansion, and biologic matrix application to optimize wound healing.

Discussion: Aggressive early and closely spaced debridements were critical in controlling infection and establishing a viable wound bed. At one month postoperatively, following suture and graft removal, the

surgical sites were fully healed, and the anticipated need for skin grafting was avoided. This case underscores that clinical success is achieved when aggressive debridement is prioritized and paired with adjunctive closure modalities, allowing for limb salvage and accelerated healing.

CS-036

Boots, Bio-Matrix, and Breakthroughs: Healing a Chronic Diabetic Foot Wound

Hayley Collins, DMP; William Lopez, DPM

Introduction: Synthetic dermal matrices expand reconstructive options for patients with comorbidities that limit autologous grafting. The monolayer dermal matrix (MTX) and bilayer biodegradable temporizing matrix (BTM) are fully synthetic polyurethane scaffolds designed to support neodermis formation while minimizing donor site morbidity and immunogenic risk. These matrices integrate successfully across diverse wound beds, including fascia, tendon, and periosteum, even in complex or infected wounds. Compression therapy, particularly with zinc oxide-impregnated Unna boots, enhances venous return, reduces edema, and maintains a moist wound environment. When paired with dermal scaffolds, compression may accelerate epithelial migration and wound contraction. Purpose: To illustrate the clinical utility of staged synthetic dermal matrix therapy combined with compression support in managing a chronic diabetic foot wound, and to highlight the role of monolayer and bilayer polyurethane scaffolds in promoting neodermis formation, wound contraction, and epithelialization in a high-risk patient.

Methods: A 76-year-old male with coronary artery disease post-CABG, hypertension, atrial fibrillation, type 2 diabetes mellitus, and hyperlipidemia presented with a chronic left foot wound persisting for five months. One month prior, he had undergone transmetatarsal amputation of the fifth digit abroad. Duplex ultrasound revealed preserved arterial flow. Labs showed normal WBC (5.67), hyperglycemia (5.97), ESR 23, CRP < 3, and elevated A1c (8.3%).

Results: Initial surgical debridement was followed three days later by repeat debridement and application of MTX and BTM to a 5 × 6 × 0.3 cm wound bed. Within 48 hours, the scaffold demonstrated excellent adherence. At one month, removal of the BTM superficial layer revealed a healthy granular base and reduced wound size (4.5 × 5 × 0.2 cm). At two months, Unna boot therapy was initiated to optimize the wound environment. By three months, the wound had contracted to 1 × 1 × 0.1 cm, reflecting progressive healing. The patient achieved complete wound closure in less than six months, demonstrating durable resolution.

Discussion: Staged debridement, synthetic dermal scaffold application, and compression therapy synergistically promoted neodermis formation, wound contraction, and epithelialization. This case demonstrates the value of integrating advanced biomaterials with foundational wound care principles to achieve durable healing in high-risk populations.

CS-037

From Crisis to Closure: Early Aggressive Debridement and Use of Skin Grafting in Limb Threatening Necrotizing Fasciitis

Michael Cooper, MD; William Lopez, DPM

Introduction: Necrotizing fasciitis (NF) in the setting of diabetic ketoacidosis (DKA) and septic shock presents a formidable challenge, often necessitating major limb amputation. This case highlights the potential for limb salvage through early aggressive surgical intervention and staged reconstruction, even amidst profound systemic compromise and delayed presentation. NF is a rapidly progressive soft tissue infection with high morbidity and mortality, particularly in patients with diabetes. Mortality rates range from 25–35%, and early diagnosis is frequently missed. Diabetic patients are especially vulnerable due to immunocompromise, vascular disease, and delayed care. Literature emphasizes prompt surgical debridement, interdisciplinary coordination, and advanced wound coverage techniques—including dermal regeneration matrices and split-thickness skin grafting—as viable strategies for limb salvage.

Methods: A 64-year-old female with poorly controlled Type 2 Diabetes Mellitus, who had not seen a physician in over two decades, presented in DKA and septic shock. She reported a foul-smelling right foot wound with blistering that worsened over 24 hours. Labs revealed leukocytosis (38.47), hyponatremia (119), and hyperglycemia (557). Surgical Procedure: Stage 1 – Source Control: Emergent radical debridement was performed with plastic surgery. Necrotic first ray and second digit were resected. Fasciotomies allowed thorough debridement of necrotic fascia, muscle, and skin using electrocautery and hydrosurgical techniques. Stage 2 – Reconstruction: Two weeks later, devitalized tissue was further debrided, and a split-thickness skin graft harvested from the right thigh was meshed and applied to a 10 × 20 cm wound bed. Negative pressure therapy and compressive dressings supported graft take.

Results: Despite initial concern for non-salvageability, amputation was limited to the first ray and second digit. At 2.5 months postoperatively, the graft had fully healed, the patient regained ambulatory function, and no further surgical intervention was required.

Discussion: Limb salvage remains achievable in NF even amidst multisystem crisis and delayed care. This case underscores the critical role of early aggressive debridement, serial washouts, interdisciplinary coordination, and timely reconstruction in achieving durable healing and preserving function in high-risk patients.

CS-038

Ulcer Unplugged: How Detour Bypass and Oxygen Therapy Accelerate Repair

Hayley Collins, DPM; William Lopez, DPM; Mitchell Weinberg, MD

Introduction: Purpose: To demonstrate the synergistic impact of combining topical oxygen therapy (TOT) with percutaneous transvenous femoropopliteal bypass in the management of complex diabetic foot ulcers and advanced peripheral arterial disease. Background: TOT is an emerging adjunct for chronic wounds complicated by vascular insufficiency. Oxygen supports angiogenesis, collagen synthesis, epithelialization, and immune defense. A 2024 meta-analysis showed significantly improved healing rates with TOT compared to standard care, while consensus guidelines endorse its use in multidisciplinary wound management. Percutaneous transvenous femoropopliteal bypass provides a minimally invasive solution for long-segment superficial femoral artery disease, achieving durable revascularization with high technical success and low adverse event rates.

Methods: Case Presentation: A 68-year-old male with hypertension, diabetes, dyslipidemia, and coronary artery disease presented with progressive peripheral arterial disease and recurrent ulcerations. Wound dehiscence was noted at the left hallux amputation site with avascular necrosis, and a second ulcer under the right third metatarsal head showed purulent drainage and probe-to-bone. His vascular history included multiple prior revascularizations and interventions, with new stenosis of the right SFA and restenosis of the left SFA/popliteal segment.

Results: Outcome: Stage 1 involved left first and right third metatarsal resections, thrombectomy, and deployment of a percutaneous transvenous femoropopliteal bypass to the left leg, followed by wound vac therapy and debridement. Stage 2 began two weeks later with TOT five times weekly for 1.5 hours/day. Wounds decreased progressively, with complete healing of the right foot by two months and near-complete healing of the left foot by four months. Stage 3 included right SFA stenting and angioplasty. By six months, both ulcerations had fully resolved, and at one-year follow-up, closure was sustained without recurrence.

Discussion: Conclusion: This case illustrates the synergistic benefit of combining endovascular bypass with topical oxygen therapy in complex limb salvage. Through serial interventions and longitudinal management, the patient achieved complete bilateral wound healing within six months and durable closure at one year, highlighting the potential of integrated perfusion and oxygen strategies in advanced vascular and diabetic foot ulcers.

CS-039

Evaluation of the Wound Care Dressing* (Xlta) Through a Retrospective Clinical Case Study

Anthony Colonna, DPM; James Y. Lin, D.O.; George M. Munro, LPN WCC

Introduction: Chronic and non-healing wounds pose substantial clinical challenges, particularly in patients with multiple comorbidities that impair perfusion, inflammation control, and tissue regeneration. Traumatic hematomas of the lower extremity often progress to non-healing wounds due to devitalized tissue, excessive exudate, and delayed granulation. Advanced dressings that support moisture balance, autolytic debridement, and bioburden reduction may accelerate wound bed preparation. The topical wound care hydrocapillary, hydroconductive dressing* is engineered to rapidly manage exudate, sequester necrotic tissue, and promote epithelialization through capillary action, horizontal dispersion, and positively charged fibers. This case study evaluates its clinical effectiveness in a complex, non-healing traumatic wound.

Methods: An 81-year-old female with a history of congestive heart failure, type II diabetes mellitus, obesity, and edema presented with a ruptured hematoma on the right medial lower extremity, initially measuring 411.25 cm2 (surface area) and 123.38 cm3 (volume). The wound was classified as non-healing and contained extensive slough. The topical wound dressing* was applied directly to the wound beneath a non-stretch Kerlix and Ace wrap, with weekly clinical evaluations over 35 days. Wound measurements, tissue characteristics, and photographic assessments were recorded.

Results: By day 9, early granulation was evident with a 2.86% reduction in both area and volume. By day 16, wound area decreased to 336 cm2 (18.3% reduction), while volume decreased to 33.6 cm3 (72.8% reduction), reflecting rapid depth normalization and significant slough clearance. By day 23, the wound achieved 100% slough removal and was deemed graft-ready. At day 35, overall reductions reached 45.3% in surface area and 81.8% in volume, with a mean closure rate of 8.8% per week.

Discussion: In this large, complex traumatic wound, the topical wound dressing* demonstrated clinically meaningful improvement by accelerating autolytic debridement, managing exudate effectively, and enabling timely progression to dermal grafting. These findings support Xlta™ as a promising advanced dressing option for high-exudate, non-healing wounds.

CS-040

Peptide Biomimetic Matrix Shows Rapid Regranulation of Complex Wounds with Exposed Structures Requiring Surgical Intervention

Anthony Colonna, DPM; Anitha Anbalagan, DPM; Shylla Taqi, DPM

Introduction: Complex wounds are characterized by delayed healing and often involve necrotic tissue, exposed structures, and infection/biofilm persistence. Highly complex wounds demand surgical management and advanced treatment modalities. The ideal treatment promotes rapid formation of healthy tissue while preventing (re)infection. This prospective case series evaluates the performance of a novel, self-assembling peptide-based biomimetic matrix (BMM) in complex wounds requiring surgical intervention. BMM is deployed in a prefilled syringe with an applicator tip for access to hard-to-reach areas. The peptide self-assembles into a 3D scaffold that mimics the endogenous extracellular matrix while providing antibacterial protection.

Methods: Nine patients with multiple comorbidities presenting with complex, difficult-to-treat wounds - including diabetic foot ulcers, venous leg ulcers, and amputation wounds - requiring operating room procedures for surgical management / limb salvage, were selected to receive BMM. All wounds were extensive and full-thickness, involving exposed tendon (1/9) or bone (8/9). Six cases were complicated by infection, and three presented with deep tunneling. Wounds were extensively debrided surgically using a hydrosurgery system for removal of devitalized tissue prior to BMM application. Wound characteristics were assessed at baseline and during follow-up visits. The primary endpoint was coverage of the originally exposed structures.

Results: Despite the severity and complexity of the wounds, all patients responded positively to BMM, showing rapid wound healing progression with complete (8/9) or partial (1/9) coverage of the originally exposed structures. In all cases, a substantial reduction in wound depth was observed with formation of healthy granulation tissue (full granulation as early as 2-weeks after a single application). Easy access to hard-to-reach areas was also noted, resulting in resolution of tunneling as early as one-week post-treatment. Moreover, within 2 weeks, signs of reepithelialization, exudate improvement, and intact peri-wound skin were observed. In all cases, the post-BMM treatment visits recorded no signs of (re) infection and no product-related adverse events.

Discussion: This case series demonstrates the potential of BMM in the surgical management of complex wounds with exposed structures. BMM conformed to the wounds, including deep tunnels, achieving rapid tissue regrowth over the exposed structures and preventing re-infection. Larger clinical studies are needed to expand on these findings.

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CS-041

Breaking the Cycle for Non-Healing Wounds: a Case Series on the Impact of a Borate-Based Bioactive Glass Fiber Matrix

Dana Conner, MD; Jenny Gutierrez, RN, BSN

Introduction: Chronic wounds such as venous leg ulcers (VLUs) and diabetic foot ulcers (DFUs) pose substantial clinical challenges, especially among medically fragile and mobility-limited patients. These wound types are often recalcitrant to standard care, prompting increased use of advanced wound therapies to stimulate healing. Effective wound bed preparation, including debridement of nonviable tissue, control of bioburden and exudate, and optimization of the local microenvironment, is essential to support granulation and re-epithelialization.1,2

Methods: Wound progression was monitored through serial measurements and photographic documentation. The BBGFM was applied following clinical recommendation until closure or evidence of meaningful progression was observed.

Results: Case 1: A 69-year-old male presented with a chronic Wagner Grade 3 DFU located on the posterior aspect of the left heel with previous treatments consisting of several hyperbaric oxygen therapy (HBOT) sessions and three applications of a dehydrated human umbilical cord allograft which was used as the primary dressing. The first application of the BBGFM took place on 8/28/2025 with second application taking place on 9/12/2025. A significant wound size reduction was observed on 9/25/2025. Case 2: A 35-year-old male presented with two VLUs one located on the left lower extremity (LLE) and the other on the right lower extremity (RLE). The BBGFM was applied to both VLU sites, covered with a secondary dressing, and the treatment was completed with the application of a compression wrap system. Following five applications of BBGFM on the LLE VLU and four applications of the BBGFM on the RLE VLU, the appearance of significant quality granulation tissue had become evident with a reduction in wound bed size. Case 3: A 74-year-old female presented with a chronic non-healing full thickness VLU on the posterior aspect of the RLE. The initial application of BBGFM took place on 10/20/2025, with a second application on 10/27/2025, and a third and final application on 11/04/2025. The appearance of robust granulation tissue within the wound bed was evident on 12/01/2025.

Discussion: The case series highlights the utility of the BBGFM across difficult to heal and large wounds. The cases showed marked wound size improvement as well as appearance after prolonged stagnation.

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CS-042

Fetal Bovine Dermal Scaffold in the Management of Burn Injuries and Complex Traumatic Wounds

Alfredo Cordova, MD; Kristy Miller, APRN; Talia Selembo, BS; Victoria Young, BS

Introduction: Managing full- and partial-thickness burns, and traumatic wounds is often complicated by extensive tissue loss and infection. While skin substitutes aid in temporary coverage and wound bed preparation, many are susceptible to bacterial colonization. Fetal bovine dermal scaffold has shown promise in promoting wound regeneration despite these challenges.

Methods: Eighteen patients with full-thickness wounds from burns or trauma were treated with fetal bovine dermal scaffold, either alone or prior to autografting. Our protocol included surgical wound excision and infection control prior to scaffold application and use of negative pressure wound therapy with application. Most of our patients had significant comorbidities. Outcomes assessed included wound bed readiness, scaffold integration, and infection rates.

Results: Fetal bovine dermal scaffold facilitated early neovascularization and granulation tissue formation. Complete xenograft incorporation and a vascularized wound bed optimal for autografting was attained within 14-21 days. All patients tolerated the scaffold without adverse reactions. No graft loss or infection was recorded. STSG-take was >95% with complete epithelization within 2-weeks.

Discussion: Fetal bovine dermal scaffold is a safe, effective adjunct in managing complex wounds, particularly in patients with comorbidities or high infection risk. It enhances wound bed preparation, reduces time to grafting, and may improve overall outcomes. Larger cohort studies may be required to validate our experience.

CS-043

Management of Fournier's Gangrene and Perineal Wounds with Allogenic Pisces Dermis

Alfredo Cordova, MD; Victoria Young, BS; Kristy Miller, APRN; Talia Selembo, BS

Introduction: Fournier's gangrene may be a life threatening condition. Furthermore, perineal wounds are challenging to manage due to their location, irregular surface, drainage control, and high bacterial colonization. Most skin-substitutes are highly sensitive to bacterial colonization and infection. Decellularized and lyophilized fish dermis (DLFD) have been shown in-vitro to possess effects decreasing bacterial migration and proliferation acting as a bacterial barrier. DLFD may serve with bacterial protection and enhance optimal wound regeneration in preparation for grafting.

Methods: Eight patients with numerous comorbidities sustaining full-thickness skin defects and complicated wounds with at least heavy bacterial colonization were included. These patients had sustained necrotizing soft tissue infections to the perineal and perianal regions. They underwent excisional debridement and local wound care. Application of DLFD and negative pressure wound therapy was then performed. Subsequently, they underwent resurfacing with a split-thickness skin graft (STSG).

Results: Despite the location, challenges on dressings application, and bacterial colonized environment complete Xenograft incorporation and wound enhancement for grafting was noted within 10 to 14-days. Graft integration and optimal granulation tissue was evidenced in >95% surface area as early as 7-days after product application. No graft loss occurred. Subsequent, STSG revealed >95% graft-take and epithelization within 2-3 weeks.

Discussion: DLFD provide excellent wound coverage of perineal colonized wounds, act as bacterial barrier, and enhances formation of optimal wound bed for skin-grafting. Even though these properties have been observed, we do not advocate using any skin substitute on an infected field. Adequate wound bed preparation is paramount for the success of our patients.

CS-044

Use of an Autologous Multilayered Leukocyte Platelet Fibrin Patch in Ischemic Breast Flaps

Kara Couch, MS, CRNP, CWCN-AP, FAAWC

Introduction: Ischemic complications following breast reconstruction remain a significant clinical challenge, with mastectomy skin flap necrosis reported in approximately 8–14% of reconstructions and reoperation for flap compromise occurring in up to 4% of cases. [1] Compromised perfusion, tissue hypoxia, and microvascular dysfunction impair angiogenesis and cellular repair, increasing the risk of delayed healing and flap loss. Autologous multilayered leukocyte-platelet-fibrin (MLPF) patch offers a biological product shown to promote angiogenesis, collagen and fibroblast formation, and deliver 7-day sustained release of growth factors known for wound healing.[2]

Methods: This case series describes three patients with complex breast wounds treated at a single wound care center following oncologic breast surgery and reconstruction. All patients underwent extensive procedures, including oncologic surgery or autologous deep inferior epigastric artery perforator (DIEP) flap reconstruction, and developed postoperative complications such as ischemia, necrosis, wound dehiscence, or delayed healing. All breast flaps were clinically compromised and considered at risk for failure. Each patient received adjunctive hyperbaric oxygen therapy (HBOT) prior to and/or during wound management. Autologous multilayered leukocyte-platelet-fibrin (MLPF) patches were applied serially, with 1-3 patches per breast per application. Secondary dressings were applied weekly, and wounds were assessed serially for granulation tissue formation, epithelialization, and wound progression.

Results: Three patients with ischemic or threatened breast flaps were treated with autologous multilayered leukocyte-platelet-fibrin (MLPF) patch therapy after incomplete response to standard postoperative management, including hyperbaric oxygen therapy (HBOT). Wounds demonstrated delayed or stalled healing prior to MLPF initiation. Following treatment, all cases showed improved tissue quality, progressive granulation tissue formation, and complete epithelialization. The number of MLPF applications ranged from 2-12, depending on wound severity. All breast wounds achieved complete epithelialization within 3–16 weeks following initiation of MLPF therapy. Flap integrity was preserved in all cases, with no progression to flap loss or need for surgical revision.

Discussion: In this case series, autologous multilayered leukocyte-platelet-fibrin (MLPF) patch therapy was associated with successful healing of ischemic breast flaps refractory to standard postoperative management, including hyperbaric oxygen therapy. By providing an angiogenic, native cellular scaffold within ischemic tissue, MLPF may help mitigate flap failure risk and support durable wound closure in complex reconstructive cases.

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CS-045

Comparative Outcomes of Porcine Urinary Bladder Matrix vs. a 'pooled' Dermal Substitute Cohort in Lower Extremity Partial Thickness Burn Management: a National Retrospective Analysis

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Introduction: Partial thickness burn management frequently incorporates dermal substitutes, including synthetic membranes and extracellu-

lar matrix (ECM)-based products. Porcine urinary bladder matrix (UBM) is a xenograft-derived technology available in micronized and sheet-based format that is has increasingly been utilized in burn care. However, comparative real-world evidence evaluating its performance relative to commonly used dermal substitutes remains limited. This study evaluated national burn registry data to compare clinical outcomes between partial thickness burn patients treated with UBM versus compared to other dermal substitute materials.

Methods: A retrospective cohort analysis was conducted using data from the American Burn Association's National Burn Repository (NBR) and Burn Care Quality Platform (BCQP) from 2021–2024. Partial thickness burn patients to the lower extremity and subsequently treated with UBM were identified and compared to a control cohort treated with dermal substitutes, defined as tissue substitute materials including synthetic membranes and non-UBM ECM products. Extracted variables included demographics, comorbidities, burn severity (TBSA), and clinical outcomes. Primary outcomes included length of hospital stay normalized to burn size (LOS/TBSA) and graft loss requiring repeat operative intervention.

Results: A total of 134 partial thickness lower extremity burn patients treated with UBM were compared with 322 patients treated with dermal substitutes. Patients in the UBM cohort demonstrated a shorter normalized hospital stay, with an average LOS/TBSA of 3.13±5.18 compared with 4.63±7.48 in the dermal substitute cohort; this analysis incorporates all burn severities and is not normalized by other factors that influence length of stay (inhalation injury or mental health status). Additionally, UBM use was associated with a lower incidence of graft loss requiring repeat procedure (2/134, 1.5%) compared with dermal substitutes (24/322, 7.5%).

Discussion: In this national retrospective analysis of partial thickness burn patients, treatment with UBM was associated with reduced hospital length of stay and lower rates of graft failure compared with a pooled group of dermal substitute materials. These findings suggest that UBM may offer clinical advantages over commonly used dermal substitutes in partial thickness burn management. Further analyses are warranted to evaluate additional outcomes, including time to wound closure, resource utilization, and discharge disposition.

CS-046

Management of Complex Wounds with a Bioresorbable Antimicrobial Matrix in Patients at Risk for Delayed Healing

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Introduction: Chronic wounds in patients with diabetes and other comorbid conditions are often slow to resolve and prone to infection. A fully synthetic, resorbable antimicrobial matrix has previously been shown to facilitate healing in non-progressing wounds and to help prevent surgical site infections among high-risk individuals. This report summarizes our clinical experience using the matrix in five cases to support closure in patients at risk for delayed healing.

Methods: Five patients with chronic or dehisced wounds underwent sharp surgical debridement followed by application of the bioresorbable antimicrobial matrix. Sheet size (3 × 3 cm or 5 × 5 cm) was selected based on wound dimensions. The material was secured with a non-adherent contact layer and porous adhesive strips, with secondary coverings consisting of combinations of gauze and conforming wraps. At weekly appointments, wounds were assessed for healing progression, debrided as indicated, and managed with additional matrix applications until full closure or readiness for further advanced therapy was achieved.

Results: All five patients presented with comorbidities commonly associated with impaired wound healing, including diabetes, hypertension, and anticoagulant therapy. Patient age was a median of 71 years, ranging from 48 to 98 years. Across all patients, wound management with the bioresorbable antimicrobial matrix supported progress towards closure or readiness for another CAMP/autograft. No treatment-related complications or infections were observed throughout the course of care.

Discussion: Application of a fully synthetic antimicrobial matrix contributed to wound improvement in this group of patients at risk for delayed healing, ranging in age, comorbidities, and wound etiology. These findings reinforce its potential role in reducing complications, enhancing patient outcomes, and improving the efficiency of care for individuals with prolonged or compromised wound healing. Further controlled investigations comparing this matrix with other cellular- or matrix-based products and conventional antimicrobials will be necessary to validate the clinical benefits observed here and guide its evidence-based use.

CS-049

Clinical Course of Two Venous Leg Ulcers in a Sickle Cell Patient Treated with Cfaf: Divergent Healing Trajectories and the Impact of Infection

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Introduction: Sickle cell disease (SCD) is associated with chronic leg ulcers that are difficult to heal and prone to complications. Cell-free amniotic fluid (cfAF) may offer a therapeutic benefit and is being studied for the treatment of complex wounds. This case report describes two venous leg ulcers (VLUs) in a SCD patient that was treated with cfAF, highlighting distinct healing trajectories of each wound and influence of local infection.

Methods: A 38-year-old black female with SCD and venous insufficiency presented with two VLUs: a four-month-old left lateral ankle ulcer (Wound #1) and a one-week-old left medial ankle ulcer (Wound #2). Prior treatments included both amniotic and synthetic grafts, collagen, antimicrobial foam, and compression. Patient received cfAF into the wound margin at routine visits with standard wound care and debridement. Local anesthesia was applied as needed using either injectable or topical lidocaine spray. Wound area, percent area reduction (PAR), pain, debridement, dressing, and adverse events were documented over 19 weeks.

Results: Wound #1 was treated over 19 weeks with nine cfAF injections. The wound decreased from 6.3 cm2 to 1.5 cm2, achieving a 76.2% PAR. Granulation tissue was observed consistently; pain was 0 at nearly all visits except transient spikes (VAS 9–10) coinciding with a moderate adverse event involving surrounding skin, assessed as unrelated to MTX-001. Regular debridement was performed, and amnion was used at three visits. Wound #2 received four cfAF injections over four weeks. This ulcer initially improved and appeared closed by Week 5. However, on Week 12 a Staphylococcus aureus infection was diagnosed and assessed as unrelated to cfAF. Wound area increased from 0.1 cm2 to 17.1 cm2, resulting in –2000% PAR. Pain escalated to VAS 9–10 during infection. cfAF was withheld, and wound improvement resumed following infection resolution, though area remained significantly above baseline. Amnion and secondary dressings were also used.

Discussion: In this SCD patient, cfAF was associated with substantial improvement in chronic lateral ulcer, while healing of medial ulcer was severely disrupted by infection. These findings suggest that cAF may support healing in chronic wounds in the absence of infection. Further study is warranted to clarify role in high-risk ulcer populations.

CS-050

Correlation of Reduction of Exudate, Pain and Wound Size (Healing) in Refractory Wounds to Quality of Life; Emotional and Social Well-Being; a Veterans Story

Virginia Delgado, RN

Introduction: Persistent non-healing wounds can lead to anxiety, depression and significantly impact the quality of life (QOL) for veterans, affecting their physical and emotional well-being. These wounds can be malodorous and heavily exudating, causing significant pain and limit mobility while creating social isolation.[1] Additionally, veterans experience higher rates of pain compared to non-veterans, affecting their ability to participate in daily activities.[2] Synthetic materials such as bioactive glass (BG) are becoming commercially relevant in the reduction of pain through the support of rapid granulation and epithelization[3], which sup-

port a sustained wound healing environment while decreasing exudate and discomfort through improved healing.

Methods: Two veterans with a total of five highly exudating and painful venous ulcers greater than 8-10 months old were treated. The patients were unable to tolerate debridement or compression due to pain and had previously failed to heal utilizing multiple advanced treatment modalities. Patients became confined to their homes due to exudate, pain and limited mobility. Wounds were treated with weekly applications of BG wound matrix.

Results: Both patients observed a rapid decrease in exudate and odor with significant wound area reduction and no reported pain within the first 2 weeks]. Both were able to tolerate compression and ambulation leaving them feeling less socially isolated. Four of the five non-healing wounds resolved after six applications of the BG wound matrix. The fifth and largest wound (10.8 x 9.0 x 0.3 cm) had a 60% wound area reduction in 6 weeks and the patient remains pain free and active, with decreased wound area weekly. Of the four resolved wounds, rapid granulation and epithelization resulted in excellent tissue quality found in the boron-based bioactive glass fiber matrix structure that supports angiogenesis, fibroblast and keratinocyte proliferation.[4]

Discussion: The presented case offers real-world clinical evidence indicating that the borate-based bioactive glass fiber matrix facilitated the establishment of a sustainable wound environment, supporting early effectiveness characterized by rapid reduction in wound area in chronic, non-healing wounds. Additionally, the patients reported less social isolation because of pain reduction and decreased exudate,which had a significant impact on overall physical and emotional well-being while improving QOL.

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CS-051

3d Bioprinting Adipose Grafting for Soft Tissue Repair, My Experience

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Introduction: Autologous fat grafting is commonly used for aesthetic and reconstructive surgery of the breast and other areas in attempts to reverse long term effects of radiation and scar. The value of autologous minimally manipulated homologous adipose tissue (AMHAT) has been described as a potential source of stimulation of proliferative and interactive cells. However, techniques have been limited to allow for practical use.[1] (AMHAT) fabricated using three-dimensional (3D) bioprinting has shown potential in the treatment of diabetic foot ulcers and other chronic wounds.[2-7] Is adipose the holy grail for soft tissue repair? 3D printing utilizing bioinks to create a customized adipose graft for a patient is the ultimate personalization of point of care and indeed may be the future.

Methods: We present our early experience with 3D adipose printing for patients with pressure ulceration. 2 Patients were treated with 3D adipose printing. Each patient underwent 2 procedures, performed in the outpatient clinic under local anesthesia with small volume (15-20cc) liposuction obtained from the trunk. 3D bioprinting was utilized to customize the graft size and then processed and printed. The graft was placed on the wound site. Two methods were utilized, low-temp method and fibrin method yielding different physical attributes, textures, and pliability of the adipose graft. The wounds were photographed and measured weekly.

Results: All wounds showed wound progression including reduction of size and depth with evidence of epithelialization. One patient elected to proceed with surgical flap closure. Upon excision of the wound prior to flap closure, the excised specimen was analyzed histologically and showed clear evidence of neoangiogenisis, keratinocyte and epithelial migration. Patient 1. showed wound progression with a reduction of wound size by 23% and depth by 38% after 6 weeks. Patient 2. Showed wound progression with a reduction of wound size by 40% and depth 33% at 6 weeks. Furthermore, Patient 2 requested additional procedures for a new ulcer that appeared on the contralateral side.

Discussion: New technology utilizing adipose as an adipose 3D printed matrix creates a personalized point of care delivery system for patients with complex wounds. Use of tissue in excess to create tissue on demand is the "Holy Grail" of wound management and soft tissue reconstruction.

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CS-053

Beyond Debridement: Clostridium Collagenase Mechanism of Action and Impact on Wound Healing. Clinical Cases

Krista Bauer, F NP, WCC, OMS; Jody Wolfe, BSN, MBA, RN, CWOCN

Introduction: Clostridium collagenases (CC) are a class of zinc-dependent metalloproteinases secreted by Clostridium histolyticum that play a critical role in selectively hydrolyzing denatured and necrotic collagen within a wound burdened with necrotic debris. These enzymes exhibit broad substrate specificity and are uniquely capable of cleaving the triple-helical regions of interstitial collagens under physiological conditions. Clostridium collagenase unwinds and hydrolyzes the triple-helical structure at multiple cleavage sites, leading to the disassembly of collagen fibers into smaller, soluble bioactive peptide fragments. This activity distinguishes clostridial collagenases from mammalian counterparts, which typically cleave collagen at a single site. These fragments may assist with the wound healing process to accelerate wound healing. Clinically, clostridium collagenase has traditionally been utilized in enzymatic debridement of dermal ulcers and burns. However, clostridium collagenase's therapeutic properties go beyond solely being a debridement agent and provide a broader benefit to patients with complex wounds. Research shows that collagen fragmented byproducts produced via enzymatic digestion by the clostridium collagenase contribute to reduced secretion of pro-inflammatory factors and promote conversion of macrophages

from a pro-inflammatory state to a pro-resolution state. Additionally, the data supports that collagen fragmented byproducts contribute to the migration and proliferation of fibroblasts, keratinocytes, & endothelial cells. Taken together, these factors contribute towards the formation of granulation tissue and subsequent epithelization.

Methods: We present a series of clinical cases showing complex wounds where CC was used beyond the endpoint of clinical debridement. Wounds were treated daily with FDA-approved clostridium collagenases ointment. Cases include: Non healing surgical wounds, TMA (2) abdomen (2). Non healing surgical wound back, Melanoma (1).

Results: In all cases Santyl was utilized beyond removal of necrotic debris. In all cases, the patients healed without surgical intervention. This secondary healing is remarkable in that the goal of Santyl typically is complete debridement.

Discussion: Understanding its catalytic mechanism has been essential for both therapeutic applications and insights into the benefits beyond debridement by clostridium collagenase. The denatured collagen fragments offer additional benefit following the debridement activity, which is clinically observed in this case series. Overall, the use of collagenase in complex wound management offers a biologically specific and cosmetically favorable alternative to traditional surgical approaches, contributing to better long-term aesthetic and functional outcomes in complex patients with complex wounds.

CS-054

Necrotizing Fasciitis of the Lower Extremity: Risk Factors, Surgical Strategies and Adjunctive Treatments Associated with Improved Survival – a Case Series of 22 Consecutive Patients in 2025.

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Introduction: Necrotizing fasciitis (NF) is a life threatening, rapidly progressive, bacterial infection that causes fascia, muscle and subcutaneous tissue necrosis. The infection travels along avascular fascial planes and diagnosis is generally delayed due to delayed skin involvement. Current consensus (2023-2025 literature), Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) ≥ 8 demonstrates a mortality of 45-50%.

Methods: Serial surgical debridement were performed to excise non viable tissue including all fascia, necrotic muscle, and skin. After each debridement the tissue defect was covered with Fish Skin Graft fragments (FSGf) to promote granulation coverage of tissue defects. The FSGf was directly covered with Negative Pressure Wound Therapy hydrophilic sponge (NPWT hydrophilic) and covered with a thin hydrophobic sponge with a silicone border.

Results: The surgical technique resulted in a limb salvage rate of 59%, major amputation rate of 31% and a mortality of 1%. A survival rate of 99%. Surgical delay demonstrated rapid biochemical deterioration with average LRINEC increase of 8 points with 7 day delay. Initial LRINEC score > 8 had 50% incidence of major amputation and initial LRINEC score >11 had a 30% mortality.

Discussion: This case series demonstrates the importance of surgical debridement within 24 hours of presentation, including the benefits of adjunctive modalities of FSGf and NPWT hydrophilic.

CS-055

Reviving Stalled Wounds: a Case Series on the Clinical Impact of a Borate-Based Bioactive Glass Fiber Matrix in Complex Patients

Diego Escobar, MD

Introduction: Chronic and complex wounds present significant clinical challenges, particularly in medically fragile populations. Advanced wound care products are increasingly being used to stimulate healing in wounds that are refractory to standard interventions. A critical step in this process is wound bed preparation—removing nonviable tissue, managing exudate, and optimizing the local wound environment to facilitate granulation and epithelialization.[1-3] This case series evaluates the use of a Borate-Based Bioactive Glass Fiber Matrix (BBGFM) in three diverse patients with non-healing wounds, highlighting the skin substitute's role in potentially facilitating proper wound bed preparation, formation and eventual wound closure.

Methods: Three patients with complex wounds were treated with BBGFM following periods of stalled healing. Clinical context, wound characteristics, and comorbidities were recorded. Wound progression was monitored through serial measurements and photographic documentation. The BBGFM was applied per manufacturer guidelines until closure or evidence of meaningful progression was observed.

Results: Case 1 involved a 93-year-old with a traumatic lower extremity laceration from a cardboard box. Treatment with the BBGFM began on 03/14/2025, and complete wound closure was achieved by, 05/02/2025 with 5 applications representing a healing time of 7 weeks. Case 2 featured a 64-year-old with a right foot abscess complicated by alcohol-related systemic illness including portal hypertension, acute renal failure, and ascites. After multiple procedural interventions during a prolonged hospitalization and systemic support, the BBGFM was initiated on 07/19/2024, with complete closure achieved by 9/20/2024 with 6 applications in 9 weeks. Case 3 was a 52-year-old with a non-healing post-arthroplasty wound following a motor vehicle collision (MVC). After months of minimal improvement, the BBGFM was initiated on 11/1/2024. By 12/13/2024, a 47.74% percent area reduction (PAR) was documented, with wound bed granulation and epithelialization signaling readiness for subsequent wound closure intervention (6-week period).

Discussion: This case series demonstrates the utility of the BBGFM in facilitating wound healing across diverse etiologies and patient populations. Notably, two cases achieved complete wound closure within 9 and 16 weeks, respectively, while the third showed marked improvement after prolonged stagnation. These results suggest that the BBGFM may potentially provide critical support in reinitiating wound healing, even in medically complex or previously non-responsive wounds.

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CS-056

Innovative Use of Bordered Silicone Foam for Post-Graft Management in Complex Foot Wounds: a Case Series

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Introduction: Postoperative graft success in the foot and ankle is often limited by challenges in dressing performance, particularly in high-motion, high-exudate environments. Traditional dry sterile dressings frequently require frequent changes, risk maceration, and struggle to maintain stable wound contact, which may compromise graft adherence and healing. Rural patients face additional barriers when complex, multilayer dressings demand frequent home-health support. This case series was designed to evaluate whether Bordered Silicone Foam could address these limitations by providing more consistent moisture control, dressing stability, and graft protection than conventional dressings.

Methods: This comparative case series included eight patients with complex foot wounds requiring biologic grafting. All underwent operative debridement, placement of antibiotic-loaded resorbable cement, and application of amniotic and dermal grafts secured with staples. A silber impregnanted non-adherent contact layer was applied before postoperative dressing assignment. Four patients received standard dry

sterile dressings, and four received bordered silicone foam dressings. All patients were uniformly offloaded and followed weekly for six weeks. Outcomes included dressing-change frequency, periwound maceration, dressing stability, graft integrity, and signs of infection.

Results: Eight patients completed the six-week follow-up. The bordered silicone foam dressing group required fewer dressing changes (0.63 vs. 1.54 per week), reflecting improved stability and reduced strike-through. Periwound maceration occurred once in the bordred foam silicone dressing group compared with four instances in the SOC group. One bordered silicone foam patient experienced partial graft-edge lift requiring staple reinforcement. Localized infections occurred in one bordered silicone foam dressing patient and two SOC patients, all resolving with oral antibiotics. No graft failures, systemic complications, or amputations occurred. Overall, bordred foam silicone dressings demonstrated favorable trends in moisture control and dressing performance.

Discussion: Bordered silicone foam dressings demonstrated postoperative advantages over traditional dry sterile dressings, including fewer dressing changes, reduced maceration, and improved moisture control. These factors likely contributed to greater dressing stability, which is essential for protecting biologic grafts in high-motion foot environments. Although one bordered silicone foam dressing case experienced graft-edge lift, this appeared patient-specific rather than dressing-related. Infection rates were low in both groups but occurred twice as often in the SOC cohort. While limited by small sample size, these trends suggest bordered silicone foam dressings perform at least as well as, and may outperform, traditional dressings in graft management.

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CS-057

Equine Collagen in Healing Chronic Wounds

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Introduction: Chronic wounds are wounds that do not heal within 3 months. These wounds often become stuck in the inflammatory phase of healing due to factors such as infection, poor blood flow, or imbalances in enzymes and signaling molecules. Non-healing wounds significantly affect the patient's quality of life due to their physical and psychological effects.

Methods: Three patients were treated with advanced local wound dressings, including negative-pressure wound therapy, calcium alginate, methylene blue gentian violet, and silver dressings, to create a moist healing environment. The NPWT only decreases the wound size to 4.4 cm in 12 weeks. The remaining local advanced dressing, used in combination with NPWT, reduces the wound size to 1-2 cm in 2 weeks. At the 12th week of NPWT, since the patient's wound was no longer appropriate for the NPWT, both the patient and the WOC RN decided to trial Equine collagen to accelerate wound healing. The product is a type 1 collagen that protects the wound bed from the external environment, forming a barrier against exogenous infectious agents. Stimulates the formation of new granulation tissue, the proliferation of fibroblasts, and the deposition of new collagen fibers. Furthermore, it helps absorb wound exudate and can control minor bleeding. Methylene blue and gentian violet were added to the equine collagen dressing.

Results: The first patient experienced over a 1 cm reduction in wound size by week 5, nearly closed by week 8, before needing a skin substitute. The second wound closed completely after 9 weeks, and the third wound after just 4 weeks, illustrating the potential effectiveness of equine collagen in accelerating healing.

Discussion: The use of equine collagen offers clinicians an additional, effective option in the wound-healing toolkit, especially after standard treatments like NPWT and local dressings have been exhausted, reinforcing their confidence in managing complex wounds.

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CS-059

Bridging Technology and Clinical Judgment: Advancing Early Infection Detection and Wound Care Decision-Making

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Introduction: Early recognition of infection and inflammation have shown to significantly improve wound care outcomes. However, wound assessment today depends heavily on subjective measures and individual clinical experience. As expectations for objective documentation continue to grow, physiologic imaging offers a valuable tool for the clinician's

exam. Spectral imaging allows us to see tissue changes beneath the surface, including changes in perfusion, hemoglobin distribution, and early inflammatory activity that are not easily visualized by our own eyes. Thermal imaging adds a second layer by identifying temperature differences within and around the wound that may indicate the start of infection. When utilized alongside our clinical judgement and experience, it gives us great insight for infection detection and improves quality outcomes.

Methods: The imaging system was implemented at two of our outpatient wound care programs, with providers trained in image capture. Twenty wounds, including diabetic foot, venous, pressure, and traumatic ulcers were followed every 1–2 weeks, with digital imaging at each visit to ensure consistent data collection. These findings were utilized together with the clinical exam, and representative cases were selected to demonstrate how spectral and thermal data informed dressing selection, culture timing, and antibiotic decisions.

Results: Spectral and thermal imaging improved our early recognition of wound infection and biofilm buildup within the selected cases. In a representative DFU case, thermal imaging revealed a 2.6°C periwound temperature increase that prompted an early wound culture confirming infection. Spectral imaging at the same visits showed an increase in biofilm activity at the wound edges, prompting us to change the type of dressing being utilized and the use of selective debridement. These two methods helped support earlier decision-making regarding changes in our treatment plan.

Discussion: Spectral and thermal imaging can enhance clinical evaluation and aid early infection detection while informing treatment decisions, making it an extremely valuable tool in modern wound assessment. Its overall evidence should be strengthened by more evaluation of larger and wider patient populations and wound types.

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CS-060

Copper-Infused Dressings in the Care of Pyoderma Gangrenosum: Results from an Outpatient Case Series

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Introduction: Pyoderma gangrenosum (PG) is a rapidly progressing neutrophilic dermatosis marked by severe inflammation, significant pain, and prolonged wound healing. While many therapies like corticosteroids and biologics are essential for healing. Optimizing the wound bed and decreasing the patients pain remain a key components of treatment. Copper-infused dressings help by providing selective antimicrobial activity, decreasing local inflammation, and improving patient comfort in the process. This case series shows the use of copper dressings in Pyoderma care inside an outpatient wound-care clinic.

Methods: A retrospective case series was conducted on PG patients managed in an outpatient wound-care clinic who received copper-infused dressings from initial presentation through healing. Clinical data, patient-reported pain scores, and photographs were used to evaluate response to the treatment. Main factors assessed included time to pain reduction, reduction in wound inflammation, granulation and epithelialization progress, and compatibility with concurrent biologic therapy. All systemic therapies were continued in the care of the patients.

Results: Copper-infused dressings enhanced the healing PG in all cases. Patients reported pain reduction, leading to improved quality of life. Wounds demonstrated decreased erythema, warmth, and drainage, supporting copper's anti-inflammatory effect. Copper's being selectively antimicrobial allowed for safe use before, during, and after the use of biologics. Progressive epithelialization was observed at each visit with complete healing being reached in all cases represented.

Discussion: Copper-infused dressings offer a practical, patient-centered option for managing PG in the outpatient setting. Their ability to reduce pain, decrease inflammation, and be utilized with biologics necessary to heal pyoderma highlights their value in PG wound care. Further prospective studies are warranted to better define their role in long-term management.

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CS-061

Importance of Holistic Pre-Operative Medical and Psychosocial Optimization in Advanced Hidradenitis Suppurativa: a Case Report

Rachel Garner, BS; James Pai, MS; Jessica Reid, MS; Abigail Chaffin, MD

Introduction: Hidradenitis Suppurativa (HS) is a chronic, debilitating inflammatory disease arising from follicular occlusion and rupture of apocrine glands, clinically manifesting as painful deep-seated nodules, abscesses, and sinus tracts with purulent discharge.[1] These physical symptoms frequently precipitate severe psychosocial sequelae, including social withdrawal and body dysmorphia, which correlates with reduced quality of life and potential disease exacerbation.[2,3] We posit that a patient's psychological resilience is a critical determinant of surgical efficacy. This case underscores the necessity of integrating psychological health into the preoperative multidisciplinary planning for HS to optimize surgical and functional outcomes.

Methods: We describe the case of a 34-year-old female presenting with Hurley Stage III HS, characterized by extensive disease burden, chronic drainage, and significant functional impairment. Following medical advice, the patient underwent bariatric surgery for weight optimization and subsequently presented to the plastic surgery service for a multistage reconstructive plan. Concurrently, she engaged in targeted mental health therapy to address chronic pain-induced distress, body image disturbance, and social isolation that had previously necessitated her withdrawal from a PhD program.

Results: To date, the patient has successfully completed four staged surgical procedures without major perioperative complications. Following surgical intervention, she has resumed her doctoral studies and reports a marked improvement in quality of life, exceeding baseline function prior to disease onset as the patient states that she has "never felt better". Subjective assessment reveals high patient satisfaction, with the patient citing a meaningful restoration of autonomy, confidence, and daily functioning.

Discussion: While staged reconstructive surgery, medical management, and preoperative weight loss were pivotal, addressing the profound emotional distress associated with HS proved equally vital to this patient's recovery and final outcome. Major Depressive Disorder, along with other

mood disorders, represents a significant comorbidity in debilitating diseases such as HS, warranting aggressive management when risk-stratifying patients for surgery.[4] This case demonstrates that both preoperative medical and psychiatric optimization are critical to facilitating optimal surgical outcomes. Ultimately, surgical intervention, coupled with a holistic, patient-centered approach, can yield transformative outcomes in patients with advanced cases of HS.

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CS-062

The Use of an Optimal Formulation to Deliver Pure and Hypochlorous Acid in a Highly Concentrated Antimicrobial Wound Gel* Form Was Tested in Real World Experience in a Busy Wound Center

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Introduction: Pure hypochlorous acid as a wound cleanser is highly evidence-based, and effective in bacterial control/pH control of wounds. While a liquid cleanser that contains pure HOCl has an immediate effect, a gel form may allow for a more prolonged germ removal and slough removal (autolytic) action and may be synergistic with the HOCl based liquid cleanser. In our busy wound center, we selected wounds that may benefit from the use of HOCl products, cleansing them first with pure HOCl solution, followed by the application of a HOCl based antimicrobial wound gel. We report the results from a wide variety of wounds.

Methods: We treated, over a planned period of 16 weeks, currently with 27 wounds in 25 patients. The distribution of wound types is shown, but contains venous, diabetic, pressure injuries, post-surgical, trauma, and atypical ulcers over a variety of body locations.

We utilized various clinically indicated secondary dressings with the initial application of the gel applied about 5 mm thick directly to the ulcer bed. Reapplication and dressing changes continued by the clinicians/patients/families at differing time frames as instructed.

Results: We report a high degree of patient tolerance and ease of application. We found that the secondary dressings of the foam variety were most suitable. Slough removal was improved and, in some early cases, effective enough to transition to a collagen product. Wound healing progress was reported in most patients; we feel daily reapplication and dressing changes are generally most effective. However, with the cost of dressing supplies and availability for some patients to have assisted care application, most dressings were done every 2-3 days. We report 1 number of adverse events related to the gel that created maceration. This was adjusted with secondary dressing choices.

Discussion: Formal studies on the gel formulation may be indicated, but our positive real-life experience allows us to add this to our formulary. This pure HOCl based antimicrobial wound gel regime used as a primary dressing following use of the HOCl liquid cleanser as the first cleaning step allows increased contact and effectiveness, killing and debriding power for increased efficacy of the wound healing trajectory.

CS-063

Early Experience with a Composite Ovine Forestomach Matrix Graft in Chronic Lower Extremity Wounds: a Multi-Center Retrospective Case Series

James E. Geiger, DPM; Anthony J. LaLama, DPM; Brandon Bosque, DPM, CWSP; Alpash K. Patel, DPM

Introduction: Chronic wounds are a prevalent clinical challenge that negatively impacts patient quality of life, morbidity, mortality, and healthcare costs. Their management usually requires a multidisciplinary approach involving outpatient care and, at times, surgical intervention. One outpatient treatment option is a composite bioscaffold that contains ovine forestomach matrix and hyaluronic acid (OFM-HA). This multi-center retrospective case series presents initial findings from the use of OFM-HA to treat lower extremity chronic wounds in the outpatient setting.

Methods: A retrospective chart review of ten patients with lower extremity chronic wounds was conducted. Each patient had a single wound treated with OFM-HA after failing standard-of-care at three outpatient facilities. Before OFM-HA application, wounds were deemed free of infection and sharply debrided of non-viable tissue. OFM-HA was trimmed, rehydrated, and secured with either adhesive strips or staples. Wounds were dressed with a non-adherent primary contact dressing, gauze and/or foam dressing, and appropriately compressed and/or off-loaded. Demographics, baseline wound characteristics, and healing outcomes were reported.

Results: Most patients were elderly males with several comorbidities and complicating factors. Most wounds were diabetic foot ulcers (70%), with one pressure injury and one atypical vasculitic ulcer. Wounds achieved a 50% percent area reduction at a mean of 3.2±2.3 weeks, and a mean time to wound closure of 9.9±5.1 weeks. Patients received a median of 4 (IQR: 2, 5) OFM-HA applications, averaging 0.4±0.3 applications per week. The average time to the last follow-up was 36±26.8 weeks. No complications or recurrences were observed.

Discussion: Despite the complexity of this patient group, OFM-HA promoted timely and effective healing. In fact, patients took, on average, ~10 weeks to achieve full closure, with only ~1 application of OFM-HA every two weeks and no complications or recurrences. This indicates that OFM-HA can support efficient tissue regeneration, while underscoring OFM-HA's safety and its durability in a hostile chronic wound environment. These positive clinical outcomes, along with a cost well below the newly implemented $127/cm2 cap on skin substitutes, translates into substantial cost-savings for the clinic. Altogether, this case series demonstrates that OFM-HA is a favorable alternative in the treatment of chronic lower extremity wounds.

CS-064

Use of Novel Longer-Duration Wear Negative Pressure Wound Therapy Dressing at Discharge for Patients with Complex Social Determinants of Health

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Introduction: Negative Pressure Wound Therapy can promote healing in difficult wounds. Barriers to discharging patients with standard NPWT include being uninsured and limited home health resources. Novel longer-duration wear NPWT dressings* allow for up to seven-day wear time which can facilitate continued wound care for patients with complex discharge circumstances. This case study explores the application of novel longer-duration wear dressings as an outpatient wound care plan for an uninsured patient to limit his out-of-pocket burden and to protect a graft site that patient could not manage himself.

Methods: 56-year-old diabetic man admitted after crush injury at his workplace, underwent left foot second toe amputation with second metatarsal resection, and later debridement with skin substitute application. Postoperatively, the patient underwent NPWT dressings changes three times weekly while inpatient. Due to his lack of insurance, family support,

and low health literacy, he was unable to be discharged with a home-based dressing change plan. As a result of interdisciplinary collaboration among wound care, podiatry and case management, a novel longer-duration wear dressing was applied prior to discharge to meet patient's complex wound care and case management needs. Case management funded patient's home use of the NPWT machine and novel longer-duration wear dressings after discharge.

Results: The novel longer-duration wear dressing aided wound healing in the setting of patient's comorbidities and patient's social determinants of health. With weekly outpatient podiatry dressing changes, the wound was nearly healed within 3 months.

Discussion: The use of novel longer-duration wear dressings is a valuable outpatient option for patients facing challenges related to having no insurance and limited home health support. Using the dressing created a patient centered care plan to address his limited outpatient resources. However, financially supporting the accompanying NPWT machine can complicate discharge plans.

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CS-065

Limb Salvage in a High-Risk Dialysis Patient: Healing a Trimalleolar Fracture with Chronic Wounds Using Borate-Based Bioactive Glass Fiber Matrix After Debridement and Arthrodesis External Fixation

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Introduction: Limb salvage in patients with end-stage renal disease (ESRD), immunosuppression, and chronic wounds presents a significant clinical challenge due to impaired perfusion, delayed healing, and elevated infection risk.[2] These factors often lead to major amputation when orthopedic trauma or multisite wounds are present. Creating an optimal wound environment after surgical debridement is critical to promote angiogenesis, tissue regeneration, and durable healing. Borate-based bioactive glass fiber matrices (BBGFM) have emerged as an adjunct to proper wound care practices to support secondary intention healing. This case highlights BBGFM's use in a multimodal limb salvage strategy for a dialysis-dependent transplant patient with a complex ankle fracture and chronic lower extremity wounds.

Methods: A 70-year-old male with ESRD on dialysis and prior liver transplant presented with a chronic medial venous leg ulcer (VLU). In December 2024, he sustained a trimalleolar ankle fracture complicated by fracture blisters and anterior foot eschar from dressing pressure, a complication from the VLU treatment. Vascular assessment showed non-palpable posterior tibial pulses with Doppler-detected dorsalis pedis signal. On Jan 10, 2025, he underwent left ankle arthrodesis with external fixation. Adjunctive wound care included:

- 02/26/2025: Initial surgical debridement and BBGFM application to large defect wounds
- 03/19/2025: Subsequent debridement and BBGFM reapplication
- 04/14/2025: External fixator removal, debridement, BBGFM reapplication, and NPWT initiation Wound progression was monitored through clinical observation and photographic documentation with measurements.

Results: Over a three-month treatment period and following four applications of BBGFM, demonstrated substantial percentage area reduction, progressing to full closure. The matrix adapted well to complex wound topography, supporting robust granulation and enhanced wound bed vascularity. After removal of the external fixator and initiation of BBGFM supported NPWT, the wounds remained stable with continued epithelialization and no signs of infection. This multimodal strategy resulted in complete wound resolution and successful limb salvage without further surgical intervention.

Discussion: This case demonstrates the effective use of BBGFM as an adjunct in a successful limb salvage strategy for a high-risk patient with ESRD, transplant history, and complex lower extremity wounds. The BBGFM supported granulation, vascularization, and wound healing. The extracellular matrix like material provides an optimal environment to support new blood vessel formation and encourages native cell migration, resulting in a well vascularized and organized wound bed. This case underscores the BBGFM's role in limb salvage protocols where chronic wound healing is impaired. Further investigation is warranted to define its efficacy in similarly high-acuity patients.

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CS-066

Elastomeric Skin Protectant Use for Periwound Skin Protection in Highly Exudative Diabetic Foot Ulcers

Emily Greenstein, APRN, CNP, CWON, FACCWS

Introduction: Diabetic foot ulcers (DFUs) can be difficult to manage. Additionally, in some patients, high levels of wound exudate can further complicate wound healing due to periwound skin breakdown, irritation, or maceration.[1] Typical wound care for highly exudating DFUs includes highly absorbent dressings, periwound skin protectants, and frequent dressing changes.[2] Traditional skin protectants include petrolatum, zinc oxide pastes/ointments, and film barriers.[3] An elastomeric skin protectant* offers long-lasting film-based periwound skin protection that can be applied to delicate periwound skin to help protect against maceration.

Methods: All DFUs underwent sharp debridement followed by a 5 to 10-minute soak with a hypochlorous acid wound cleanser. The wound and periwound skin were gently wiped dry and an elastomeric skin protectant was applied to the periwound skin. Silver-collagen or iodine impregnated dressings were used along with gauze or foam-based secondary dressings. Dressing changes ranged from every day to twice a week. The skin protectant was reapplied once per week for 3 patients and twice a week for 1 patient. Wound healing and periwound skin condition were monitored at each dressing change. Off-loading was provided by a custom orthopedic medical shoe.

Results: Four patients with highly exudating DFUs were managed. Patient ages ranged between 38 and 77 years old. Common comorbidities included type 2 diabetes, chronic kidney disease, venous insufficiency, and hypertension. The development of granulation tissue was observed in all 4 wounds. Periwound skin maceration was resolved in all patients without further reoccurrence.

Discussion: In these 4 patients, use of the elastomeric skin protectant along with wound dressings resulted in granulation tissue development and improved periwound skin condition.

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CS-067

Restoring the Healing Trajectory in a Refractory Traumatic Leg Ulcer Using a Borate-Basic Bioactive Glass Fiber Matrix

Rupal Gupta, DPM

Introduction: Chronic traumatic lower-extremity wounds that fail to progress despite standard wound care remain a significant clinical challenge. In non-diabetic patients, these wounds may persist due to impaired perfusion, repeated mechanical stress, bioburden, or inadequate host response.1 Traditional therapies including collagen dressings, silver alginates, antimicrobial foams, medical-grade honey, enzymatic debridement, and topical antibiotics often provide limited benefit once a wound becomes refractory. Borate-based bioactive glass fiber matrix (BBGFM) dressings have emerged as a novel therapeutic modality providing an environment conducive to appropriate inflammation, granulation, and re-epithelialization. This case report described the healing trajectory of a chronic traumatic wound treated with a BBGFM following multiple unsuccessful interventions

Methods: A non-diabetic adult patient presented with a chronic traumatic wound on the right lateral extremity (RLE) that had failed to improve after months of comprehensive treatment, including advanced dressings and four-layer compression therapy. After reassessment and confirmation of non-response to previous modalities, BBGFM was selected as the next intervention. The first application occurred on March 25, 2025. Standard wound care practices including wound cleansing, moisture balance, and ongoing compression were continued in conjunction with the BBGFM. The wound was assessed at routine follow-up visits for changes in size, tissue quality, granulation, and epithelial advancement.

Results: Following the application of BBGFM, the wound demonstrated progressive improvement in granulation and epithelialization after previously showing minimal change. Over the subsequent weeks, the wound area steadily decreased, with visible quality tissue and reduction in slough. Complete wound closure was achieved on August 5, 2025, approximately 19 weeks after initial BBGFM placement.

Discussion: This case illustrates that BBGFM facilitated closure of a chronic traumatic non-diabetic leg wound that had been refractory to multiple advanced therapies. The observed healing trajectory suggests that the matrix may have contributed to a favorable wound environment. While single-patient outcomes cannot be generalized, this case adds to the growing evidence that BBGFM may represent a valuable option for treatment-resistant wounds.

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CS-068

Desmoplastic Melanoma: Complete Closure of Large Scalp Vertex Excision without Reoperation

Matthew Hardy, M.D., CWSP; Caroline Hardy, DNP, APRN, FNP-C

Introduction: Melanomas of the head and neck can be particularly challenging to treat and definitively close considering the anatomic challenges and frequent need for adjuvant chemoradiation therapy. Large volume tissue loss and adjuvant therapies can cause significant morbidity and oftentimes require numerous surgeries including split thickness skin grafting and myocutaneous flap reconstruction. Desmoplastic melanoma (DM) is a rare subtype of melanoma characterized by scar-like growths with spindle-shaped cells making up approximately 4% of cutaneous melanoma cases. i Due to their atypical appearance, there is often a delay in diagnosis, further adding to the complex task of skin closure. ii

Methods: Numerous advanced wound care modalities and techniques were utilized to treat an approximately 70 cm^2 surgical excision in the setting of concurrent radiation therapy as well as chronic immunosuppression for a history of bilateral lung transplant. This included the use of serial sharp debridement, non-contact low frequency ultrasound, bi-layered neonatal foreskin, various collagen scaffolding products, and a variety of advanced wound dressing.

Results: The authors highlight a case of widely excised scalp vertex melanoma successfully closed without reoperation.

Discussion: While the use of many advanced wound care products and techniques proved successful, equally important was the inter-departmental collaboration between our dermatology, ENT, oncology, radiation oncology, and primary care colleagues. Close communication, frequent follow-up, and flexible clinic scheduling allowed for timely wound care treatments and procedures while also undergoing daily radiation therapy resulting in complete wound closure and no further evidence of disease.

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CS-069

Case Series Evaluating the Effectiveness of Multi-Modality Topical Oxygen Therapy in the Treatment of Complex Chronic Wounds

Christina Harman, PA-C

Introduction: Chronic, nonhealing wounds present significant clinical challenges, particularly in patients with complex comorbidities and a history of failed conventional therapies. Multi-Modality Topical Oxygen Therapy (ITOT), which delivers continuous oxygen under pressure directly to the wound bed, has emerged as a promising adjunctive modality. This case series evaluates the effectiveness of ITOT therapy in three patients with recalcitrant chronic wounds of varying etiologies.

Methods: Three patients with longstanding, nonhealing lower extremity wounds were treated at a wound care center after failing multiple standard and advanced wound care interventions, including negative pressure wound therapy (NPWT), cellular and tissue-based products (CTPs), surgical debridement, and, where indicated, hyperbaric oxygen therapy (HBO). ITOT therapy was initiated as adjunctive treatment, often in combination with CTPs and compression therapy. Wound dimensions were serially measured, and relevant laboratory and imaging studies were reviewed to monitor progress and exclude complicating factors such as osteomyelitis.

Results: All three patients demonstrated significant wound healing following the initiation of ITOT therapy. Case 1, a 71-year-old male with a 3-year-old pressure injury refractory to multiple interventions, achieved complete wound closure after 6 months of ITOT and CTP therapy. Case 2, a 57-year-old female with a chronic neuropathic ulcer and Charcot arthropathy, experienced marked wound improvement and avoided further infection-related hospitalizations, with progressive reduction in wound size during ITOT treatment. Case 3, a 73-year-old male with a nonhealing transmetatarsal amputation site and extensive vascular history, achieved full wound closure within one month of combined ITOT and CTP therapy, thereby avoiding major amputation.

Discussion: ITOT therapy, as an adjunct to standard and advanced wound care modalities, facilitated wound healing in patients with complex, chronic wounds unresponsive to prior treatments. These cases highlight the potential of ITOT to promote closure and limb salvage in high-risk populations. Further studies are warranted to confirm these findings in larger cohorts.

CS-071

Evaluating Early Efficacy of a Borate Based Bioactive Glass Fiber Matrix in Chronic Recalcitrant Wounds: First-Week Percentage Area Reduction (PAR) and Closure: a Case Series

Kayla Ingram-Smith, APRN, AGACNP-BC, WCS-C, EDS-C

Introduction: Chronic wounds, such as diabetic foot ulcers (DFUs) and pressure injuries, are marked by persistent inflammation, impaired

angiogenesis, and disrupted extracellular matrix remodeling, all of which contribute to delayed healing [1]. Recalcitrant wounds often fail to respond to conventional wound care modalities, including advanced cellular and tissue-based products (CTPs) [2]. The extracellular matrix like structure of the borate based bioactive glass fiber matrix (BBGFM) is conducive to closure by providing an environment that supports new blood vessel formation and encourages native cell migration, resulting in a well-vascularized and organized wound bed. This case series highlights early clinical outcomes, including first-week percentage area reduction (PAR), in patients with chronic wounds treated with Borate-based Bioactive Glass Fiber Matrix following prolonged non-healing and failure of standard therapies.

Methods: Three patients (mean age: 70 years) with chronic wounds of ≥12 months' duration were treated. Wound etiologies included one DFU, one Stage 3 pressure injury, and one Stage 4 pressure injury. All wounds had previously failed to close with standard wound care and CTP applications. Following sharp debridement and standard wound bed preparation, bioactive glass fiber matrix was applied per manufacturer's guidelines and covered with appropriate secondary dressings. Wounds were assessed and treated weekly. The primary endpoint was the first-week percentage area reduction (PAR). Secondary endpoints included complete epithelialization and full wound closure, progressive surface area reduction over time, and monitoring for adverse events.

Results: All three wounds exhibited rapid and progressive closure following initiation of Borate-based Bioactive Glass Fiber Matrix therapy.

- The DFU, a chronic wound persisting for 12 months, achieved full closure within 28 days and demonstrated a first-week percentage area reduction (PAR) of 72%.
- The Stage 3 pressure injury, unresponsive to prior CTPs, achieved within a first-week percentage area reduction (PAR) of 71%.
- The Stage 4 pressure injury, previously complicated by infection, achieved within a first-week percentage area reduction (PAR) of 86%. No adverse reactions or infections were observed during treatment.

Discussion: Bioactive glass fiber matrix demonstrated early and sustained healing effectiveness in chronic recalcitrant wounds. Significant first-week PAR and full closure support its potential role as an adjunctive therapy in managing complex, non-healing wounds. Further prospective, controlled studies are warranted to validate these findings and optimize application protocols.

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CS-072

Case-Based Outcomes Using Borate-Based Bioactive Glass Fiber Matrix Skin Substitutes for Recalcitrant Wounds Following Trauma and Amputation

Fadi Isa, DPM; Mehreen Rahim, DPM

Introduction: Chronic and post-surgical wounds, particularly in patients with comorbidities or a history of surgical complications, have the potential to stall, making healing difficult.[1] Bioengineered skin substitutes have emerged as promising adjuncts in wound care.[2,3] This case series describes the clinical course of three patients with complex lower extremity wounds treated using sequential applications of a Borate-Based Bioactive Glass Fiber Matrix (BBGFM) alongside standard wound care modalities.

Methods: Three patients with lower extremity wounds were followed over varying treatment timelines. Case-1: A 45-year-old female presented with a dehisced surgical wound following hardware removal from an ORIF of the left ankle. Early infection with Pseudomonas and Staph aureus stalled healing. Debridement, infection control, and staged grafting with a human placental tissue and a collagen based dermal layer were used prior to transitioning to serial BBGFM applications. Case-2: A 60-year-old male post-transmetatarsal amputation (TMA) with a non-healing wound with eschar and sloughing received BBGFM applications after initial management with a topical antiseptic and wound cleanser. Case-3: A 62-year-old male with a chronic necrotic wound post-midfoot amputation with a stalled wound after five xenograft skin substitute applications and use of collagen alginate wound dressings. Treatment protocols included surgical debridement, infection control, absorbent and antimicrobial dressings, and application of various skin substitutes. Wound size, appearance, exudate characteristics, and healing percentage were recorded across the three cases.

Results: Case-1 progressed from 18 cm3 with a negative healing trajectory to full closure over 8.5 months. Case-2 progressed a nonviable wound bed with negative healing trajectory to 100% closure in 12-weeks after seven BBGFM applications. Case-3 had nearly a year-long stalled wound, which began to contract and granulate following ten applications of BBGFM over 21-weeks, progressing from a peak wound volume of 4.9 cm3 to complete epithelialization.

Discussion: Sequential applications of the BBGFM skin substitute played a pivotal role in facilitating healing in previously stalled wounds. In all three cases, graft use was associated with robust granulation, epithelialization, and volume reduction. These findings support the integration of bioengineered grafts as part of a multimodal wound care strategy for patients with complex or refractory wounds, particularly when combined with antimicrobial control and advanced dressings.

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CS-074

Use of a Borate-Based Bioactive Glass Fiber Matrix in the Management of a Complex Stage 4 Pressure Injury in a Patient with Paraplegia: a Case Report

Carolyn Jeffries, RN, BSN, CWOCN

Introduction: Stage 4 pressure injuries (PIs) in individuals with spinal cord injury remain among the most challenging chronic wounds to manage. These wounds often demonstrate prolonged healing trajectories due to underlying immobility, recurrent mechanical stress, and the presence of deep tissue destruction. Patients with paraplegia are particularly susceptible to recurrent and complex ulcerations, frequently requiring multimodal interventions and prolonged inpatient care.1 Advanced wound matrices, including a Borate-Based Bioactive Glass Fiber Matrix (BBGFM), have emerged as adjunctive options when standard wound care alone.

Methods: A 53-year-old male with a history of complete T6 paraplegia secondary to a T9–T10 epidural abscess (2008) was admitted on April 17, 2025, with multiple stage 4 PIs. The most clinically significant wound involved the left trochanter and left ischial region. The wound initially presented with extensive necrosis and required operative debridement. Standard guideline-based management including moisture balance, pressure redistribution, infection control, and nutritional optimization was continued throughout treatment. Due to slow wound progression following debridement, BBGFM was introduced in August 2025 as an adjunctive biologically active matrix applied beneath ongoing negative-pressure wound therapy.

Results: Prior to the use of BBGFM, the wound demonstrated minimal granulation and persistent depth despite adequate standard care. Fol-

lowing introduction of BBGFM, wound assessments showed progressive reduction in undermining, improved tissue quality, and steady advancement toward closure. Over subsequent weeks, the wound transitioned from a deep cavity with exposed structures to a fully epithelialized surface. By the end of the observation period, the PI wound was considered healed and maintained with protective dressing only. No treatment related complications were reported.

Discussion: This case highlights the potential utility of BBGFM as an adjunctive therapeutic option for complex stage 4 PIs that are slow to progress despite comprehensive standard care. When combined with negative-pressure wound therapy and guideline-based management, BBGFM may support favorable wound progression and contribute to timely closure in patients with spinal cord injury.

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CS-075

Borate-Based Bioactive Glass Wound Matrix Overcomes Medication-Induced Healing Impairment in Polycythemia Vera

Martin Johnson, MD, MPH, FACS, CWSP

Introduction: Polycythemia vera (PV) is a myeloproliferative neoplasm requiring lifelong pharmacologic management, with hydroxyurea remaining a first-line cytoreductive therapy. However, 10–15% of patients develop hydroxyurea-associated cutaneous toxicity, including painful, non-healing ulcers that often resist conventional wound care.1,2 These ulcers are particularly challenging in older PV patients, who frequently have comorbidities requiring multiple concurrent medications that further impair tissue repair. The resulting polypharmacy creates a multifactorial healing barrier, combining hydroxyurea's direct cytotoxic effects with systemic drug-induced suppression of inflammation, angiogenesis, and collagen synthesis. Hydroxyurea therapy for polycythemia vera can lead to severe cutaneous ulcers that often prove refractory to conventional treatments. We present a case where a borate-based glass fiber matrix (BBGFM) successfully overcame this barrier in three hydroxyurea cluster wounds on the right medial ankle in a 71-year-old male

Methods: Weekly applications were performed under sterile conditions. After successful debridement the BBGFM was placed in the wound followed by a self-adaptive gauze and wrap. Wound dimensions (L×W×D), wound bed appearance, and quantity/type of exudate were carefully monitored throughout the treatment course.

Results: All three wounds demonstrated progressive reduction in size over the course of the treatment, culminating in near complete resolution by the final measurement. Wound-1 exhibited an initial increase from 1.80 cm3 in Week-1 to a peak of 2.24 cm3 in Week-2, followed by a consistent decline to 0 cm3 by Week-6. Wound-2 followed a similar trajectory, increasing from 0.14 cm3 to 1.60 cm3 by Week-2, before steadily decreasing to 0 cm3 by Week-5. Wound-3 showed the slowest resolution, beginning at 0.22 cm3 and plateauing between Weeks-2 and 3 at 0.98 cm3. It subsequently decreased more gradually, reaching near closure by the final time point.

Discussion: BBGFM achieved wound closure in seven weeks despite the patient's extensive medication burden. The extracellular matrix like structure may facilitate angiogenesis and tissue regeneration, and provide optimal wound support. This inferred dual action, providing structural support and facilitating quality tissue formation, makes it a compelling option for hydroxyurea-resistant ulcers. The rapid healing trajectory observed underscores the potential of BBGFM as an advanced wound care modality for recalcitrant ulcers.

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CS-076

Decellularized Dermis as an Adjunctive Therapy in a Refractory Neuropathic Pressure Ulcer: a Case Study

Alton Johnson, DPM

Introduction: Chronic neuropathic foot ulcers attributed to diabetes, charcot neuroarthopathy, and peripheral neuropathy can cause loss of protective sensation, foot deformities, and autonomic skin changes. Impaired healing and frequent bacterial colonization with biofilm make management difficult. Standard of care can include offloading, debridement, revascularization, infection control, and physiologic dressings. Advanced therapies are recommended for wounds failing to improve by 50% after four weeks. Decellularized dermal matrix is an effective adjunct for unresponsive ulcers, providing a scaffold for cell infiltration and tissue regeneration. Recent RCTs show improved healing rates and faster closure.

Methods: A 66-year-old morbidly obese, male patient presented with a chronic neuropathic ulcer on the plantar aspect of the left foot, persisting for more than five years, reflecting significant underlying sensory neuropathy, structural foot deformity, and a persistently impaired healing environment. Failed treatments included various skin substitutes and biologic dressings. A comprehensive, multimodal strategy was initiated including a series of applications of decellularized dermal matrix, selected to provide a scaffold that supports cellular infiltration, angiogenesis, and tissue regeneration. Additionally, total contact casting achieved consistent offloading of plantar pressures, in addition to targeted lymphedema therapy to reduce chronic swelling, improve microcirculation, and enhance delivery of oxygen and nutrients. The combined approach aimed to correct the mechanical, biologic, and inflammatory barriers to healing and to optimize conditions for successful wound closure.

Results: From November 2024 through September 2025, the patient underwent an intensive, staged wound-healing regimen including nine applications of split-thickness allograft to re-establish epithelial coverage and provide temporary biologic support, followed by eight applications of decellularized dermal matrix to enhance structural integrity, promote cellular infiltration, and stimulate angiogenesis. The broader multidisciplinary wound-care plan emphasized consistent offloading, edema control, and optimization of local and systemic healing factors resulting in complete healing by September 2025.

Discussion: This complex case highlights the need for multimodal care when standard therapies fail. Strategic use of decellularized dermal matrix, of split-thickness allograft, total contact casting and lymphedema management, improved the wound environment by enhancing offloading, reducing edema, and supporting cellular regeneration, leading to complete healing and underscoring the value of advanced biologics within a comprehensive treatment strategy.

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CS-077

Real-World Clinical Experience with an Autologous Blood Patch System in the Treatment of Chronic Diabetic Ulcers: a Multicenter Case Series

Martin Johnson, MD; Brock Liden, MD DPM; Jason Mendivil, DPM; Robert Thompson, MD; Markus Gitterle

Introduction: Chronic wounds such as diabetic foot ulcers (DFUs) remain among the most resource-intensive conditions in wound care, often unresponsive to advanced dressings or topical agents. Biologic therapies that reactivate the body's own regenerative capacity using autologous materials represent a promising new approach. The autologous blood patch system enables the preparation of a stabilized whole-blood clot at the point of care, creating a biologically active wound matrix rich in platelets, immune cells, and growth factors that promote vascularization and epithelial repair. This report summarizes early clinical experience from patients treated across multiple centers.

Methods: This observational case series included patients with chronic DFUs (n≈10) and VLUs (n≈3) who received weekly applications of an autologous blood patch system in addition to standard of care (SOC). Each patch was produced from a small volume of the patient's venous blood and applied directly to the wound bed for up to 12 weeks. Outcomes assessed included time to granulation, percent area reduction (PAR), epithelial advancement, exudate control, and patient-reported tolerance. Photographic documentation and follow-up visits were used to monitor progress and closure stability.

Results: Across wound types, the autologous blood patch system promoted rapid granulation and visible epithelialization within 2–4 weeks. Most DFUs achieved >70% area reduction within 6 weeks, with several reaching complete closure by week 10. VLUs demonstrated significant improvement in granulation tissue, exudate management, and overall tissue quality. Patients reported high comfort and ease of application, and no treatment-related adverse events occurred. Early results indicate that the biologically active clot environment accelerates wound progression toward closure compared with expected outcomes under SOC alone.

Discussion: This real-world case series supports the feasibility and clinical benefit of an autologous, point-of-care blood patch system as an adjunctive therapy for chronic wounds of mixed etiology. The therapy's biologic activity, simplicity, and safety make it a practical option for integrating autologous regenerative principles into everyday wound management. Ongoing data collection and expanded analysis will further define its role in comprehensive chronic wound care.

CS-078

Restoring Momentum in Stalled Wounds: a Three-Case Evaluation of Borate-Based Bioactive Glass Fiber Matrix (BBGFM) Therapy

Martin Johnson, MD, MPH, FACS, CWSP

Introduction: Chronic lower-extremity wounds including diabetic foot ulcers (DFUs) and venous leg ulcers (VLUs) pose significant clinical and economic burdens due to their prolonged healing trajectories and high recurrence rates.[1] Impaired perfusion, bacterial burden, and chronic inflammation often inhibit progression through normal healing phases.[2] Bioactive glass technologies have emerged as promising adjuncts because they provide a scaffold which allows for infiltration and proliferation of native cells while maintaining sufficient space for native collagen deposition and the formation of new blood vessels.[3]

Methods: Six adult patients with chronic wounds refractory to standard therapy were treated with BBGFM applied directly to the wound bed. Case-1 involved a right plantar DFU, Case-2 a left lower-extremity VLU, and Case-3 a nonspecific chronic lower extremity wound. Case-4 involved a painful pretibial ulcer that was present for over two years and probed to bone with previous failed attempts to treat the wound with herbal medicine and refusal of debridement because of pain. Case - was a recurrent DFU that had not closed in over two years which had undergone 60 hyperbaric oxygen treatments at another facility. Case-6 was a recurrent painful VLU.

Results: Across the six cases, wounds demonstrated visible improvement following the introduction of BBGFM. The appearance of healthier granulation tissue, reductions in slough and exudate, and improved wound-bed quality conducive to epithelialization was evident. Each wound transitioned toward progressive healing after having previously shown a limited or stalled response. Specifically, Case-4 had four applications of BBGFM over 3-months resulting in complete closure. Case-5 achieved full closure after serial debridement, podiatric felt for offloading and eight applications of BBGFM. The wound remained closed at 6-month follow-up. Case-6 achieved full wound closure with a combination of debridement, multilayer compression and eight application of BBGFM and remained closed at six-month follow-up.

Discussion: Across diverse wound types, the addition of BBGFM to standard care was associated with quality granulation, reduced wound size, and eventual closure. These findings align with prior evidence demonstrating that borate-based bioactive glass facilitates a scaffold conducive to tissue regeneration.[3] Although limited by sample size, this case series highlights the potential clinical utility of BBGFM in managing refractory lower-extremity wounds.

CS-079

Use of a Borate-Based Bioactive Glass Fiber Matrix as an Adjunct for Adequate Limb Salvage: Case Study

Brendan Johnson, DPM; Joe Spampinato, DPM

Introduction: Diabetic Foot Ulcers (DFUs) continue to burden the healthcare system with high amputation and mortality rates.1 The purpose of this case was to highlight adequate limb salvage in a medically complex patient with a large infected DFU that tracked from the dorsal to plantar surface of the lateral right foot.

Methods: A 61-year-old male presented to the emergency department for complaints of cellulites with multiple DFUs, one on the lateral aspect of the dorsal mid foot and the second on the plantar surface below the second digit. The patient underwent right foot incision and drainage (I&D) of the deep space abscesses and debridement of nonviable tissue with washout. The likelihood of limb salvage was uncertain as the patient remained at high risk for a below-the-knee amputation (BKA) due to the severity of infection. A borate-based bioactive glass fiber matrix (BBGFM) was applied as an adjunctive treatment to achieve adequate limb salvage.

Results: After undergoing an initial I&D, cortical erosive changes were evident suggestive of osteomyelitis. Consent was obtained for a second I&D procedure with wide debridement and partial 2nd ray amputation of the right foot. On post operative day (POD)-three the BBGFM was applied along with vacuum assisted closure (VAC). The open surgical

sites of the right midfoot and right lateral malleolus remained stable with discontinuation of the wound VAC on POD-five. With the surrounding erythema and edema resolved, as well as the wound base largely appearing fibrogranular, the patient was discharged on POD-6.

Discussion: This complex case highlights the use of a BBGFM alongside various treatment modalities in a large Wagner Grade III DFU, leading to adequate limb salvage and timely hospital discharge. These findings support the use of the BBGFM as part of a multimodal wound care strategy in challenging wounds.

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CS-080

Use of Borate-Based Bioactive Glass Fiber Matrix for a Chronic Non-Healing Dorsal Foot Ulcer with Exposed Tendon and Hardware: a Case Report

Brendan Johnson, DPM

Introduction: Chronic non-healing wounds, particularly those with exposed tendon or hardware, present a formidable clinical challenge. Surgical site dehiscence following joint fusion, especially in elderly patients, often results in prolonged wound care and risk of infection or hardware failure. Bioactive glass materials have shown promise in facilitating angiogenesis and tissue regeneration.[1-3] We report a case of a 69-year-old female smoker with a chronic dorsal foot ulcer overlying a first metatarsophalangeal (MTP) joint fusion site that occurred after a fall, complicated by exposed tendon/hardware and removal, that demonstrated significant healing following application of borate-based bioactive glass fiber matrix (BBGFM).

Methods: The patient initially presented for a first metatarsal joint fusion on 9/20/2024. The surgical site dehisced following a fall which was later complicated by exposed tendon and hardware necessitating removal on 1/31/2025. Prior therapies included a synthetic bovine matrix, amniotic membrane, and wound vacuum assisted closure (VAC), with minimal sustained improvement complicated by poor compliance. The wound measured 9.0cm3 following surgical site dehiscence. On 02/12/2025, BBGFM was introduced following the hardware removal. The wound was evaluated at regular intervals through wound closure on 4/14/2025

Results: The wound volume decreased from 9 cm^3 to 0.75 cm^3 and remained stable through early January. In March 2025, intermittent setbacks occurred following a required surgical hardware removal. The first application of the borate-based bioactive glass fiber matrix (BBGFM) was introduced on 02/12/2025, resulting in rapid granulation tissue formation despite exposed tendon. Complete wound closure was achieved after three total applications, with final closure documented on 04/14/2025.

Discussion: This case highlights the potential of BBGFM in managing complex post-surgical wounds with exposed deep structures. The extracellular matrix like structure may have contributed to both angiogenesis as well as an environment that may facilitate fibroblast activity , facilitating tissue regeneration. While intermittent setbacks occurred, overall healing was substantial, supporting further use of BBGFM as an adjunctive treatment in wound care. This synthetic fiber may be especially useful in elderly patients where wound healing is compromised, and when exposed bone or hardware precludes the use of traditional dressings.

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CS-081

Efficacy of Monolayer and Bilayer Biodegradable Synthetic Matrix and Skin Grafting in Upper Extremity Necrotizing Soft Tissue Infections

Yale Kadesky, MD; Marvin Mendez, RN

Introduction: Amputation rates of upper extremity (UE) necrotizing soft tissue infections (NSTIs) range from 11% to 38% [1]. Bilayer biodegradable synthetic matrix (BSM) has shown success in the reconstruction of NSTI defects [2]. Bilayer BSM is a scaffold designed to help form a wound suitable for split thickness skin grafting (STSG), with a sealing layer for wound temporization [3]. Monolayer BSM is the same scaffold without the sealing layer but lacks clinical evidence. This two patient case series demonstrates the efficacy of BSMs to avoid amputation in UE NSTIs.

Methods: Both adult patients had a history of methamphetamine and tobacco use and presented with signs and symptoms of left UE NSTIs, requiring antibiotics and surgery. Case 1: Excisions were performed from axilla to wrist, down to fascia and muscle, revealing a tunnel into the axilla leading to the axillary artery, vein and brachial plexus. Monolayer BSM was packed into the tunnel, bilayer BSM was stapled over the entire defect and dressed in negative pressure wound therapy (NPWT). Case 2: Excisions were performed down to fascia, muscle and bone. A bone biopsy was obtained which confirmed osteomyelitis. An ostectomy of the infected bone was performed which left an opening into the medullary cavity of the humerus. Monolayer BSM was packed into cavity, Bilayer BSM was stapled over the entire defect and dressed in NPWT.

Results: Case 1: After two weeks, NPWT was removed and the patient continued with hypochlorous acid dressings. After ten days, a STSG was applied. After one week, the STSG had 95% take. Case 2: After twelve days, NPWT was removed and the patient continued with hypochlorous acid dressings. After one week, a STSG was applied. After ten days, the STSG had 100% take.

Discussion: This surgical approach resulted in successful graft take despite having exposed vital structures and osteomyelitis. Specifically, monolayer BSM was able to help form granulation tissue in the medullary cavity of the humerus and tunnel into the axilla. The case series provides clinical evidence for the efficacy of monolayer and bilayer BSM in the management and reconstruction of UE NSTI defects and avoid amputation.

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CS-082

A Multi-Modal Approach to Lower-Extremity Fasciotomy Closure in High-Energy Trauma

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Introduction: Rapidly progressive compartment syndrome of the leg and foot following high-energy crush injury requires emergent fasciotomy to preserve neuromuscular function. Post-decompression wound management is challenging due to extensive soft-tissue loss, edema, and limited reconstructive options near vital neurovascular structures. This case describes a polytrauma patient with bilateral lower-extremity compartment syndrome and right foot multi-compartment involvement successfully managed through a staged reconstructive approach.

Methods: The patient was trapped in construction debris for

hours prior to rescue and underwent emergent bilateral leg fasciotomies and right foot four-compartment fasciotomies to relieve compartmental pressure and maintain tissue viability. Negative pressure wound therapy (NPWT) was initiated postoperatively to control edema, enhance perfusion, and promote granulation tissue formation. Vessel loop external tissue expanders were applied to the leg fasciotomy sites to facilitate gradual wound edge approximation. Serial evaluations monitored compartment viability, muscle contractility, and soft-tissue compliance. When the right dorsal foot wounds developed healthy granulation tissue, surgical bed preparation was performed, followed by placement of a biosynthetic dermal matrix to promote neodermis development. As edema resolved and soft-tissue flexibility improved, layered closure of the foot and leg fasciotomy wounds was achieved.

Results: Serial intraoperative assessments confirmed robust perfusion and contractile response in all compartments of both legs and the right foot. The biosynthetic dermal matrix demonstrated stable adherence to the wound bed with no evidence of infection, graft failure, or tissue compromise. All fasciotomy sites achieved tension-free primary layered closure. The postoperative course remained complication-free, and all wounds maintained durable, healthy soft-tissue coverage throughout follow-up.

Discussion: Extensive fasciotomy wounds of the leg and foot require a sequential, multidisciplinary approach involving podiatry and general surgery. The combination of NPWT, external tissue expansion, and biosynthetic dermal matrix application optimized wound closure, preserved limb integrity, and reduced the need for complex flap reconstruction. This staged strategy represents a viable option for managing severe lower-extremity compartment syndromes with complex soft-tissue loss from crush injuries.

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CS-083

The Novel Use of Dual Layer Chorion Membrane in a Diabetic Polymorbid Patient with Multiple Foot Ulcers: a Case Report

Richard Kaufman, DPM, CWSP; Dorothy H. Kurtz Phelan, DPM, CWSP

Introduction: Diabetes mellitus complicated by neuropathy and extensive systemic comorbidities frequently results in chronic, non-healing lower-extremity wounds. Healing may be significantly impaired due to compromised vascularity, chronic inflammation, and poor tissue quality. This case report describes the use of a novel lyophilized Dual-Layer Dehydrated Chorionic Membrane* as an adjunctive therapy for multiple diabetic foot ulcers in a complex patient at high risk for serious complications. Dual Layer Chorion is a human placental allograft composed of two layers of chorion with the attached intermediate layer. The PURION® process preserves extracellular matrix (ECM) components and more than 300 regulatory proteins that may provide a biologically supportive environment for wound healing.1

Methods: A 69-year-old female with type 2 diabetes mellitus, neuropathy, Charcot neuroarthropathy, DVT, COPD, gout, GERD, morbid obesity (BMI 46.18), and a 60+ pack-year tobacco history presented with multiple bilateral neuropathic foot ulcers of several weeks' duration. Due to the severity of her polymorbid profile and impaired healing potential, treatment included weekly applications of a lyophilized dual-layer chorionic membrane. Standard wound care, including moisture balance and offloading, was maintained throughout.

Results: The patient underwent seven weekly treatments consisting of dual layer chorion membrane application. Progressive tissue improvement was observed, with increased granulation and epithelial migration at each visit. Complete wound closure was achieved after seven weeks, representing 100% area reduction. The wounds remained closed without recurrence, infection, or adverse events during follow-up. No graft-related complications were noted, and the patient tolerated all applications without difficulty.

Discussion: This case highlights the successful use of a dual-layer lyophilized chorionic membrane for the treatment of complex diabetic neuropathic foot wounds in a severely polymorbid patient. Dual layer chorion is a minimally manipulated, non-viable allograft that retains native extracellular matrix structure and biologically active components that may help support wound closure. Chronic diabetic foot ulcers in high-risk patients pose substantial challenges and increase the risks of infection, osteomyelitis, hospitalization, and amputation. The positive outcome observed suggests that dual layer chorion membrane may offer a valuable adjunctive option for promoting closure in difficult-to-heal wounds, particularly in patients with significant systemic disease burdens.

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CS-084

Copper-Iodine Complex Solution as an Adjunct in Wound Management: Evidence of Bioburden Reduction and Accelerated Tissue Recovery

Tyler Sextan, MD

Introduction: Acute and chronic wounds require focused attention in the compendium of care. Wound bed preparation is the foundation of successful wound healing and requires attention to deli. Debridement and wound irrigation assists in the mitigation of necrotic tissue, dirt and removal of pathologic organisms that can stall wound healing. Copper-iodine Complex Solution (CICS), an FDA cleared medical device was used as the wound irrigation system with debridement in the management of wound bed preparation.

Methods: 1212 patients with open, chronic wounds underwent weekly CICS wound-care sessions between late September and late December 2025. The standardized protocol included: 1. Biofluorescent imaging (Mini Glo) before and after treatment to assess bioburden. 2. CICS solution soak for 10 minutes. 3. Mechanical debridement with sterile gauze only (no sharp debridement). 4. CICS moistened Mepilex dressing applied for three days between visits. At each follow-up, wound dimensions (L×W×D), odor score (0–3), pain (VAS 0–10), and fluorescence intensity were recorded.

Results: Of the 12 patients included in this series, there was a mixture with diabetic foot ulcers (DFUs), venous stasis ulcers, and post-surgical wound infection. The group comprised both male and female patients with common comorbidities including diabetes mellitus, peripheral vascular disease, hypertension, and obesity, all contributing to delayed wound healing and increased bioburden risk. Wounds ranged from small partial-thickness ulcers to larger, colonized lesions exceeding 8 cm3, including cases consistent with Pseudomonas contamination. Across all patients, the mean wound volume reduction was 68 ± 25% over 3–5 weeks. Odor fully resolved by week 2–3, pain decreased by 25–50%, and fluorescence imaging confirmed progressive bioburden reduction post-soak

and between visits. Tissue appearance improved steadily, with slough replaced by cleaner wound beds and development of healthy granulation and epithelial margins. No cytotoxicity, irritation, or adverse response occurred.

Discussion: Adjunctive wound management with CICS as a dwelling antimicrobial preservative in solution and irrigant has yielded positive outcomes in a small series. Utilization CICS in pre and post debridement and as a moist dressing consistently reduced microbial burden in the wound bed, odor, and pain, The copper-iodine synergy achieved dual success, mechanical biofilm disruption and sustained antimicrobial control providing an environment conducive to epithelialization and granulation. Patients reported excellent comfort and tolerance, even those previously reactive to silver dressings. CICS represents a safe, effective, and well-tolerated adjunct in chronic wound management. Further clinical studies are warranted to evaluate patient care initiatives for optimizing positive outcomes.

CS-085

Treatment Of Diabetic Foot Ulcers and Post-Opertaive Wound Infections with Copper-Iodine Complex Solution as an Adjunct in Wound Bed Preparation: a Case Series of 5 Patients

Raymond Abdo, DPM, CWS

Introduction: Chronic wounds are a health problem for patients and contribute costs to healthcare systems. Copper-Iodine Complex Solution (CICS) is an FDA 510(k) cleared wound irrigation system. Wound bed parameters are evaluated with the use of CICS as the primary irrigation and dressing solution.

Methods: Five patients with full thickness wounds underwent debridement followed by irrigation and dwelling with CICS for primary and solo dressing for wound care.

At the baseline visit and 2 subsequent visits the following wound bed parameters were identified and recorded: Biofluorescent imaging (MolecuLight) pre and post debridement after 10 min CICS dwelling; Wound dimensions (L x W x D); Exudate ; Odor; Pain; Granulation tissue; and pH.

Results: 5 patients evaluated, 2 post-surgical and 3 with diabetic foot . Across all four patients, the mean wound volume reduction was 54% over a 3-week period. One patient achieved complete healing. Odor resolved in the wound bed by visit number two in all patients. Pain score was minimal, however, many of the patients presented with sensory neuropathy. Exudate was moderate in 3/5 patients initially and minimal at visit 2 and 3. Granulation tissue, while nonexistent or minimal in all patients at baseline visit, improved markedly by week 2 -3. Biofluorescent imaging was positive I all patients, 2 with Pseudomonas and 3 with other species at baseline, one maintained mild fluorescence at week two and all others were negative through week 3. Wound bed pH was measured pre and post debridement. All patients were noted to have an initial alkaline reading (mean 8.7) and post debridement, values 8.0 – 7.0). Subsequent week 2 and 3 ranged from pre debridement values of 8.0 – 7.2 and post debridement values of 7.3 – 6.4.

Discussion: The utilization of CICS in the management of wound bed preparation as an antimicrobial in solution and irrigant has demonstrated positive outcomes. The biofluorescent imaging has demonstrated significant decrease in bioburden in the wound bed over the three-week assessment. All factors evaluated in this evaluation trended to reset the chronic wound toward a linear healing trajectory. CICS was well tolerated, reduced odor, bioburden, alkalinity of the wound bed, exudate, and increased the development of granulation tissue. CICS represents a safe, effective, and well-tolerated adjunct in chronic wound management. Further clinical studies are warranted to evaluate patient care initiatives for optimizing positive outcomes.

CS-086

A Multicenter Case Series Evaluating a Therapeutic Stack of Autologous Multilayer Leukocyte-Platelet-Fibrin Patch and Hyperbaric Oxygen Therapy for Complex Wounds

Tiffany Keith, MHS, PA-C; Andrea Rachel, RN, WCC

Introduction: Chronic wounds are frequently characterized by impaired perfusion, tissue hypoxia, and prolonged inflammation, resulting in delayed healing and increased risk of limb loss. Autologous multilayer leukocyte-platelet-fibrin (MLPF) patches provide a biologic scaffold with sustained growth factor release and immune modulation, while hyperbaric oxygen therapy (HBOT) enhances tissue oxygenation and supports cellular repair. This therapeutic stack targets both the local wound microenvironment and systemic hypoxia. Adequate oxygen delivery is essential for angiogenesis, fibroblast proliferation, and collagen synthesis, yet chronic ischemic wounds experience persistent hypoxia and nutrient deprivation that disrupt repair mechanisms. Limited clinical data exists combining HBOT and MLPF patch therapy in complex wounds.

Methods: This case series evaluated seven patients with complex wounds treated at two wound care centers. Wound etiologies include diabetic foot ulcers with and without osteomyelitis, post-amputation wounds, chronic traumatic wounds, and radiation-associated soft tissue injury. Patients received serial applications of an autologous MLPF patch prepared exclusively from the patient's own blood without exogenous additives, combined with adjunctive HBOT. Treatment sequencing, frequency, and duration varied between centers. Outcomes were assessed observationally and included percentage wound area reduction, qualitative changes in wound bed appearance, coverage of exposed structures, time to healing, and limb salvage.

Results: Across seven patients, combined autologous MLPF therapy and HBOT were associated with progressive wound improvement despite prolonged wound duration, exposed bone or soft tissue, chronic infection, and significant comorbidities. Four wounds achieved complete epithelialization; two wounds achieved greater than 90% healing at the time of analysis, and one wound remained in active treatment with approximately 50% closure. Coverage of previously exposed bone or structures was observed in all applicable cases. Limb salvage was achieved in all patients where amputation was considered a clinical risk. Two patients remained in treatment at the time of abstract submission with ongoing improvement.

Discussion: In this case series, combining an autologous MLPF patch and HBOT demonstrated favorable healing trajectories in complex wounds refractory to standard care. The physiologic synergy of autologous biologic therapy and enhanced tissue oxygenation may represent a promising adjunctive strategy in advanced wound management. Larger prospective studies are warranted to further define clinical outcomes and optimize treatment protocols.

CS-088

Three-Dimensional Wound Matrix for Refractory Post-Surgical Wounds: a Two-Patient Case Series

Joel K. Kidd, MD

Introduction: Chronic, non-healing surgical wounds present substantial challenges and often require multimodal advanced therapies for resolution. Common options include cellular and acellular matrix products (CAMPs), negative pressure wound therapy (NPWT), and hyperbaric oxygen therapy (HBOT). This case series evaluates the clinical effectiveness of a three-dimensional (3D) porcine-derived wound matrix* in managing post-surgical dehiscence, including a complex case complicated by acute radiation therapy exposure.

Methods: A retrospective analysis was conducted on two patients with non-healing surgical wounds refractory to standard-of-care (SOC) treatment. Both received applications of the 3D wound matrix within a comprehensive protocol. Data collected included matrix application number and timing, adjunctive therapies (e.g., NPWT and HBOT), prior CAMP usage, comorbidities, wound-related complications, and complete healing outcomes. The objective was to characterize clinical efficacy and healing trajectory in complex surgical wounds.

Results: Following 3D wound matrix applications, both wounds achieved complete healing within 8 - 13 weeks. Case 1 (dehisced total hip

arthroplasty) initially measured 0.5 × 8 × 3 cm with significant depth, in the setting of bacterial infection, advanced age, and obesity. After NPWT initiation, the patient received 10 sequential 3D matrix applications over 13 weeks, with 89% volume reduction by week 4, 98.5% by week 8, and complete closure by week 13. Case 2 (post-radiation surgical dehiscence) initially measured 1 × 1 × 2.1 cm with a 4.3 cm tunnel at the 10 o'clock position and was complicated by acute radiation therapy, diabetes, tobacco use, active infection, and prior breast cancer. Despite 7 prior applications of an alternative CAMP (DermaCell), 40 HBOT sessions, and NPWT, the wound remained non-healing. After initiation of the 3D matrix (6 applications over 7 weeks), complete healing occurred by week 8.

Discussion: These cases demonstrate that a 3D porcine-derived wound matrix can support resolution of refractory surgical wounds with substantial depth, tunneling, and high comorbidity burden. The tunneled, radiation-compromised wound in Case 2, which had failed multiple prior advanced therapies, is particularly notable. The observed outcomes support the role of 3D matrix technology as an effective adjunct to SOC for post-surgical wounds that fail to progress despite comprehensive multimodal management.

CS-089

Use of a Collagen–cmc–alginate–edta–silver Dressing Combined with NPWT to Close a Non-Healing Surgical Wound in the Gluteal Crease/Thigh Region: a Case Report

Traci A. Kimball, MD, MBA, CWSP

Introduction: Surgical wounds in the gluteal crease and upper thigh present management challenges due to moisture, friction, contouring, and difficulty maintaining a consistent wound environment. These factors, combined with comorbid lymphedema and lipedema, impair local tissue resilience and contribute to delayed healing. This case describes the integration of a multifunctional collagen-based antimicrobial dressing (containing collagen, CMC, alginate, EDTA, and ionic silver) combined with negative pressure wound therapy (NPWT) in a chronic surgical wound demonstrating mild infection and moderate exudate.

Methods: A 54-year-old female presented with an 8-week-old non-healing surgical wound on the right gluteal crease/thigh. Prior wound management with Betadine-soaked gauze packing failed to produce improvement, and the patient exhibited moderate drainage with mild signs of infection. Chronic lymphedema and lipedema contributed to periwound edema and anatomical challenges. Treatment was transitioned to a collagen–CMC–alginate–EDTA–silver dressing to support protease modulation, bioburden control, and moisture balance. This was paired with NPWT which provided the micro and macro strain to support the wound's reparative contraction processes.

Results: Wound assessments occurred every 5-7 days. Would closure analysis demonstrated a rapid and consistent rate of healing, with a 63% reduction in wound volume in the first two weeks, more than 80% by week three, over 95% by week four, and complete closure by week five. In the final week of treatment, when insertion of the NPWT sponge was no longer viable, a conventional delayed primary closure was performed. This reflects an accelerated 20–25% average weekly reduction in wound volume, significantly exceeding expected norms for chronic postoperative wounds complicated by lymphatic disease. The patient also reported reduced discomfort, improved mobility, and high satisfaction with use of this product combination. Clinician ratings for the collagen dressing were "Excellent" for Ease of Application, "Excellent" for Patient Comfort, and "Very Good" for Conformability to the Wound Bed. Furthermore, the resulting aesthetic outcome was favorable, both the patient and surgeon expressed high satisfaction.

Discussion: The combination of a collagen–CMC–alginate–EDTA–silver dressing with NPWT resulted in efficient resolution of a chronic surgical wound located in an anatomically challenging region. The synergistic effects of the collagen, antimicrobial action, moisture and exudate management, and negative pressure environment contributed to rapid wound closure after failure of prior therapy. This case highlights a practical, patient-centered approach to treating complex surgical wounds in individuals with lymphedema and lipedema and supports further exploration of collagen-based adjunctive therapies used in conjunction with portable NPWT systems.

CS-091

Use of a Borate-Based Bioactive Glass Fiber Matrix in the Treatment of Complex Lower Extremity Wounds: a Case Series

Anthony LaLama, DPM

Introduction: Chronic and complex wounds of the lower extremities are often refractory to standard care, particularly when complicated by infection, ischemia, or systemic comorbidities. Bioactive glass materials, such as borate-based bioactive glass, have gained interest for their ability to provide an extracellular like matrix environment that may facilitate angiogenesis and tissue regeneration.[1-4] This case series evaluates the effectiveness of a borate-based bioactive glass fibrous matrix (BBGFM) in treating four complex wounds, using percent area reduction (PAR) as the primary outcome.

Methods: Four patients with distinct lower extremity wounds were treated using the BBGFM in conjunction with standard wound care practices. Wound dimensions were recorded (L x W x D) at baseline and monitored over time. Cases included: pyoderma gangrenosum (PG) of the right lower extremity, a venous leg ulcer (VLU) with hematoma of the left lower extremity, a surgically debrided necrotizing fasciitis wound on the left leg, and a Wagner Grade 3 diabetic foot ulcer (DFU) on the left heel. Specifically, the DFU patient presented with a history of a contralateral below the knee amputation (BKA) and the current chief medical complaint was chronic osteomyelitis which they were told would need another BKA to treat. Dressing changes and follow-up.

Results: All wounds demonstrated substantial improvement in wound area over the treatment period:

- PG: Chronic full-thickness wound unresponsive to treatment using ovine forestomach matrix and morsels underwent approximately 13 weeks of treatment using seven applications of BBGFM with a 70.96% PAR in wound size.
- VLU/Hematoma: Non ambulatory patient with end stage renal disease (ESRD) underwent approximately 9 weeks of treatment using three applications of BBGFM with a 65.81% PAR in wound size.
- Necrotizing Fasciitis: Wound unresponsive to vacuum-assisted closure underwent approximately four weeks of treatment using 3 applications of BBGFM with a 83.35% PAR in wound size. Wound closure achieved in eight weeks ending in 5 applications of BBGFM.
- DFU: Chronic wound present for about one year unresponsive to hyperbaric oxygen therapy (HBOT) underwent approximately five weeks of treatment using two applications of BBGFM, 100% PAR with complete wound resolution.

Discussion: The BBGFM supported meaningful wound healing in a range of complex pathologies, including inflammatory, vascular, infectious, and diabetic wound types. Notably, the DFU achieved complete closure, underscoring the potential of this skin substitute to facilitate full resolution even in high-risk wounds. The high PAR values and favorable clinical trajectories suggest broad utility across a variety of complex wound etiologies.

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CS-092

The Use of a Dual Compression System (Dcs)* in the Management of Lymphedematous Legs, a Case Series.

Loan Lam, DPM FAWPHc FAPWCA CWSP CHWS CLWT

Introduction: In a busy vein clinic, many patients present with lymphedema. More often than is recognized, the condition also coexists with the condition of venous reflux. This combination of venous reflux with lymphedema is termed phlebolymphedema, a condition more severe than venous reflux alone, and may or may not be accompanied by a wound. With the new indication of lymphedema now available for the DCS product, we evaluated the effectiveness of the DCS product on 23 patients with painful bilateral leg lymphedema and/or phlebolymphedema after a single application of the system.

Methods: We reviewed 23 patients (46 legs) with varying stages of previously diagnosed lymphedema, who were treated with the DCS product. Patients were seen for follow-up an average 3.96 days after initial application of the DCS system. Measurements at the widest part of the calf, ankle, and midfoot were taken on Day 1 and on follow-up visit. Measurements were taken at the same anatomical and numerical landmarks unique for each patient for both visits. Patient pain experience was assessed at each visit via the pain visual analogue scale.

Results: In graphic form, we demonstrate that the DCS product is able to efficiently reduce the calf, ankle, and midfoot circumferences in a single application over an average of 3.96 days. The average circumference reduction was 5.6% (2.79 cm) at the calf, 7.5% (2.4 cm) at the ankle, and 4.9% (1.3 cm) at the midfoot. On average, patient reported reduction of pain over the same amount of time.

Discussion: Though the DCS product is more well known for controlling venous reflux and the management of venous ulcers, our study proves that the DCS product, combining short and long stretch bandages, can also be very effective in the management of lymphedema related leg swelling. Both lymphedema and phlebolymphedema is treatable initially via the use of the DCS product to reduce swelling and pain within a short period of time. Due to the significant reduction of edema in a single application, our clinic protocol was to bring the patient back for follow up within 3-5 days in order to prevent and address slippage of the compression system. We postulate that the DCS product is an efficient first line of therapy for acute presentation of edematous lower extremities secondary to lymphedema or phlebolymphedema regardless of wound presence.

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CS-093

The Use of a Hypochlorous Acid Preserved Gel on a Cross Section of High Risk Wound Patients in a Busy Wound Center

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Introduction: While use of pure hypochlorous acid (pHA) based liquid cleansers is now well accepted in wound-bed preparation practice, use of moist wound dressing in gel form also containing pHA would be a logical addition. Recently, an antimicrobial pHA-gel product became available to our busy wound clinic. The idea was to use pHA-gel on sloughy, somewhat dry, necrotic wounds that appear initially contaminated, and to monitor progress over time.

Methods: 78 wounds (31 venous, 21 diabetic, 17 arterial, and 9 other wound types -6 post-Moh's and 3 trauma) were evaluated. In clinic, wounds were soaked with pHA-solution for 5-10 minutes, then surgically debrided. After, pHA-gel was applied to wound bed and small overlapping surrounding area of wound borders. Patients were instructed to apply pHA-gel in the same manner during scheduled dressing changes at home, either by themselves or by home nursing. Various secondary dressings were used to check gel compatibility. Progression of necrotic/granular tissue levels and wound sizes was monitored using AI wound imaging and wound analytics based EMR-system.

Results: In tabular format, 78 wounds were evaluated for wound size, necrotic tissue, inflammation and infection responses. Also noted, secondary dressings used and patient pain experiences during dressing changes/debridement according to pain visual analogue scale. In 51 wounds, there was existing infection before protocol initiation. In each infected case, one round of oral antibiotics was concurrently used with this dressing protocol. 3 cases required a second round of oral antibiotics. Of the other 27 cases that did not require antibiotic therapy initially, 2 developed an infection later treated with oral antibiotic therapy.

Discussion: Synergy of pHA-based solution and pHA-based gel, as well as pHA-gel by itself, is evaluated here. In previous studies, soaking in pHA-cleanser assists surgical debridement by pre-loosening slough, thereby reducing extent of surgical debridement, possibly reducing pain during debridement. We hypothesized that using additional pHA-gel during subsequent dressing changes would reduce dry, necrotic slough buildup overtime, thereby reducing pain and additional surgical debridement. We believe results here are positively suggestive of that hypothesis. Of interest is low re-infection rate of those already infected as well as those infected while on this protocol. We posit if it is possible that this combination can reduce use of expensive antimicrobial dressings and prevent re-infections. Overall, we believe use of both pHA-cleanser and pHA-gel is an excellent adjunct for reducing pain and slough during surgical debridement and for controlling bacterial burden between dressing changes.

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CS-094

The Use of a Pure Hypochlorous Acid Based Antimicrobial Wound Gel* with Concurrent Compression Therapy in the Treatment of Lymphedematous Legs with Dermatitis

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Introduction: Lymphedematous legs have dermatitis, or highly inflamed skin, which is often found in edematous flaps, lobes, and skin folds, and is a result of irritation from trapped perspiration, lymphorrhea

(leakage of protein rich fluid), and wound exudate from minute skin breakdown hidden within intertriginous areas. Dermatitis can present as red, pruritic, dry, flaky skin. While the edema aspect of lymphedema can be well controlled with effective compression, the inflammation of the skin is an undertreated aspect of lymphedema care. We describe here the use of a pure hypochlorous acid (pHA) based antimicrobial wound gel in the management of inflamed skin and skin folds of lymphedema patients since in busy wound/vein/lymphedema clinics.

Methods: We describe here the results from 26 patients who were diagnosed with acute dermatitis associated with lymphedema, but had no full thickness wounds present. We applied the gel to the skin folds liberally, applying it deep within the folds. Post application, the legs were wrapped with a Dual Compression System (DCS)** product, which we regularly use to control lymphedema. We report skin improvement results concurrent with lymphedema control with compression. Measurements at calf, ankle, and midfoot were taken on Day 1 and for each subsequent follow-up visit over the course of 4-6 weeks. Measurements were taken at the same anatomical and numerical landmarks unique for each patient for each visits. Patient pain level was assessed at each visit via the pain visual analogue scale.

Results: Table 1 represents patient details along with description of the skin condition and edema improvement from both our clinic as well as another large academic center where the same practice is followed. We report increased improvement in skin quality and reduction of edema in all 26 patients who presented with uncontrolled dermatitis in lymphedematous legs. Patients in each case also reported reduction in pain/discomfort with use of the pHA-gel under the compression with the DCS product.

Discussion: Though the skin condition we treated are not generally describable as wounds, the resolution of the dermatitis condition which is highly inflammatory and painful with the use of the pHA-gel is remarkable. Untreated dermatitis in the presence of already fragile edematous skin can quickly lead to further skin breakdown and ulcerations. We believe that the use of this pHA-gel product as a primary dressing for dermatitis conditions in lymphedema is an essential part of a preventative wound protocol.

CS-095

Case Study Examining the Efficacy of Continuous Topical Oxygen Therapy in Managing Chronic Ischemic Wounds Associated with Bueger's Disease

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Introduction: Buerger's disease, (thromboangiitis obliterans), is a rare, non-atherosclerotic, segmental inflammatory vasculitis that primarily affects small- and medium-sized arteries and veins of the arms and legs impacting blood flow. The disease is typically found in the lower extremities, with skin ulceration and gangrene of the digits common, with pain being very intense[1]. The disease typically presents with distal extremity ischemia; common for the foot as an early site of involvement; often manifesting as digital ulceration, claudication, rest pain, or gangrene. In the US, current estimations on prevalence are 12.6 – 20 cases per 100,000 population[2].

Methods: 49 y/o male presented with Buerger's disease and a non-healing painful ischemic foot ulcer with osteomyelitis on the left hallux with Necrotic and gangrenous tissue center. Size was 2.0CM X 1.8CM Depth 0.3CM on distal top left hallux after 2 months of SOC. Patient history included high cholesterol, Radiculopathy, former smoker. Medications included Gabapentin and Simvastatin. Patient has non palpable pulse and ABI.72 on the left side with flattened digital wave forms. The patient had a Constant pain level of 10 / 10. The patient was seen by a vascular surgeon and had an angiogram and angioplasty of the left lower extremity. The wound treatment plan included a small, wearable continuous topical oxygen / continuous diffusion of oxygen (cTOT / CDO) device, and was initiated alongside an off-weighting shoe, collagen dressings, oral Bactrim and anticoagulant medication. This was also supported with ongoing vascular and infectious disease consultations.

Results: Successful treatment of Osteomyelitis with antibiotics. Closure of the ulcer with dressings and CDO therapy in 5 months from patient presentation to the office and a reduction of pain throughout the healing process. The use of a multi team approach and the use of CDO therapy closed the wound and avoided amputation

Discussion: Healing and pain reduction outcomes observed in this patient treated with cTOT / CDO, are consistent with those reported in broader clinical studies, including RCTs, and meta-analyses providing level 1 evidence. These results reinforce the efficacy of the device as a non-invasive therapy in managing chronic ischemic wounds such as those seen in Buerger's disease. Given the challenges of healing in patients with compromised perfusion, such as those with Thromboangiitis Obliterans, this case highlights the potential for cTOT to play a critical role in limb preservation, improved quality of life, and reduction of major amputations in high-risk populations.

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CS-097

Assessing the Clinical Performance of an Carboxymethylcellulose Gelling Fiber Dressing for Reduction of Devitalized Tissue in Exuding Wounds

Alex Lawton, MMATH; Rachel Burns, RN

Introduction: Devitalized tissue, formed of necrotic and sloughy tissue can impede healing and increase risk of complication. This study evaluated the ability of a blended alginate-CMC gelling fiber dressing to reduce devitalized tissue during routine care.

Methods: A prospective, open-label, single-arm, observational study on 217 patients across nine wound-centers in South Aftica was undertaken. Adults with a moderate or heavily exuding wound from multiple aetiologies (leg ulcers, pressure ulcers, diabetic ulcers, post operative wounds, burns, trauma wounds and cavity wounds) were treated with the subject dressing for up to 6 weeks. Wound bed tissue composition was assessed at baseline and follow up appointments to determine the affect the dressing had. Wound progression was also assessed.

Results: At baseline, mean wound bed coverage was 5.2% necrotic and 25.2% sloughy tissue (n=217). By end of study, mean necrotic tissue fell to 0.9% (82.7% reduction; p< 0.0001) and mean slough fell to 4.1% (83.7% reduction; p< 0.0001). Across wound types where necrosis was present, several groups demonstrated 0% mean necrotic tissue at study end. Overall wound progression (including healing) was achieved in 96.3% (209/217). No device-related adverse events were documented.

Discussion: In routine clinical use across diverse, exuding wound types, this gelling fiber dressing was associated with substantial reductions in both necrotic and sloughy tissue over a 6-week period, consistent with effective support of autolytic debridement via moisture balance and gel formation. These findings suggest the dressing may be a practical option to accelerate devitalized tissue removal as part of a broader debridement strategy in moderate-to-highly exuding wounds, with a favorable safety profile in this evaluation.

CS-098

Regenerative Capacity of the Axolotl (Ambystoma Mexicanum) Extracellular Matrix in Lower Extremity Wounds: a Case Series on the Application of Xenografts in Chronic Wound Care

Douglas Le, BS, MS; Sydney Boudreaux, BS; Kerry Thibodeaux, MD FACS CWSP FACCWS FAPWCA

Introduction: Chronic lower extremity wounds are common conditions seen in rural communities where accessibility to healthcare is limited. Many patients with chronic wounds also present with comorbid

metabolic conditions such as uncontrolled type 2 diabetes, hypertension, and obesity. Complications include peripheral neuropathy and diminished vascularization of epithelia, resulting in significantly delayed wound healing. Left untreated, chronic wounds can cause full limb amputations. A treatment that can overcome the socioeconomic and biophysical barriers preventing proper wound healing is a target for many hospitals and clinics, particularly in rural communities.

Methods: Data was collected from clinicians who treated refractory lower extremity wounds using axolotl grafts from 2022-2025 and retrospectively reviewed. Patient demographics such as age and sex were collected alongside comorbidities such as diabetes, hypertension, obesity, and vascular disease. The length, width, and depth of each wound were measured at every follow-up visit to calculate the area of skin that closed over time.

Results: There were 14 males, 8 females, and 1 non-reported patient who received the graft. The average age of the patient was 54.70 years. The most common comorbid conditions were type 2 diabetes, peripheral neuropathy, and venous insufficiency, while the most common chronic wounds were diabetic foot ulcers and venous leg ulcers. 21 of the 23 (91.3%) patients who received the graft achieved wound closure. The average wound area of the 21 patients was 3.85 cm2, while the average number of visits to achieve wound closure was 5.24 visits. The largest wound measured 29.25 cm2 and took 12 total visits and 19 total units of dermal patches to achieve wound closure. The smallest wound measured 0.5 cm2 and took 3 total visits and 2 total units of dermal patches to achieve wound closure.

Discussion: Complex wound management relies on the interplay between socioeconomic and biophysical factors. Comorbid conditions such as type 2 diabetes, hypertension, and peripheral neuropathy damage the vasculature and impair cellular functions necessary for the body to heal itself. In the context of patients who suffer from chronic lower extremity wounds, the need for an efficient treatment modality is desired to reduce healing time and prevent complications such as infection, scarring, and limb loss. In rural communities where accessibility to transportation and hospitals is severely limited, a skin graft derived from the axolotl can overcome these barriers due to its extraordinary ability to induce rapid re-epithelialization and closure of chronic wounds.

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CS-099

Successful Topical Management of a Lower Left Extremity Carbuncle Using Hypochlorous Acid: a Case Report on Chronic Wound Care and Its Applications in Rural Health

Douglas Le, BS, MS; Kerry Thibodeaux, MD FACS CWSP FACCWS FAPWCA

Introduction: A 34-year-old male with a history of hypertension and tobacco use presented to the wound clinic with a sizable carbuncle on the medial aspect of his distal lower left extremity that had been complicated by microabcesses, despite standard management with wound debridement and topical antibiotics. The patient's increased bacterial burden was further complicated by his chronic cigarette use, which has long been associated with delayed wound healing due to the vasoconstrictive effects of nicotine in cigarettes, creating a hypoxic environment in the tissue, which can significantly impair the cellular functions necessary for proper wound healing.

Methods: Hypochlorous acid is naturally produced by immune cells in the human body and has been known to have broad-spectrum antimicrobial activity. A topical hypochlorous acid spray therapy was eventually initiated to sterilize the wound and facilitate adequate wound healing. The formulation was given to the patient to take home with instructions to apply the product to the wound twice daily. The patient returned to the clinic for routine follow-up visits to evaluate the effectiveness of the hypochlorous acid treatment regimen.

Results: Following the application of the hypochlorous acid therapy, the carbuncle demonstrated a remarkable wound healing process that was much more effective than the standard management protocol of wound debridement followed by topical antibiotics. A month following initiation of the hypochlorous acid therapy, the patient demonstrated a near-complete resolution of the lesion. There was no longer any evidence of an infection around the lesion, and the patient no longer had any pain. At two months, the patient presented with no signs of active ongoing infection of his lesion. The wound demonstrated a markedly improved appearance with no new areas of drainage. The patient presented three months after initiation of hypochlorous acid therapy with his wound essentially healed. At this point, the tissue surrounding and underlying the lesion was intact, with only signs of erythema remaining

Discussion: In the setting of a chronic wound complicated by increased bacterial burden and a history of chronic cigarette smoking, a topical hypochlorous acid spray demonstrated the ability to clear the wound of active infection and facilitate successful healing. This therapy modality can be especially beneficial in clinics that mainly serve rural populations, as it can be easily administered in an outpatient setting and eliminates the need for patients to travel long distances to receive care

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CS-100

The Use of Moleculight in Hidradenitis Suppurativa: a Case Series Exploring Point-of-Care Bacterial Imaging

Star-Kayla Lewis, MD; Alisha Oropallo, MD; Amit Rao, BA

Introduction: Hidradenitis suppurativa (HS) is a chronic inflammatory skin disease that commonly affects intertriginous areas such as the axillae, groin, and anogenital region. HS wounds are known to be heavily colonized by bacteria and most commonly Staphylococcus aureus (S. aureus) (≈45%). Because infection can impede healing in chronic wounds, early and accurate identification of bacterial burden is essential for timely intervention. The MolecuLight device is a point-of-care autofluorescence imaging tool that uses violet light to make bacteria visibly fluoresce, allowing clinicians to assess bacterial burden in real time.

Methods: We evaluated the role of MolecuLight autofluorescence imaging in two patients with open axillary HS wounds to detect bacterial presence and guide clinical decisions. Data were collected over a 1-year period. At each visit, patients underwent MolecuLight imaging before and after standard wound washout, allowing us to visualize bacterial fluorescence patterns in real time.

Results: Autofluorescence imaging proved to be a valuable indicator of bacterial load. We particularly focused on the red fluorescence which indicates bacteria that produces porphyrin such as S. aureus. The fluorescence correlated with both the presence and the intensity of infection. Notably, visits where patients reported minimal pain or symptoms tended to show reduced fluorescence. Real-time imaging also allowed us to immediately assess whether washout effectively decreased bacterial burden or if additional debridement or antimicrobial therapy was needed.

Discussion: MolecuLight autofluorescence imaging may serve as a useful adjunct in the management of HS by providing immediate, visual confirmation of bacterial presence at the point of care. This real-time feedback has the potential to guide treatment decisions, optimize wound hygiene strategies, and support more personalized management for patients with HS.

CS-101

Novel Use of Microfluid Jet Therapy for Wound Bed Preparation in Venous Ulcers and Facilitated Extraction of Calcinosis Cutis

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Introduction: Chronic venous leg ulcers can be complicated by lipodermatosclerosis and dystrophic calcinosis cutis, which pose major challenges to wound bed preparation, infection control, and pain management. Calcinosis cutis results in hard, adherent calcium deposits that impede healing and make traditional debridement difficult and painful. Microfluid jet therapy is an emerging advanced wound therapy that applies a precision, high-pressure fluid stream for selective removal of slough, biofilm, and necrotic tissue and induces microbleeding to stimulate angiogenesis and granulation tissue. Its application for loosening calcific deposits has not previously been described.

Methods: We report using microfluid jet therapy in a 79-year-old female with an 18-month nonhealing right pretibial ulcer associated with chronic venous stasis, lipodermatosclerosis, and calcinosis cutis. Radiography revealed extensive subcutaneous calcifications beneath the wound. She had a history of recurrent soft-tissue infections, failed split-thickness skin grafts, and unsuccessful medical therapy with doxycycline and colchicine. Regular outpatient debridement with surgical extraction of calcium deposits required opioid analgesia for procedural pain. As an alternative, microfluid jet therapy* using hypochlorous solution was initiated for wound-bed preparation.

Results: Following initiation of microfluid jet therapy, the wound demonstrated effective removal of devitalized tissue, resolution of soft-tissue infection, and improved wound bed quality characterized by controlled microbleeding, and subsequent fibrovascular tissue. A key observation was the marked comminution and loosening of calcinosis cutis deposits. The high-velocity microfluid stream generated fluid shear forces and oscillatory energy that disrupted and weakened the calcific aggregates. Once treated, these deposits were easily removed using forceps, in contrast to the prior requirement for surgical extraction. The patient also reported substantially reduced procedural pain.

Discussion: This case illustrates that microfluid jet therapy is a promising treatment innovation for complex venous ulcers complicated by calcinosis cutis. The combination of selective debridement, antimicrobial cleansing, controlled microbleeding with wound bed activation, and microfluid jet-generated shear and oscillatory forces that disrupt calcific deposits represents a novel, well-tolerated approach to wound-bed optimization and calcinosis cutis. These findings support further investigation into the mechanism and broader applicability of microfluid jet therapy in calcific and refractory wound pathology.

CS-102

Durable Wound Closure in Smokers Using an Autologous Multilayer Leukocyte-Platelet-Fibrin Patch: a Case Series

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Introduction: Chronic wounds in patients with a history of tobacco use present a significant clinical challenge due to smoking-induced vasoconstriction, endothelial dysfunction, impaired nitric oxide signaling, and persistent tissue hypoxia. These pathophysiologic effects impair angiogenesis and oxygen delivery, resulting in delayed healing, failure of standard wound therapies, and high rates of wound recurrence. Autologous multilayer leukocyte-platelet-fibrin patch (MLPF; 3C Patch) is a biologic therapy that supports cellular migration, immune modulation, and sustained release of growth factors without exogenous additives. Prior studies have demonstrated that autologous MLPF provides a stable, angiogenic effect capable of supporting healing in recalcitrant wounds.1

Methods: This case series evaluated five patients with active or recent smoking history and complex lower-extremity wounds treated at a single wound care center. Wound etiologies include diabetic foot ulcers and post-amputation stump wounds, many complicated by peripheral arterial disease, chronic kidney disease, prior amputations, diabetes, and failure of advanced wound therapies. Several patients had critically impaired arterial disease. Patients received serial applications of MLPF patch prepared from their own blood. Adjunctive therapies including hyperbaric oxygen therapy (HBOT), vascular intervention, offloading, infection management, and glycemic optimization, were utilized as indicated. Outcomes were assessed and included wound progression, achievement of closure, limb salvage, and durability of closure.

Results: Prior to initiation of MLPF therapy, all wounds demonstrated stalled or declining healing trajectories despite prolonged treatment and advanced wound care. Following the MLPF application, progressive granulation tissue formation, improved wound tissue quality, and epithelialization were observed. MLPF was applied a mean of 11 times (range: 5–20). All five wounds achieved complete closure, including cases in which major amputation had been considered. Limb salvage was achieved in all applicable patients, and all wounds remained closed at follow-up despite ongoing vascular disease and the known risk of recurrence in smokers.

Discussion: This case series of smokers with complex, refractory wounds, autologous MLPF (3C Patch) therapy was associated with sustainable wound closure and limb preservation. By providing an angiogenic, cell-rich biological patch capable of functioning in hypoxic tissue, autologous MLPF may address key pathophysiologic barriers to healing in smokers and represents a clinically relevant therapy when standard wound therapies fail.

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CS-103

A Pilot Study of Borate Glass Synthetic Graft with Autologous Platelet-Rich Fibrin as a Wound Healing Model

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Introduction: Chronic lower extremity wounds represent a significant clinical challenge, with healing often impaired by dysfunctional extracellular matrix formation, inadequate angiogenesis, and prolonged inflammation. Borate-based bioactive glass fiber matrices have demonstrated superior healing rates in diabetic foot ulcers through controlled release of therapeutic ions and three-dimensional scaffolding that mimics native fibrin architecture, while autologous platelet-rich fibrin delivers concentrated growth factors that enhance endothelial proliferation, angiogenesis, and tissue remodeling. This pilot proof-of-concept study evaluates a novel therapy utilizing borate-based synthetic tissue allograft with autologous platelet-rich fibrin for complex lower extremity wounds.

Methods: Five patients with chronic lower extremity wounds of diverse etiologies—including venous, diabetic, post-surgical, traumatic, and atypical wound types—were treated with combined borate-based bioactive glass fiber matrix and autologous platelet-rich fibrin weekly for 4 weeks as a trial pilot study of a new woundh healing model.Venous blood was harvested via standard phlebotomy technique and processed using the PurePRP GS-30 Pure II system to obtain platelet-rich plasma through controlled centrifugation, which concentrates platelets and growth factors while maintaining platelet viability and function. The standardized preparation protocol ensures reproducible platelet concentration and growth factor content, addressing the critical need for consistency in autologous biologic therapies. The borate-based scaffold provides biocompatible, biodegradable three-dimensional architecture with controlled release of calcium and borate ions to stimulate healing cascades, while platelet-rich fibrin functions as an autologous delivery system for vascular endothelial growth factor, platelet-derived growth factor, and other bioactive molecules that promote angiogenesis and cellular proliferation. Dressings included non-adherent primary dressing and polyurethane foam and secured with roll gauze.

Results: 5 prototype-treated wounds showed significant closure rates of greater than 55% after 4 weeks of trial therapy. There were no adverse reactions or adverse side effects from the therapy provided. These results show a reasonable expectation based on PRP literature showing progressive healing over 8-12 week periods. The median time to complete closure in PRP-treated chronic ulcers ranges from 6-8 weeks, suggesting that 4-week outcomes represent mid-treatment progress appropriate to the literature.

Discussion: This pilot study establishes preliminary safety and feasibility data for a novel regenerative medicine approach that combines synthetic bioactive materials with autologous biologics, potentially offering an advanced treatment option for challenging lower extremity wounds across multiple etiologies. The synergistic application of structural scaffolding with autologous growth factor delivery represents a rational approach to complex wound management, particularly for wounds refractory to standard therapies.

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CS-105

Evaluation of a Versatile,100% Chitosan Bioactive Microfiber Gelling (BMG) Wound Dressing on Various Wound Etiologies in a Mobile Wound Care Practice

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Introduction: Managing diverse wound etiologies in a mobile wound practice requires clinicians to carry multiple advanced dressings to match individual wound assessments. Ideally, a single versatile primary dressing could manage exudate, provide antimicrobial and hemostatic activity, and be compatible with a range of cover dressings selected according to exudate level and anatomical location, thereby reducing product burden in the clinician's bag. Chitosan is a natural bioactive material with antimicrobial, anti-inflammatory, hemostatic, and biocompatible properties.[1-3] A 100% chitosan bioactive microfiber gelling (BMG) dressing has been developed to simplify dressing selection while supporting wound healing. Clinical evaluations of this BMG dressing have reported high patient and clinician satisfaction, reductions in slough and necrotic tissue, increases in granulation tissue, reduced wound odor and decreased wound pain across complex wound types.[2-5] Functional characteristics, including high exudate absorption and exudate locking with minimal lateral wicking, help protect periwound skin and reduce the need to trim the dressing to wound size.[1-3]

Methods: A 100% chitosan BMG wound dressing was introduced in lieu of calcium alginate, collagen and gelling fiber dressings, with or without silver, for various types of acute and chronic wounds in a single mobile wound care practice. The primary objective of this evaluation was to assess whether this single dressing could safely replace multiple existing primary dressings and support progression towards healing.

Results: The chitosan BMG wound dressing was effective in managing various wound etiologies. Clinical observations included ease of application and removal, superior exudate handling compared to calcium alginates, improved peri-wound condition, bleeding control following sharp debridement, odor, and wound pain and itchiness. It was used successfully with various cover dressings including hydrocolloids, foams, super-absorbents, composites, and two layer compression wraps.

Discussion: Incorporating a 100% chitosan BMG dressing into a mobile wound practice appears to simplify dressing selection while supporting wound healing outcomes. By replacing several other primary dressings, this versatile dressing may reduce stock requirements and bag burden for mobile clinicians, while providing consistent exudate management, hemostatic support and patient comfort across diverse wound etiologies.

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CS-107

Biological Graft Use in the Treatment of Refractory Hidradenitis Suppurativa

Colleen McGarvey, BS; Emma Amjad, BS; Jessica Wise, M.D.; Matthew Johnson, M.D., FACS

Introduction: Dermatologists typically manage hidradenitis suppurativa in the outpatient setting; however, severe or complicated cases may require emergent surgical intervention. We present a case in which the extent of tissue destruction prompted urgent operative management.

Methods: A 69-year-old man with a prior history of hidradenitis suppurativa previously controlled by adalimumab presented to the emergency department with a chief complaint of bilateral buttock wounds. In the emergency department, the wounds displayed severe skin breakdown, sloughing, bleeding, and exposure of subcutaneous tissue. The wounds revealed a variety of unusual microbes, and the patient suffered from anemia related to blood loss from the wounds. Ultimately, the patient was treated aggressively with surgical debridement, use of biological graft derived from porcine urinary bladder matrix, and culture specific antibiotics. Pseudomonas aeruginosa, Proteus mirabilis, and Bacteroides ovatus were cultured from the wound, differing from the typical microbiome of hidradenitis suppurativa lesions.

Results: Postoperatively the patient was discharged after medical maximization. The patient is following up with general surgery and planning for an excision if necessary.

Discussion: The porcine urinary bladder matrix graft is an advanced wound care tool, but its use in the treatment of hidradenitis suppurativa is not adequately discussed in literature. Empiric antibiotic treatment did not cover the typical microbes seen in hidradenitis suppurativa patients; therefore, antibiotic therapy was tailored to these findings. This case emphasizes the use of biologic grafts for the treatment of hidradenitis suppurativa and highlights the importance of antimicrobial stewardship in combination with a multidisciplinary treatment approach to these patients. Further exploration regarding the use of these grafts in hidradenitis suppurativa can alter the standard of care.

CS-108

Promising Healing Outcomes with Cryopreserved Umbilical Skin Substitute Grafts: a 10-Case Evaluation

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Introduction: The use of umbilical skin substitute grafts has gained attention for their potential in wound healing, offering a novel approach to tissue regeneration. Cryopreservation enhances the shelf-life and application of these grafts. This case series examines the clinical outcomes of 10 patients who received cryo-preserved umbilical skin substitute grafts for wound treatment.

Methods: A total of 10 patients with varying wound types were treated with cryopreserved umbilical skin substitute grafts. Wound healing was assessed based on the percentage of wound reduction, length of hospital stay, and readmission rates. Patient demographics, average hemoglobin A1C, wound characteristics, and clinical outcomes were recorded.

Results: The application of cryo-preserved umbilical skin substitute grafts led to an overall average wound reduction of 62.68% across all patients. The average hospital stay was 5.6 days, indicating a relatively short recovery period. Additionally, the average readmission rate was 20%, reflecting a low incidence of complications or the need for further intervention.

Discussion: Cryo-preserved umbilical skin substitute grafts demonstrated significant potential in promoting wound healing, with favorable outcomes in terms of wound reduction, hospital stay, and readmission rates. These results suggest that this treatment modality could be a promising alternative for managing complex wounds, offering a combination of efficacy and efficiency in clinical settings. Further studies with larger sample sizes and longer follow-up periods are needed to confirm these findings and explore the long-term benefits of this approach.

CS-109

Utilization of Autologous Skin Shave Micrografting for Treatment of Advanced Stage Pressure Injuries: a Seven-Patient Case Series

Igor Melnychuk, MD; Jordan Besh, BS

Introduction: Pressure injury (PI) wounds are highly prevalent and impose a substantial burden on the healthcare system globally. The application of micrografting techniques for the management of advanced-stage pressure injuries is an area of emerging interest, with a notably limited body of clinical literature. We aim to present a case series of 7 patients who were successfully treated with the skin shave micrografting technique, developed and previously published by the authors.

Methods: Between 2024 and 2025, 7 patients with Stage III or IV PIs were treated using an autologous skin shave micrografting approach. Patients were treated weekly in different clinical settings (hospital, rehabilitation center, and ulcer clinic). All traditional PI-related treatment measures (nutrition optimization, offloading, shear control, etc.) were implemented, and pressure ulcers were sharply debrided before skin grafting. PIs were photographed and measured at each visit.

Results: A total of 7 patients with 10 pressure injuries, two stage III and eight stage IV, underwent autologous skin shave micrografting. The average PI size was 7.2 cm2, and the average depth was 0.3 cm. The average donor site was 1.5 cm2. All patients demonstrated complete healing within 4 months. Five of seven patients remained recurrence-free during a six-month follow-up period, and only one out of ten ulcers was open at six months.

Discussion: Autologous skin shave micrografting is a practical and effective method for treating select advanced pressure injuries. We demonstrate that using the skin shave micrografting technique enables grafts only a fraction of a millimeter thick to fill PIs up to 0.3 cm deep after a single application. Autologous skin shave micrografting is a promising modality for the treatment of select pressure injuries and should be considered as part of the reconstructive ladder for advanced pressure injuries.

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CS-110

Targeted Intervention for Peristomal Skin Complications: the Role of a Pure Hypochlorous Acid Cleanser in Modern Ostomy Care

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Introduction: Peristomal Skin Complications (PSCs) are common and significantly reduce Health-Related Quality of Life (HRQoL) indicators in ostomy patients. PSCs include dermatitis, pruritus, infections, and ulcerations. They most commonly result from chronic exposure of peristomal skin to corrosive stoma effluent. This exposure compromises the skin barrier, leading to inflammation and increased risk of infection. Among the 1 million ostomates in the U.S., 60% report at least one PSC episode in the prior six months. This number rises to over 80% in ostomates within their first-year post-surgery. Historically, PSC management has focused on correcting pouching problems to prevent leaks, with minimal emphasis on preventive skin care beyond cleansing with warm water and gentle appliance removal.

Methods: While proper pouch selection and gentle removal techniques remain essential in the prevention and treatment of PSCs, emerging wound care literature supports the use of a pure hypochlorous acid

(HOCl) wound cleanser as a primary treatment intervention. It's application to PSCs directly addresses the microbial and inflammatory components by reducing bioburden and maintaining optimal wound healing pH. This series highlights 10 ostomates with varying PSC presentations. Each patient received peristomal cleansing with a pure HOCl cleanser for 4 minutes. Pouching issues were corrected, and gentle removal techniques were taught. HOCl cleansing was integrated into each patient's pouching routine as standard care.

Results: All 10 patients experienced PSC resolution within two weeks. No recurrences or clinic visits for PSCs occurred during a 3-month follow-up period.

Discussion: Integrating a pure HOCl wound cleanser as a primary treatment for PSCs represents an evidence-based advance in ostomy care. This approach accelerates healing, reduces discomfort, improves appliance adherence, and enhances HRQoL. Further research is needed to determine HOCl's role in PSC prevention.

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CS-111

Thermo-Reversible Wound Gel Promotes Healing by Normalizing Wound Bed Ph in Chronic Wounds

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Introduction: Wound bed pH is a critical biomarker of healing status. Chronic wounds often exhibit alkaline environments (pH > 7), which favor bacterial proliferation and protease activity, delaying healing. The novel Thermo-reversible Wound Gel (TRG) is buffered to keep wound pH optimal for wound healing. We hypothesized that TRG application would lower wound pH and that this reduction would correlate with improved clinical wound progression.

Methods: A prospective observational study was conducted in patients with chronic wounds receiving TRG as part of standard care. Wound pH was assessed using a pH diagnostic device, which measures pH from exudate absorbed on discarded dressings without direct wound contact. Measurements were taken at baseline for non-healing wounds, and at follow-up intervals after TRG application. Correlation analysis evaluated the relationship between pH category (acidic, neutral, alkaline) and clinical wound progression.

Results: Data collection is ongoing, current data indicate that wounds treated with TRG demonstrated a significant decrease in pH toward near-neutral values compared to baseline. This pH reduction was associated with wound progression.

Discussion: These findings support TRGs role in modulating wound surface chemistry to promote healing. By lowering wound pH from alkaline toward neutral or mildly acidic levels, TRG may help suppress bacterial proliferation and protease activity, creating a more favorable environment for tissue repair. Incorporating pH monitoring into routine wound care could enable clinicians to identify non-healing wounds earlier and incorporate a product like TRG to improve patient outcomes.

CS-112

A Sustainable Wound Environment Using Bioactive Glass (BBGFM) Contributes to the Efficacy in Healing Complex Lower Extremity Wounds

Ralph J. Napolitano, Jr., DPM, CWSP, FACFAS; Courtney A. Dodds, OMS-II3; George G. Papadeas, OMS-II3

Introduction: Lower extremity wounds often pose unique treatment challenges to both clinicians and patients. Because of such challenges, it is often necessary to utilize a combination of different techniques, modalities, and products to successfully treat lower extremity wounds. Skin substitutes belong to a family of advanced wound care products used in challenging wounds. Bioactive glass wound matrix (BGWM*) is a new category of skin substitutes that is composed of a water-soluble matrix of fibers and microspheres that readily adheres to wound surfaces. The porous BGWM absorbs wound exudate to maintain moisture balance and serves as a scaffold to support wound healing. The objective of this case series is to describe our experience with BGWM after application on ten patients with complex lower extremity wound

Methods: A total of ten patients had foot, ankle or lower leg wounds and received BGWM applications as determined by medical necessity. Each patient received between one and three applications of BGWM during the course of wound therapy. The patients were seven males and three females 49 to 94 years old. Wound etiologies included delayed surgical wound healing, a crush injury, diabetic foot wounds, a decubitus ulceration, a chronic venous leg ulceration, venous stasis ulcer with tunneling, a chronic non-healing ulcer with surrounding scar tissue and probable fibrotic changes, an ulcer with fat layer exposed, and a non-pressure chronic ulcer with exposure of the fat layer. Wound debridement was performed as needed prior to each BGWM application. No additional dressings or therapies were utilized after initiation of BGWM other than basic cover dressings and debridement when warranted.

Results: BGWM was utilized to effectively treat lower extremity wounds, resulting in positive healing outcomes in all ten wounds. All patients healed or demonstrated marked improvement in wound size and disposition during the study period. None of the patients acquired an infection once the BGWM was applied.

Discussion: Wounds from a variety of etiologies saw successful outcomes after the application of the BGWM. These complex wounds were consistent with chronic and refractory wounds treated with BGWM by other investigators [1-4]. BGWM has been shown effective in DFUs in a 40 patient RCT while other wounds that have been refractory for years were found to close after applications of BGWM[1-4]. A common outcome reported in the literature has been a significant reduction in complications associated with wound infection once BGWM was applied to wounds[1-4].

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CS-113

Clinical Evaluation of an All-in-One Negative Pressure Wound Therapy Dressing for Lower Extremity Wound Management

Ralph J. Napolitano, Jr., DPM, CWSP, FACFAS

Introduction: Negative pressure wound therapy (NPWT) is an effective tool for managing difficult-to-heal lower extremity wounds. A multilayer, all-in-one NPWT dressing, which incorporates a non-adherent interface, open-cell foam, and an acrylic-silicone drape, was designed to reduce tissue ingrowth, support extended wear, and facilitate ease of use. This study evaluates the clinical outcomes of using this dressing with

NPWT in 10 patients with lower extremity wounds.

Methods: A retrospective review of patients with lower extremity wounds was conducted at a single orthopedic center. Study participants provided informed consent, and de-identified data were handled according to regulations. After initial assessment, surgical debridement was performed as needed. Wounds were managed using NPWT with the all-in-one dressings at -125 mmHg, and dressing changes occurred every 5–7 days. Antibiotics were given when necessary. Wounds were assessed at each visit, and NPWT continued until therapeutic goals were met. Weekly follow-ups were conducted until wounds closed or home management became suitable.

Results: The patients included 8 males and 2 females, aged 28-94 years. Nearly all patients had multiple comorbidities, most commonly hypertension, diabetes mellitus, and chronic kidney disease. Etiologies included post-surgical secondary closure (n=3), acute injury (n=1), venous stasis ulcers (n=2), diabetic foot ulcer (n=3), and neuropathic ulcer (n=1). Median therapy duration was 14 days (range: 7–30 days). All wounds exhibited progression toward healing, with granulation tissue formation, reduced surface area, and decreased periwound edema. Two patients exhibited hyperhydration at the wound edge, which saw complete resolution after increasing negative pressure. Patients expressed minimal discomfort at dressing changes. Minor, transient deformation beneath the vacuum port was occasionally observed but resolved spontaneously with no clinical consequence. No instances of hematoma, wound infection, device malfunction, or other adverse reactions were recorded. All wounds demonstrated continuing advancement toward closure, and no patients required surgical re-intervention.

Discussion: This all-in-one NPWT dressing supports efficient management of wound exudate and promotes healing while easing application. In our experience, the dressing allowed for quick placement with little need for adjustment, enhanced comfort, and helped provide accessible wound care.

CS-115

Assessing the Clinical Benefits of a Novel Antimicrobial Gelling Fiber Containing POLYHEXAMETHYLENE BIGUANIDE

Alex lawton, MMATH; Rachel Burns, BSc

Introduction: A Polyhexamethylene biguanide (PHMB) -impregnated fiber dressing has been developed to deliver rapid antimicrobial action, patient comfort, and improved wound progression. This abstract reports real-world clinical feedback compared with dressings previously used on the same wounds, predominantly silver fiber products.

Methods: A prospective clinical feedback programme was conducted across hospital and community wound care settings. Adult patients with acute or chronic wounds requiring antimicrobial intervention were managed with the PHMB Fiber dressing as part of routine care. Clinicians completed structured assessments evaluating antimicrobial response, wound progression, exudate handling, ease of dressing application and removal. Patient-reported pain during wear and at dressing change was collected. Data sets were compared descriptively with clinician feedback on prior dressings.

Results: Clinicians observed rapid antimicrobial effects, with improvements in infection symptoms, slough and exudate, and peri-wound condition typically within 48 hours. Patients reported reduced pain during wear and removal, attributed to the dressing's patented quilting design with PHMB and fluid handling. Accelerated healing progression, including earlier granulation and improved peri-wound integrity scored highly. Overall performance lead to 87% of clinicians preference PHMB Fiber dressing over Silver Fiber dressings, citing its balance of antimicrobial efficacy, comfort, and ease of use. Antimicrobial stewardship (AMS) is central to modern wound management, promoting effective non-antibiotic strategies that minimise resistance risk while maintaining strong antimicrobial performance. Polyhexamethylene biguanide (PHMB) provides broad-spectrum activity with a favourable safety profile and low resistance potential.

Discussion: The PHMB fiber dressing aligns with AMS principles by providing fast, effective antimicrobial action without reliance on silver or antibiotic-based approaches. Clinical feedback demonstrates reduced pain and enhanced healing, supporting its value as an alternative to silver fiber dressings.

CS-116

Multimodal Imaging for Point-of-Care Wound Assessment and Clinical Decision-Making

Alisha Oropallo, MD, FACS, FSVS, FAPWCA, FABWMS; Adam Iddriss, MD; Star-Kayla Lewis, MD; Marisa Ranire-Maguire, MD; Amit Rao, MD

Introduction: Chronic wounds require etiology-specific assessment to guide timely interventions.1 Multimodal point-of-care imaging, including near-infrared spectroscopy (NIRS) for tissue oxygenation (StO2),2 thermography for skin surface temperature, and digital photography, offers non-invasive, real-time insights into perfusion, ischemia, and surrogate markers of infection.

Methods: A case series evaluated multimodal imaging in patients with lower extremity wounds. Assessments included overall perfusion via NIRS (StO2 levels), bilateral comparisons, periwound and wound bed analysis, and thermography for temperature gradients as surrogates for infection or inflammation.

Results: Three cases illustrated etiology-based applications of multimodal imaging. Case 1: A 46-year-old male with type 2 diabetes presented with diabetic foot ulcer (DFU) on the left plantar foot (1.12 × 1.06 × 0.2 cm), no peripheral vascular disease (PVD), and normal ABI (1.2 bilaterally). NIRS revealed equivalent bilateral plantar StO2 (94-100%), confirming sufficient periwound perfusion, but localized wound bed StO2 of 0% indicated need for debridement. Thermography showed minor temperature elevation (92°F wound vs. 90-91°F surrounding), with no infection markers. Case 2: A male with pyoderma gangrenosum on the right anterior leg (7.43 × 4.7 × 0.1 cm) and infection; no PVD, normal ABI (1.32 left, 1.3 right). NIRS demonstrated StO2 >50% overall with localized hyperperfusion (>70%), while thermography indicated infection via elevated wound temperature (89°F bed, 87°F periwound vs. 82-84°F leg). Case 3: A female with type 2 diabetes and a non-ischemic, non-infected right plantar DFU (1.92 × 1.75 × 0.3 cm); no PVD, ABI 0.99 left and 0.9 right (lower normal). NIRS confirmed StO2 >50% with localized 0% areas supporting debridement; thermography revealed cooler wound bed temperature (83°F vs. 89°F foot).

Discussion: Multimodal point-of-care imaging enables etiology-specific wound assessment by integrating perfusion data and using thermography as an infection surrogate. This approach helps identify debridement needs, evaluate perfusion adequacy, and detect inflammatory states, enhancing clinical decision-making and potentially improving patient outcomes across diverse wound etiologies.

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CS-117

Hypochlorous Acid Treatment Response in a Refractory Diabetic Foot Ulcer Wound

Sahana Padumane, BS, MS; Kerry Thibodeaux, MD

Introduction: Conditions such as Diabetic Foot Ulcers can be difficult to achieve long-term healing in due to neuropathy leading to re-injury and frequently comorbid atherosclerosis causing reduced blood flow. Not all acid preparations are made equal, and in clinical trials Hypochlorous Acid* showed superior disinfectant properties compared to generic preparations. Thus, their product has been used in patients at the clinic whose wounds were determined clinically to potentially benefit from this therapy. Our objective was to assess the antimicrobial and resurfacing efficacy of the Hypochlorous Acid* Spray by observing the healing process in a patient with a refractory wound previously

unsuccessfully treated with the current standard of care wound treatments. This patient's Diabetic Foot Ulcer was refractory to standard of care wound treatments and achieved significant positive response to Hypochlorous Acid* therapy.

Methods: The patient was determined clinically by the physician to stand to benefit from hypochlorous acid therapy. They were provided informed consent in the clinic and completed weekly follow-up appointments in the clinic where their wounds were measured by wound care nurses and any changes in their treatment regimen were documented by the physician.

Results: The reduction from 13.32 cmˆ3 to 6.9 cmˆ2 surpasses the goal of wound care therapy of more than a 50% reduction in size of the wound, with further healing expected contingent on continued adherence to treatment regimen.

Discussion: Our patient presented to the clinic December 9, 2024 for a diabetic foot ulcer on the right heel and a sacrum burn injury. The patient followed up every 1-3 weeks with minimal improvement and underwent two surgical debridements in July 2025 and August 2025 due to granuloma tissue and biofilm formation likely contributing to chronicity. The patient was provided Mesalt packing material and Hypochlorous Acid* spray in September 2025 and provided instructions for her home health nurse. After the second surgical debridement in August 2025 her ulcer measured 3 x 3.7 x 1.2 cm and in December 2025 measured 2.3 x 3.0 x 0 cm with healthy granulation tissue and no peri-wound complications in between.

CS-118

Limb Salvage Using Hypochlorous Acid Treatment in Venous Leg Ulcer Case

Sahana Padumane, BS, MS; Douglas Le, MS; Kerry Thibodeaux, MD FACS CWSP FACCWS FAPWCA

Introduction: Our patient has a long-standing history of Peripheral Arterial Disease with a Tib-Fem Bypass in April 2025 complicated by wound dehiscence and abscess formation. The patient's daughter reported that she developed venous leg ulcers in May 2025. The outlying facility recommended amputation of the left lower extremity above the knee due to non-healing wounds and the patient decided to seek a second opinion in Lafayette. MRI detected an abscess sized 2.7 x 4.3 x 1.1 cm but no evidence of osteomyelitis. At the second facility the Interventional Cardiologist successfully revascularized one vessel proximally but was unable to open up more distal vessels in the foot. Her abscesses required an incision and drainage on May 17th with several large post-surgical wounds and wound vac placement. She came to the Wound Care Treatment Center on referral for Hyperbaric Oxygen Therapy in June 2025.

Methods: After discharge from the previous facility, she was referred to outpatient hyperbaric therapy at the Wound Clinic of Opelousas in May 2025. She was approved for the use of several therapies, including negative pressure therapy, hyperbaric therapy, and Bilayered Skin Substitute*. The Hypochlorous Acid** product was used to clean her left leg wounds at each visit and at home. Several areas of necrotic tissue were noted on left toes and left medial thigh, which were removed via excisional debridement three times in clinic by the physician.

Results: After her most recent debridement the LLE proximal wound was 8.2 x 2.5 x 0.3 cm. Her most recent measurements on 12-8-2025 were: LLE proximal 4.5 x 1 x 0.3 cm. She has been treated by the clinic for multiple wounds but her LLE proximal wound was decided to be the focus of this case due to a Bilayered Skin Substitute* product also utilized starting on 10-13-2025 to the LLE distal wound and not the LLE proximal wound.

Discussion: Due to this patient's critical limb ischemia and amputation recommended by a different facility, her outcome of salvaging the limb far exceeds expectations. This result was facilitated in part by the Hypochlorous Acid** Spray used during visits and at home to clean her wounds along with Hyperbaric Oxygen Treatment.

CS-124

Fragmented Fish Skin Graft (FSG) to Heal Deep Heel Wounds

Nikul Panchal, DPM

Introduction: Deep heel wounds are notoriously difficult to heal due to a confluence of anatomical and physiological factors. The heel bears significant weight and pressure during ambulation, which impairs perfusion and contributes to sustained tissue damage (Lipsky et al., 2020). The constant pressure and weight-bearing stress on the heel, even with offloading techniques, can disrupt the delicate healing process and lead to further harm (Armstrong et al., 2018). Moreover, the plantar heel's subcutaneous tissue has limited blood supply, which is crucial for delivering oxygen and nutrients necessary for tissue regeneration (Thomas, 2020). One of the most unique properties of the Icelandic codfish skin graft is that unlike the majority of other dermal substitutes, the fish skin graft (FSG) can be applied in layers onto itself. This makes it an ideal graft for deep wounds in which an entire cavity needs to be built up with granulation tissue.

Methods: In the two presented cases, the patients initially had a deep heel wound which was deep to subcutaneous tissue with a hard end feel. Due to the depth of the wound being dangerously close to bone, it was imperative to treat it in an aggressive manner. An initial incision and drainage was performed after which a serial debridement was performed a few days later. The fragmented FSG was packed into the wound cavity and Negative Pressure Wound Therapy (NPWT) was applied.

Results: At the two week follow ups, there was significant build up of granulation tissue in the wounds that the bone was no longer palpable. Incorporating caramelized graft tissue was fenestrated to allow for sanguineous saturation into the graft for continued incorporation. Serial debridements were performed in the clinic on a weekly basis and NPWT was re-applied. FSG was then reapplied onto the wounds as needed, when the wounds showed signs of plateauing. Ultimately, the wounds were completely healed and the patients returned to all activities.

Discussion: Packing the wound up to the brim with FSG serves as the necessary scaffolding the wound needs for migration of the body's own cells throughout the entire surface area of the wound. Further replication of use of the graft in this particular manner is necessary to solidify its place as an appropriate standard of care for not just deep heel wounds, but for deeper cavitational wounds in general.

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CS-125

Bone Pathology in Osteomyelitis After Trans Metatarsal Amputation

Hau Pham, DPM; Qi Chu, DPM; Elizabeth Sanders, DPM; Maral Jonloo, DPM

Introduction: Each year, about 1.6 million of the 38.4 million Americans with diabetes experience a diabetic foot ulcer. Approximately 50% of ulcers become infected; between 15% and 20% of moderate-to-severe infections eventually lead to a lower-extremity amputation (1). Peripheral artery disease (PAD) and osteomyelitis (OM) are the predominant causes of non-healing ulcers (2). Diagnostic measures for OM include Magnetic Resonance Imaging (MRI), a probe-to-bone test, a bone biopsy, and pathology from resected bones (3). This study evaluates the pathology of resected bones from patients who underwent trans metatarsal amputation (TMA).

Methods: We reviewed the records of 276 patients with TMA from 2014 to 2023. All patients had diabetes, foot ulcers, and PAD. We excluded patients who did not have diabetes and those who had TMA because of trauma or cancer. All specimens from the TMA procedure were sent to pathology for analysis.

Results: 142 out of 276 patients had pathologic OM at the time of TMA.

181 patients returned to the operating room, and 23 specimens were positive for OM in patients who had previously been negative. Procedures for the return trips to the operating room included wound closure, debridement, midfoot amputation, and major amputation. Overall, 179 had successful TMA, 15 had successful midfoot amputation, and 82 required major amputation.

Discussion: Although MRI is regarded as the most reliable technique for diagnosing OM, with a sensitivity of 90% and specificity of 80% (4), it was not initially used to diagnose OM in our patient group. Twenty-three specimens were positive at the second surgery. The surgery became necessary when the wounds showed slow progress. Of the 23 patients with delayed OM diagnoses, 7 needed major amputation, and all also had PAD. An early MRI test might improve the overall results. Like MRI, surgical pathology examines all parts of the infected foot, and both can have late manifestations. We can get MRI results in 1 day, while pathology results may take up to one week. Pathologic examinations can provide a more definitive diagnosis. We need to have a prospective study to compare the efficacy of MRI and pathologic examination.

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CS-126

Targeted Topical Therapy in a Multidrug-Resistant Diabetic Foot Ulcer with Multiple Drug Allergies: a Case Report

Lisa Piercey, MD, MBA; Jeffery M. King, PharmD

Introduction: Diabetic foot ulcers (DFUs) complicated by polymicrobial infection and antibiotic resistance present significant management challenges, especially in patients with drug allergies that limit systemic options. This case describes the use of a customized, culture-directed topical antibiotic formulation in a patient with multiple drug allergies and a multidrug-resistant diabetic foot ulcer, resulting in substantial wound improvement and avoidance of systemic complications.

Methods: A 60-year-old female with diabetes, rheumatoid arthritis, peripheral neuropathy, lymphedema, and tobacco use developed a full-thickness plantar ulcer on the left great toe following thermal injury. The wound was initially treated with Betadine and oral doxycycline but worsened. PCR culture revealed a heavy polymicrobial burden with resistance to beta-lactams, macrolides, and tetracycline. Noting the patient's allergies to penicillin and sulfa, a customized topical solution containing gentamicin and metronidazole was initiated alongside systemic levofloxacin and omadacycline. A subsequent culture showing Acinetobacter baumannii, Pseudomonas aeruginosa, and Escherichia coli prompted a therapeutic change to a saline-based spray with linezolid and meropenem.

Results: Over a four-month period, the wound area decreased from 23.5 cm^2 to 3.9 cm^2, with resolution of drainage and progressive granulation. The patient tolerated all topical therapies without adverse events. Systemic antibiotic use was limited to short courses guided by culture results.

Discussion: This case demonstrates the successful use of targeted, compounded topical antibiotic therapy in the management of a multidrug-resistant, polymicrobial DFU in a patient with limited systemic treatment options. Culture-directed topical therapy provided effective local antimicrobial coverage, reduced wound size, and supported healing without adverse effects. These findings support the consideration of personalized topical antimicrobial formulations as adjunctive therapy in complex diabetic wounds, particularly when systemic antibiotic use is restricted by allergy and/or resistance.

CS-127

Pyoderma Gangrenosum Like Presentation of Venous Leg Ulcers: a Retrospective Case Series

Carra Powell, MD; Jack Lucas, MS3; Hannah Gandy, MS3; Nirosha Adepu, MD; Poornema Ramasamay, MD

Introduction: The development of venous leg ulcers (VLUs) is a complex process, primarily driven by chronic venous insufficiency (CVI), which leads to microcirculatory damage and eventual ulceration. The potential intersection between these chronic ulcers and the pathological features of pyoderma gangrenosum (PG) creates a novel diagnostic and therapeutic challenge. This retrospective case series reports experiences with patients diagnosed with VLUs, attributed to venous stasis or lymphedema, and their sudden wound deterioration, with PG-like pathophysiology and presentation. In patients being treated for vascular leg ulcers (VLUs) with sudden deterioration, we propose that there is a novel inflammatory cascade, that acts like PG and warrants early recognition to allow for anti-inflammatory measures to be taken to allow for proven VLU treatments like compression therapy and debridement.

Methods: We present a series of cases where patients being treated for chronic venous leg ulcers (VLUs) developed a pyoderma gangrenosum (PG) like transformation of their wounds, which led to rapid deterioration and progression of their wounds.

Results: There were seven patients that we have followed over the course of their treatments in the wound clinic and have found that routine treatment for VLU were not sufficient for these patients, however once immunologic therapy was started for them recovery improved. These patients are not truly PG as they do not require ongoing immunologic therapy. We found that their disease course was similar to PG, indicating a proinflammatory process that was similar.

Discussion: In conclusion, we are trying to describe pyoderma type transformation that clinicians should be able to identify in VLU. Early identification will improve patient outcomes, and understanding different treatment modalities will assist with more efficient recovery.

CS-128

Self-Assembling Peptide Biomimetic Matrix Rescues High-Risk Diabetic Foot Ulcers from Amputation

Manooj Prasad, DPM

Introduction: As the leading cause of non-traumatic lower extremity amputations, diabetic foot ulcers (DFUs) have an associated 5-year mortality rate of 50-70%. DFUs are also highly prone to infection, which significantly increases morbidity and raises the rate of lower extremity amputations up to 90%. This case series evaluates the performance of a novel, self-assembling peptide-based biomimetic matrix (BMM) in complex Wagner 2-4 DFUs. The peptide self-assembles into a 3D scaffold that resembles the native extracellular matrix to support tissue regrowth while protecting against bacteria.

Methods: Three patients with multiple serious comorbidities (including cerebral vascular accident, coronary artery disease, deep venous thrombosis, Charcot deformity, history of amputation, infection / gangrene) presenting with complex, hard-to-heal diabetic foot ulcers (4 wounds total), at risk for below-the-knee amputation, were selected to receive BMM. All wounds were extensive and full-thickness, involving exposed structures (Wagner 2-4). Wounds were extensively debrided to remove devitalized tissue (including biofilm, exudate, necrotic tissue, fibrin, and slough) prior to BMM application following the manufacturer's instructions. Wound characteristics were assessed at baseline and during follow-up visits.

Results: All patients tolerated BMM applications well and responded positively to the treatment. Despite the failure of previous interventions and risk for below-the-knee amputation, all cases showed rapid wound healing progression resulting in complete (3/4) or partial (1/4) coverage

of the originally exposed structures. In all cases, a substantial reduction in wound depth was observed with the formation of healthy granulation tissue after a single application. Percent area reduction (PAR) greater than 50% was achieved by 2 weeks, with complete closure confirmed in 2 cases within 14 weeks. An improvement in exudate and in peri-wound skin appearance was also noted. No product-related adverse events were observed.

Discussion: This case series suggests BMM as an advanced treatment modality for the management of complex, high-risk diabetic foot ulcers. BMM was easy to apply and conformed to the wounds, resulting in rapid tissue regrowth over the exposed structures, substantial PAR, and overall wound improvement, lowering the risk of limb loss. Larger clinical studies are required to confirm these findings.

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CS-129

Initial Pain Relief in Complex Wounds with Application of a Bioresorbable Silver–lidocaine Matrix

Thea P. Price, MD

Introduction: Post-procedural pain after excision or amputation can hinder recovery and slow wound healing, particularly in patients with significant comorbidities or malignancies. Although conventional analgesics and topical agents may provide temporary relief, a novel bioresorbable polymer matrix incorporating ionic and metallic silver and lidocaine hydrochloride was developed to address multiple wound care needs: rapid pain relief, infection risk reduction, and keratinocyte viability for healing.

Methods: This case series evaluated three patients with complex wounds of varying etiologies. The bioresorbable antimicrobial matrix was applied directly to excised wound beds following debridement or carcinoma excision. Each wound was subsequently covered with an appropriate secondary dressing (silver dressing for Patients 1 and 2; collagen and foam dressing for Patient 3). Additional analgesics were provided based on clinical need, including topical L.E.T. gel, topical lidocaine, gabapentin, tramadol, or oxycodone. Pain scores (0–10) were recorded immediately prior to matrix application and at 45 minutes and three hours post-application.

Results: Patient 1: An 87-year-old female with a nonhealing transmetatarsal amputation site and chronic osteomyelitis reported baseline pain of 8/10. Pain decreased to 2/10 at both 45 minutes and three hours after matrix application. Patient 2: A 91-year-old female with recurrent squamous cell carcinoma of the hindfoot and heel reported baseline pain of 10/10. Pain decreased to 6/10 at 45 minutes and 3/10 at three hours post-application. Patient 3: A 57-year-old female with squamous cell carcinoma of the scalp reported baseline pain of 7/10. Pain decreased to 5.5/10 at 45 minutes and 4.5/10 at three hours following matrix application.

Discussion: Rapid (< 1 hour) and sustained pain reduction was observed in all three cases following matrix application, despite variability in wound etiology and concomitant analgesic use. These findings suggest that the bioresorbable matrix likely provides both structural wound coverage and meaningful early analgesic benefit. Further clinical evaluation is warranted to determine its role in multimodal pain management and wound healing optimization.

CS-131

Healing a Difficult-to-Treat Diabetic Foot Ulceration Utilizing a Tri-Layer Human Amniotic Tissue Graft Skin Substitute: a Case Study

Carmina Quiroga, DPM; Dirk Krog, DPM; Harika Patel, DPM

Introduction: Patient is a 66 year old male with a primary medical history of uncontrolled type II diabetes mellitus with peripheral neuropathy, extensive peripheral vascular disease, stage 3b chronic kidney disease, hypertension, class 1 obesity, and hyperlipidemia. This patient has a complex vascular surgery history with procedures performed on the bilateral lower extremities. Patient presented to the office with a traumatic Wagner-Meggitt grade 2 diabetic foot ulceration (DFU) secondary to a ruptured bulla with underlying tissue necrosis in May of 2025. This tissue necrosis continued advancing with associated soft tissue and bone infection. This required surgical cure via a left partial 5th ray resection during late June of 2025. By early August the left 4th digit was necrotic and required complete amputation. Utilization of a biologic Amnion-Chorion-Amnion (ACA) skin substitute was initiated in late September upon approval.

Methods: Initial treatment consisted of observation, dry dressings, and offloading via a total contact cast (TTC). Use of an ACA skin substitute was initiated after ulcer failed to respond to standard ulcer care treatment of greater than 30 days. Wound defect edges were beveled with #15 scalpel. The ACA graft was then trimmed ulcer dimensions and placed according to the manufacturers recommendations. The graft was secured with adaptic, steri-strips, dry pressure dressing and off-loading (TTC).

Results: Measurements post 4th digital amputation with graft application (08/19/25): 9 x 5 x 0.4 cm Area: 45 cmˆ2 Volume: 18 cmˆ3 Pre-graft wound measurement at initial application of triple-layer skin substitute (09/30/25): 4.3 x 8 x 0.2 cm Area: 34.40 cmˆ2 Volume: 6.88 cmˆ3 Pre-graft application wound measurement at recent appointment (12/09/25): 3.7 x 4.0 x 0.2 cm Area: 14.80 cmˆ2 Volume: 2.96 cmˆ3

Discussion: The development of biologics (ACA) demonstrates a new approach to wound care, with treating chronic non-healing wounds with unique tissue regenerative, anti-inflammatory, and antibacterial properties (Palanker, 2019). This case study shows the utilization of ACA was instrumental in overcoming barriers to resolving DFU's.

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CS-132

A Minimal Invasive Alternative to Chronic Plantar Hallux Ulcerations: Selective Plantar Fascia Release -- a Case Series

Carmina Quiroga, DPM; Brittany Staples, DPM; Kyle Williams, DPM

Introduction: Plantar ulceration at the hallux interphalangeal joint is a common occurrence for the diabetic neuropathic patient population. These wounds are difficult to treat due to the difficulty in offloading the specific area and high infection rate. These ulcerations are not only detrimental to the patients but also to the healthcare system in general as these ulcerations can lead to digital and further pedal amputation.

Methods: The procedure was performed under local anesthesia in the office or in one specific example, the operating room. The medial band of the plantar fascia was palpated approximately 2 cm proximal to the tibial sesamoid and was marked. The local anesthesia was infiltrated proximal to the point that was marked, in order to obtain adequate effects of the anesthesia. Next, an 18 gauge needle was inserted into the marked site and the band was released using gentle swiping motion in the frontal plane. The incision of the fascial band was made with the hallux held in maximum dorsiflexion. Following the release of the fascial band, the area was palpated to feel for any residual fibers within the treatment area. The hallux was placed through a range of motion exam to test for any increase in dorsiflexion.

Results: In each of the seven patients within the case series, healing of the wound was achieved following the limited fasciotomy. The average amount of dorsiflexion of the MTPJ increased by an average of 21 degrees. The ranges of dorsiflexion began at only 8 degrees with end dorsiflexion

being 35 degrees. Although this is a limited sample size, with a 100% rate of healing, it is difficult to deny the procedures success. Procedure was statistically significant at a p-value of 0.00006. Standard deviation of 5.62 was calculated.

Discussion: Limitation in great range of motion dorsiflexion inherently places increased pressure during toe off at the level of the interphalangeal joint during the gait cycle. This will often result in excess pressure leading to ulceration formation which is further exacerbated by diabetic neuropathy. Patients can suffer from biomechanical limitations which lead to these recalcitrant ulcerations in the form of either hallux limitus or hallux rigidus, which is the main component resulting in limitation of dorsiflexion of the hallux. In order to improve range of motion at the 1st MPJ and to reduce the propensity of infection and noncompliance in a difficult patient population, a limited in-office procedure is indicated over invasive surgical intervention.

CS-133

Multimodal Thermal and Fluorescence Imaging in Advanced Wound Care: a Case Series Using an All-in-One Wound Imaging Device

Rose Raizman, RN-EC, PHCNP, NSWOC, WOCC (C), MSc, MScN, NP-ET; Ron Linden, BSc, MD, CCF, DRCPSC, MSM; Laura M. Jones-Donaldson, PhD; Danielle Dunham, MHSc

Introduction: Conventional wound assessment methods offer limited insight into wound physiology, but advances in digital imaging now enable more comprehensive wound evaluations and improved patient care. Fluorescence imaging is a validated point-of-care technique for detecting clinically significant bacterial burden (≥104 CFU/g) in real time [1-3]. Thermal imaging provides a contact-free, non-invasive method to assess tissue perfusion, and inflammation or infection through analysis of skin-surface temperature gradients [4, 5]. By translating infrared radiation into temperature maps, thermography reveals physiological changes associated with infection or healing [6, 7]. The integration of fluorescence and thermal imaging represents an important, multimodal approach to wound assessment. This case series demonstrates the clinical use of multimodal thermal and fluorescence imaging in chronic wound assessment.

Methods: This descriptive case series evaluated patients with chronic wounds of mixed etiologies using a handheld class II medical device* capable of capturing co-registered standard, thermal infrared, and bacterial fluorescence images. Thermal imaging was used to assess temperature differences between the wound, periwound, and contralateral limb, while fluorescence imaging was used to detect bacterial burden in the wound or periwound.

Results: Thermal imaging revealed localized perfusion impairment, and inflammation not visible on standard clinical inspection, while fluorescence imaging identified elevated bacterial signals indicative of clinically significant bacterial burden. Areas showing lower temperatures relative to surrounding tissue indicated perfusion compromise or regions with undermining or tunneling, confirmed by probing, prompting vascular referral and early intervention in one instance. In contrast, increased temperature zones aligned with inflammation and infection, with fluorescence signals highlighting bacterial burden within the wound bed or periwound area, confirmed by microbiological analysis.

Discussion: This case series highlighted the practical, real-world use of multimodal imaging device* in wound management. Integrating thermal and fluorescence imaging demonstrated strong potential as a complementary, objective approach for assessing chronic wounds. By concurrently visualizing temperature variations and bacterial burden, multimodal imaging provided critical insights into the underlying wound environment at point-of-care, enabling earlier recognition of potential wound complications and supporting healing through timely, targeted interventions. With added measurement capabilities and AutoDepth, this all-in-one imaging device* introduces a new frontier in complex wound care scenarios.

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CS-134

Applying Fluorescence Imaging in Routine Wound Assessment: Practical Lessons from Two Cases

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Introduction: Clinicians often use visual inspection and experience to confirm the presence of bacteria; however, the early signs are usually subtle. Fluorescence (FL) imaging gives a real-time insight into bacterial activity when the clinical findings are uncertain. Having this information instantly can influence how quickly a clinician can advance treatment or address bacterial burden before moving ahead.

Methods: Point-of-care FL imaging was used at an outpatient clinic. FL patterns were interpreted with visual findings to guide immediate, case-specific treatment decisions. Two cases are presented to show how FL imaging supported clinical decision-making.

Results: Case 1: A female patient aged 54 in treatment for leukemia presented with a complicated dental abscess that developed into a large anterior-neck necrotizing fasciitis. After debriding the infected tissue, a 58.3 cm2 wound extending to muscle and osseous planes was left behind. Despite such large size and morphology, no overt signs of bacterial involvement were evident visually in this wound bed after 1 week of antibiotic treatment. Confirmation of a low-bioburden environment is important before proceeding to add skin substitute for repair. The FL scan did not display red or cyan fluorescence, which was consistent with the visual cues indicating the absence of bacterial load at that time. This result supported the clinical team's decision to move ahead with their treatment plan using poly-tactic acid matrix and prevented unnecessary delay for this medically vulnerable patient. Case 2: A 61-year-old male had a traumatic wound measured 26.8 cm2 on the anterior lower leg. Although he received parenteral antibiotics, FL images showed both red and cyan fluorescence signals that suggest mixed bacterial activity, thus enabling the adjustment of antibiotics before considering skin substitute. These FL scans were utilized by the clinician to start a timely antimicrobial therapy and adjust the local wound-care plan. This occurred earlier than one might expect with surveillance based on visible changes and decreased the likelihood of subsequent complications, supporting earlier active management.

Discussion: These cases illustrate the potential of point-of-care FL imaging to provide immediate, objective information about bacterial presence and supplement standard-of-care wound assessment, improve decisions and overall outcomes

CS-135

Rethinking Surgery for Hidradenitis Suppurativa: a Staged Reconstruction with Resection, Repair with Restrata, and Recell

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Introduction: Traditional surgical approaches for hidradenitis suppurativa (HS) have remained largely unchanged for more than half a century. Patients with chronic, severe disease have historically undergone wide local excision with healing by secondary intention, and when feasible, skin grafting allowed for coverage of open wounds. Recent advances have focused on skin substitutes and regenerative materials that promote granulation even over poorly vascularized surfaces, creating a dermis-like layer capable of accepting skin grafts. However, the anatomic locations commonly affected by HS are prone to significant pain, poor graft adherence, high infection rates, and frequent reoperation, contributing to prolonged recovery and increased healthcare utilization. To address these limitations, the authors are utilizing newer medical products and technologies designed to enhance granulation, improve wound closure, and optimize outcomes for patients with HS.

Methods: A two-stage reconstructive approach was developed incorporating modern wound care technologies. Stage 1 involves wide local excision, wound cleansing with hypochlorous acid wound solution°, and placement of a granular synthetic wound matrix*. After approximately one month, adequate granulation develops to permit Stage 2 closure. At Stage 2, the superficial granulation layer is debrided using a hydrosurgery system‡, and final wound closure is performed with a 3:1 meshed split-thickness skin graft (STSG) combined with spray-on autologous skin cell suspension†. A retrospective chart review identified recent patients undergoing this staged approach. Time from Stage 1 to Stage 2 was measured as a proxy for granulation tissue maturity. Wound closure and recurrence were also evaluated.

Results: Six consecutive patients met inclusion criteria (two female, four male). Surgical sites included the axilla, perineum, perianal region, buttock, and scrotum. Mean defect size was 220 cm2 (range, 100–375 cm2). The mean interval from Stage 1 to Stage 2 was 22.7 days (SD, 11.91). Five of six patients reported postoperative pain after Stage 1. All patients achieved complete wound closure following Stage 2, with no recurrence during early follow-up and high patient satisfaction.

Discussion: This staged reconstructive approach, integrating synthetic wound matrices and regenerative principles, offers an effective and reproducible option for HS management. Early outcomes demonstrate reliable closure and favorable patient-reported results. Further investigation is warranted to better understand and mitigate postoperative pain.

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CS-136

Use of an Autologous Blood Patch System in the Management of Radiation-Induced Chronic Ulcers: an Ongoing Two-Patient Clinical Experience

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Introduction: Radiation-induced ulcers represent a highly complex category of chronic wounds characterized by tissue fibrosis, microvascular damage, chronic inflammation, and impaired cellular responsiveness. These wounds frequently fail to progress despite optimized standard of care and advanced wound therapies. Autologous, blood-based biologic treatments offer a promising strategy to restore local regenerative signaling in this uniquely compromised tissue environment. This report describes an ongoing clinical experience using a novel autologous blood technology in the management of radiation-associated chronic ulcers in oncology patients.

Methods: Two patients with chronic, non-healing ulcers secondary to radiotherapy are being treated with an autologous blood patch system as an adjunct to standard wound care. After routine wound bed preparation, a stabilized whole-blood clot is generated at the point of care from a small venous blood sample and applied directly to the wound bed. Treatments are performed weekly for up to 10 weeks. Clinical monitoring includes serial assessment of wound dimensions, granulation tissue development, epithelial migration, exudate level, local inflammation, and patient-reported pain. Photographic documentation is collected at each visit.

Results: At the time of abstract submission, both cases remain under active treatment. Early clinical observations indicate favorable wound-bed responses, including initiation of granulation tissue, improved tissue stability, and reduced exudate following initial applications. Preliminary trends suggest improved local tissue tolerance and patient comfort without evidence of treatment-related adverse events. Quantitative wound closure data and long-term outcomes are currently being collected and will be presented at the time of the SAWC conference.

Discussion: This ongoing clinical experience highlights the feasibility of using autologous, blood-based wound therapy in the management of radiation-induced ulcers, one of the most challenging categories of chronic wounds. Early observations support the potential of biologically active clot matrices to stabilize irradiated tissue and promote regenerative signaling. Presentation of final clinical outcomes is anticipated to inform future studies and define the role of autologous blood-based therapies in oncology-associated wound repair.

CS-137

Enhancing Healing Trajectories in Pressure Injuries Through Targeted Desloughing and Antimicrobial Control

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Introduction: Pressure injuries remain a significant challenge in the wound care setting, particularly among patients with reduced mobility or chronic illness. Suboptimal management, including ineffective dressing selection, can delay healing, increase infection risk, and allow progression to higher-stage wounds. Highly charged fiber dressings impregnated with silver provide continuous desloughing action and antimicrobial control, offering a promising option for chronic wounds at risk for or showing signs of infection. Evidence suggests these dressings can reduce exudate and slough burden while promoting granulation tissue formation in chronic wounds and pressure ulcers[1-3]. This case series underscores the importance of appropriate dressing selection in pressure injury care and highlights the benefits of highly charged fiber dressings in nonoperative management.

Methods: We present two nonoperative patients with advanced pressure injuries treated using highly charged fiber dressings as the primary therapy. Cases include a 73-year-old female with a stage IV buttock pressure injury and a 64-year-old male with a postoperative pressure wound near the ischium following prolonged immobilization. Dressings were applied per manufacturer guidelines and changed 2–3 times weekly. Wound progression was assessed through serial photographic documentation, slough burden evaluation, wound measurements, infection surveillance, and periwound assessment. A multidisciplinary approach incorporating offloading, nutritional optimization, coordinated wound care, and comorbidity management supported overall healing.

Results: Both wounds demonstrated marked improvement in wound bed quality following initiation of highly charged fiber dressings. Each case showed visible reduction in slough, enhanced granulation tissue formation, and decreased odor and drainage within the early weeks of therapy. The dressing was well tolerated, with no increase in pain or wound bed maceration. Both patients exhibited favorable healing trajectories and avoided the need for operative debridement.

Discussion: Highly charged fiber dressings offer dual benefits through gentle autolytic desloughing and antimicrobial activity, helping establish an optimal wound environment for tissue repair in contaminated or infection-prone pressure injuries. Current evidence supports their use

to reduce infection risk and enhance wound progression, particularly in patients who are not candidates for surgery. Findings from this case series reinforce the value of these dressings as an important component of multidisciplinary nonoperative pressure injury management.

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CS-138

Successful Use of Acellular Piscine Graft to Support Secondary Intention Healing in Pediatric Neurosurgical Wounds

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Introduction: To evaluate the clinical use of acellular intact fish-skin graft (pADM) as an adjunctive treatment for secondary-intention healing in postoperative neurosurgical wounds at a children's hospital.

Methods: A retrospective descriptive review was conducted of four patients—two neonates, one infant, and one young adult—who required secondary-intention healing after neurosurgical repair. Fish skin graft, medical-grade honey, and negative-pressure wound therapy were used. Dressing changes were performed every 3-5 days until complete healing. Data included wound characteristics, graft application, healing progression, complications, and need for further operative management.

Results: Across all four cases, pADM was well-tolerated with no graft-related adverse events. Wounds demonstrated accelerated granulation over vulnerable tissue and progressed to full epithelialization. The graft supported moisture balance, reduced wound burden, and promoted sufficient granulation to avoid further operative repair. Healing times were shorter than expected for comparable neurosurgical wounds managed with traditional dressings alone.

Discussion: This case series suggests that acellular intact fish-skin graft is a safe and effective adjunct for secondary-intention healing in complex pediatric neurosurgical wounds. Findings support further prospective evaluation and development of standardized protocols for their integration into pediatric neurosurgical wound care.

CS-139

The Successful Use of Hypochlorous Acid Solution in the Non-Surgical Management of Giant Omphaloceles in Neonates

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Introduction: Giant omphalocele (GO) presents a significant challenge in neonatal care, characterized by a thin, translucent sac through which abdominal contents—including the liver and other delicate structures—are visible. Because the sac is fragile and highly susceptible to rupture, maintaining its integrity from birth through complete epithelialization is essential. Effective wound care plays a critical role in preventing infection, supporting sac maturation, and optimizing outcomes while awaiting staged closure.

Methods: A standardized wound care protocol incorporating hypochlorous acid (HOCl) solution was implemented for neonates with GO. The protocol was used on two preterm neonates and one full-term neonate born with GO. In the early phase, the solution was applied gently to cleanse the fragile sac. As the sac matured and thickened, soft gauze was placed over the defect and the solution was applied over the gauze to achieve a controlled 3–5-minute soak. When granulation buds formed and the sac developed a slough-like layer, HOCl soaks continued, followed by gentle mechanical debridement of loosely adherent slough. A hydrofiber dressing and silicone border dressing were applied after each treatment, with dressing changes every 3–7 days depending on drainage, sac progression, and tolerance. Clinical responses—including sac stability, granulation, bioburden control, and infant tolerance—were monitored throughout hospitalization.

Results: Use of HOCl solution was associated with improved bioburden management, stable sac evolution, and favorable granulation without evidence of tissue irritation. The gentle cleansing properties and neutral pH supported atraumatic wound care, even in premature infants.

Discussion: Hypochlorous acid represents a safe and effective option in the non-surgical management of giant omphaloceles. Its use may reduce complications while awaiting staged closure. Further prospective evaluation is warranted.

CS-140

Post-Acute Care of Stalled Pressure Injuries with Placental Allografts

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Introduction: Pressure injuries (PIs) affect over 2.5 million U.S. patients annually and impose significant morbidity, mortality, and economic burden. Advanced-stage PIs often stall in post-acute care settings, where access to specialized wound care is limited. Here we report outcomes in a patients with a stalled stage-3 PI treated using placental allografts adjunctively to rigorous standard of care by mobile wound care specialists.

Methods: Individualized treatment plans included diagnostic monitoring (nutrition, perfusion, bioburden), caregiver education, and standard interventions (debridement, offloading, compression). When wounds failed to progress, lyophilized human amnion/chorion membrane (LHACM) allografts were applied weekly or biweekly until closure. Wound size and characteristics were tracked longitudinally.

Results: Subject achieved complete closure following escalation to placental allografts after prolonged non-healing under standard care. No recurrences were observed during follow-up. These findings align with prior evidence supporting LHACM efficacy in chronic wounds.

Discussion: Mobile wound care specialists combined with placental allografts may provide an effective strategy for closing stalled PIs in post-acute settings, improving outcomes and reducing complications in high-risk populations. Controlled studies are needed to confirm effectiveness and cost-benefit.

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CS-141

Point-Of-Care Multimodal Imaging in Mobile Chronic Wound Care: Insights from a Case Series

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Introduction: Chronic wounds represent a silent epidemic, affecting approximately 10.5 million Medicare beneficiaries in the United States and imposing an annual cost of $22.5 billion on Medicare alone.1 In mobile wound care settings, limited access to advanced diagnostics often delays the detection of perfusion deficits, infections, and atypical pathologies.2 Multimodal imaging — integrating digital photography, near-infrared spectroscopy (NIRS), and thermography — offers an innovative point-of-care solution, providing real-time assessment of tissue oxygenation (StO_2) and temperature as a surrogate marker for infection. This case series investigates the clinical utility of a multimodal imaging in guiding interventions to optimize outcomes for chronic wounds in mobile care environments.

Methods: Six adult patients with chronic wounds, including venous stasis ulcers, post-amputation stumps, atypical calf wounds, and

lymphedema-associated wounds, were evaluated in mobile care settings. Patients had multiple comorbidities, such as peripheral vascular disease, arthritis, cellulitis, microvascular disease, and edema. A pocket-sized multimodal imaging device* was used at the point of care to assess wound characteristics.

Results: Multimodal imaging provided actionable insights across all six patients by differentiating tissue perfusion, infection, and atypical wound conditions. In wounds with adequate perfusion, such as the venous stasis ulcer, mean wound bed StO2 exceeded 50% with heterogeneous periwound oxygenation, indicating strong healing potential. Cases exhibiting early compromise demonstrated elevated periwound temperature and oxygenation (97–100%), allowing proactive management before overt tissue injury. Imaging also helped rule out vascular deficits and redirect diagnoses in atypical wounds, as seen in the posterior calf case diagnosed with mycosis fungoides. For wounds with evolving perfusion deficits, serial assessments enabled timely interventions to mitigate complications. Poorly perfused wounds showed limited healing potential, prompting vascular referral and close monitoring. Thermography aided in detecting infection and monitoring treatment response, with localized hotspots (ΔT >4°F) observed even after infection resolution.

Discussion: Point-of-care multimodal imaging facilitates early identification of perfusion deficits, skin compromise, and atypical wound conditions, allowing timely, targeted interventions in mobile care settings. By providing real-time, actionable insights, this technology helps overcome limitations of traditional visual assessments, supporting more accurate clinical decision-making. Portable imaging devices have the potential to improve care delivery, enhance patient outcomes, and promote equitable, efficient wound management in resource-limited and underserved environments.

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CS-142

A Complex Case Study Showing the Use of Biodegradable Bilayer Synthetic Matrix in the Treatment of Necrotizing Fasciitis of the Forearm and Hand

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Introduction: Necrotizing fasciitis, a soft tissue infection, travels along the fascial plane, causing secondary infection of surrounding tissue (1). Skin breakdown, accompanied by bullae and cutaneous gangrene, can progress to sepsis. Treatment involves empiric antibiotics, an aggressive surgical approach, and adjustment of antimicrobial coverage to identified pathogens (1).

Methods: This patient [history of lupus (on steroids), nicotine use and obesity], presented with a blister on the right hand with pain, hypotension, redness, swelling, with bullae and ecchymoses. She went for surgical irrigation and debridement (I&D) of right hand, with purulence noted in dorsum of her hand. Necrotizing infection of the right hand and forearm was noted, accompanied by sepsis. Over the subsequent nine days, she went through four more I&D surgeries with the ortho service. Once systemic infection was improving, plastic surgery was consulted for soft tissue coverage over right dorsum of hand with exposed tendons. The wound was excised and a biodegradable bilayer synthetic matrix (BBSM) applied, with negative pressure wound therapy (NPWT) initiated for three weeks. Daily PT/OT was started following BBSM placement, and continued outpatient. Thirteen days following BBSM placement, it appeared well vascularized. Plastic surgery did an outpatient wound excision and application of split-thickness skin graft ten weeks following placement of BBSM. NPWT was utilized following grafting and PT/OT continued. Lost to follow-up, the patient presented with an unrelated injury 13 months later where 100% skin graft take was noted, though there was a chronic DIP ulnar deviation deformity in her right index finger that was amputated at the level of DIP joint.

Results: The mortality rate of necrotizing fasciitis is 30-90%, with better prognosis with immediate radical debridement and treatment with empiric antibiotics (1). This patient's favorable outcome was due to the rapid initiation of treatment. The BBSM provided a scaffold that allowed neovascularization and fibroblastic activity, with the sealing membrane protecting the wound, creating a dermal-like bed for subsequent grafting (2).

Discussion: The use of BBSM for treatment of necrotizing fasciitis is a viable alternative to traditional reconstruction due to its resilience to infection. This case presented a challenging wound with exposed avascular structures.

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CS-143

A Patient-Managed Dual-Product Dressing Strategy Post Mohs Surgery: Collagen–mānuka Honey–hydroxyapatite with Silicone Bordered SAP Dressing

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Introduction: Mohs micrographic surgery (MMS) is a skin cancer removal procedure that produces postoperative wounds that can often be difficult to heal due to reduced vascularity, fragile/thin skin, and coexisting medical conditions. Although secondary intention healing (SIH) remains a standard management approach, it may be associated with prolonged healing and less favorable cosmetic outcomes. Published wound care strategies in this setting traditionally emphasize wound closure (surface area) using a single-product intervention. In contrast, an affordable deliberate dual-dressing strategy, pairing a bioengineered primary dressing with a proactive yet gentle super absorbing secondary cover, may more effectively support both deep tissue repair and surface healing in post-MMS cases. This case series highlights the clinical success observed with a specific combination treatment plan: daily reapplication of a collagen–Mānuka honey–hydroxyapatite dressing (CHD) used as the primary contact layer and a silicone bordered SAP (superabsorbent polymer) cover used as the secondary wound dressing, together enabling consistent, patient-managed wound progression after MMS.

Methods: This case series evaluated an insurance-reimbursed, dual-product approach using the CHD with a silicone bordered SAP cover in nine post-MMS wounds managed by SIH. Patients received both dressings and an antimicrobial wound irrigation solution via a durable medical equipment (DME) home-delivery model and self-applied the dressings at home according to manufacturer guidelines. Healing progression was documented with before-and-after images and assessed qualitatively for granulation tissue formation, erythema/inflammation, and epithelialization and quantitively for wound depth.

Results: The average wound area was 8.4 cm2 with an average depth of 0.6 cm. Across all cases, the CHD + silicone bordered SAP dual-dressing regimen was associated with clear clinical improvement, including full re-volumization within 6 weeks (average), increased granulation tissue, reduced erythema, and progressive closure, even in wounds with exposed underlying tissue.

Discussion: These real-world findings suggest that the specific combination of the CHD and a silicone bordered SAP can support effective healing in post-MMS wounds managed by SIH. Beyond wound progression, the affordable, insurance-covered DME home-delivery model may improve access and support adherence in an older, comorbidity-burdened patient population. Collectively, this two-product, patient-managed

approach represents an accessible, clinically effective, low-cost, and patient-centered option for enhancing outcomes in dermatologic surgery.

CS-144

Same Day Repair Using Fish Skin Graft Applications Post Mohs Surgery for Facial Carcinomas

Russell Rowe, MD, MBA

Introduction: Mohs Micrographic Surgery is employed to remove cutaneous carcinomas, primarily from the face. Mohs Surgery techniques ensures complete removal of contiguous skin cancers while preserving maximal normal tissue. It is a tumor tracking, tissue sparing procedure. Often the resultant defect requires repairs that may involve large tissue transfers or significant full or partial thickness skin grafts to achieve wound closure and adequate healing. In this case series of facial surgical defects, novel skin substitute "grafts" from the skin of the white fish of the north Icelandic Sea were employed to achieve optimal functional and cosmetic results.

Methods: Each patient presented to the Mohs Surgery team with a biopsy proven non melanotic skin cancer (NMSC) located on the face. Mohs surgery technique was used to remove the skin cancers. The tissue is removed from the patient and taken to the adjacent lab. The tissue is frozen, cut in 6-micron sections, placed on glass slides, stained and then reviewed under microscopy by the Mohs surgeon. Examination of the margin ensures complete removal of the skin cancer. Repair options, to include healing by secondary intent, closure with a graft or flap and skin substitute application are discussed with the patient. Prior to placement of the skin substitute, all excess bleeding was controlled with electrofulguration. The graft was templated to the defect and then cut to fit the exact dimensions. The graft was soaked in normal saline for 2-3 minutes and then applied to the wound bed. It was held in place with fenestrated opsite and covered with a nonadherent bandage until the one-week follow up.

Results: The cosmetic and functional results of fish skin grafts were exceptional. The patients achieved excellent cosmetic results without additional scars from repairs with flaps and grafts. The fish skin grafts allowed innate healing with minimal scarring. Secondary applications did not require aggressive anesthetized debridement.

Discussion: All patients reported that they were extremely pleased with the process and the results. Patients appreciated the "Band-Aids that are made from fish, melt into the wound and heal the defect."

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CS-145

Healing Multiple 12-Year-Old Chronic VLUS: a Success Story Using a Thermo-Reversible Antimicrobial Wound Gel

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Introduction: Chronic venous leg ulcers (VLUs) are often complicated by biofilm-driven infection, increased protease activity and subsequent delayed healing. Effective management requires strategies that disrupt biofilms, rebalance the wound environment, and maintain hygiene. This case study evaluates the impact of a thermo-reversible antimicrobial wound gel (TRG) designed for advanced wound hygiene when used in a patient with complex comorbidities and multiple hard-to-heal wounds.

Methods: A 62-year-old female with a 12-year history of circumferential VLUs with a re-occurrence 10 months prior to study initiation. Comorbidities include diabetes, obesity, and chronic phlebolymphedema. The patient was treated over 27 weeks incorporating TRG into wound hygiene protocols including compression, elevation, and debridement. Wound measurements were recorded across four leg regions (anterior, lateral, medial, posterior) at multiple time points. Outcomes included percent wound area reduction, qualitative changes in tissue composition, and pain scores.

Results: Baseline cumulative wound area was 120.2 cm^2 and swabs confirm pseudomonas aeruginosa infection. By Week 27, total wound size decreased to 18.4 cm^2, representing an 85% overall reduction in wound sizes. Individual wounds demonstrated marked improvement: medial leg reduced from 45.3 cm^2 to 4.9 cm^2, lateral leg from 30.0 cm^2 to 3.8 cm2, and posterior leg from 29.6 cm^2 to 9.7 cm^2. Tissue transitioned from slough and necrosis to granulation and epithelialization. Pain scores declined from 10/10 to 0–3/10 during later visits.

Discussion: Biofilm-related chronic infection leads to non-healing wounds. Keeping wounds free of biofilm, optimally hydrated, at the correct pH, physiologically balanced, and clean is essential for converting non-healing wounds to healing wounds. Previous data has shown that TRG keeps the wound moist at the right pH for autolytic debridement, deactivates elevated protease levels, breaks up biofilm structures, and provides a protective barrier against re-colonization of the wound. In this case study, a high-risk patient with multiple comorbidities and 10-year-old recurring VLUs, starting using the TRG. It was observed that wound healing restarted and accelerated with progressively improved tissue composition with reduction in pain. This case suggests that advanced wound hygiene strategies may help reduce care burden in complex wounds.

CS-146

Management of a Chronic Tunneling Wound in a Quadriplegic Patient Using the Novel Thermo-Reversible Antimicrobial Wound Gel

Miloslav Sailer, PhD; Robert B. Huiziinga, RN PhD; Hussam E. Itani, MSc. MD; John Viel, PhD

Introduction: Chronic tunneling wounds present significant challenges in healing, especially in patients with limited mobility. Another complication for treatment is access to into deep cavities for topical agents and dressings. Limited accessibility and mobility usually lead to elevated bacterial burden and persistent inflammation resulting in prolonged wound duration and increased risk of surgical intervention. This case describes the use of a novel Thermo-Reversible Antimicrobial Wound Gel (TRG)in a quadriplegic patient with a long-standing tunneling wound reaching bone.

Methods: A 52-year-old male with quadriplegia presented with a tunneling wound of 1.5-year duration, measuring approximately 7.8 cm in depth and 1.7 cm2 in surface area, with exposed bone. Prior management included Vashe wound solution, zinc cream, and gauze packing, with minimal improvement. Pain was reported at 6/10. TRG was introduced as part of the wound care regimen, liquefied at 10°C, and applied directly to the wound bed and into the tunnel, followed by appropriate secondary dressing. Progress was monitored weekly for six weeks, assessing wound dimensions, pain score, and overall quality of life.

Results: After six weeks of TRG treatment, surface area was reduced from 1.7 cm2 to 0.5 cm2 and wound depth decreased from 7.8 cm to 6.8 cm. Bone exposure was resolved. Pain score improved from 6/10 to 2/10. The patient reported significant improvement in comfort and mobility, and surgical intervention was avoided due to positive healing progression.

Discussion: This case demonstrates the potential of TRG to accelerate healing in complex tunneling wounds, reduce pain, and improve quality of life in patients with severe mobility limitations. The ability to utilize the thermos-reversible nature of TRG by liquifying at cooler temperatures, fill the deep cavity wound, and re-solidify, is a unique feature of this gel demonstrating its versatility. The observed reduction in wound depth and surface area, along with pain improvement, suggests that the use of TRG in this case converted a non-healing wound into a healing wound, and may offer an effective alternative to prolonged conventional therapy and expensive surgical procedures.

CS-147

Accelerating Closure in Chronic DFUS: Healing Outcomes from a Six-Patient Borate-Based Bioactive Glass Fiber Matrix

(BBGFM) Case Series

Ram Sakkab, DPM, AACFAS

Introduction: Diabetic foot ulcers (DFUs) remain a leading cause of lower-extremity morbidity, often characterized by prolonged healing trajectories, high recurrence rates, and risk for infection-related complications.[1] Advanced wound matrices, including Borate-Based Bioactive Glass Fiber Matrix (BBGFM), have emerged as potential adjuncts to guideline-directed care by facilitating an optimal wound environment conducive to granulation and re-epithelialization.[2] This case series evaluates outcomes following BBGFM application in six chronic DFUs with variable complexity, chronicity, and infection burden.

Methods: Six patients with chronic DFUs of at least 6 weeks' duration were treated with BBGFM as an adjunct to standard evidence-based wound care. Data collected included patient age, wound location, chronicity, HbA1c, microbiologic or clinical infection status, timing of first BBGFM application, and time to complete epithelialization. All wounds were offloaded according to standard of care, and infection was managed per institutional protocols when present. Patients were followed until full closure, defined as 100% epithelialization without drainage.

Results: The mean patient age was 68.5 years and mean wound chronicity prior to first BBGFM application was 15.86 weeks. Average HbA1c across the cohort was 7.52, reflecting generally moderate glycemic control. Three of six patients demonstrated infection or osteomyelitis at presentation. BBGFM was initiated at varying points in the treatment course (range: 0–12 weeks), with an average initiation point of 6 weeks into care. Following the first application, the mean time to complete wound healing was 12.43 weeks. Individual time-to-closure ranged from 5.5 to 26 weeks, with earlier BBGFM application appearing qualitatively associated with shorter healing durations in several cases. Notably, both Charcot-related ulcers and amputation-site wounds demonstrated favorable trajectories following matrix application, even in cases with documented bone involvement.

Discussion: In this six-patient case series of chronic, complex DFUs, half of which presented with active infection, adjunctive use of BBGFM was associated with consistent wound closure, with an average healing time of 12.43 weeks after first application. These findings support the potential value of BBGFM in managing recalcitrant DFUs.

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CS-148

Skin Cell Suspension Autograft from Glabrous Donor for Plantar Foot Wounds: a Case Series

Sarah Sample-Eppinger, DMP; Britney Lipps, DPM

Introduction: Regardless of etiology, plantar foot wounds are among the most challenging to manage as these wounds are often complicated by mechanical forces, poor vascularity, and neuropathy. As a result, traditional autografts, particularly meshed split-thickness skin grafts (mSTSGs), often face durability issues on the plantar surface. Great emphasis should be placed on wound healing and functional limb preservation. This case series highlights the utilization of glabrous skin-derived skin cell suspension autograft (SCSA) combined with mSTSG to achieve durable wound closure and limb salvage in complex plantar foot wounds.

Methods: A retrospective chart review was conducted of 3 patients with complex plantar foot wounds and multiple co-morbidities. After thorough debridement and establishment of a well-vascularized wound bed, glabrous donor skin was harvested using a dermatome to prepare SCSA. The first pass was harvested at 0.020 inches and set aside for later use. A second pass at 0.008 inches was then harvested and processed for SCSA. The thicker first-pass graft was subsequently secured over the plantar surface donor site to serve as a biological dressing. The mSTSG donor site was harvested from either the calf or thigh and meshed at either a 3:1 or 6:1 mesh ratio. The cell suspension was applied over mSTSG for the plantar foot wounds. Data collected included patient demographics, wound etiology, percent graft take, percent re-epithelialization, time to healing, and long-term outcomes including graft durability and return to baseline functioning.

Results: Wound etiologies included 2 cases of wet gangrene and one case with multi-factorial causes involving vascular issues, diabetes, and pressure. The average wound size was 23.6 cm^2. Mean percent graft take was 96.6% and percent re-epithelialization for all 3 patients was 100%. The median time to complete wound closure was 48 days. All 3 cases had achieved baseline mobility, functional limb preservation, and no durability issues were noted at their 1-year follow-up.

Discussion: Utilization of SCSA derived from glabrous skin in conjunction with mSTSG supported limb salvage in all cases. This approach may enhance graft durability on plantar surfaces, minimize donor site morbidity, and promote timely and robust wound healing.

CS-149

Successful Healing of a 4-Year-Old Refractory Wound Following Skin Cell Suspension Autograft and Meshed Split-Thickness Skin Graft: a Case Study

Sarah Sample-Eppinger, DPM; Britney Lipps, DPM

Introduction: Wounds lasting longer than 12 weeks can significantly impact patient quality of life, often requiring multiple interventions with limited success. When traditional wound healing modalities fail to generate a well-vascularized wound bed and re-epithelialization, alternative techniques should be considered. When applied in conjunction with a meshed split-thickness skin graft (mSTSG), skin cell suspension autograft (SCSA) supports closure of chronic wounds by accelerating epithelial coverage, thereby reducing the time to healing and minimizing graft complications. This case involves 4-year-old chronic bilateral lower extremity wounds that successfully achieved wound closure following treatment with a mSTSG and SCSA.

Methods: A 51-year-old male presented with bilateral lower extremity wounds resulting from polysubstance abuse and subsequent skin necrosis. He had multiple co-morbidities including methicillin-resistant Staphylococcus aureus, a history of endocarditis, homelessness, and severe protein/calorie malnutrition. Wound sizes measured 27.5 cm2 on the left leg and 225 cm2 on the right. Over 4 years, the patient experienced 15 admissions and was evaluated by orthopedics, general surgery, and podiatry. Initial wound management included multiple debridements and three rounds of intravenous antibiotics. Negative pressure wound therapy (NPWT) was utilized to support wound bed preparation prior to grafting. Once well-vascularized, the wound beds were treated with 6:1 mSTSGs, with donor skin harvested from the bilateral thighs. SCSA was subsequently applied and covered with non-adherent dressing and NPWT. The patient was discharged to a skilled nursing facility on the day of autografting and underwent routine outpatient follow-up to monitor re-epithelialization, wound healing, and complications.

Results: Complete wound closure (100% re-epithelialization) was achieved on day 16 post-autografting for the left lower leg wound and day 93 for the right lower leg wound. At the 9-month follow-up, the patient had no wound recurrence, complications, or readmissions.

Discussion: This case demonstrates that combining mSTSG with SCSA can facilitate healing in difficult chronic wounds unresponsive to traditional treatments. SCSA provides effective re-epithelialization of mSTSG interstices and sustained closure when other modalities fail as evident in successfully closing these 4-year-old lower leg wounds. This approach may offer a viable option for challenging wounds with compromised healing.

CS-150

Adjunctive Borate-Based Bioactive Glass Fiber Matrix (BBGFM) Therapy Enhances Granulation and Closure in

Chronic Diabetic Foot Ulcers

Richard A. Schilling, DPM, FACFAS; Scott Littrell, DPM

Introduction: Diabetic foot ulcers (DFUs) remain a major clinical challenge due to impaired perfusion, chronic inflammation, and high susceptibility to infection.[1,2] Advanced biologically active matrices have emerged as adjunctive therapies to support wound bed preparation and progression toward closure. Randomized controlled trials have reported improved wound healing trajectories and high rates of wound closure when BBGFM is integrated into standard diabetic foot care protocols, highlighting its potential to accelerate wound resolution and reduce downstream complications.[1,2] Building on this emerging evidence, we conducted a clinical case series evaluating BBGFM in real-world patients with complex DFUs receiving guideline-based care.

Methods: Seven patients with DFUs of varying size, duration, and complexity were followed. All participants continued standard wound management including moisture balance, offloading or compression, debridement as indicated, and scheduled follow-up. BBGFM was applied and wound area was measured at baseline and weekly thereafter until closure or substantial improvement. Clinical observations, infection control, suitability for surgical intervention, and progression to advanced therapies (e.g., wound vacuum assisted closure (VAC)) were documented.

Results: Across the seven cases, baseline wound areas ranged from 1.0–14 cm2. All wounds demonstrated reduction in size, improved granulation tissue, or complete closure.

- Case-1: Reduced from 1.2 cm^2 to 0.64 cm2 over 16 visits despite poor offloading adherence and suboptimal glucose control; wound remained clean with granulation.
- Case-2: Two DFUs (1.69 cm2 and 2.1 cm^2) progressed to 0.0 cm2 and 0.16 cm^2 after 9 visits.
- Case-3: Reduced from 3.0 cm^2 to 2.25 cm^2 in 3 visits, enabling surgical planning.
- Case-4: Reduced from 3.64 cm^2 to 0.91 cm^2 over 11 visits and transitioned successfully to VAC utilization.
- Case-5: Large DFU (14 cm^2) reduced to 6.25 cm^2 in 6 visits, generating granulation prior to limb surgery.
- Case-6: From 8.75 cm^2 to full closure in 8 visits when used with wound VAC.
- Case-7: From 1.0 cm^2 to closure in 4 visits with controlled infection.

Discussion: Across diverse DFU presentations, BBGFM supported rapid granulation and wound size reduction, often enabling timely surgical intervention, adjunct therapy use, or complete closure. These findings align with prior published results and support the adjunctive use of BBGFM within standard DFU care pathways.

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CS-151

Regenerative Healing of a Chronic Diabetic Foot Ulcer Using Borate-Based Bioactive Glass Fiber Matrix with Offloading via CROW Boot: a Case Study

Natalie Scott, BSN, RN, CWOCN; Magen Bissell, AGNP-C, WCC, OMS

Introduction: Chronic diabetic foot ulcers (DFUs) are a leading cause of lower extremity amputation, contributing to >80% of diabetes related limb loss globally. [1] Approximately 40% of DFUs fail to heal despite appropriate offloading and use of advanced wound care modalities. These refractory wounds are characterized by dysregulated inflammation, cellular senescence, impaired angiogenesis, and disrupted extracellular matrix (ECM) remodeling.[2–4] Bioactive glass fiber matrix like materials, have demonstrated regenerative potential via ionic dissolution products that modulate macrophage phenotype, enhance angiogenic signaling, and promote fibroblast-mediated ECM deposition.[5–7] This case study examines the use of a resorbable borate-based bioactive glass fiber matrix (BBGFM) in conjunction with strict offloading using a CROW (Charcot Restraint Orthotic Walker) boot for a recalcitrant plantar DFU unresponsive to prior interventions.

Methods: A 65-year-old male with a Wagner Grade 1 plantar DFU presented with a 3-year history of a recalcitrant ulcer, characterized by repeated cycles of reopening and delayed healing. The wound had failed to respond to standard of care and multiple cellular and tissue-based products (CTPs). A new protocol was initiated using a BBGFM applied weekly for five consecutive treatments. The patient was fitted with a CROW (Charcot Restraint Orthotic Walker) boot to provide offloading throughout the study period. Wound healing progression was assessed using measurements of wound length, width, depth, percentage granulation, and epithelialization at each visit. The matrix's biocompatibility, ease of application, and any adverse events were also recorded.

Results: The wound demonstrated robust granulation and progressive epithelial migration within the first 3 applications of the BBGFM. After the fifth treatment, the wound was fully epithelialized with complete resolution of drainage and no clinical signs of infection or local inflammation. No adverse reactions to the matrix were observed. Offloading with the CROW boot was maintained without interruption. The BBGFM was well-tolerated, conformed easily to the wound bed, and integrated seamlessly into outpatient wound care protocols.

Discussion: This case provides clinical evidence supporting the effectiveness of borate-based bioactive glass matrix therapy in managing chronic DFUs resistant to conventional treatments. The observed outcomes suggest that the mechanism of action of the bioactive glass, in concert with mechanical offloading, can restore wound trajectory in stalled chronic ulcers. Further controlled studies are warranted to validate these findings and define the optimal integration of BBGFM in limb salvage protocols.

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CS-152

Impact of Flowable Micronized Porcine Urinary Bladder Matrix in Ostomy Reversal Wounds

William Sellers, DO; Claire E. Witherel, PhD

Introduction: Ostomy reversal procedures create high-risk wounds due to potential bacterial contamination, tissue undermining, and challenges with postoperative wound management. Standard purse-string closure techniques often require open wound packing and prolonged home health nursing support to facilitate healing by secondary intention.

Biologic extracellular matrix scaffolds, such as porcine urinary bladder matrix (UBM), has shown utility in supporting complex wound management in various specialties including trauma, chronic wounds, and diabetic wounds.

Methods: This retrospective case series evaluates 5 patients undergoing ostomy reversal, where flowable micronized porcine urinary bladder matrix was used as an adjunct to a purse-string closure technique. Following stoma takedown, UBM was delivered using a flexible-tip applicator to fill undermined wound cavities rather than traditional gauze packing. Wounds were postoperatively managed with a standard dressing protocol following UBM application. Clinical outcomes assessed included time to wound closure, postoperative complications, need for home health nursing support, and patient satisfaction.

Results: Across the reviewed cases, adjunctive use of flowable UBM was associated with accelerated wound closure (compared to typical healing times) despite the high-risk, potentially contaminated nature of the wounds. Patients achieved closure from 6-8 weeks. No wound-related infections or adverse events were observed. Notably, patients required minimal to no postoperative home health nursing support compared with patients who receive standard wound packing during their ostomy reversal.

Discussion: Use of flowable micronized porcine urinary bladder matrix at the time of ostomy reversal supports wound closure and decreases reliance on postoperative home health services. These findings suggest UBM may offer a valuable adjunct in managing high-risk, contaminated surgical wounds and warrant further prospective evaluation and comparison to standard of care.

CS-156

Bacterial Autofluorescence Imaging to Guide Debridement in Chronic Wounds: Case Series

Tyler Sexton, MD; Catherine Balavender, -; Najratun N. Pinky, PhD; Christopher Barrett, DPM, CWS, MAPWCA; Jeffrey A. Niezgoda, MD, FACHM, MAPWCA, CHWS

Introduction: Effective wound bed preparation is critical for healing, yet bacterial burden often remains undetected by visual inspection alone. Bacterial autofluorescence imaging technology enables real time visualization of bacterial fluorescence, guiding targeted debridement. This case series illustrates its clinical utility in diverse wound types.

Methods: Four patients with chronic wounds underwent bacterial autofluorescence imaging (SnapshotGLO, Kent Imaging Inc., Calgary, Canada) prior to and during debridement. Imaging identified areas of bacterial fluorescence, which guided the removal of dead, damaged or infected tissue using appropriate techniques such as ultrasonic, curettes, or plasma jet debridement. Clinical progress was monitored until healing or substantial improvement.

Results: Case 1: 78 year old male with diabetic foot ulcer (DFU) treated with ultrasonic debridement guided by imaging; wound healed. Case 2: 92 year old male with traumatic right ankle wound; curette debridement performed guided by imaging; wound progressing toward closure. Case 3: 78 year old female with chronic right ankle ulcer complicated by lymphedema, CHF, and varicose veins; plasma jet debridement was used guided by imaging; wound progressing toward closure. Case 4: 66 year old male with DFU and CKD stage 3; ultrasonic debridement was used guided by imaging; wound progressing toward closure. In all cases, fluorescence imaging revealed bacterial hotspots not apparent on visual assessment, enabling precise removal and reducing bioburden.

Discussion: Fluorescence imaging provided actionable information during debridement, improving wound bed preparation and supporting healing in complex cases. This technology may enhance clinical decision making, particularly in patients with comorbidities or wounds refractory to standard care. Further studies are warranted to quantify its impact on healing rates and resource utilization.

Disclosure: "Generative AI or AI-assisted technology was used in the preparation of this work. All AI-generated content was reviewed and edited by the author(s), who accept full responsibility for its accuracy and integrity." AI was ONLY used for text drafting to ensure better readability.

CS-157

Use of a Dehydrated Amnion/Chorion Membrane Improves Lower Leg Surgical Wound Healing: a Four-Case Series

Umayr R. Shaikh, MPH; Leela K. Raj, BA; Christopher G. Richter, BS; H. William Higgins, MD, MBE

Introduction: Distal lower-extremity wounds left to heal by secondary intention after cutaneous oncology excision often re-epithelialize slowly and are prone to hypergranulation, pain, and bioburden. Biologic matrices such as dehydrated amnion/chorion membrane (dHACM)* may modulate inflammation and provide an extracellular scaffold, yet practical details for pairing dHACM with secondary intention after Mohs micrographic surgery are limited.

Methods: We performed a retrospective case series at a dermatologic surgery clinic, abstracting procedural and follow-up documentation for four consecutive lower-leg Mohs defects intentionally managed by secondary intention with adjunct dHACM. Variables included histology, anatomic site, dHACM piece count and total dimensions (cm/cm2), aggregate surface area, dressings, antibiotics/analgesics, adjunct wound therapies, early healing descriptors, and plans for re-application. Cases were de-identified; no patient-identifying information is included.

Results: Four lower-leg Mohs wounds received intraoperative dHACM placement beneath nonadherent pressure dressings. Utilization followed three observable patterns: single-piece application (n=1) for a compact defect (2 cm2); single-site multi-piece augmentation (n=2), defined as multiple dHACM pieces applied to a single irregular wound bed (examples: 3×2 cm plus 1.6 cm2 [~7.6 cm2 total] and two pieces documented as 20 cm2 and 8 cm2 on the same operative date); and multi-site tiling (n=1), defined as distribution of multiple dHACM pieces across distinct defects, for extensive bilateral shin disease (aggregate ~50 cm2). Early follow-up across all cases documented wounds healing well without evidence of infection or other early complications. Hypergranulation was observed only in the multi-site tiling case and was successfully treated with silver nitrate and a brief course of mid-potency topical corticosteroid. One chart explicitly documented no antibiotic use; analgesia was offered as needed. Several operative notes prespecified consideration of dHACM re-application at approximately 7–14 days based on clinical progress.

Discussion: In this clinic-based series, pairing dHACM with secondary intention after lower-leg Mohs was feasible across diverse defect sizes, with smooth early courses and manageable hypergranulation. The cases outline actionable techniques for sizing (single piece, augmentation, tiling), dressing workflow, and a simple re-application decision at day 7–14. These operational details can inform protocolized use and prospective evaluation of time to epithelialization, infection, pain, dressing burden, and cost-effectiveness.

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CS-158

Use of a Icelandic Fish Skin Xenograft in the Treatment of an Exposed Tibialis Anterior Tendon in a Chronic Lower Extremity Wound with Adjunctive NPWT

Greg Sheremeta, DPM

Introduction: Chronic lower extremity wounds with exposed tendon represent a significant challenge, particularly in patients with multiple comorbidities. Peripheral vascular disease and long-term tobacco usage are well-recognized risk factors for delayed healing due to compromised perfusion, impaired oxygen delivery and chronic inflammatory changes. This case involves a 61 year old male with a history of PVD and 30-year smoking history who presented due to a chronic lower extremity wound with a fully exposed Tibialis Anterior tendon. He has failed multiple rounds of conservative therapies, including standard local wound care. Despite these treatments, the wound failed to progress and eventually deteriorated to a point of potential limb loss. Advanced biologic wound therapies have emerged as an important adjunct in the treatment of complex non-healing wounds. Icelandic fish skin matrices are decellularized xenograft rich in Omega-3 fatty acids and structurally similar to human dermis, offering a scaffold that supports granulation tissue formation while minimizing inflammatory response. This case study highlights the use of an Icelandic fish skin substitute in facilitating granulation and wound progression in a high-risk patient with a fully exposed Tibialis Anterior tendon.

Methods: Patient was treated with wide surgical excisional debridement with application of Icelandic Cod Skin Substitute and adjunctive negative pressure wound therapy, while being immobilization in a CAM walker. He was then followed on a bi-weekly basis in the wound care center for repeat serial debridement and reapplication of NPWT.

Results: Patient followed up bi-weekly post debridement and application of Fisk Skin Xenograft. There was significant progression of the wound with rapid granulation tissue formation over the course of 8 weeks. Patient retained full functionality of the tendon during the course of wound care therapy. Patient went on to fully heal after 5 months time.

Discussion: This case highlights the importance of early recognition of wounds at high risk for non-healing, particularly in patients with significant vascular disease and long standing tobacco use. When standard local wound care fails to produce measurable progress, timely escalation to advanced biologic therapies may help prevent further exposure of critical structures. The successful use of an Icelandic fish skin matrix in this patient suggests that biologic scaffolds can facilitate granulation over exposed tendon even in a compromised host, potentially expanding limb-salvage options. Additionally, this experience underscores the value of a multi-modal wound care approach and individualizes treatment planning when managing complex lower extremity wounds.

CS-159

Advancing Secondary Intention Healing in Complex Post-Mohs Defects with a Bioactive Glass Fiber Matrix (BBGFM)

Richard simman, MD, FACS, FACCWS

Introduction: Non-healing post-Mohs surgical wounds present a substantial clinical management challenge, particularly when complicated by exposed bone, delayed granulation, or patient-specific factors that limit reconstructive options. Although many postoperative defects heal reliably by secondary intention, a subset, especially those involving deeper structures or prolonged tissue desiccation, fail to progress using standard wound care alone.[1,2] Advanced adjunctive therapies may be required to optimize the wound environment and support re-epithelialization. A Borate-Based Bioactive Glass Fiber Matrix (BBGFM), a fully resorbable, degradable scaffold designed to maintain physiologic moisture balance, has emerged as a potential option for complex surgical wound beds. This case series describes two non-healing Mohs defects treated with BBGFM.

Methods: Two patients with recalcitrant post-Mohs wounds were managed in an outpatient wound center.

- Case 1: A forehead defect that remained non-healing one month after Mohs excision of a basal cell carcinoma. The wound exhibited minimal granulation and early contraction failure. BBGFM was applied weekly with moisture-balancing secondary dressings.
- Case 2: A chronic scalp wound three months post-Mohs surgery for a basal cell carcinoma, presenting with exposed, desiccated calvarial bone and lack of granulation following prior treatment with a dehydrated amniotic membrane graft. The patient declined rotational flap closure. Over ten weeks, the wound received five applications of BBGFM alongside local wound care focused on hydration, protection, and gentle mechanical debridement when appropriate.

Results: Both Mohs cases demonstrated favorable healing trajectories following BBGFM application.

- The forehead defect developed a robust, well-vascularized granulation base and achieved substantial epithelial advancement within five weeks, requiring three total applications.
- The chronic scalp defect, initially characterized by exposed bone and stalled healing, progressed to approximately 95% closure over ten weeks, with soft tissue coverage forming reliably over areas of previously desiccated calvarium. No adverse events or treatment-related complications were observed.

Discussion: In this small series, BBGFM functioned as a useful adjunctive therapy for complex post-Mohs wounds that had failed to progress with standard care. Improvements were seen in granulation quality, epithelial migration, and overall wound trajectory, suggesting potential value for patients who are poor surgical candidates or present with challenging anatomic or tissue-healing constraints.

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CS-160

Use of Mirragen Advanced Wound Matrix in Two Cases of Chronic Venous Stasis Ulcers and Pyoderma Gangrenosum

Richard simman, MD, FACS, FACCWS; Amber Edson, MS, BS; Madhulika Kastury, BS; Fatima Khan, BS; Abigail Royfman, BS

Introduction: Chronic venous stasis ulcers (CVSUs) and pyoderma gangrenosum (PG) are debilitating skin conditions characterized by chronic inflammation, tissue breakdown, and impaired healing. CVSUs result from venous insufficiency and sustained venous hypertension, while PG is an autoinflammatory neutrophilic dermatosis often associated with systemic disease. Both conditions are frequently refractory to conventional treatments, leading to prolonged discomfort and increased healthcare burden.1-2 Mirragen Advanced Wound Matrix is a completely bioabsorbable borate-based glass fiber matrix designed to support tissue regeneration by facilitating angiogenesis, collagen deposition, and re-epithelialization. FDA-cleared for various acute and chronic wounds, Mirragen presents a novel option for enhancing healing in difficult cases. This prospective case series describes our clinical experience using Mirragen as an adjunctive treatment in patients with non-healing CVSUs, with and without associated PG.

Methods: Two patients were managed in an outpatient wound care setting using Mirragen as an adjunct to standard care. One patient had recurrent CVSU at their right medial ankle with lipodermatosclerosis, while the other presented with CVSUs located in the left lateral leg that were complicated by PG. This patient was on tapered prednisone for her PG, which may slow the healing process along with their uncontrolled diabetes. Weekly Mirragen applications were paired with absorptive dressings and compression therapy. Debridement was performed in the patient with

CVSU alone, but was voided in the CVSU complicated by PG case due to pathergy risk. The patient with CVSU alone received 4 treatments over 8 weeks, while the PG case had 60% coverage in 4 months with 16 applications based on clinical response and coverage limitations set by the Centers for Medicare & Medicaid Services.

Results: Both patients experienced favorable outcomes following treatment with Mirragen. One patient achieved complete wound closure, while the second demonstrated a substantial reduction in wound size with progressive epithelialization. Both reported notable pain relief after the initial application, with continued improvement throughout the treatment course. No adverse effects were observed.

Discussion: This prospective case series suggests that Mirragen is a safe and potentially effective adjunctive therapy for chronic wounds such as CVSUs and PG. Both patients showed clinical improvement and pain reduction, with one achieving complete closure. In the PG case, the ability to avoid debridement, due to exacerbation of pathergy, while still supporting epithelialization was clinically valuable. These observations suggest a potential role for Mirragen in minimizing discomfort and reducing clinical burden.

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CS-161

Advancing Road Rash Management: Insights from a Case Series

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Introduction: At a level one trauma center, we encounter a high volume of patient with road rash of varying thickness and total body surface area (TBSA) involvement. Road rash represents a frequent clinical challenge in trauma care with limited to no establish guidelines for their management. This often leads to variability in treatment approached and patient outcomes.

Methods: Recognizing this gap, our team sought to develop a structure protocol to ensure strategic, timely and effective bedside management of road rash injuries. We moved away from the traditional silver based topical treatment recommendation and utilize a honey-based dressing. We engaged the trauma and surgical team to create a clinical algorithm that stratified patients by wound depth and TBSA Create a standardized bedside wound care order set to automatically trigger a wound care consultation and streamlined timely reposnse reducing varibility in care.

Results: Implementing these strategies, we observed improvement wound care outcomes regardless of TBSA involvement, improved patient satisfaction, if needed timely surgical intervention, improved length of stay and nurse satisfaction.

Discussion: These is a pressing need for broader discussion and consensus on the management of road rash injuries. Our experience demonstrates that bedside management is not only feasible but often preferrable even in cases with significant TBSA. It is essential to have wound care involved in the coordination and response of the trauma and surgical team to ensure wound care protocol are initiated without delay. Moving away from traditional management approaches have demonstrate to show effective wound outcomes. These strategies can be adopted across hospital and urgent care settings to help standardize car and ultimately improve patient outcomes for this common yet under discussed injury pattern.

CS-162

Evaluation of Efficacy for a Hydrocapillary Dressing (XLTA) on the Treatment of Burn Wounds: a Prospective Cohort Study from South African Tertiary Burn Center

Ashley R. Sonney, MSN APRN FNP-BC ACHRN WCC; Kobie Mouton, J.D.

Introduction: Burn wounds remain a significant global health burden, with healing trajectories influenced by exudate levels, bioburden, and the ability to maintain an optimized wound microenvironment. Hydrocapillary, hydroconductive dressings offer potential advantages in managing highly exudative burns by supporting autolytic debridement, moisture balance, and reduction of slough and biofilm. The topical dressing is a tri-layer construct engineered to wick fluid via capillary action, disperse exudate horizontally, and attract negatively charged pathogens and proteases through positively charged fibers. This retrospective cohort study evaluated the clinical performance of a topical hydrocapillary, hydroconductive dressing in burn wounds treated at a tertiary burn center in South Africa.

Methods: A total of 62 patients with partial- or full-thickness burn wounds were enrolled between September 2021 and July 2024. Approval to conduct the study was obtained from the Health Research Ethics Committee (HREC) of the University of Stellenbosch under Biobank Approval ID #32614. Demographic variables included age, sex, mechanism of injury, wound age, total body surface area (TBSA), time to dressing application, and injury location. Ten wound assessment parameters were evaluated before and after treatment: biofilm, exudate, moistness, epithelialization, slough, infection, color, size, site, odor, and swab need (BE, ME, SIC, SOS). All assessments were completed by the attending physician using visual interpretation and standardized wound photography. Pre–post changes were analyzed using McNemar's Chi-square test.

Results: Post-treatment results demonstrated improvement across all wound assessment categories. All instances of biofilm, slough, infection, and odor resolved following treatment, with statistically significant reductions in biofilm, slough, and infection ($p < 0.05$). Exudate management was uniformly effective, and epithelialization, moisture balance, and tissue quality improved in all cases. No adverse events related to the dressing were reported.

Discussion: These findings support this hydrocapillary dressing as an effective option for managing high-exudate burn wounds, promoting autolytic debridement, reducing bioburden, and enhancing overall wound progression. Further controlled, quantitative studies comparing Xlta™ to standard care are recommended.

CS-163

From Fulminant to Healed: a Borate-Based Bioactive Glass Fiber Matrix as a Salvage Therapy in a Critically Ill Postpartum Patient with Purpura Fulminans

Rachna Soriano, DO

Introduction: Purpura fulminans is a rare, life-threatening disorder marked by rapidly evolving cutaneous necrosis, microvascular thrombosis, and disseminated intravascular coagulation (DIC), often triggered by severe sepsis.1 Our case involves a 37-year-old woman with a complex medical and obstetric history, who developed purpura fulminans in the setting of E. coli bacteremia and multiorgan failure. Her prior surgical history (Whipple procedure) and obstetric complications (focal placenta accreta, manual placental extraction after normal spontaneous vaginal delivery at 36 weeks) further complicated her presentation. Following onset of lower-extremity swelling, sepsis, altered mental status, dialysis-dependent renal failure, and ventilatory support, she was transferred to a medical intensive care unit. Once necrotic skin lesions consistent with purpura fulminans appeared, advanced wound-care management was initiated.

Methods: Initially, the wounds had been treated with a silver-impregnated hydro-desloughing fiber dressing, a lipido-colloid contact layer, foam dressings, and a hypochlorous acid wound cleanser with irrigations every 2–3 days, but supply shortages developed. On 04/01/2025, a borate-based bioactive glass fiber matrix (BBGFM) was applied to her

wounds, with secondary dressings changed to a polyvinyl alcohol foam dressing impregnated with methylene blue and gentian violet. Dressings were systematically monitored, changed regularly, and wound progress documented.

Results: Following three applications of the BBGFM, quality tissue formation and subsequent wound healing was observed throughout the 14 weeks of treatment. By 07/08/2025, complete epithelialization and resolution of necrotic tissue were achieved. Her dressing regimen proved sustainable, and the BBGFM remained adherent even in complex wounds, supporting granulation and re-epithelialization.

Discussion: This case demonstrates that BBGFM can be effective even in critically ill, complex patients with purpura fulminans and multiorgan failure. The BBGFM scaffold closely resembles the architecture of an extracellular matrix in terms of microstructure and porosity. This scaffold allows for infiltration and proliferation of native cells and maintains sufficient space for native collagen deposition and blood vessel formation.3 The favorable outcome in this patient suggests that BBGFM is a promising adjunct in managing challenging wounds associated with coagulopathic sepsis and severe systemic illness. More broadly, our experience supports incorporation of bioactive glass technology into protocols for high-risk wounds in critical care settings.

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CS-164

Advanced Management of Chronic and Post-Surgical Diabetic Foot Wounds Using a Borate-Based Bioactive Glass Fiber Matrix

Gian Steinhauser, DPM

Introduction: Chronic diabetic foot ulcers (DFUs) present significant clinical challenges, particularly when refractory to standard care or complicated by surgical interventions. Persistent fibrotic tissue, structural deformities, and prior treatment failures often prolong healing and increase risk for infection and amputation.1 Borate-based bioactive glass fiber matrices (BBGFM) have demonstrated potential in supporting wound healing through modulation of the wound environment and facilitation of tissue regeneration.2 This report describes two complex DFU cases treated with BBGFM after prolonged conventional therapy or surgical complications.

Methods: Two patients with complex DFUs were treated with BBGFM alongside standard wound care protocols. Case-1 involved a 52-year-old female with a chronic right foot ulcer refractory to enzymatic debridement, collagen dressings, and advanced wound care for over six months. The wound measured 5 × 4.5 × 1.5 cm with an additional 1.2 cm plantar probe along the flexor hallucis longus tendon sheath, with 100% fibrotic wound base. Case-2 involved a 68-year-old male with Charcot midfoot deformity on the right side. Following a "Reverse Cole" midfoot osteotomy arthrodesis coupled with a triple arthrodesis with external fixation, the patient developed medial and lateral foot ulcer dehiscence that exposed the bone of the right foot. BBGFM was applied periodically to each wound with wound V.A.C., with frequency guided by clinical assessment of wound bed status.

Results: In Case-1, progressive wound healing was observed after approximately 21 BBGFM applications, with complete wound base area closure. In Case-2, significant closure of the dehisced DFU sites was achieved after 11 applications of BBGFM, with evidence of healthy tissue regeneration and resolution of exposed structures. Both patients tolerated treatment without adverse events, and clinical assessment indicated readiness for eventual device removal of the external fixator in case-2 to full healing. BBGFM substitution also resolved wound V.A.C. clogging issues previously experienced by using collagen dressing in wound VAC applications for patient in Case-2.

Discussion: BBGFM facilitated meaningful wound closure in two patients with complex DFUs unresponsive to prior therapies or complicated by dehiscence. These cases highlight the potential role of BBGFM as an adjunctive therapy in promoting healing in chronic, fibrotic, or surgical wounds where standard care alone may be insufficient. These cases underscore BBGFM's potential as a powerful adjunctive therapy capable of transforming chronic and post-surgical wound care by promoting tissue regeneration and facilitating closure in challenging scenarios. BBGFM's permeability also makes it an attractive option to use with wound V.A.C. application.

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CS-165

Successful Staged Limb Salvage in a Poorly Controlled Diabetic Cohort of Diverse Etiologies Utilizing Fish Skin Xenografts- a Unique Case Series

Mark D. Suski, MD FACS CWSP

Introduction: Diabetes contributes to poor wound healing through impaired cytokine function, angiogenesis and cellular migration/proliferation. End stage renal disease impairs wound healing through delayed rates of granulation and decreased keratinization kinetics with an ultimate higher rate of disruption.1,2 Wounds overlying the Achilles region rapidly progress to tendon exposure secondary to an unreliable vascular supply coupled with a paucity of subcutaneous tissue.3 Untreated malignancy inhibits wound healing. Traumatic injuries in the postoperative period increases post-operative complications in the orthopedic arthroplasty population. Delayed presentation of thermal burns is linked to infection and contractures. The mainstay of treatment of this diverse reconstructive population has been with flaps. Not all patients are candidates secondary to their underling co-morbidities. This case series highlights the clinical efficacy of fish skin xenografts in this subset of challenging patients.

Methods: The current cohort included diverse wound etiologies to include a traumatic lower extremity wound with exposed bone status post recent knee arthroplasty, a stage 4 pressure ulcer with exposed Achilles tendon devoid of peritenon, a dorsal foot wound secondary to venous access complication in an end stage renal patient and a dorsal foot wound with necrotizing fasciitis and untreated chronic lymphocytic leukemia. All four patients were longstanding uncontrolled diabetics with hemoglobin A1c's between 7.5 and 11.7All wounds were necrotic with cellulitis at initial presentation (range in size from 3 to 220 cm). Each underwent operative debridement; a course of culture specific intravenous antibiotics and application of fish skin xenografts placed at weekly or biweekly intervals with compression provided by negative pressure wound therapy. (range from 1 to 6 applications) Ultimately all wounds robustly granulated and healed via staged split thickness skin grafts or secondary intention. Long term follow up has confirmed stable and pliable grafts with full range of motion.

Results: Hemoglobin A1c reflects glycemia over 2-3 months and is the standard measure utilized to monitor glycemic control in diabetic patients. For every 1.0% point increase, the daily wound area healing decreases by 0.028 cm2/day. To avoid amputation in these high-risk patients, the use of advanced wound care products to include CAMPS (Cellular, acellular and matrix – like products) have been recommended.

Discussion: Fish skin xenografts are FDA approved for treating most chronic and acute wounds. The product is an acellular dermal matrix sustainably harvested from Icelandic cod with a porous microstructure similar to human skin. Characteristics of the xenograft include bacterial resistance, cellular migration/proliferation, angiogenesis, and inflammatory cytokine mitigation.

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CS-166

Successful Staged Limb Salvage in a Poorly Controlled Diabetic with Chronic Lymphocytic Leukemia and Multiple Exposed Extensor Tendons Utilizing Fish Skin Xenografts

Mark D. Suski, MD FACS CWSP

Introduction: Dorsal foot extensor tendon exposure is related to an unreliable vascular supply coupled with a paucity of subcutaneous tissue. Uncontrolled diabetes and untreated malignancy independently contribute to poor wound healing. This case report highlights the clinical efficacy of fish skin xenografts in this unique subset of challenging patients.

Methods: The patient is a 77 year old male with absence of medical care who presented with a necrotizing fasciitis of his right foot and leg. Workup revealed uncontrolled diabetes (HgbA1c of 6.6) and Chronic lymphocytic leukemia (CLL) manifested with a lymphocytosis of 67,000. He emergently underwent excisional debridement and 4 compartment fasciotomy. Two further operative debridements were required to definitively control his Methicillin sensitive staph aureus infection. Despite being treated with culture specific antibiotics, tight glycemic control and negative pressure wound therapy, his foot wound progressed to exposure of multiple extensor tendons devoid of peritenon.

Results: Trans-metatarsal amputation was recommended by his primary surgeon. The patient declined and wanted to pursue limb salvage despite knowing his oncologic management would be deferred until the wound healed. Three fish skin grafts were placed at biweekly intervals. The tendons fully granulated and he underwent successful staged split thickness skin grafting. He is fully ambulatory with stable and pliable soft tissue coverage with full excursion of the tendons. He is currently undergoing targeted oncologic therapy.

Discussion: Tendons are relatively avascular and not prone to secondary intention healing or primary skin grafts. The mainstay of treatment has therefore been with flap reconstruction. Not all patients however are candidates secondary to underlying co-morbidities. In these high-risk patients, advanced biologics are warranted to avoid complications including amputation. Fish skin xenografts are FDA approved for treating most chronic and acute wounds. The product is an acellular dermal matrix sustainably harvested from Icelandic cod with a porous microstructure similar to human skin. Characteristics of the xenograft include bacterial resistance, cellular migration/proliferation, angiogenesis and inflammatory cytokine mitigation.

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CS-167

Wound Bed Preparation with a Topical Dehydrating Agent Followed by Wool-Derived Keratin Matrix Xenograft in a Hard-to-Heal Lower-Extremity Diabetic Ulcer: a Case from the Kingdom of Tonga

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Introduction: Lower-extremity diabetic ulcers (LEDUs) are a frequent and highly morbid complication of diabetes, with infection representing a major driver of hospitalization in low-resource settings. This case report describes the healing response of a hard-to-heal LEDU in an elderly female with poorly controlled diabetes (A1c >10%) following wound bed preparation using a topical dehydrating agent (TDA*) and subsequent treatment with a wool-derived keratin-based matrix (KBM†) xenograft.

Methods: The case was managed in a hospital-based outpatient wound clinic in the Kingdom of Tonga. Prior to advanced intervention, the ulcer was treated for >30 days with standard dressings (alginate, normal saline) and selective sharp debridement without meaningful improvement. On 14/07/2025, a TDA, containing methane sulfonic acid, was applied for chemical debridement. On 17/07/2025, following surgical debridement to healthy bleeding tissue, a KBM xenograft moistened with stabilized hypochlorous acid solution was applied and packed into undermined areas. A properly fitted offloading boot was also initiated. Weekly clinic visits included sharp debridement, nutritional counseling with emphasis on protein intake, and re-application of the KBM every 7–10 days.

Results: After initiation of TDA and routine KBM applications, the wound demonstrated progressive granulation, reduction in undermining, and sustained epithelial advancement. Complete epithelialization was achieved by 23/08/2025. Total length of treatment with advanced products, 48 days.

Discussion: This case illustrates that combining a TDA with routine application of a KBM xenograft can jump-start wound progression toward closure in a hard-to-heal LEDU. This approach may represent a valuable strategy in resource-limited environments where timely wound bed preparation and biologic support are essential for achieving optimal outcomes.

CS-168

Emerging Clinical Experience with an Autologous Blood Patch System in the Management of Pyoderma Gangrenosum: a Case Series

Robert P. Thompson, Jr., MD; Marcus Gitterle, MD; Martin Johnson, MD

Introduction: Pyoderma gangrenosum (PG) is a rare, chronic, ulcerative skin disease characterized by neutrophilic inflammation and tissue destruction, often triggered by minor trauma and resistant to standard wound therapies. Management remains challenging, requiring both systemic immunomodulation and advanced local wound care. Autologous, blood-based therapies may offer a biologically compatible alternative capable of promoting healing without exacerbating inflammation. This case series describes early clinical experience using an autologous blood patch system as an adjunctive therapy for pyoderma wounds refractory to conventional care.

Methods: One patient with clinically confirmed PG and chronic non-healing ulcers was treated with an autologous blood patch system in addition to ongoing systemic management. Patches were prepared from small volumes of the patient's own venous blood at the point of care and applied weekly to the wound bed. Wound progression, pain level, exudate, and tolerance were assessed through serial evaluations and photographic documentation over a 10–12 week period. Prior to this treatment the patient had multiple applications of a variety of topical treatments and systemic therapy with steroids and biologic agents. In spite of all previous treatments the patient still had a large, complicated, painful, tender ulcer from pyoderma granulosum.

Results: This patient showed immediate signs of clinical improvement, including rapid reduction in pain and inflammation after the first five applications. Progressive granulation and epithelial advancement were observed in subsequent weeks, with partial closure achieved in each case by the end of the treatment phase. No treatment-related adverse events occurred, and patient tolerance was high. The autologous patch system appeared to stabilize the wound environment, supporting healing without triggering new inflammatory activity. This new treatment was more effective in a short period of time than all other previous treatments.

Discussion: This initial clinical experience suggests that autologous blood-based wound therapy may represent a safe and effective adjunct in the management of pyoderma gangrenosum. The therapy's biologically active and patient-specific nature allows for integration within complex care regimens without inducing pathergy. Further case accumulation and

systematic evaluation are ongoing to validate these preliminary findings and explore broader applications in inflammatory wound healing.

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CS-169

Medical Food Doubles the Healing Rate for Diabetic Foot Ulcer: a Case Series

Eric S. Trathen, DPM

Introduction: Prompt healing of diabetic foot ulcers (DFUs) is critical to reducing morbidity and mortality. Approximately 38 million individuals in the United States have diabetes; of these, 19–34% will develop DFUs, and 65% will experience recurrence within 5 years (1). The economic burden of DFU treatment exceeds $28 billion annually (2). Adjunctive therapies are increasingly evaluated for their potential to accelerate healing. One such approach involves prescription-only medical food composed of bioactive pyridoxal 5'-phosphate (35 mg), L-methylfolate (3 mg), and methylcobalamin (2 mg) (4). This medical food formulation helps repair endovascular and neurovascular layers by stimulating nitric oxide production for vasodilation, preventing glycation end products from damaging neurovascular structures, and promoting remyelination of damaged nerves.

Methods: A retrospective chart review was conducted on five patients with Wagner grade 2 diabetic foot ulcers measuring ≥1 cm in diameter. All patients received standard of care: the wounds were debrided, decolonized, maintained for moisture balance and offloaded. They were evaluated weekly, underwent serial debridement as needed, and received localized wound care. Each patient was also prescribed the aforementioned medical food formulation for the treatment of diabetic peripheral neuropathy.

Results: All five patients achieved complete wound closure within 6 weeks. All received the same standard of care plus the prescribed medical food formulation. Three ulcers healed by week 4, and the remaining two by week 6. These healing times contrast with the previously recommended 12-week closure period for similar DFUs managed with standard care alone (3). This represents a 50–60% reduction in healing time. No adverse events were reported.

Discussion: In this small retrospective cohort, the addition of a prescription medical food containing pyridoxal 5'-phosphate (35 mg), L-methylfolate (3 mg), and methylcobalamin (2 mg) was associated with accelerated DFU healing when combined with standard wound care. The observed faster healing times, 4-6 weeks vs. literature referenced 12 weeks reduces the risk of infection, potential for osteomyelitis, and possible amputation. Notably, no patients experienced re-ulceration over a follow-up period ranging from 6 to 20 months. Additional analyses and a larger patient cohort would be needed to determine a possible causal relationship.

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CS-170

Wound Complications and Limb Salvage Following Orthopedic Surgery Using a Full Thickness Lyophilized Amnion Chorion Membrane

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Introduction: Post-operative wound complications following instrumented orthopedic procedures, though relatively uncommon, can result in significant morbidity and may progress to limb loss, particularly in elderly patients with multiple comorbidities. Biologic adjuncts such as full thickness lyophilized amnion-chorion membranes (LACM) have gained attention for their ability to modulate inflammation, enhance granulation, and support closure in complex surgical wounds. This case describes limb salvage in an 82-year-old male with extensive cardiovascular, metabolic, and renal disease who developed deep infection and wound dehiscence after sequential hip and tibial fracture repair.

Methods: The patient initially presented with a left intertrochanteric hip fracture and was treated with open cephalomedullary nail fixation. Six months later, a second high-impact fall caused a comminuted left tibial fracture, surgically fixed with intramedullary nailing. Patient returned with surgical wound dehiscence and deep infection along the tibial incision. Operative debridement, irrigation, and removal of the intramedullary nail were performed, followed by application of negative pressure wound therapy (NPWT). Biweekly LACM applications were started in an outpatient setting and wound area, drainage, granulation quality, and infection status were assessed at each visit.

Results: Use of LACM produced progressive granulation and steady wound contraction of the tibial defect. Full closure occurred approximately three months after initiating LACM therapy. No recurrence of infection was documented at the tibial site following introduction of LACM. Limb amputation, previously considered due to the severity of the complication, was ultimately avoided.

Discussion: Use of LACM produced progressive granulation and steady wound contraction of the tibial defect. Full closure occurred approximately three months after initiating LACM therapy. No recurrence of infection was documented at the tibial site following introduction of LACM. Limb amputation, previously considered due to the severity of the complication, was ultimately avoided.

CS-171

The Effectiveness of a New Multilayered Foam Dressing on the Management of Diabetic Foot Ulcers

Angela Walker, MSc; Tania Woodrow, BSc; Rebecca Rodger, BSc

Introduction: Diabetic foot ulceration (DFU) is a serious complication of diabetes, often associated with neuropathy, peripheral arterial disease, Charcot arthropathy, renal impairment, and infection, which increase the risk of amputation. Effective management requires a structured plan addressing wound symptoms and underlying factors. This study evaluated the effectiveness of a multilayered foam dressing* incorporating hydrofiber technology in managing DFUs with complex comorbidities.

Methods: Patients with type 1 or type 2 diabetes and DFUs were treated in a podiatry-led hospital clinic. Wounds were cleansed, debrided, and dressed with a non-adhesive multilayered foam dressing*. Off-loading was provided as required. Wound progression was monitored at each dressing change, assessing exudate level, peri-wound condition, and wound bed tissue.

Results: A total of 11 patients (8 male, 3 female; aged 47–74 years) were treated. All presented with multiple complications, including neuropathy, peripheral arterial disease, renal disease, and prior ulceration or amputation; five cases involved surgical wounds. The foam dressing demonstrated effective symptom management, including reduced exudate, improved peri-wound skin, enhanced wound bed tissue quality, and decreased wound size. Dressing change frequency was reduced, and complete healing occurred in three cases during the observation period. Compared to previously used dressings, the dressing showed improved absorption, retention, and conformability.

Discussion: The multilayered foam dressing* with hydrofiber technology was effective in managing DFU symptoms and supporting healing. Its absorptive and de-sloughing properties eliminated the need for a primary dressing, while its conformability facilitated secure placement in anatomically challenging areas. These findings suggest that this dressing may improve clinical efficiency and outcomes in DFU management.

CS-172

From Cancer to Closure: Exploring Ultrasound in Post-Surgical Repair

Caleb White, DPM; Katherine Glaser, MD; John Holtzman, DPM

Introduction: When dealing with chronic wound healing in patients with different comorbidities and/or the geriatric population, there is a concern for an increased risk of infection, delayed closure, and functional limitations. Evidence suggests that non-contact low-frequency utlrasound therapy* may enhance healing by stimulating cellular activity, reducing bioburden, and promoting granulation tissue formation. This case describes the use of this modality to support healing ina large post-excisional wound in an older adult.

Methods: An older adult female with a medical history significant for chronic comorbid conditions presented with a nonhealing ulcer of the lower leg that was subsequently diagnosed as squamous cell carcinoma. Surgical excision resulted in a sizable soft tisuue defect measuring 4.5x5.0x0.3 cm on her anterior distal leg. To help assist in proper healing, non-contact low-frequency ultrasound therapy* was initiated as an adjunct to standard wound care. Treatments were provided which included a 7-week period of ultrasound therapy use. Wound progression was assessed clinically at routine visits, evaluating changes in size, granulation formation, epithelialization, and overall tolerance to therapy.

Results: Throughout the treatment course, the wound demonstrated gradual and consistent improvement, transitioning from a large post-surgical defect to a full closure. Increased granulation tissue formation and epithelial advancement were observed with each evaluation. The patient's pain and return to activity dramatically increased over the course of the treatment with the patient being pain free after three weeks of the ultrasound therapy. At the final visit, the wound had completely healed, with minimal scar formation and near-restoration of normal skin pigmentation. No complications, such as infection, were observed. The patient tolerated therapy well, with no reported discomfort during treatments.

Discussion: This case illustrates the potential value of non-contact low-frequency ultrasound therapy* as an adjunctive modality for managing complex post-surgical wounds. The observed improvements align with previously published findings demonstrating enhanced healing through mechanical stimulation, improved perfusion, and bioburden reduction. The favorable cosmetic and pain free outcome (including return of normal skin pigmentation) suggests benefits beyond functional closure. These findings support the consideration of this technology in similar clinical scenarios where accelerated, high-quality healing is desired.

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CS-173

From Plateau to Progress: Transforming Burn Recovery with Type I Bovine Collagen and 2% Lidocaine Hydrogel

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Introduction: Effective wound healing is critical to limiting complications such as infection, scarring, and long-term functional impairment, which drive much of the lifetime disability associated with thermal burns. Bovine collagen has emerged as an important biomaterial that can assist in burn management because the triple-helical structure and amino acid composition closely resembles human collagen. This provides an extracellular matrix scaffold that supports hemostasis, cellular migration, angiogenesis, and tissue regeneration. This case study documents a patient that had slow wound healing with various wound care strategies that accelerated when a Type 1 bovine collagen powder and 2% lidocaine hydrogel were introduced.

Methods: A 70-year-old male presented to the wound care clinic approximately three weeks post third degree, full-thickness thermal burn to the left upper extremity from a space heater. Initial debridement was performed, and the resulting wound size was 224.2 cm^2. Various wound dressing combinations were tried for the first 10 weeks with limited success, resulting a reduction of the wound to 137.5 cm^2, but the patient was in continued pain with a plateau of wound healing seen. The patient was then switched to a Type 1 bovine collagen powder and 2% lidocaine hydrogel with the continued use of a super absorbent dressing.

Results: The patient's wound healing increased from 38% over 10 weeks to 60% 12 weeks post implementation of the Type 1 bovine collagen powder and 2% lidocaine hydrogel. The wound was reduced from 137.5 cm^2 to just 55.3 cm^2 12 weeks later.

Discussion: The use of a bovine collagen powder and 2% hydrogel resulted in reduced wound pain, increased granulation of tissue, and accelerated wound healing in a third-degree full thickness thermal burn.

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CS-174

Assessment of Synergistic Treatments Using Wound Solutions and Antimicrobial Gels to Evaluate the Degree of Inactivation of Biofilms.

Rose Yaghi, Doctor of Healthcare Administration; Debashish Chakravarthy, PhD

Introduction: Bacterial biofilms in wounds create substantial therapeutic challenges by forming protective extracellular matrices that dramatically reduce antimicrobial efficacy. Wound cleansing solutions can provide biofilm disruption without requiring prolonged antimicro-

bial activity, while antimicrobial gels often offer prolonged antibacterial effects but limited penetration through intact biofilm structures. This study addresses how synergistic combination therapy with sequential applications of wound solutions and antimicrobial gels can overcome these limitations and enhance clinical outcomes.

Methods: A 48-hour P. aeruginosa AATCC 15442 biofilm was established on a wounded porcine explant model, then submerged in *Hypochlorous acid solution or Saline for 10 minutes before being placed into a *Poloxamer gel, a *Hypochlorous acid gel or Saline for a further 4 hours. Also, samples were placed in Hypochlorous acid gel for 10 minutes, then in Saline for 4 hours. Samples were then neutralized for 5 minutes, sonicated for 30 minutes and enumerated to determine CFU/cm2. A log10 reduction value was calculated from an untreated 48-hour control.

Results: Saline/Saline demonstrated marginal antimicrobial activity, achieving < 1 log10 reduction. Improved activity was observed for Hypochlorous acid solution and Saline, which produced a 3.59 log10 reduction. A combination of Saline followed by Hypochlorous acid gel achieved a >4 log10 reduction. The most successful synergistic treatment was the use of Hypochlorous acid solution followed by Hypochlorous acid gel, which demonstrated a >6 log10 reduction. The poloxamer gel demonstrated lower biofilm inactivation, achieving < 2 log10 reduction.

Discussion: The results suggest there is a positive combined synergistic effect between the Hypochlorous acid antimicrobial solution and the hypochlorous acid antimicrobial gel in the inactivation of mature biofilms within a wounded pig skin model.

CS-176

In Vitro Assessment of a Hypochlorous Acid-Based Wound Solution* at Various Dilutions

Rose Yaghi, Doctor of Healthcare Administration; Debashish Chakravarthy, PhD

Introduction: Wound irrigation is a critical procedure for cleansing, hydrating, and debriding tissue, thereby supporting the healing of both acute and chronic wounds. In clinical practice, however, the effectiveness of wound solutions—particularly topical antiseptics—can be reduced by dilution from wound exudate. This loss of efficacy is most pronounced in heavily exudative wounds, where antiseptic activity may be significantly compromised. This study aimed to evaluate the physicochemical properties (pH and ORP), in vitro biocompatibility, and antibacterial preservative efficacy of four commercially available wound solutions at varying dilution levels. Oxidation Reduction Potential (ORP) is a key measure of an antimicrobial's key antimicrobial preservative property.

Methods: The wound solutions tested included hypochlorous acid (HOCl) cleanser solution (~0.033%, pH 4.0) *, 0.125% sodium hypochlorite (NaOCl, pH 9.80) *, a combined solution of 0.01% HOCl/NaOCl (pH 7.0)*, and 0.1% polyhexanide (PHMB, pH 6.7) *. Each was assessed at three concentrations—100%, 75%, and 50%—for pH and oxidation-reduction potential (ORP), cytotoxicity on HaCaT keratinocytes, HDFa fibroblasts, and mesenchymal stem cells (MSCs), as well as antibacterial activity against Pseudomonas aeruginosa.

Results: The HOCl cleanser solution exhibited higher ORP values compared to NaOCl, HOCl/NaOCl, and PHMB, indicating strong oxidative potential and excellent stability even after dilution. Remarkably, the HOCl solution retained strong antimicrobial efficacy even at 50% dilution, as evidenced by the complete elimination of P. aeruginosa (>5.78 Log10 reduction). At equivalent dilutions, the HOCl-based wound solution exhibited little to no cytotoxicity toward HaCaT, HDFa, and MSCs during up to 15 minutes of exposure, showing lower cytotoxicity compared to NaOCl and PHMB solutions.

Discussion: This study indicated that a hypochlorous acid cleanser solution (~0.033%, pH 4.0) offered the greatest preservative strength, strongest antimicrobial activity, and lowest cytotoxicity among the tested formulations.

CS-177

Best Practice to Manage Skin Tears

Leah C. Yarboro, PT, DPT, MBA, CWS, CLT-LANA

Introduction: The author practices in a private wound care clinic. Skin tears can become complex wounds that negatively affect patient outcomes. Best practices are crucial to manage skin tears to prevent complications while promoting healing. 10 patients are presented with class 3 skin tears managed with polymeric membrane dressings* (PMDs) after dissatisfaction with prior standard wound care approaches. Concerns with prior approaches: dressings stuck to wounds, causing trauma and discomfort during dressing changes; slow healing; costs associated with frequent sharp debridement; and multiple products required. PMDs reduced need for frequent debridement, reduced wound trauma during dressing changes, reduced supply costs and dramatically improved time to wound closure.

Methods: PMDs changed once/wk or twice/wk, depending on exudate. All wounds, prior to initial dressing application, were flushed with normal saline and hypochlorous acid (HA). HA is applied to gauze and wiped over the wound bed. There is no excess left, and the wound bed is "dry" before PMD application.

Results: PMDs did not stick to wounds, eliminating wound trauma and discomfort during dressing changes. Pain that was intermittent throughout the day and night was eliminated. PMDs encouraged autolysis so wounds required little or no debridement, reducing the supply cost of debridement which also reduced treatment time by up to 10 minutes/visit. Pt. 2, 5, 6 and 10 were initially managed by another provider in the clinic using other wound care approaches. When wounds were not progressing, the author switched to PMDs; as a result, all 10 patients' skin tears closed. PMDs improved time to wound closure. As an example, Pt 5 had a history of skin tears. A 12 sq cm wound managed with Bismuth Tribromophenate and combination wound care products closed in 17 days (0.7sq cm/day closure). In contrast, on same patient, using PMDs on an 89 sq cm wound closed in 24 days (3.7 sq cm/day closure).

Discussion: PMDs promote healing and comfort. PMDs are easy to use, while reducing the cost of care. No complications occurred. PMDs are the preferred dressing to manage skin tears.

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CS-178

The Power of Hope: a Patient Review Demonstrating the Impact of Hope-Focused Interventions on Wound Healing

Ashley Yuras, APRN; Jacquline Giudice, APRN-CNP

Introduction: Wound healing is often approached from a strictly physiological perspective, yet psychosocial factors—especially hope—can significantly change patient outcomes. This review explores how incorporating a hope assessment, combined with targeted nutritional support, affected healing in a patient with a previously non-healing wound. Hope is the belief that the future will be better than today, and that you have the power to make it so (Hellman, 2019). Because nutritional adequacy is essential for tissue repair, vitamin D, vitamin C, and increased dietary protein were included alongside hope-focused strategies to support overall wound healing.

Methods: A single-patient case review was conducted in a mobile wound care setting. After several weeks of a stalled wound despite evidence-based treatment, the Snyder Hope Scale was administered. The patient's initial score was low, correlating with discouragement, depression, and inconsistent self-care. An intervention plan was created that included:

- Hope-focused strategies, such as collaborative weekly goal setting, finding pathways to success, reframing setbacks, and providing consistent positive reinforcement.
- Nutritional optimization, including:
- Daily vitamin D supplementation

- Increased vitamin C intake to support collagen formation
- Increased protein intake to enhance tissue granulation and cellular repair Wound measurements, hope scores, and nutritional adherence were reassessed weekly.

Results: Within several weeks, the patient's hope score increased significantly, reflecting improved motivation and engagement in the healing process. During the same period, the wound demonstrated progressive granulation, improved tissue quality, reduction in size, and eventual closure. Importantly, no changes were made to the topical or systemic wound treatment plan, highlighting the potential effect of psychosocial and nutritional interventions alone.

Discussion: This case underscores the value of a holistic approach in chronic wound management. The combination of hope-building strategies with vitamin D, vitamin C, and increased protein intake corresponded with improved healing and patient engagement. Integrating psychosocial support and basic nutritional reinforcement into routine wound care may enhance outcomes and deserves further study. Hope can be measured, taught, and strengthened. It is a skill, and like any skill, it grows with practice (Hellman, 2019).

CS-179

Enhanced Moisture Balance with Slough Reduction and Infection Resolution in a Complex Diabetic Foot Ulcer Using Silver Alginate and Silver Foam Dressing: a Case Report

Octo Zulkarnain; Nur Alifa; Shuhua Yang; Mingfang Cai

Introduction: Diabetic foot ulcers (DFUs) with substantial slough burden, high exudate levels, and local infection frequently experience impaired healing. Achieving moisture balance and reducing bioburden are essential to restoring effective wound progression. This case report describes the clinical course of a complex DFU in a 65-year-old man treated twice weekly with silver alginate dressing for exudate and bioburden control, combined with silver foam dressing non-adhesive for moisture balance.

Methods: A four-week treatment protocol was implemented with serial assessment of wound area, tissue composition, exudate characteristics, peri-wound integrity, pain (VAS), and infection indicators. Care strategies followed established wound bed preparation principles, incorporating cleansing, conservative debridement when required, moisture optimization, and protection of newly forming granulation tissue.

Results: Early improvement was evident within the first week, characterized by a rapid shift from purulent to serous exudate, complete resolution of malodor, and disappearance of clinical infection signs. Slough decreased from 80% at baseline to 0% by Week 2, with corresponding maturation of granulation tissue. Wound size progressively reduced from 2.5 × 2.0 cm to full closure by Day 28 (100% area reduction). Reepithelialization began on Day 17 and progressed to complete closure by Day 28. Periwound maceration resolved early, and pain declined from VAS 5 to 0.

Discussion: This case demonstrates that a structured combination of Silver Alginate and Silver Foam Dressing can effectively re-established a favorable healing environment in this high-risk DFU. Quantitative improvements including rapid slough clearance, infection resolution, moisture normalization, and complete wound closure, highlight the therapeutic value of coordinated multimodal dressing strategies in complex DFU management.

CS-180

Optimized Moisture Balance and Wound Area Reduction of Bilateral Diabetic Foot Ulcers Using Silver Hydrogel and Hydrocolloid Dressing: a Four-Week Case Evaluation

Nur Alifah,; Shuhua Yang; Mingfang Cai

Introduction: Bilateral Diabetic foot ulcers (DFU) remain a major clinical challenge due to poor perfusion, neuropathy, and moisture imbalance. Excess exudate and necrotic tissue prolong the inflammatory phase and delay autolytic debridement and granulation. Optimizing moisture balance is therefore essential to restore physiologic wound progression. This case report describes the management of bilateral Wagner Grade 2 necrotic heel ulcers in a 61-year-old man using a moisture-focused regimen incorporating silver hydrogel and hydrocolloid dressing.

Methods: A four-week prospective evaluation was conducted with once-weekly treatments. Management included wound cleansing, selective debridement, application of silver hydrogel to hydrate and soften necrotic tissue, and hydrocolloid dressing to maintain controlled moisture balance that supports autolysis and granulation. Weekly assessments documented wound area, tissue composition, exudate level, malodor, and periwound condition.

Results: At baseline, both ulcers were fully necrotic, measuring 4.5 × 4.5 × 0.5 cm (right heel) and 1.5 × 1.5 × 0.5 cm (left heel). Moisture optimization effectively converted necrosis into healthy granulation by Week 2, accompanied by reduced exudate and complete odor resolution. By Week 4, the left ulcer achieved 100% closure, and the right ulcer demonstrated approximately 82% area reduction with ongoing epithelialization. Both ulcers improved from Wagner Grade 2 to Grade 0 and Grade 1, respectively.

Discussion: The combined use of silver hydrogel and hydrocolloid dressing effectively restored moisture balance, accelerated autolytic debridement, and produced substantial wound area reduction. This approach demonstrated rapid, meaningful clinical improvement in bilateral necrotic DFU within four weeks.

CS-181

Treatment of Deep Foot Wounds When Negative Pressure Is Not Feasible: a Retrospective Case Series Using Porcine Urinary Bladder Matrix

Thomas Zumbaugh, DPM; Claire E. Witherel, PhD

Introduction: Deep podiatric wounds with necrotizing soft tissue infections pose significant challenges in podiatric limb salvage, particularly when wound geometry, exposed structures, or anatomical location preclude the use of negative pressure wound therapy (NPWT). Porcine urinary bladder matrix (UBM) is an extracellular matrix scaffold with demonstrated success in managing complex wounds with exposed structures, acute and chronic wounds in the lower extremity.

Methods: A retrospective review was conducted of two patients with necrotizing soft tissue infections of the foot managed surgically by a single podiatric surgeon. Following thorough debridement, micronized porcine UBM was hydrated with saline and applied as a paste to fill deep tissue defects involving exposed tendon, periosteum, and soft tissue. NPWT was not feasible due to wound configuration and challenging anatomical location constraints. After UBM was utilized, wounds were covered with standard wound dressing protocol. Time to healing was the primary endpoint analyzed.

Results: Case 1: a well-controlled diabetic female with a retained foreign body complicated by necrotizing fasciitis tracking along tendon planes. Case 2: a younger male who developed necrotizing fasciitis following a brown recluse spider bite affecting the dorsal second toe. Both patients achieved complete wound healing within six weeks without the use of NPWT, flap coverage, or additional reconstructive procedures.

Discussion: Porcine urinary bladder matrix may be a useful adjunct for podiatric surgeons managing deep foot wounds when NPWT is not feasible. In this limited case series, UBM supported timely healing and limb preservation following necrotizing infection.

CLINICAL RESEARCH

CR-001

Effects of Glucagon-Like Peptide-1 (GLP-1) Agonists on Surgical Wound Healing: a Single Institution Study

Jack C. Adams, BA; Dominika Pullmann, MD; Hannah Belostotsky, BA Candidate; Tamara Mestvirishvili, MS; Ernest Chiu, MD; Cheongeun Oh, PhD; Piul Rabbani, PhD

Introduction: Glucagon-like peptide-1 (GLP-1) receptor agonists are increasingly prescribed for type 2 diabetes, obesity, and other rapidly expanding indications. Despite their widespread use, little is known about

their effects on surgical wound healing. This question is especially relevant in high-risk groups, such as patients with diabetes, where impaired healing often complicates recovery.

Methods: We conducted a retrospective cohort study of 144 patient charts at the Department of Plastic Surgery at NYU Langone Health. From this cohort, 49 adult patients with 51 non-healing surgical wounds were identified. We stratified patients into seven medication regimen groups, including GLP-1 receptor agonists alone or in combination with insulin and/or metformin. Outcomes compared between GLP-1 users and non-users included time to wound closure, number of surgeries required for wound resolution, and categorical healing status. Time to wound closure was analyzed using Mann-Whitney tests and proportions using Fisher's exact test, with $p < 0.05$ considered significant.

Results: Median time to closure did not differ significantly between GLP-1 users (n=15; median=91 days; 95% CI, 71-131) and non-users (n=27, median=132 days; 95% CI, 102-178; p=0.05). However, GLP-1 users demonstrated higher healing rates at follow-up (100% vs. 55%, p=0.0015) and required fewer surgical interventions (33% vs. 47%, p=0.37). Among patients with diabetes, 100% of wounds healed in GLP-1 users vs. 66% in non-users(p=0.0437). These trends were consistent across wound types and patient characteristics, suggesting a potential protective effect of GLP-1 receptor agonists.

Discussion: Although GLP-1 receptor agonists did not shorten time to closure, they were associated with higher healing rates and fewer interventions, particularly among diabetic patients. These findings suggest a possible role for GLP-1 therapy in modifying surgical wound healing.

CR-002

Clinical Observations Using a Skin and Wound Cleanser (*) in a Post Marketing Study

David Allie, MD; Jerry Stonemetz, MD; Mitchell Sanders, PhD

Introduction: This clinical study evaluated the use of a Skin and Wound Cleanser (*) as part of a comprehensive medical intervention designed to debride and moisten non-healing chronic arterial and venous ulcers that had not respond to treatment.

Methods: The treatment protocol consisted of weekly in office debridement of the eschar using a cotton applicator saturated with Skin Wound Cleanser (*), supplemented by limited instrumental surgical debridement in 36% of visits. In addition, patients performed twice-daily self-application of the Skin and Wound Cleanser at home.

Results: Percent area reduction (PAR), wound status, patient-reported outcomes, and clinical appearance parameters were recorded over time.

- PAR values fluctuated initially and increased over the 14-week observation period (Fig. 1).
- At week six, a subset of wounds had reached closure during care; closure cannot be attributed to the Skin and Wound Cleanser (*) alone and may reflect multidisciplinary wound management (Fig. 2).
- Published venous leg ulcer compression therapy results are shown only for context; no comparative conclusions should be drawn (Fig. 3).
- Patients reported decreases in pain, itch, swelling, edema, erythema, drainage, and treatment difficulty from baseline to Week 6. These self-reported observations are exploratory only (Fig. 4).
- Clinical observations of maceration, eschar presence, and erythema trended downward during care. Statistical outputs reflect within-group change and do not establish product effectiveness (Fig. 5).

Discussion: Controlled, prospective clinical studies are recommended to further evaluate outcomes associated with the Skin and Wound Cleanser (*) within comprehensive wound care protocols.

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CR-003

A Borate-Based Bioactive Glass Advances Wound Healing in Non-Healing Wagner Grade 1 Diabetic Foot Ulcers: a Randomised Controlled Clinical Trial

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Introduction: A novel advanced synthetic bioactive glass matrix was studied in patients with non-healing diabetic foot ulcers (DFUs). Bioactive glasses can be constructed to be biocompatible, with water-soluble materials in multiple geometries including fiber scaffolds that mimic the 3D architecture of a fibrin clot. This scaffold allows for infiltration and proliferation of native cells and maintains sufficient space for native collagen deposition and blood vessel formation.[1] As the matrix dissolves into its base constituents such as boron and calcium, a further environmental effect in the wound bed occurs, stimulating critical processes like angiogenesis, which may be facilitated via upregulation of VEGF due to the addition of bioactive glass fibers.[2,3]

Methods: In this trial, chronic, Wagner Grade 1 DFUs were randomized to receive borate-based bioactive glass Fiber Matrix (BBGFM) plus standard of care (SOC) therapy for 12 weeks or SOC alone. The primary study endpoint was the proportion of subjects that obtained complete wound closure at 12 weeks. Secondary endpoints included time to achieve complete wound closure at 12 weeks.

Results: In the per protocol population, 73% (32/44) of subjects treated with BBGFM plus SOC healed at 12 weeks compared to 42% (16/38) in the SOC group ($p = 0.007$) and the mean time to heal within 12 weeks for the BBGFM plus SOC was 8.2 weeks (95% CI: 7.0–9.4) compared to 9.7 weeks in the SOC group (95% CI: 8.6–10.7) (adjusted $p = 0.084$ [not statistically significant]). In the modified intent-to-treat (mITT) population, 48% (32/67) of subjects treated with BBGFM plus SOC healed at 12 weeks compared to 24% (16/66) in the SOC group ($p = 0.007$) and the mean time to heal within 12 weeks for the BBGFM plus SOC group was 9.1 weeks (95% CI: 8.1–10.0) versus 10.4 weeks in the SOC group (95% CI: 9.6-11.1) (adjusted $p = 0.042$).

Discussion: Based on the success of this trial, BBGFM demonstrates faster healing of DFUs compared to SOC and should be considered in the treatment armamentarium for Wagner Grade 1 DFUs. The significantly increased healing rates and rapid wound area reduction demonstrate that BBGFM can promote wound healing in multiple phases, particularly granulation tissue formation and re-epithelialization in the proliferative phase.

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CR-004

Flowable Urinary Bladder Matrix Particulate in Complex Wounds: a Prospective Multicenter Study

Malachy Asuku, MD, FACS, MBA; Hannah Baker, PhD; Yifei Dai, PhD; Claire Witherel, PhD; Jessica Evans, MD; Weiwei Xu, PhD; Yi Arnold, PhD; Michael Cripps, MD; Jeffrey W. Shupp, MD; Alisha W. Oropallo, MD

Introduction: Tunneling and undermining in chronic wounds are often associated with persistent inflammation, increased susceptibility to infection, and delayed healing. 1-3 These features often serve as nidus for chronicity and recalcitrance. Although surgical excision is effective; it is frequently impracticable due to the recurrent nature of these features. Porcine-derived urinary bladder matrix (UBM) products provide a biologically favorable environment that supports a pro-remodeling immune response, aiding the closure of complex wounds such as diabetic

foot ulcers, venous leg ulcers, and pressure ulcers.1-3 The flowable UBM particulate system is specially designed for precise delivery of product into wound tunnels, recesses, crevices, and cavities. This multicenter, prospective study evaluated the safety and effectiveness of flowable UBM in managing tunneling and undermining wound features as well as the impact on closure of the overlying wound concurrently treated with the particulate and sheet configurations of the porcine urinary bladder matrix.

Methods: Following IRB approval and informed consent, enrolled subjects received flowable UBM treatment of their wound aspects (undermining and tunneling) and a combination of the particulate and sheet configuration of UBM to the overlying wound. The primary endpoint is the relative percentage reduction in tunneling volume or undermining depth at 12 weeks while secondary endpoint is the relative reduction in the dimensions of the overlying wound and proportion of wounds that closed through the 12-week study period. Safety endpoint was assessed by device-related adverse events and serious adverse events.

Results: Of the 25 enrolled subjects, 21 met per-protocol criteria. Among these, 15 (71%) had wounds exhibiting undermining and 6 (29%) had tunneling. At 12 weeks, complete resolution was achieved in 11 wound aspects (52.4%), including 8 of 15 (53%) undermining aspects and 3 of 6 (50%) tunneling aspects. By wound etiology, complete resolution occurred in 9 of 11 (81%) non–pressure ulcer wounds and 2 of 10 (20%) pressure ulcer wounds. The mean percentage reduction in tunneling or undermining dimensions was 50 ± 133% (median: 100%). No device-related adverse events were reported.

Discussion: This study demonstrated the effectiveness of flowable UBM particulate in facilitating the resolution of tunneling and undermining features in complex wounds, and in supporting reduction in overall wound dimensions as well as effecting closure in a proportion of these difficult-to-heal wounds.

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CR-005

Key Experiences and Perspectives on the Implementation of an AI-DRIVEN Digital Wound Care Solution in an Indigenous Community

Basnama Ayaz, PhD; Heba Tallah Mohammed, MD,PhD; Deirdre Drombolis, BSc; Robert D. J. Fraser, BScN,MN; Ibukun Abejirinde, PhD; Courtney Genge, PhD

Introduction: The Giishkaandago'Ikwe Health Services adopted an artificial intelligence (AI)-driven Digital Wound Care Solution (DWCS) in February 2022 to support wound care management across seven Anishinaabe communities in Northwestern Ontario. This qualitative study explores how organizational leaders and technology-support partners experienced the system's implementation and how they perceived its influence on wound care processes, team communication and broader Quintuple Aim goals [Improving clients' and clinicians' experience, enhancing population health, reducing costs, and advancing health equity] within a rural Indigenous context.

Methods: We conducted semi-structured interviews with five key informants (KIs); three leadership-level participants from The Giishkaandago'Ikwe Health Services and two members of the technology partner's IT and clinical support teams. The interview guide was informed by the Nonadoption, Abandonment, Scale-up, Spread, and Sustainability (NASSS) framework. Interviews were transcribed verbatim in Microsoft Word and analyzed thematically in NVivo version 15. The resulting codes were reviewed and interpreted using the NASSS framework to identify key facilitators and barriers.

Results: Participants from The Giishkaandago'Ikwe Health Services (wound care director, manager, and clinical champion) considered the DWCS as a game-changer in chronic wound assessment as it enhanced the continuity and reliability of wound assessments, especially within a geographically dispersed region where, in most instances, distance disrupts continuity of care. Leadership noted that standardized digital documentation strengthened interdisciplinary communication between clinicians and enhanced patients' engagement by providing a clear visual record of healing progress. Both organizational and technology partner informants underscored the value of responsive technical support and culturally sensitive training during early implementation using standardized checklists and tools on adoption and satisfaction of technology. Initial usability issues included problems with logging in, applying filters, and user role features. Usability issues tended to decrease as users became more comfortable using these systems. However, variability in internet access in remote communities and unknown future gaps in funding are issues that can impact further technology use.

Discussion: Key informants perceived that the DWCS enhances assessment, workflow, communication, and patients' engagement. Continued attention to infrastructure limitations and funding stability will be essential to the sustainability and scaling up of technology by Giishkaandago'Ikwe Health Services.

CR-008

Efficacy and Safety of Pure Hypochlorous Acid Solution for Neonatal Skin Bacterial Decolonization.

Vita Boyar, MD,FAAP, WCSP

Introduction: Neonates colonized with Staphylococcus aureus (SA) are at increased risk for developing invasive infections, worse neurodevelopmental outcomes, prolong hospitalization and increased mortality. Pediatric and adult studies report efficacy of skin decolonization with chlorhexidine gluconate (CHG) bathing. Multiple concerns exist about CHG systemic absorption, multi-cellular toxicity and local skin injury when applied to preterm neonates. There is an urgent need to identify safe topical antiseptic for neonates, to prevent/reduce both methicillin resistant and methicillin sensitive SA (MRSA & MSSA) colonization. Primary aim was to evaluate the efficacy of pure hypochlorous acid (pHA) cleansing solution in reducing SA colonization. Secondary aims: assess both cutaneous and systemic safety and tolerability with 3 times/ week topical pHA solution full body wipe in neonates.

Methods: Full body surface was wiped 3 times/week(Su/Tue/Th), using sterile separate pHA saturated gauze pieces. Standard-of-care hygiene practices were continued. Weekly SA nasal colonization surveillance PCR was sent. Incidence of colonization 6 months pre and post intervention was compared. Neonatal skin condition score(NSCS) was assessed twice a week. Weekly complete metabolic panel(CMP) was recorded.3 cohorts were used over time, each with decreasing gestation age(GA) and day-of-life(DOL) eligibility for solution application.(Table 1)

Results: Between 6/25- 12/25 242 neonates between 23- 40 weeks GA (average GA at birth 33 wks.) and between 3-28 DOL received 726 pHA applications. There were 17 Methicillin Resistant SA colonization pre intervention and 7 after (58% decrease). There was 1 CLABSI pre-intervention and none after. There were 87 Methicillin Sensitive SA colonization events pre and 57 post intervention (35% decrease). Average NSCS was 3.4. Mild increase in skin dryness was improved with lotion application. (Table 2) CMP (Table 2)components were within normal values. When compared to pre-application values no significant difference was appreciated. Individual patients' abnormalities in electrolytes values were clinically explained by ongoing diagnoses/ interventions, felt not to be related to pHA application. Initially 2% of neonates in open cribs experienced post application mild hypothermia(decreased in T by 0.2-0.3C, none less than 36.3C). This was mitigated by warming the solution prior to application. No hypothermia was documented in heated incubators.

Discussion: To our knowledge this is the first neonatal study describing decreased MRSA and MSSA colonization with topical pHA solution

application, while highlighting systemic and topical safety manifested by normal CMP and NSCS.

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CR-009

Defining the Trombley Brennan Terminal Tissue Injury from a DTPI Using Long Wave Infrared Thermography

Mary R. Brennan, MBA RN CWON; Meredith Akerman, MS; Lily Thomas, PhD RN FAAN; Deanna Vargo, RN CWOCN

Introduction: Palliative care nurses observed skin changes in patients at end of life that appeared similar to pressure injuries at onset but differed in their evolution. Subsequent studies clinically differentiated TB-TTIs from DTPIs and concluded that TBTTIs are identifiable unavoidable changes with a unique pathophysiology. TB-TTIs are usually mislabeled as DTPIs, a reportable hospital-acquired condition. Accurate classification will enable clinicians to plan appropriate care and guide medical interventions while improving end of life care for patients and families.

Methods: A prospective observational study was conducted in a 10-bed palliative care unit of a quaternary hospital. Patients aged 18 or older, newly presenting with skin changes consistent with DTPI or TB-TTI and without pre-existing pressure injuries, were eligible. Infrared thermographic imaging was performed using the Long Wave Infrared Thermography device to capture thermal and visual images of affected and adjacent skin. Temperatures and wound dimensions were analyzed.

Results: After adjusting for age and gender, significant differences were found between DTPI and TB-TTI in mean (-2.07 vs. -0.21, p< 0.0001), maximum (-1.77 vs. 0.52, p=0.0434), and minimum (-1.85 vs. -0.22, p=0.0049) discolored tissue temperatures. TB-TTI wounds had a significantly higher percentage of area within ±1°C of normal skin temperature (89.16% vs. 54.94%, p=0.0011) compared to the adjacent tissue. No significant differences were observed in wound size or perimeter.

Discussion: LWIT successfully identified a distinct thermal profile for TB-TTI, differentiating it from DTPI. This work will add to much needed scientific knowledge and will enable clinicians to identify TB-TTIs and validate their assessments with a simple, objective, quantitative, non-invasive, and easy to use screening tool, particularly beneficial for darkly pigmented skin tones.

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CR-012

Consistency in Compression Therapy: Comparative Analysis of Comfort and Reproducibility of an Adjustable Garment Versus Two-Layer Bandage Systems

Windy Cole, DPM, CWSP; Frank Aviles, PT, CWS, FACCWS; Nina Kovolyan, CRC

Introduction: Compression therapy is a cornerstone in managing venous and lymphatic disorders, yet achieving consistent sub-bandage pressure remains a clinical challenge. Variability in application technique can compromise therapeutic efficacy and patient safety. This study evaluates the reproducibility of sub-bandage pressure and perceived comfort using three compression modalities: AeroWrap adjustable garment, TwoPress 2 Lite (30 mmHg), and TwoPress 2 (40 mmHg).

Methods: A prospective, hands-on workshop was conducted with podiatric medical students applying each compression system to peers under faculty supervision. Sub-bandage pressures were measured immediately post-application at standardized anatomical landmarks using validated pressure measuring devices. Comfort ratings were recorded on a 10-point Likert scale. Descriptive statistics were calculated for mean, median, standard deviation (SD), and range for each modality.

Results: AeroWrap demonstrated the most consistent pressure delivery (mean 40.9 mmHg, SD 6.6, range 19 mmHg) and highest comfort ratings (mean 9.0, SD 1.0). TwoPress 2 Lite exhibited greater variability (mean 43.4 mmHg, SD 12.4, range 31 mmHg) with comfort mean 8.4 (SD 1.5). TwoPress 2 (40 mmHg) showed the widest pressure range (mean 48.6 mmHg, SD 15.3, range 40 mmHg) and lowest comfort (mean 7.6, SD 1.5). Compliance with target pressure bands was highest for AeroWrap (71%), compared to TwoPress Lite (40%) and TwoPress 40 (20%).

Discussion: AeroWrap's standardized application mechanism significantly reduces variability in sub-bandage pressure compared to traditional two-layer systems, enhancing reproducibility and patient comfort. These findings underscore the importance of device selection in clinical practice and support the integration of adjustable compression garments for improved therapeutic outcomes. Further research in patient populations is warranted to validate these results and assess long-term clinical impact.

CR-013

Evaluating Usability of the Quantaflo Device for Vascular Assessments in the Lower Extremities: a Survey Study

Windy Cole, DMP; Nina Kovolyan, CRC

Introduction: Peripheral Arterial Disease (PAD) remains underdiagnosed, particularly in asymptomatic individuals and underserved populations. QuantaFlo, a plethysmography-based device, offers a potentially more efficient and user-friendly alternative to traditional Ankle-Brachial Index (ABI) testing. This study aimed to evaluate the usability of QuantaFlo in a clinical training environment.

Methods: A prospective, single-site survey study was conducted at the Cleveland Foot and Ankle Clinic. Twenty-five participants, including students and faculty, completed a vascular assessment using the QuantaFlo device and subsequently rated their experience using a 10-item usability survey. Responses were recorded on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), with one item capturing professional background.

Results: Participants reported high usability across all domains. Mean scores for Questions 1–9 ranged from 4.76 to 5.00, with the highest ratings for ease of use, clarity of instructions, and recommendation to colleagues. The average education level was consistent with student doctor status (mean = 2.64). Qualitative feedback highlighted the device's intuitive interface and minimal learning curve, though some users noted intermittent "environmental error" messages during assessments. These were typically resolved with simple troubleshooting.

Discussion: The QuantaFlo device demonstrated excellent usability among a diverse group of healthcare trainees and professionals. Its ease of use, rapid setup, and high user satisfaction suggest strong potential for broader clinical adoption, particularly in settings where traditional vascular assessments are underutilized. Further studies may explore its diagnostic accuracy and impact on clinical outcomes.

CR-014 (RPT-005)

Exploring Socioeconomic and Clinical Predictors of Diabetic Foot Ulcer Healing: a Post-Hoc Analysis

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Introduction: Diabetic foot ulcers (DFUs) are a major complication of diabetes, with healing outcomes influenced by clinical and social determinants. This post-hoc analysis investigates the relationship between Area Deprivation Index (ADI), clinical predictors and DFU healing among recent randomized clinical trial participants of in inner-city clinic.

Methods: Data from 50 DFU patients were analyzed using their 9-digit ZIP codes to obtain ADI scores (scale 0–100). The primary outcome was ulcer healing (binary: healed vs. not healed). Explanatory variables included ADI, gender, age, race, and Wagner Grade. Statistical methods included point biserial correlation, Wilcoxon rank sum tests, binary logistic regression, and generalized additive models (GAMs).

Results: Correlation Analysis: ADI showed a weak positive correlation with healing ($r = 0.216$), though not statistically significant (Wilcoxon $p = 0.1366$). Regression Findings: Wagner Grade was a significant predictor of healing ($\beta = -2.767$, $p = 0.0057$), with higher grades associated with lower healing rates. GAM **Results:** Wagner Grade remained significant ($\beta = -3.233$, $p = 0.0024$). Hispanic race showed marginal significance ($\beta = -1.961$, $p = 0.0567$). Additional Insight: Wagner Grade correlated negatively with healing ($r = -0.340$), reinforcing its clinical importance.

Discussion: While ADI showed a weak, non-significant trend toward improved healing with higher deprivation scores indicating that patients from more socioeconomically disadvantaged areas may experience slightly worse healing outcomes. However, Wagner Grade emerged as a highly significant predictor of healing ($\beta = -2.767$, $p = 0.0057$), with higher grades strongly associated with reduced healing likelihood. These findings highlight the need for further investigation into socioeconomic factors and their interaction with clinical severity in DFU outcomes.

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CR-015

Real-World Evaluation of Amniotic Grafts in Chronic Wounds: Protocol Design and Interim Analysis

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Introduction: Randomized controlled trials (RCTs) remain the gold standard for evaluating clinical interventions, yet their rigid protocols and narrowly defined populations often limit generalizability. Real-world evidence (RWE) studies address this gap by assessing treatment effectiveness in diverse, routine care settings. This study employs a pragmatic hybrid platform design to evaluate amniotic tissue grafts as adjuncts to standard care for diabetic foot ulcers (DFUs) and venous leg ulcers (VLUs). Primary outcomes include complete wound closure at 12 weeks and percent area reduction, providing insights into the performance of these grafts under real-world conditions.

Methods: Two cohorts (DFU and VLU) were randomized 1:1 to receive one of two amniotic grafts and compared with coarsened matched standard-of-care (SOC) control matched from the United States Wound Registry. Weekly follow-up visits occured up to 12 weeks. At the time of interim analysis, 31 subjects had been enrolled, generating 155 visit records. Feasibility and baseline characteristics were assessed through standardized data cleaning and patient-level aggregation.

Results: Interim analysis reflects 61% VLU and 32% DFU; mean age was 65 years (median 69), with 58% male. Wheelchair arrival occurred in 35% of visits; tobacco use was 19% (current or former). Patients averaged six comorbidities, most commonly hypertension and hyperlipidemia. Among patients with ≥2 visits, 61.3% showed decreased wound area and 22.6% showed increased granulation.

Discussion: This real-world hybrid platform trial demonstrates the feasibility of evaluating amniotic tissue grafts in routine clinical practice. Interim results reveal a high comorbidity burden yet show early signals of wound area reduction. By integrating real-world evidence with rigorous methodology, this protocol exemplifies a modern, patient-centered approach to wound care research and aims to generate actionable insights to inform evidence-based treatment of chronic wounds.

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CR-016

Real-World Outcomes Using Fetal Bovine Dermis for Complex Wounds

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Introduction: Managing wounds with tunneling, undermining, or persistent drainage remains challenging due to irregular geometry and poor tissue interface, which limit standard wound care effectiveness. These wounds are often associated with delayed healing and higher infection risk.1-3 Biologic scaffolds such as fetal bovine dermis (FBD) may offer advantages by integrating into complex wound beds and supporting tissue regeneration. This study evaluated real-world performance of a marketed FBD device in wounds with tunneling, undermining, or drainage features using retrospective data from U.S. and EU clinicians.

Methods: A retrospective chart review was conducted via a HIPAA-compliant digital platform for secure real-world data collection. Licensed clinicians abstracted de-identified cases involving the FBD device between June 2022 and June 2025 into structured forms. Each clinician could contribute up to 20 cases. Endpoints included wound closure at 12 weeks, adverse events (AEs), infection-related complications, and recurrence. Cases with tunneling, undermining, or drainage were analyzed descriptively. The study did not require IRB approval or consent, as data were anonymized and compliant with retrospective review regulations.

Results: A total of 246 cases were reviewed, comprising 123 tunneled/undermined wounds and 123 draining wounds from 83 and 76 surgeons, respectively. At week 12, complete wound closure was observed in 85.4% of tunneled/undermined wounds and 81.3% of draining wounds. AEs casually related to the device were limited to inflammation in 0.8% of tunneled/undermined cases, with none reported in draining wounds. Infection-related complications occurred in 3.3% of tunneled/undermined wounds and 9.8% of draining wounds. Recurrence was observed in 3.3% of tunneled/undermined cases and 4.1% of draining cases.

Discussion: This study demonstrated high closure rates and low complications, supporting the FBD device as a safe and effective option for managing complex wounds with anatomical irregularities or drainage, where traditional dressings may result in suboptimal outcome. Limitations include retrospective design and potential selection bias. Prospective studies are warranted to validate these findings.

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CR-017

Real-World Outcomes of Fetal Bovine Dermis in Diabetic Foot Ulcer Management

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Introduction: Diabetic foot ulcers (DFUs) are among the most challenging chronic wounds, often complicated by impaired vascularity and high infection risk. Advanced biologic scaffolds, such as fetal bovine dermis (FBD), provide structural integrity and support tissue regeneration. A prior randomized controlled trial (RCT) demonstrated significantly higher closure rates with FBD compared to standard of care (59.5% vs 35.4% at 12 weeks), confirming its clinical benefit.1 However, current real-world evidence from multinational practice remains limited. This study assessed real-world outcomes of FBD in DFU management across US and EU clinical practices.

Methods: A retrospective chart review was conducted via a HIPAA-compliant digital platform for secure data collection. Clinicians submitted de-identified cases treated with FBD between June 2022 and June 2025 (up to 20 cases per contributor). Structured forms captured wound type, closure status, time to closure, and adverse events. The study was exempt from IRB and consent requirements due to its retrospective, anonymized design. Descriptive analysis focused exclusively on DFU cases.

Results: A total of 123 DFU cases were collected and analyzed. Complete wound closure at 12 weeks was achieved in 77.2% of cases (95/123). Safety outcomes were favorable: no intraoperative device-related adverse events were reported. Infection complications occurred in 3.3% of cases, and wound recurrence was noted in 6.5%, primarily within six months.

Discussion: This chart review highlights consistent real-world performance of FBD in DFU management across US and EU practices. Real-world DFU outcomes confirm the clinical benefits of FBD observed in controlled trials. Outcomes observed in routine care align closely with those reported in controlled trials, supporting the clinical benefits of FBD beyond the constraints of RCT settings. Compared to prior RCT data1, this study demonstrates comparable effectiveness in the real-world setting, achieving high closure rates with minimal complications. Low infection incidence (3.3%) and modest recurrence (6.5%) suggest durable healing and potential to reduce downstream risks such as hospitalization and amputation. While retrospective design and variable follow-up are limitations, these findings reinforce FBD as a reliable, versatile option for complex diabetic wounds and underscore its potential role in cost-effective, multidisciplinary limb-preservation strategies.

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CR-018 (**RPT-006**)

Microbial Burden and Socioeconomic Predictors of Amputation Risk in Diabetic Foot Ulcers: a Statewide Retrospective Analysis

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Introduction: Diabetic foot ulcers (DFUs) are a major contributor to lower-extremity amputations and wound-related morbidity in the United States. Infection and osteomyelitis are well-established clinical risk factors for poor healing outcomes. However, limited research has examined how microbial diversity and socioeconomic disparities jointly influence amputation risk. Understanding these relationships is essential for developing targeted interventions in high-risk populations.

Methods: We conducted a retrospective cohort study of 27,078 patients diagnosed with DFUs between 2019 and 2024 using data from the Indiana Network for Patient Care (INPC), a statewide health information exchange. Extracted variables included patient demographics, microbiological culture results, ICD/CPT codes for infection and amputation, and zip-code-level median household income. Logistic regression models were used to evaluate associations between infection type, presence of osteomyelitis, and likelihood of amputation. Geographic income data were used to assess socioeconomic patterns in DFU prevalence.

Results: Osteomyelitis was associated with a 7.83-fold increase in odds of amputation ($p < 0.001$). Among amputated cases, the most frequently isolated pathogens were Staphylococcus spp. (22.75%), Enterococcus spp. (11.86%), and Streptococcus spp. (10.42%). Patients with polymicrobial infections involving all three genera had significantly elevated amputation risk (OR = 1.69, $p = 0.013$). DFU prevalence was inversely correlated with median income ($r = -0.2108$, $p = 0.0016$), with rates exceeding 5 per 1,000 residents in low-income zip codes.

Discussion: This study demonstrates that microbial burden and osteomyelitis are strong predictors of amputation in DFU patients. Additionally, socioeconomic disparities relate to DFU prevalence and outcomes, suggesting that patients in underserved communities face additional risks. These findings support the need for enhanced microbial diagnostics, early osteomyelitis detection, and community-level wound care strategies. Public health should consider prioritizing resource allocation and preventive care in low-income regions to reduce amputation rates and improve healing trajectories. Of note, INPC aggregates data from across the state; however, variability in regional data contributions limits the accuracy of statewide estimates for DFU encounter frequency and the availability of bacteriology data.

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CR-020

Enhanced Silver Dressing Versus Dialkylcarbamoyl Chloride-Coated Dressing in Venous Leg Ulcers: a Blinded Re-Assessment of Randomized Controlled Trial Findings

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Introduction: Venous leg ulcers (VLUs) are hard-to-heal wounds that pose a significant burden to patients and healthcare systems worldwide. A carboxymethylcellulose fibre dressing containing ionic silver, ethylenediaminetetraacetic acid, and benzethonium chloride (CISEB*) was designed to address the challenges of patients with hard-to-heal wounds. A previous randomized controlled trial (RCT) demonstrated a significantly higher rate of complete wound closure at 12 weeks with CISEB compared to a dialkylcarbamoyl chloride-coated dressing (DACC†; 74.8% vs. 55.6%, p< 0.0031).1 The current study aimed to validate these findings through an independent, blinded re-assessment of wound closure status.

Methods: Patients with hard-to-heal VLUs were randomized 1:1 to receive either CISEB or DACC for ≤4 weeks. Wounds not healed by week 4 were subsequently managed with standard of care for ≤12 weeks or until healed. The complete study design has been previously described.1 The primary endpoint was incidence of complete wound closure at week 12, assessed by an independent, blinded reviewer using photographs. Inter-rater reliability was an exploratory endpoint. A post hoc tipping analysis modeled the probability of outcome reclassification based on disagreement rates.

Results: A total of 113 VLUs from 105 patients were included (CISEB: n=49; DACC: n=56). Agreement between the independent reviewer and the original RCT assessment was 94.7%, with a Cohen's Kappa of 0.89, indicating 'near-perfect' agreement. Using the disagreement rate (5.3%) to enumerate all plausible reclassification scenarios, the tipping point analysis confirmed a 98% probability CISEB would retain its superiority if outcomes were reclassified based on the blinded assessment. When modelling a more conservative reclassification scenario using the upper bound of the 95% CI for the disagreement rate (11.1%), the probability of superiority remained high at 92.4%. High inter-rater agreement was generally observed across countries and study sites. By week 12, CISEB was associated with a higher rate of complete wound closure compared to DACC (63.5% vs. 59.0%).

Discussion: The strong inter-rater reliability supports the robustness of the results and reinforces the role of CISEB as a standard of care for managing hard-to-heal VLUs. Independent blinded assessment confirmed that CISEB improves wound closure rates in hard-to-heal VLUs compared to DACC, aligning with previous RCT findings.

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CR-021

Comparison of Bromelain-Based Enzymatic Debridement to Collagenase Santyl Ointment - Analysis from the Chronex Multicenter RCT

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Introduction: ChronEx, a multicenter randomized controlled trial, previously demonstrated that a novel bromelain-based enzymatic debridement (BBD) was superior to hydrogel placebo and non-surgical standard of care (NSSOC) in achieving complete debridement (CD) and complete granulation (CG), core components of wound bed preparation (WBP) for chronic venous leg ulcers (VLU). Collagenase SANTYL Ointment, one of the permitted NSSOC treatments, is an FDA-approved agent indicated for debriding chronic dermal ulcers. This post hoc analysis evaluates the efficacy of BBD compared with SANTYL in the VLU subgroup of ChronEx.

Methods: Patients with chronic VLU were randomized 3:3:2 to daily BBD, placebo, or NSSOC for up to 14 days or until CD, followed by weekly NSSOC through 12 weeks. NSSOC included SANTYL, hydrogels, medical-grade honey, and non-active dressings; surgical or mechanical debridement was not allowed. Post hoc analyses assessed incidence and time to CD, CG, and WBP (defined as achieving both), comparing BBD with SANTYL, placebo, and NSSOC excluding SANTYL (NSSOCES). CD and CG were evaluated clinically. Time-to-event differences were tested with log-rank tests, and incidences with Fisher exact tests.

Results: Among 119 randomized patients, 46 received BBD, 43 placebo, and 30 NSSOC (8 SANTYL; 22 NSSOCES). Baseline characteristics were comparable across groups. Median time to CD was 9 days (95% CI 5–15) for BBD versus not achieved for SANTYL (22–NA, P = 0.023), 63 days (21–93) for placebo, and 44 days (21–67) for NSSOCES. Incidence of CD within 2 weeks was 63.0% (47.5–76.8) for BBD versus 0% for SANTYL (P = 0.001), 30.2% (17.2–46.1) for placebo, and 18.2% (5.2–40.3) for NSSOCES. Median time to CG and to WBP was 11 days (95% CI 7–50) for BBD versus not achieved for SANTYL (22–NA, P = 0.014), 85 days (24–99) for placebo, and 61 days (30–85) for NSSOCES. Incidence of WBP was 78.3% (63.6–89.1) for BBD versus 37.5% (8.5–75.5) for SANTYL (P = 0.03), 60.5% (44.4–75.0) for placebo, and 68.2% (45.1–86.1) for NSSOCES.

Discussion: This post hoc analysis demonstrates that BBD outperforms SANTYL in accelerating CD, CG, and overall WBP, and in improving the incidence of WBP. These findings reinforce BBD as an effective modality for optimizing wound bed preparation in chronic VLU.

CR-022

Lymphedema Therapy Improves Outcomes in Patients with Concurrent Diabetic Foot Ulcer and Lymphedema.

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Introduction: Introduction: Diabetic foot ulcers (DFUs) are the most common complication of diabetes, and have significant impact on morbidity and mortality.[1,3] Studies indicate that concurrent lymphedema impairs healing in DFUs.[2,3] Peripheral edema, found in 38% of DFUs, has been associated with worse outcomes.[2] RCTs have shown that edema management improves outcomes.[1] The current IWGDF guidelines advise assessment of edema and treatment of edema when present, no recommendations are provided on intervention.[5] Our objective was to compare healing outcomes in individuals with active DFU, lymphedema and concurrent leg ulcer (DFU/LE/LU) versus those with DFU, lymphedema and no concurrent leg ulcer (DFU/LE) treated with and without manual lymphatic drainage (MLD).

Methods: Materials and **Methods:** A retrospective cohort study was conducted over a 10-year period at a multidisciplinary wound center. Patients with DFU/LE/LU and DFU/LE were divided into cohorts: those who received MLD and those who did not. Primary outcomes measured were time to complete DFU closure and healing of DFU at 12 weeks and 20 weeks.

Results: Results: Twenty patients (DFU/LE and DFU/LE/LU) received MLD. The mean-time-to-wound healing was 22.5 weeks (range: 3.9-74). Closure rates were 45% by 12 weeks, 65% by 20 weeks. Twenty-one patients did not receive MLD. The mean-time-to-wound closure was 25.9 weeks (range: 3.6-77). Closure rates were 38% by 12 weeks, 57% by 20 weeks. In DFU/LE, mean-time-to-wound closure for MLD cohort was 13.6 weeks compared to 25 weeks in no MLD cohort.

Discussion: Discussion: Although differences between the groups were not statistically significant, individuals with concurrent DFU and

lymphedema who received MLD had higher healing rates, the biggest difference was seen in the individuals with DFU/LE that received MLD. Patients with DFU/LE/LU received lymphedema therapy at a higher rate than individuals with DFU/LE (p = 0.007). Larger studies are needed to confirm the impact of lymphedema therapy on DFU outcomes and guide recommendations on interventions regarding edema management in DFU.

CR-023

Optimal Concentration of Tarumase for Wound Healing and Debridement of VLUS

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Introduction: Tarumase is a trypsin-like serine protease that is being investigated for its ability to debride and actively support healing of venous leg ulcers (VLUs) via activation of the PAR2 receptor. During early Phase II trials the emphasis of clinical testing has been to establish an optimal concentration that could be taken into later Phase II and III clinical trials utilising co-primary endpoints for debridement and wound healing. We seek to illustrate the combined data sets from two pilot trials SC_VLU_001 and 003 over the 4 week periods studied.

Methods: Clinical trials SC_VLU_001 and 003 assessed the clinical safety and efficacy of tarumase gels across a concentration range of 1-24U/mL using a common population of VLU patients (ages 25-87; wound sizes 2-45 cm2) and a common dosing frequency (3 times weekly for four weeks) in combination with standard of care (moist wound dressing + compression). In study 03 the volume of gel administered was halved from 0.4 mL/cm2 to 0.2 mL/cm2. Both studies had common endpoints for assessing safety (AE, pain and local tolerability effects) and efficacy assessments included partial area reduction in wound surface area, rate of wound healing (cm2/day) and rate of wound debridement (cm2/day).

Results: It was observed that as the concentration of tarumase was increased, the rate of debridement and the rate of healing both increased, with corresponding reductions in mean partial wound area. Indeed, 75% of the patients treated with 24U/mL, reached a minimum threshold of >40% reduction in wound surface area, indicative of these patients achieving complete healing by 12 weeks. At the highest dose there were no treatment related AEs, no indications of increased local tolerability and no pain on application.

Discussion: The results obtained at the highest concentration of 24U/mL, highlight the ongoing potential of tarumase gels to achieve continuous and sustained debridement of sloughy VLU wounds leading to increased wound healing. Surprisingly, at the highest concentration tested (24U/mL), the data also show that median healing rates (cm^2/day) exceed the debridement rates (cm^2/day) by a factor of 2.5, suggesting that at this concentration the wound healing effects may be greater than the potential debridement effects.

CR-024

Clinical Evaluation of an Autologous Blood Patch System for Chronic Diabetic Foot Ulcers: a Multicenter Prospective Study

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Introduction: Chronic diabetic foot ulcers (DFUs) remain one of the most challenging and costly complications in wound care, often resistant to standard therapies and associated with infection, amputation, and impaired quality of life. Biologic treatments that leverage the patient's own healing mechanisms have emerged as promising alternatives. This study evaluated the clinical performance of an autologous blood patch system, a point-of-care therapy that transforms a small sample of whole blood into a stabilized clot patch creating a biologically active wound matrix rich in regenerative components in comparison with standard of care (SOC) in patients with chronic DFUs.

Methods: In this prospective, multicenter, open-label controlled study, 20 adults with chronic DFUs (≥4 weeks' duration) were enrolled across three sites. Patients received either the autologous blood patch system plus SOC (n = 10) or SOC alone (n = 10) for up to 12 weeks. Weekly assessments documented wound size, closure, and safety. The primary endpoint was the incidence of complete wound closure at 12 weeks; secondary endpoints included time to closure, percent area reduction (PAR) at 4, 8, and 12 weeks, and adverse events. The autologous blood patch system (FastSkin) was applied at the point of care following standard preparation procedures.

Results: Treatment with the autologous blood patch system achieved a 6-fold higher closure rate than SOC (60% vs 10%) and a faster median time to closure (9 weeks vs 11 weeks). Mean PAR reached 93% at 8 weeks in the treatment group versus 33% for SOC, with durable closure confirmed at follow-up. Treated wounds demonstrated rapid granulation, epithelialization, and improved tissue quality. No treatment-related adverse events were reported.

Discussion: This clinical study demonstrates that the autologous blood patch system is a safe and effective biologically active therapy for chronic DFUs. By utilizing the patient's own blood to create a regenerative matrix, it re-engages natural healing pathways and accelerates closure. These findings establish a clinical foundation for future regenerative enhancements using advanced bioactivation strategies in wound repair.

CR-025

Do Wound Measurement Protocols in Facilities Standardize Clinician Technique and Lead to More Consistent Results?

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Introduction: The box[1,2], clockface[3,4], and longest length/widest width3,4 methods are commonly described wound measurement techniques; however, limited evidence exists evaluating consistency of technique application in clinical practice. Variability in wound measurements may be influenced by clinician education, confidence, and communication of expectations across care teams. This study examined clinician confidence, organizational protocols, and wound measurement practices.

Methods: Using a cross-sectional design, researchers developed a face- and content-validated anonymous survey and collected responses over six months using convenience sampling. Recruitment occurred through professional wound care organizations, hospitals, universities, social media platforms, and industry wound care education events. Participants completed a Qualtrics survey assessing confidence, organizational protocol, and wound measurement strategy. Participants measured four standardized two-dimensional wound images using their preferred technique (box, longest length/widest width, or clockface). Missing data were addressed using zero/constant value imputation. Data were analyzed using Microsoft Excel and Jamovi5. ANOVA evaluated differences in confidence among clinicians with advanced wound care certification. Pearson correlation assessed relationships between advanced certification, confidence, and knowledge of reimbursement impact. Facility protocol use was analyzed using odds ratios, and associations between certification and technique use were examined using chi-square analysis.

Results: Ninety-four clinicians participated; 94% reported using a paper ruler for wound measurement. Consistent measurement across all four wounds was demonstrated by 20% (19/94) of participants using the box method, whereas no participants using longest length/widest width or clockface methods demonstrated consistency. Clinician confidence was high overall, with 34% reporting extreme confidence, 55% very confident, and 10% somewhat confident. Clinicians with advanced wound care certification reported significantly higher confidence ($F=4.39$, $p=.039$). Among participants demonstrating consistent measurement, 58% held advanced certification. While 76% reported the presence of organizational measurement protocols, facility protocol was not a significant predictor of box method use (OR=.78, p=.55). In contrast, advanced wound care certification was strongly associated with box method use ($\chi2(2)=23.14$,

p<.001, φ=0.49).

Discussion: These findings suggest that clinician education and effective communication of standardized measurement expectations exert greater influence on wound measurement consistency than formal organizational protocols alone. Targeted training and interdisciplinary communication may enhance measurement reliability, improve documentation quality, and support consistent clinical and reimbursement decision-making.

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CR-026

A Prospective Study of a Single-Use Negative Pressure Wound Therapy System in a High-Risk Revision Total Hip or Knee Arthroplasty Cohort

Philip Huang, MD; Jennifer A. O'Connell, BA; Cheryl Rothermel, RN; Liis A. Teene, MSc.; John Timmons, RN, DipNS, Master of Nursing, PG Dip PGTLHE

Introduction: Total hip arthroplasty (THA) and total knee arthroplasty (TKA) are common surgical procedures. While rates of surgical site complications (SSCs) are relatively low in primary procedures, approximately one in 20 TKAs will require revision within 10 years, with rates of complications up to 15-fold higher with revision. Closed incision negative pressure wound therapy (ciNPWT) is increasingly being used to prevent SSCs in patients undergoing revision arthroplasty. A study was undertaken to evaluate the performance of a canister-based, single-use, NPWT system following revision THA or TKA.

Methods: The investigation was undertaken at 7 high-volume orthopedic centers in the USA. The primary endpoint was the proportion of patients with at least one SSC within 90 days of post-revision surgery. Secondary endpoints included the incidence of surgical site infection (superficial, deep, or organ space) dehiscence, hematoma, and seroma formation at 30 and 90 days, and drainage within 14 days.

Results: A total of 105 patients were recruited. At 30 days post-operatively, 3 patients had experienced an SSC, none of which were deemed to be device-related. Importantly, skin was deemed 'healthy' by investigators at 99.0% of assessments, with no maceration, hematomas or seromas reported. Mild blistering was reported in 5 patients, but peri-wound skin was still deemed 'healthy' by investigators in two of those cases.

Discussion: In this report of 30-day study findings, the canister-based NPWT system performed well after revision THA and TKA. Low SSC incidence and highly favorable outcomes relating to skin condition were reported. Systems that can reduce the risk of SSCs occurring in high-risk patients while minimizing skin blistering around the incision site are desirable to health care providers, payers and patients.

CR-027 (RPT-002)

Incidence of Surgical Site Complications After Primary Total Hip or Knee Arthroplasty: a Comparison of Silver-Containing Dressings with Single Use Negative Pressure Therapy in a Low-Risk Cohort.

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Introduction: Surgical site complications (SSCs) are expensive and cause significant mortality and morbidity. Single-use closed-incision negative pressure wound therapy (ciNPWT) systems may reduce SSCs in high-risk patients, but their benefit for low-risk patients is underexplored. An investigation was undertaken to compare the rate of SSC between low-risk cohorts managed with silver-containing dressings incorporating silicone wound contact layers (SD) vs. ciNPWT following primary total hip arthroplasty (THA) or total knee arthroplasty (TKA).

Methods: A retrospective registry study was conducted using a large dataset (Premier Database, approximately 700,000 patients) who had undergone primary THA or TKA in the USA between 2022-2024. Low-risk patients were defined as scoring < 2 at the time of surgery on the Charleston Comorbidity Index. The primary endpoint was the difference in the proportion of subjects who developed at least one SSC within 90 days of surgery between those who had SD applied compared to those who had ciNPWT applied.

Results: A total of 10,351 patients in the SD group and 921 patients in the ciNPWT were identified as low-risk; the uneven distribution between groups was resolved using propensity score matching. In the matched cohort, 4/921 (0.4%) of the SD group and 12/921 (1.3%) of the ciNPWT group experienced at least one SSC within 90 days, resulting in a risk ratio (RR) of 0.33. The primary analysis demonstrated non-inferiority of SD relative to ciNPWT (p< 0.01). A sensitivity analysis confirmed the primary analysis.

Discussion: SD was non-inferior to ciNPWT in the prevention of SSCs after primary THA or TKA surgeries in low-risk patients. These findings support the use of SDs as a cost-effective and practical alternative to ciNPWT in low-risk THA/TKA outpatients.

CR-029

A Prospective Randomized Controlled Trial Evaluating an Acellular Porcine Liver Tissue Scaffold* in Complex Wounds

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Introduction: Complex, multi-dimensional wounds remain a significant clinical and economic burden, with limited high-quality evidence guiding treatments. Acellular porcine liver tissue scaffold* has emerged as a novel regenerative technique with early observational studies suggesting improved granulation tissue and accelerated closures via its highly porous extracellular matrix in complex wounds. To study more rigorously, we initiated a prospective randomized controlled trial (PRCT) to evaluate whether this CAMPs scaffold improves healing trajectories in complex soft tissue wounds compared with standard care alone.

Methods: This IRB-approved PRCT enrolls adults with complex soft tissue wounds including chronic decubitus ulcerations, post fasciotomy wounds, and post necrotizing skin and soft tissue infections to evaluate wound-closure rates. Lower-extremity and pelvic wounds were selected by the treating clinical teams when healing poorly and consented for enrollment. Participants were randomized 1:1 into one of two groups:

- Experimental Group: Weekly placement of the acellular porcine liver tissue scaffold* up to 4 times over 4-6 weeks and then every other week follow-up.
- Control Group: Ongoing weekly standard of care for 4-6 weeks. At 4–6 weeks, patients in the Control Group were permitted to cross over to receive weekly scaffold placement for four weeks. Digital photographs were reviewed to assess healing progress, measure changes in wound volumes and area reduction trajectory rates, and qualitative evaluations of tissue and any sampling characteristics over time and across groups.

Results: Interim analyses demonstrate that this acellular porcine liver tissue scaffold* is associated with accelerated wound-area reduction and improved tissue quality compared with standard care alone. Participants have reported favorable tolerability, and no device-related serious adverse events have been observed. Early signals suggest this scaffold* may be particularly beneficial in complex, multi-dimensional wounds that have stalled despite conventional therapy.

Discussion: This PRCT represents one of the first randomized evaluations of an acellular porcine liver tissue scaffold* in advanced wound care. Early findings support its potential to improve healing trajectories and reduce overall wound burden. Ongoing study expansion and continued academic–industry collaboration will help define patient-selection criteria, optimize treatment protocols, and clarify the clinical and economic value of this technology.

CR-030

Safety and Efficacy of a Self-Assembling Peptide Biomimetic Matrix in Refractory Lower Extremity Wounds

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Introduction: Given the magnitude of its clinical and economic burden, difficult-to-treat lower extremity wounds remain a serious unmet medical need. The purpose of this study was to evaluate the performance of a novel biomimetic matrix (BMM) in refractory lower extremity wounds. BMM is a synthetic self-assembling peptide matrix designed to (i) provide antibacterial protection via cationic charge and (ii) support tissue regrowth via a 3D scaffold that resembles the human skin extracellular matrix.

Methods: Twenty subjects were enrolled based on wound chronicity and lack of response to previous treatments, including advanced biological matrices. Patient comorbidities included diabetes, peripheral vascular disease, neuropathy, Charcot foot, osteomyelitis/infection, and history of prior amputations/ulcerations. Twenty difficult-to-treat lower extremity wounds, including diabetic foot ulcers and other non-healing ulcers, received the FDA-approved BMM*. BMM was applied after appropriate wound bed preparation, including debridement, following the manufacturer's instructions. Wound characteristics were assessed at baseline and monitored during following visits.

Results: Subjects received 1-4 BMM applications total. Despite the failure of previous interventions, in all cases, a rapid response towards healing was noted with BMM treatment. A reduction in inflammation followed by granulation tissue presence was observed as early one week after BMM application. This was followed by maturation of the granulation tissue leading to re-epithelialization over time. A substantial depth reduction was observed after a single application. Wounds presenting with exposed tendon / bone or tunnels achieved coverage of the originally exposed structures and complete resolution of tunneling. Within the study period, complete re-epithelialization was achieved in 17 cases (85%), with 15 ulcers (75%) fully closed by week 12. The median time to complete wound closure was 8 weeks and 2 BMM applications, with some ulcers healing as early as 2 to 4 weeks after a single application. Noticeable improvement in odor, drainage, and peri-wound skin integrity was also recorded. No re-infection nor adverse events were observed.

Discussion: BMM resulted in rapid healing response of refractory ulcers with early formation of granulation tissue that resulted in re-epithelization with accelerated wound closure rates. This study demonstrates the safety and efficacy of BMM in treating difficult-to-treat lower extremity wounds by tissue regrowth and re-infection prevention.

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CR-031

Assessment of Need for a Fit-for-Purpose Patient-Reported Outcome Measure for Diabetic Foot Ulcer (DFU)

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Introduction: A Core Outcome Set for assessing interventions for Diabetic Foot Ulcer (DFU) was developed in 2024, and among the final 8 core outcomes for evaluation of effectiveness of a DFU intervention is health-related quality of life. Patient-reported outcome measures and assessments of quality life are known to be underutilized in DFU studies. A systematic literature review conducted in 2022 found no fully suitable PRO for assessment of quality of life in patients with diabetic foot ulcer. This study sought to review newly generated evidence since the cutoff date of that 2022 review to provide a recommendation on which PROs, if any, are fit-for-purpose for evidence generation of improvement in quality of life for DFU interventions for patients in the United States.

Methods: A targeted literature review was conducted using PubMed, ChatGPT, and Google, and Gemini to capture peer-reviewed journal articles as well as grey literature (e.g. publications from FDA) on evidence supporting new or existing English language PROs assessing quality of life in DFU patients in the United States published from February 1, 2022 to December 18, 2025.

Results: New evidence on the PROs cited in the 2022 review were only in non-US patients. Globally, two new PROs were developed, DiaFootQ and WOUND-Q. DiaFootQ did not include any US patients and therefore was eliminated from consideration. WOUND-Q was developed and validated with an international sample of patients, including US patients, of a variety of chronic wound types, including DFU. Although WOUND-Q was qualified by FDA as a Medical Device Development Tool (MDDT) in 2024, it was not qualified for use in hypothesis testing. Additionally, WOUND-Q was developed and validated among patients with a chronic wound that had been unhealed for at least 3 months. This makes it not applicable to most DFU studies, as even advanced wound therapies typically seek approval for indicated use beginning at 4 weeks.

Discussion: While the WOUND-Q PRO was qualified for use by the FDA as a Medical Device Development Tool (MDDT), limitations exist for use in studies of interventions in DFU. Existing PROs should be further studied to validate their use in assessing improvement in quality of life for US patients with any stage of DFU in response to any type of intervention, or a new PRO should be developed and validated to be fit-for-purpose for this use case.

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CR-032

Multicenter, Randomized Controlled Trial Evaluating Ovine Forestomach Matrix -Hyaluronic Acid Graft vs Standard of Care in the Treatment of Chronic Diabetic Foot Ulcers: an Interim Analysis

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Introduction: A prospective, multi-center, randomized control trial is on-going to compare outcomes between a novel composite CAMP containing ECM and hyaluronic acid (OFM-HA) versus standard of care (SOC) in the treatment of chronic DFUs. The following presents the interim analysis of the first 128 DFUs.

Methods: In accordance with established protocols[1-3], a prospective, randomized controlled trial (RCT) is ongoing across 8 outpatient centers in the US. Wagner 1 or 2 DFUs unresponsive to SOC treatment for at least four weeks were enrolled and randomized to receive either OFM-HA or SOC (collagen-alginate dressing). Patients received weekly treatment, for a maximum of 12 weeks. Closure of the index ulcer was validated by a blinded independent physicians panel. Primary endpoint was incidence of closure at 12 weeks. Secondary endpoints included time to heal, PAR, W-QoL, and pain. Tertiary endpoints included product wastage and cost to closure.

Results: The interim analysis included 128 patients in the intent-to-treat (ITT) group (n=64 OFM-HA; n = 64 SOC) and 103 who completed the study per protocol (PP) (n=55 OFM-HA; n=48 SOC). The percentage of index ulcers healed at 12 weeks was 30/64 (47%) in the OFM-HA group and 20/66 (30%) in the SOC group. The time-to-heal was 67.3 days (95% CI: 61.4-73.3) in the OFM-HA group and 74.0 days (95% CI: 69.2-78.7) in SOC group. In the PP population the percentage of index ulcers healed at 12 weeks was 30/55 (55%) in the OFM-HA treatment group and 20/48 (42%) in the SOC group. The time-to-heal was 65.5 days (95% CI: 59.0-72.0) in the OFM-HA treatment group and 71.5 days (95% CI: 65.7-77.3) in SOC group.

Discussion: In comparison to the SOC, DFUs treated with OFM-HA have an increased 12-week incidence of healing and reduced time-to-heal. Rigorous statistical analysis will be presented on completion of the on-going controlled trial.

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CR-033

Comparative Healthcare Resource Use and Costs for Hospitalized Patients Receiving Durable Negative Pressure Wound Therapy from Different Suppliers

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Introduction: Durable negative pressure wound therapy (NPWT) is used in hospitals for acute and chronic wounds. While NPWT is associated with positive clinical and economic outcomes, few studies have evaluated differences in healthcare resource use and economic impact between different therapy systems. This study aimed to compare the healthcare resource utilization and costs for patients treated with devices from two durable NPWT suppliers.

Methods: This retrospective study used the Premier Healthcare Database*, a large, national, all-payer hospital database. Adult patients treated with durable NPWT from Supplier A§ or B† between 2020-2024 were included if they had not received NPWT within 180 days or disposable or abdominal NPWT. Patients were assigned to Supplier A or B based on the NPWT product used. A matched cohort was created with exact matching on wound type, hospital size, teaching status, and age (±1 year), followed by 1:4 propensity score matching using a logistic regression model that included race, ethnicity, insurance type, admission type, and Charlson Comorbidity Index score.

Results: A total of 733 hospitals used durable NPWT from Supplier A (n=691), Supplier B (n=12), or both suppliers (n=30). A total of 10,330 patients were included in the matched cohort (Supplier A: n=8,264; Supplier B: n=2,066). Length of stay was 1.73 days shorter for patients treated with Supplier A than Supplier B (13.77 vs. 15.5 days, p=0.0001). Duration of NPWT therapy was similar between groups (7.25 vs. 7.37 days, p=0.6346). NPWT-associated costs were $304 higher for Supplier A (p< 0.0001). The average number of operating room debridement procedures was lower for Supplier A (1.1 vs. 1.45, p< 0.0001). Total hospital costs were $3,497 lower for Supplier A, although not statistically significant (p=0.0635), and total charges were $30,217 lower (p=0.0006). Thirty-day post-hospitalization wound-related costs trended lower for Supplier A but were not statistically significant, and 30-day all-cause and wound-related readmissions were similar between suppliers.

Discussion: Study findings indicate differences in resource utilization, including length of stay, debridements, and costs between patients treated with durable NPWT systems from two suppliers. These differences should be considered in clinical and economic decision-making when selecting therapy for patients with complex wounds.

CR-034

Clinical Evaluation of an Autologous Blood Patch System for Chronic Diabetic Foot Ulcers: a Multicenter Prospective Study

Brock Liden, DPM

Introduction: Chronic diabetic foot ulcers (DFUs) remain one of the most challenging and costly complications in wound care, often resistant to standard therapies and associated with infection, amputation, and impaired quality of life. Biologic treatments that leverage the patient's own healing mechanisms have emerged as promising alternatives. This study evaluated the clinical performance of an autologous blood patch system, a point-of-care therapy that transforms a small sample of whole blood into a stabilized clot patch creating a biologically active wound matrix rich in regenerative components in comparison with standard of care (SOC) in patients with chronic DFUs.

Methods: In this prospective, multicenter, open-label controlled study, 20 adults with chronic DFUs (≥4 weeks' duration) were enrolled across three sites. Patients received either the autologous blood patch system plus SOC (n = 10) or SOC alone (n = 10) for up to 12 weeks. Weekly assessments documented wound size, closure, and safety. The primary endpoint was the incidence of complete wound closure at 12 weeks; secondary endpoints included time to closure, percent area reduction (PAR) at 4, 8, and 12 weeks, and adverse events. The autologous blood patch system (FastSkin) was applied at the point of care following standard preparation procedures.

Results: Treatment with the autologous blood patch system achieved a 6-fold higher closure rate than SOC (60% vs 10%) and a faster median time to closure (9 weeks vs 11 weeks). Mean PAR reached 93% at 8 weeks in the treatment group versus 33% for SOC, with durable closure confirmed at follow-up. Treated wounds demonstrated rapid granulation, epithelialization, and improved tissue quality. No treatment-related adverse events were reported.

Discussion: This clinical study demonstrates that the autologous blood patch system is a safe and effective biologically active therapy for chronic DFUs. By utilizing the patient's own blood to create a regenerative matrix, it re-engages natural healing pathways and accelerates closure. These findings establish a clinical foundation for future regenerative enhancements using advanced bioactivation strategies in wound repair.

CR-035

Digital Measurement of Surface Wound Area and Depth: Assessing Accuracy and Reproducibility in Benchtop and Clinical Settings

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Introduction: Accurate and reproducible wound measurement is important for assessing healing progression and guiding clinical management decisions. However, traditional ruler-based measurement techniques are inherently unreliable, yielding inconsistent results across practitioners and settings due to their susceptibility to geometric overestimation and operator-dependent variability as well as lack of standardization [1, 2]. The introduction of portable digital imaging systems has enabled automated, contact-free wound measurement, offering a transformative solution for improving precision and reproducibility at the point of care. This study assessed the accuracy and reproducibility of a handheld imaging device* designed to measure wound surface area, length, width, and depth compared with ruler-based measurements and ground truth digital photography methods.

Methods: This multicenter, prospective clinical study compared wound area measurements obtained with the imaging device* and ruler-based techniques against a ground truth digital photography method. Separate bench and clinical validations evaluated depth measurement performance using the device's* AutoDepth function against a calibrated three-dimensional optical scanner. Accuracy, intra- and inter-user variability, and agreement were assessed using mean percentage error (MPE), coefficient of variation (CV), intraclass correlation coefficients (ICC), and Bland–Altman analysis. **Results:** The device* demonstrated high accuracy and reproducibility for wound surface area, length and width measurements compared with ruler-based and ground truth digital photography methods and for depth compared with three-dimensional imaging. MPE for surface area was < 10%, representing a tenfold improvement over ruler estimation (77.9%). For wound area, intra- and inter-user CVs were < 10%, and for depth, ICCs were ≈0.99. Variability between users was minimal, and measurements showed consistency across a range of wound types, sizes, and skin types.

Discussion: The findings from this study demonstrated that the imaging device* delivered precise, consistent and reproducible measurements of wound area and depth across a range of wound types, exceeding the performance of conventional ruler-based methods, which are highly unreliable and inaccurate, when compared with ground truth methods. These findings suggest that integrating the device* into routine wound-assessment workflows can help overcome common limitations of conventional methods such as overestimation, variability, and inaccuracy, while allowing for more accurate monitoring and documentation of wound progression, and guiding more informed therapeutic decisions.

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CR-036

Retrospective Review of 5318 Patients with Chronic Lower Extremity Wounds Treated with Intermittent Topical Oxygen Therapy

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Introduction: This study evaluated the effectiveness of a unique multi-modality combination therapy that delivers noncontact cyclical compression with pressurized topical oxygen, intermittent topical oxygen therapy (ITOT), in the treatment of recalcitrant chronic lower extremity wounds of varied etiologies in a complex, comorbid population

Methods: Data from 5318 patients treated between January 2023 and December 2024 for lower extremity wounds were retrospectively analyzed. Patients with incomplete data, or who were still receiving therapy and did not have outcome data were excluded, resulting in a final cohort of 3126 patients, 89.4% (n=2794) male and 10.6% (n=332) female. Chronic wounds treated included diabetic foot ulcers (72.2%, n=2257), venous leg ulcers (20.1%, n=628), arterial ulcers (7%, n=209), and atypical wounds (1%, n=32). The outcomes assessed included healing rates, retreatment rates, and complications. The mean patient age was 69.6 (±12.3) years. The mean pre-treatment wound age was 7.3 (±15.7) months, and the mean number of wounds per patient was 1.1 (±0.4).

Results: 64.8% (n=2027) of the wounds achieved complete healing in 4.2 (SD±2.5) months, despite a mean pre-treatment wound age of 7 (±15.9) months. The need for retreatment due to wound recurrence was low, 2.7% (n=54), with a mean follow up time of 13.9(±4.9) months. The rates of hospitalization and amputation were 3.7% (n=115) and 6.1% (n=191) respectively, with subgroup analyses showing consistent healing rates. ITOT therapy significantly reduced amputation and hospitalization rates compared to historical standards.

Discussion: Multi-modality ITOT is an effective, noninvasive, patient-applied therapy that synergistically addresses the root causes of chronicity seen in nonhealing wounds: inflammation, edema, and tissue hypoxia. In this large cohort study, ITOT demonstrated superior wound healing outcomes in complex, comorbid populations, compared to those reported in population based real world studies. The results of this study support the durable healing outcomes demonstrated in previously published ITOT randomized controlled trial and real-world evidence studies.

CR-037

Use of a Novel Hydrosurgical Debridement Device with Negative Pressure as a New Chronic Wound Therapy Model

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Introduction: This prospective, single-arm pilot study (N=20) aims to evaluate the combined efficacy of Hydrosurgical Wound Therapy and continuous Negative Pressure Wound Therapy (NPWT) in chronic, non-progressive lower extremity wounds. The primary objectives are to determine the Percent Area Reduction (PAR) at Week 4 and the median time required to cease NPWT application.

Methods: Twenty patients with chronic lower extremity wounds (< 36 cm2) non-responsive to standard care (4+ weeks) were enrolled in this 4-week protocol. Patients receive Hydrosurgical Wound Therapy (MWT) twice weekly for precise debridement and stimulation. NPWT is continuously applied between MWT sessions, with dressing changes every 48–72 hours. Follow-up is conducted until 100% wound closure or 12 weeks.

Results: The combined therapy is projected to demonstrate high efficacy due to selective debridement and continuous stimulation. The data set shows Median Percent Area Reduction (PAR) of 78% at Week 4. The median time to cease NPWT (depth 0.1 cm) is 3.5 weeks, accelerating the transition to definitive closure. Low incidence of infection and measurable improvements in patient pain (VAS) and Quality of Life (QoL) scores are also expected.

Discussion: The combination of hydrosurgical Hydrosurgical Wound Therapy and continuous NPWT is projected to be a safe, rapid, and highly effective treatment pathway for chronic, stagnant lower extremity

wounds. This data supports the adoption of this combined modality as an intensified treatment protocol for improved wound bed preparation and accelerated granulation, offering a potentially more cost-effective strategy for complex, non-healing wounds compared to prolonged standard care.

CR-038

Senile Gluteal Dermatosis, Chronic Tissue Injuries, and Friction Skin Injuries: a Unifying Pathology – a Case Series and Histopathologic Review

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Introduction: In 2009, NPIAP guidelines separated friction from shear, and friction was no longer considered an independent risk factor for pressure injury formation. This has led to a decrease in research on friction injuries despite increasing recognition in wound care and dermatology. Additionally, there have been no histopathologic findings across diverse skin tones. This study aims to unify the terminology and pathology of friction skin injury (FSI), chronic tissue injury (CTI), and senile gluteal dermatosis (SGD), which may represent the same underlying condition. Understanding this pathology is essential for accurate diagnosis, appropriate treatment, and skin injury prevention.

Methods: We conducted a case series of seven elderly, mostly immobile male patients (BMI range 29–39) presenting with gluteal and posterior leg skin friction injuries at the Charles George VA Medical Center between 2024 and 2025. All underwent 3 mm punch biopsies and histopathologic review by two pathologists. We performed a systematic literature review (n=500 articles, 22 selected) from PubMed and Google Scholar using keywords "friction skin injury," "senile gluteal dermatosis," and "chronic tissue injury." Treatment included offloading, moisture control, topical emollients and autologous skin micrografting.

Results: Our findings support that FSIs, CTIs, and SGD represent a single clinical-pathologic entity. Biopsies consistently showed features of chronic spongiotic dermatitis with vascular proliferation and perivascular inflammation.

Discussion: The diagnosis of FSI is primarily clinical, as histopathologic features are nonspecific. Management should emphasize friction and moisture reduction, patient repositioning, and pressure injury prevention strategies. This series provides the first matched histopathologic case series from a U.S. institution across diverse skin tones. Larger studies are warranted to refine diagnostic criteria and assess preventive interventions such as moisture-control and offloading in at-risk populations.

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CR-040

Healing Times in Pressure Injuries and Diabetic Ulcers Following Two Years of Digital Wound Care Use

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Introduction: Pressure injuries (PI) and diabetic ulcers (DU) are common wounds in home healthcare (HH) facilities with PI prevalence rate reaches up to 25%, and diabetic ulcers are difficult to heal, with potential complications of infections and/or amputations. Nonetheless, there is a lack of data on healing durations for which HH facilities can compare their cases healing trajectory to it. HH facilities, in recent year, have resorted to using digital wound care systems (DWCS) to support standardized documentation. In this study, we compared healing at HH that adopted DWCS between two years, looked at wounds that healed within three months versus those that needed more time, and reviewed size changes in wounds that were not healed yet but improved.

Methods: This retrospective descriptive study used anonymous data from 50+ HH agencies using DWCS during 2022 and 2023. Analyses included healing duration over time and trends in wounds healing in < three months versus > three months ulcers. For non-healed but improved wounds, we assessed area reduction and the time to first measurable improvement. T-tests and ANOVA were applied.

Results: The use of DWCS was linked to shorter healing times in both ulcers. For PIs, a total of 10,209 wounds were healed and the average healing time decreased from 79.6 - 50.3 days in 2022 vs 2023. Average healing of wounds that took > three months was 73.2 days. Further, non-healed but improved PIs showed a 25.4% faster reduction time. Larger PIs (>4 cm2) showed greater reductions, with time to improvement decreasing by 35.5 days DUs showed similar results, with healing time decreasing from 98.9 to 68.1 days ($p< 0.001$). The proportion of healing within three months also rose by 5.3%. Area reduction and time to improvement improved as well, particularly for wounds over 2 cm^2.

Discussion: Regular use of the DWCS was linked to faster healing and earlier signs of improvement in both PIs and DUs even among the larger wounds, which are the most difficult to handle. The results indicate that regular use of DWCS can support everyday care and track wound healing over time.

CR-041

Evaluating Closed Incision Negative Pressure Therapy Use Following High-Risk Caesarean Section in a Middle East Population

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Introduction: Rates of caesarean section have been increasing over the past decade.[1,2] If surgical site complications (SSCs) develop following caesarean section, maternal morbidity and mortality may be greatly impacted. Postoperative incision management strategies such as closed incision negative pressure (ciNPT*), have been used to mitigate post-surgical complications. However, limited evidence exists on the use of ciNPT over caesarean section incisions in the United Arab Emirates (UAE). The effect of ciNPT in the management of closed incisions following caesarean section was examined.

Methods: Patients underwent caesarean section between 2022 and 2024 at a single acute care hospital in the UAE. All 82 patients underwent vaginal cleansing and received antibiotics prior to surgery. A Pfannenstiel incision was used, followed by closure with subcuticular suturing. Patients received either traditional silver dressings (SOC, n=28) or ciNPT (n=54) for postoperative care. SOC dressings remained in place for 3-7 days, while ciNPT dressings were changed every 5-7 days. Patient and incision outcomes were assessed at each dressing change. Means and standard deviations were generated for continuous variables, while counts and frequencies were generated for categorical variables. Two sample t-tests compared continuous variables and Fisher Exact tests compared categorical variables.

Results: There were no significant differences between the ciNPT and SOC groups for baseline demographics; however, the ciNPT group had a higher proportion of severely obese patients (body mass index > 40 kg/m2) and patients who had two or more previous caesarean deliveries. The ciNPT group had a lower SSC rate compared to the SOC group (0/54 [0%] vs. 6/21 [21%], respectively; p=0.0011), as well as a lower number of surgical site infections (0/54 [0%] vs. 3/28 [11%]; p=0.037) and deep infections (0/54 [0%] vs. 3/28 [11%]; p=0.037).

Discussion: In this patient population, ciNPT was well tolerated and may help improve clinical outcomes in high-risk patients undergoing caesarean delivery. Study limitations include retrospective design and potential selection bias, as only high-risk patients were included in the study. Large-scale randomized trials are needed to confirm these findings.

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CR-042

Association of Bacterial Fluorescence with Early Response to Skin Substitutes in Diabetic and Venous Ulcers: a Single-Blinded Prospective Study

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Introduction: Chronic wounds can require skin substitutes, or Cellular, Acellular, or Matrix-type products (CAMPs), when standard therapies fail to achieve healing [1]. Although CAMPs can expedite wound closure and promote tissue regeneration, infection and elevated bacterial burden may reduce their effectiveness by degrading the matrix and consuming oxygen and nutrients [2-4]. Bacterial fluorescence imaging (BFI) using a handheld device* enables bedside, real-time visualization of elevated bacterial loads (≥104 CFU/g) [5-7]. Because significant bacterial burden often remains undetected on clinical examination [8-10], detecting it before CAMP application is important. This study evaluated whether the presence or absence of bacterial fluorescence immediately before CAMP placement was associated with early wound area reduction as a therapeutic response in chronic ulcers.

Methods: This single-blinded, prospective observational study enrolled patients (N=10) at a wound center with uninfected diabetic and venous ulcers indicated for CAMP treatment. Each wound underwent standard wound bed preparation, including cleansing and debridement, followed by BFI evaluation immediately before CAMP application. Wounds were categorized as positive or negative with the presence or absence of red or cyan fluorescence signals detected by the device*, indicating elevated bacterial burden. Healing response was evaluated by percentage area reduction (PAR) at 4±1 weeks post-application using digital wound measurements. Primary endpoint was wound healing of 40% percentage area reduction (PAR).

Results: Eighty percent of nonfluorescent wounds achieved at least 40% of PAR. None of the fluorescent wounds healed as fast ($p < 0.05$). Mean wound area change differed significantly between groups; fluorescence-negative wounds showed a 68% mean reduction in area compared with a 34% mean increase among fluorescence-positive wounds ($p < 0.05$).

Discussion: This pilot study found a significant association between the presence or absence of bacterial fluorescence in the wound at the time of CAMP application and early healing outcomes. Fluorescence-negative wounds were more likely to achieve positive healing, whereas fluorescence-positive wounds showed poor outcome. Fluorescence imaging can help clinicians confirm wound bed bacterial load before advanced therapy. Integrating fluorescence-guided assessment into clinical practice may standardize wound evaluation and optimize CAMP application in chronic wound care.

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CR-043

Correlation of Multispectral Near-Infrared Imaging with Standard Vascular Diagnostics in Chronic Wound Care

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Introduction: Chronic wounds including diabetic foot ulcers and venous leg ulcers impact up to 10.5 million of Medicare beneficiaries 2.5% of the total population of the United States.[1] Adequate tissue perfusion is critical for healing.[2,3] Yet standard vascular diagnostics (ankle-brachial

index (ABI), toe-brachial index (TBI), and transcutaneous oxygen pressure (TcPO2)) often fall short in assessing real-time, microvascular status at the wound bed.[4] Multispectral near-infrared spectroscopy (NIRS) imaging non-invasively measures tissue oxygen saturation (StO2) in real time at and around the wound bed. While promising, its correlation with conventional diagnostics remains underexplored. The purpose of this study is to evaluate the correlation between NIRS-derived StO2 and standard vascular diagnostic tests.

Methods: This ongoing REB-approved, single-center, prospective observational study enrolled 40 adults (≥18 years) with lower extremity wounds, of which 11 cases are included here. Each participant underwent NIRS imaging* across multiple foot planes (plantar, dorsal, lateral) on both feet, with wounds imaged when present, and the palm of the hand included as a control, alongside standard assessments: ABI, TBI, and TcPO2. Primary analysis used Spearman correlation to assess StO2 relationships with vascular parameters ($p< 0.05$). Secondary endpoints included stratification by PAD (Rutherford, Fontaine, WIfI), venous disease (CEAP), and wound severity (Texas classification). Exploratory analyses examined StO2 variability by age, sex, diabetes status, and Fitzpatrick skin type.

Results: The data demonstrated a strong correlation between NIRS-derived StO2 and TcPO2, with TCOM < 40 mmHg corresponding to StO2 < 39% range. Moderate correlations were observed with ABI; however, in patients with diabetes—where ABI is known to be unreliable5 — StO2 showed stronger correlation with TBI. Importantly, NIRS achieved high imaging success rates, likely due to its non-contact and non-invasive design.

Discussion: These early results support NIRS imaging as a clinically relevant adjunct to standard vascular assessments. By delivering point-of-care perfusion insights directly at the wound bed, NIRS may help overcome limitations of traditional tools—particularly in patients with non-compressible vessels. While limited by single-site enrollment, this study highlights NIRS's promise as a scalable, accessible technology with potential to enhance decision-making and equity in wound care delivery.

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CR-044

Final Results of Phase-2 Randomised Controlled « DIAMEND » Study in Chronic Diabetic Foot Ulcer with Topical Multi-Target Cell & Gene Therapy AU1602-C

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Introduction: AUP1602-C is a Microbial Vector used for Gene Therapy (MVGT) which has been shown to modulate inflammation, stimulate tissue repair, and restore healing in patients with non-healing diabetic foot ulcers (DFU)[1,2]. Safety and efficacy of multi-target MVGT AUP1602-C in chronic DFUs has been evaluated in a multi-center, randomized, controlled Phase 2 trial.

Methods: AUP1602-C (INN: Rememulgene arelactibac) consists of living Lactococcus cremoris bacteria genetically engineered to secrete human Fibroblast 2 (h-FGF-2), Interleukin 4 (h-IL-4) and Colony Stimulating Factor 1 (h-CSF-1), and promote wound healing by microenvironment modulation1. Following a successful Phase-1 study (NCT04281992 / EudraCT 2018-003415-22)2, safety and efficacy AUP1602-C were evaluated in a 64-patient, standard-of-care (SoC) plus placebo-controlled patient and central-evaluator blinded, Phase-2 "DIAMEND" study (NCT06111183 / EU CT 2022-502048-10-00). DIAMEND study was conducted in 10 clinical centers in Germany, Italy and Poland. AUP1602-C was administered topically once- or twice-a-week to non-healing, neuro-ischemic DFUs until complete wound closure or maximum for 12-weeks, along with SoC, provided according to IWGDF guidelines. Efficacy endpoints included completed healing and wound area reduction at 20-weeks, with post-hoc focus on chronic ulcers over 3-months old. Results In Intention-To-Treat (ITT) population, complete wound closure rate was 55% and 30% in AUP1602-C twice-a-week and once-a-week groups respectively, and 29% in the placebo group (+26% between placebo and AUP1602-C twice a week, $p >0.05$). In Per Protocol Population (PP), complete closure rates were 56%, 32% and 26% respectively (+30%, $p >0.05$). Focusing on chronic ulcers above 3 months old, complete closure rates were 60%, 28% and 24% (+36%, $p\leq0.05$, statistically significant) in ITT Population, and 64%, 29%, 20% (+44%, $p\leq0.05$, statistically significant) in PP Population. No serious adverse reactions or safety concerns related to AUP1602-C were observed.

Discussion: In first-ever Phase-2 study with a topical gene therapy, AUP1602-C demonstrated the potential to be superior to SoC in treating non-healing, neuro-ischemic DFUs in patients with chronic ulcers over 3-months old. Preparation for a global pivotal study in this target population is under way.

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CR-045

A Comprehensive Scoping Review on the Use of Point-of-Care Infrared Thermography Devices for Assessing Diabetic Foot Ulcers

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Introduction: This scoping review synthesized evidence from thirteen studies on point-of-care infrared thermography devices for diabetic foot ulcers (DFUs), including prospective cohorts, cross-sectional comparisons, and pilot series (Level III–IV evidence). We descriptively summarized findings on diagnostic thresholds, which showed thermography's role in predicting healing, identifying complications, and monitoring DFUs.

Methods: A scoping review was conducted following Arksey & O'Malley and PRISMA-ScR guidelines. Medline, Embase, CINAHL, and Cochrane Library were searched for human studies evaluating point-of-care infrared thermography devices in DFU wound assessment, with all study designs included. Data was extracted from 13 eligible studies, capturing study design, sample size, device type, outcomes, and key findings. Findings were synthesized descriptively and presented in narrative and tabular formats.

Results: The 13 DFU studies (median n=24, range 1-100) were predominantly small observational cohorts or case series (Level III–IV evidence), with 7 out of 13 (54%) studies including a control group. Thermography detected early thermal changes in acute DFUs before they were clinically visible or symptomatic, and before complications were evident.[1] Thermography also demonstrated potential in detecting success of post-revascularization treatment.[2] In many studies, thermography

was shown to identify chronic temperature increases associated with infection risk in DFUs.[3-4] Additionally, monitoring weekly thermographic changes accurately predicted healing trajectory (p=0.036).[5] Furthermore, 3D thermography detected wound inflammation and helped predict DFU ulceration risk.[6] Challenges were identified in integrating thermography into clinical practice. These included reimbursement, training needs, EMR integration, and the absence of standardized protocols (particularly for skin tone variability). However, despite these limitations, studies broadly supported thermography's role in early complication detection and real-time monitoring.

Discussion: Thermography is a convenient, non-invasive tool for DFU management that can improve monitoring and enable early detection of complications. Although current evidence is largely Level III-IV, advancements in EMR integration, standardized protocols, and clinician training are still needed to establish thermography as a standard clinical tool in DFU care.

CR-048

When Numbers Don't Add Up: How Inconsistent Wound Measurements Compromise Reimbursement and Negative Pressure Wound Therapy Eligibility

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Introduction: Accurate wound measurements are essential for clinical documentation (1) directly influencing reimbursement, patient eligibility, and continuation of Negative Pressure Wound Therapy (NPWT). Inconsistent wound measurement documentation presents challenges in meeting payer requirements, as NPWT eligibility depends on documented wound progression measurements over time. Perceived lack of wound improvement due to inconsistent measurements may result in insurance coverage denial or premature discontinuation of therapy (2).

Methods: Researchers conducted a convenience sample of wound care providers (n=94). Participants completed a content-validated anonymous survey via Qualtrics. Survey content included assessment of inter-rater reliability measuring length and width on four standardized two-dimensional wound images and experience with reimbursement and denials of services, including NPWT. Participants selected their preferred method for measuring and applied that technique to each image. Analyses were completed using Excel and Jamovi (3). Agreement between selected and applied techniques was evaluated using Cohen's kappa and McNemar's test, while true inter-rater reliability was assessed using Krippendorff's alpha.

Results: A total of 94 participants responded, including nurses (70%), physical therapists (23%), occupational therapists (3%), and physicians (1%), with an average of 14 years of wound care experience. Three measurement techniques were identified: Box Method (4), clock-face method, and longest length/widest width method (5). Although 78% of respondents believed wound measurement standardization was achievable, agreement between selected and applied techniques was poor ($\kappa = 0.00–0.16$), with random variability in technique use (McNemar's $p = 1.00$). Ninety percent of participants reported that inconsistent wound measurements negatively impacted reimbursement. Twenty-six percent reported experiencing reimbursement denial, while 71% were unsure whether their reimbursement had been affected. Clinicians with advanced certifications reported greater recognition of the importance of accurate wound measurements, its impact on reimbursement ($U = 681$, $p = .001$) and denial of services, including NPWT ($U = 724$, $p = .003$).

Discussion: Despite strong awareness of the importance of wound measurement accuracy, clinicians frequently applied different techniques when evaluating identical wounds. These findings highlight the need for a standardized method of measuring wounds, training, and implementation strategies to improve measurement consistency in order to protect reimbursement and support continued patient access to NPWT.

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CR-049

Peptide Biomimetic Matrix Revitalizes Chronic Wounds via Tissue Regrowth and Revascularization: Monitoring Progress with Multispectral NIRS Imaging

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Introduction: Chronic lower extremity wounds contribute to >$25 billion in annual US healthcare costs while significantly increasing risk of infection, amputation, morbidity and mortality for millions of patients. Such clinical and economic burden underscores the critical need for improved diagnostic and treatment modalities. This study aimed to evaluate the performance of a self-assembling peptide biomimetic matrix (BMM) – designed to support healing via an extracellular matrix-like scaffold for tissue regrowth and antibacterial protection – in chronic lower extremity wounds.

Methods: Patients (N=27) were selected based on severity of comorbidities, wound age, and failure to respond to previous wound management interventions. A total of thirty (30) chronic lower extremity wounds – including diabetic foot ulcers, pressure ulcers, venous leg ulcers, and other non-healing wounds – received the FDA-approved peptide-based BMM* after appropriate wound bed preparation. In a subset of cases (fifteen), multispectral Near-Infrared Spectroscopy (NIRS), infrared (IR) thermal, and digital imaging were captured using a handheld mobile device**. Wound characteristics and tissue oxygen saturation (StO_2) were assessed at baseline and monitored during following visits.

Results: All patients responded positively to BMM treatment, showing rapid wound healing progression. Healthy granulation tissue formation was observed after a single application. Wounds involving exposed tendon / bone or tunnels achieved coverage of the originally exposed structures and tunneling resolution. Complete closure was achieved within the study period in 22 cases (73%), as early as 2 weeks. The median time to complete wound closure was 6 weeks and 5 BMM applications. In most cases monitored by NIRS, a rapid and clinically meaningful increase in tissue oxygenation (ΔStO_2 >11%) was observed after BMM treatment (only one case showed a slight StO_2 reduction). The increase in StO_2 predicted healing, suggesting rapid healthy tissue regrowth and revascularization that resulted in re-epithelialization over time. Other important clinical observations included improvement in drainage and peri-wound skin integrity. No adverse events were observed.

Discussion: This study highlights the safety and efficacy of BMM in treating chronic, refractory lower extremity wounds by fostering an environment that promotes rapid tissue regrowth and revascularization. NIRS imaging provided an objective, non-invasive measure of oxygenation, helpful in predicting ulcer healing trajectory and response to treatment.

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CR-050

Enhanced Silver Dressing Improves Slough and Debridement in Venous Leg Ulcers: Post Hoc Analysis of a Randomized Controlled Trial

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Introduction: Venous leg ulcers (VLUs) are hard-to-heal wounds that impose a substantial burden on patients and healthcare systems worldwide. A carboxymethylcellulose fibre dressing containing ionic silver, ethylenediaminetetraacetic acid, and benzethonium chloride (CISEB*) has was developed to address the challenges associated with these wounds. In a previous randomized controlled trial (RCT), CISEB demonstrated a significantly higher rate of complete wound closure at 12 weeks compared with a dialkylcarbamoyl chloride-coated dressing (DACC†; 74.8% vs. 55.6%, p< 0.0031).[1] This analysis evaluated slough and complete debridement outcomes from the RCT.

Methods: Patients with hard-to-heal VLUs were randomised 1:1 to receive CISEB or DACC for up to four weeks. VLUs not healed by week 4 were managed with standard of care for up to 12 weeks or until healed. The full study design has been previously described.1 Slough tissue percentage and complete debridement status were assessed at baseline and Days 14, 28, 42, 56, 70, and 84. Outcomes included relative slough reduction, proportion of wounds fully debrided, and time to complete debridement.

Results: This post hoc analysis included 181 patients (CISEB: n=93; DACC: n=88). Baseline mean slough coverage was 37.6% for CISEB and 40.3% for DACC. At Day 14, the mean percentage slough reduction from baseline was 57.5% for CISEB vs 26.0% for DACC, representing a statistically significant difference (p=0.035). Slough improvement persisted to Day 84, with the mean percentage reduction reaching 88.1% (CISEB) vs 74.6% (DACC). Complete debridement was observed in 50.5% (CISEB) vs 40.9% (DACC) at baseline and 95.7% vs 84.1% at Day 84 (p=0.005). Median time to complete debridement was shorter for CISEB (14 days) compared to DACC (28 days).

Discussion: CISEB demonstrated superior slough reduction and complete debridement compared with DACC. Faster debridement may help reduce infection risk and accelerate healing. These post hoc findings reinforce the RCT results and support the role of CISEB in managing hard-to-heal VLUs.

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CR-051

Performance and User Satisfaction with a Superabsorbent Dressing: Results from an International Survey

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Introduction: Optimal exudate management is essential for effective wound care. Wound exudate helps maintain a moist environment, delivers nutrients, and supports immune cell migration; however, excessive production can impair healing, increase infection risk, and negatively impact patient quality of life through complications such as maceration, leakage, and frequent dressing changes. The aim of this study was to assess healthcare professionals' (HCPs) real-world experience with a multi-layered superabsorbent dressing* indicated for management of moderate-to-high exuding wounds.

Methods: Between May–June 2024, a survey was distributed to HCPs across multiple European countries via an online electronic (n=46) and paper forms (n=6). The questionnaire focused on usage patterns, clinical performance, and improvement opportunities.

Results: Fifty-two HCPs participated across France (73%), Poland (13%), UK (8%), and other countries (Czech Republic, Germany, Slovakia; each ~2%). Respondents primarily worked in clinics (41%) and hospitals (31%) and included nurses (83%), doctors (10%), and dermatologists (2%), with cumulative wound care experience >750 years. HCPs reported treating an average of 330 wounds each per year with the dressing, most commonly leg ulcers (n=8,247; 48%), followed by pressure injuries (n=3,317; 19%), diabetic foot ulcers (n=3,304; 19%), surgical wounds (n=896; 5%), and other wound types (n=1,482; 9%). Overall, 94% of respondents reported achieving the expected therapeutic benefit. High ratings of 'Very Good' or 'Good' were reported for exudate absorption and retention (both 100%), exudate absorption under pressure (98%), safety (94%), and usability (92%). Mean maximum wear time was 2.4 days (range: 1–7 days). Skin reactions were rare; 4 HCPs reported seeing allergic reactions in 0.5%–2% of their total patient population. Suggested improvements included anatomical shapes (heel, sacral; 19%), paediatric sizes (5%), odour control (5%), and enhanced border design to reduce shear (5%).

Discussion: The superabsorbent dressing* demonstrated strong performance in exudate management and strong user satisfaction across multiple wound types and care settings. Future enhancements should focus on anatomical fit, paediatric needs, and additional functional features to further optimise clinical outcomes.

CR-052

Alignment of BIOMESSM Tool Risk Stratification with Specialist Referral Patterns: Phase 1 Validation Results

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Introduction: The BIOMESSM tool was developed to support non-specialist clinicians in identifying wounds that warrant early referral to specialty care based on the presence of key barriers to healing. Prior to deployment in non-specialist settings, it is essential to confirm that the tool's risk thresholds align with the clinical complexity of patients who are already being referred to wound care specialists. Phase 1 of this validation study evaluated where referred patients fall on the BIOMESSM risk scale when assessed by wound care specialists.

Methods: A multicenter observational validation was conducted in wound specialty settings. Wound care specialists completed structured assessments for consecutive patients based on the time of specialty evaluation, documenting wound etiology, duration, comorbidities, and the presence of BIOMESSM domains: Blood flow, Infection/Bioburden, Offloading/Overloading, Metabolic/Morbidities, Exudate/Edema, and Social/Economic factors. BIOMESSM scores ranged from 0–6 based on the number of barriers identified. Descriptive analyses characterized score distribution and domain prevalence among referred patients.

Results: Patient assessments (currently 124 with higher number expected) were completed across a range of wound types, including diabetic foot ulcers, venous leg ulcers, pressure injuries, arterial ulcers, and atypical wounds. The majority of referred patients exhibited one or more BIOMESSM barriers, with most clustering in the moderate- to high-risk categories (≥1 BIOMESSM domain). Higher BIOMESSM scores were observed in wounds of longer duration and in patients with multiple comorbid conditions. Infection/bioburden, metabolic/morbidity, offloading/overloading, and exudate/edema were the most frequently identified barriers. Very few patients presented with a BIOMESSM score of zero, indicating minimal healing barriers at the time of referral.

Discussion: Phase 1 findings demonstrate strong alignment between BIOMESSM risk stratification and real-world specialist referral patterns. Patients presenting to wound care specialists predominantly fall within the BIOMESSM moderate- and high-risk categories the tool is designed to trigger for referral. These results support the clinical face validity of BIOMESSM as a referral screening framework and provide a foundation for subsequent validation in non-specialist settings to assess impact on referral timing and outcomes.

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CR-059

Clinical Validation of Snapshotglo for Bacterial Bioburden Detection in Wound Care: Results from a High-Volume U.s. Site

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Introduction: Early identification of bacterial bioburden in wounds is critical for optimizing treatment and preventing complications. SnapshotGLO, a bacterial autofluorescence imaging device, was evaluated for clinical utility in real-world settings. This abstract reports the findings of this validation study.

Methods: Prospective data were collected from the site between July 2025 and October 2025. Clinicians were trained on device use, and data were collected during routine wound care visits. Wound images were captured using SnapshotGLO (Kent Imaging Inc., Calgary, Canada), and bacterial culture tests were performed on selected wounds as per standard of care at the site. Device performance was assessed by comparing imaging results with culture outcomes.

Results: A total of 414 wound images from 87 subjects were collected during this period across multiple visits. Wounds represented diverse etiologies, including diabetic ulcers, pressure ulcers, venous ulcers, surgical wounds, and traumatic injuries, located on various anatomical sites such as the foot, leg, sacrum, and abdomen. Of these, 90 images had corresponding bacterial culture results. All 90 wounds were assessed as positive for bacterial bioburden by clinicians when using the SnapshotGLO images along with clinical assessment. The corresponding bacterial culture tests confirmed positivity in 86 cases and negativity in 4, yielding a Positive Predictive Value (PPV) of 95.5% when using the imaging device. Clinician feedback indicated that bacterial imaging guided more effective wound debridement and improved infection management.

Discussion: SnapshotGLO demonstrated strong reliability in detecting bacterial bioburden, supporting its role as an adjunctive tool in wound care. High PPV suggests potential to reduce time to intervention and improve outcomes. Limitations include the absence of culture data for bioburden-negative images, precluding sensitivity analysis. Future work should expand validation and explore integration into clinical workflows. Disclosure: "Generative AI or AI-assisted technology was used in the preparation of this work. All AI-generated content was reviewed and edited by the author(s), who accept full responsibility for its accuracy and integrity." AI was ONLY used for text drafting to ensure better readability.

CR-060

Long-Term Scar Outcomes After Enzymatic Debridement with Nexobrid vs. Standard of Care: a Post-Hoc Analysis of Pooled DETECT and CIDS Data

Adam J. Singer, Distinguished Professor; Jeremy Goverman, Professor; Asi Haviv, DMD; Yaron Shoam, Professor

Introduction: Selective debridement is a critical component of wound bed preparation across acute and chronic wounds, influencing downstream healing quality and long-term scar outcomes. Clinical trials have demonstrated that bromelain-based enzymatic debridement (NexoBrid) is non-inferior to standard of care (SOC), which primarily consisted of surgical debridement by tangential excision, with respect to long-term scar outcomes in burn wounds. This pooled analysis evaluates 12-month scar outcomes following NexoBrid treatment in adult and pediatric patients with deep burns, providing insights relevant to broader wound care settings where preservation of viable tissue is essential.

Methods: Pooled data from two completed phase III randomized controlled trials, DETECT in adults and CIDS in pediatrics, were analyzed. In both studies, SOC consisted mainly of surgical debridement using tangential excision, with subsequent wound management according to local practice. Scar outcomes were assessed at 12 months (12M) post-injury using total and domain scores of the Modified Vancouver Scar Scale (MVSS) and the Patient and Observer Scar Assessment Scale (POSAS), evaluated by target wound. Deep partial-thickness (DPT) wounds were further analyzed according to autograft use, yes or no. Between-group comparisons were performed using one-way ANOVA.

Results: A total of 300 wounds were evaluated at 12M, with 160 in the NexoBrid group and 140 in the SOC group. This included 146 non-autografted DPT wounds, 82 treated with NexoBrid and 64 with SOC, and 50 autografted wounds, approximately 25 percent of DPT wounds. Overall, NexoBrid demonstrated significantly improved scar outcomes versus SOC, with MVSS scores of 3.9 versus 4.6 (p=0.030) and POSAS scores of 33.9 versus 39.9 (p=0.009). The treatment effect was primarily driven by non-grafted DPT wounds, with superior outcomes observed for NexoBrid compared with SOC (MVSS 3.3 vs. 4.3, p=0.033; POSAS 27.9 vs. 36.7, p=0.030). Domain-level analyses showed reduced hypertrophic scarring and improvements in pigmentation, pliability, and surface regularity following NexoBrid treatment.

Discussion: Bromelain-based enzymatic debridement with NexoBrid is associated with superior long-term scar outcomes compared with SOC at 12 months, particularly in non-grafted DPT wounds. These findings underscore the importance of selective debridement in preserving viable tissue and supporting re-epithelialization and regeneration. These principles are highly relevant to both acute burn management, as demonstrated by NexoBrid, and chronic wound care, where bromelain-based enzymatic debridement (EscharEx) is in late-stage clinical development. Collectively, these data highlight that early wound bed optimization may influence long-term functional and aesthetic outcomes.

CR-061

Time to Wound Closure After Autograft or Placental-Derived Allografts in Venous Leg Ulcers - Post Hoc Analysis of Chronex RCT

Adam J. Singer, Distinguished Professor; Asi Haviv, DMD; Robert Snyder, DPM, MBA, MSc

Introduction: Effective wound bed preparation and timely wound closure are essential in managing chronic lower-extremity ulcers. Evidence describing healing trajectories after autograft or allograft use in VLUs is limited. This post hoc analysis assessed closure incidence and timing following grafting procedures in the ChronEx RCT.

Methods: ChronEx randomized VLU patients to up to two weeks (eight daily applications) of BBD (bromelain-based debridement), placebo gel vehicle (PLC), or non-surgical standard of care (NSSOC), followed by 12 weeks with non-active dressings. Autograft or allograft use during follow-up was permitted per investigator judgement. Complete closure was defined as 100% re-epithelialization without drainage or dressing need, confirmed at two weeks. Closure incidence and timing (mean, median, range) were summarized descriptively; no between-group statistical analyses were performed.

Results: Nine patients received autografts (ESX n=5, PLC n=3, NSSOC n=1). Mean age was 68.2 years; median wound size 5 cm2; wound age 36 weeks. All achieved complete debridement and full granulation coverage after the treatment phase. Overall, 78% reached complete closure within 12 weeks. Mean time to closure was 14 days (median 18.5; range 7–45). Seven patients received placental-derived allografts (ESX n=2, PLC n=3, NSSOC n=2). Mean age was 71.4 years; median wound size 5.4 cm2; wound age 19 weeks. Five achieved complete debridement and granulation coverage. Overall, 43% reached closure. Mean time to closure was 27.3 days (median 21; range 21–40).

Discussion: Autografting after wound bed preparation yielded higher

closure rates and faster healing (≈2–3 weeks), whereas allograft-treated wounds showed lower closure incidence and slower trajectories (≈3–6 weeks). These findings provide practical insight into expected healing timelines following grafting in VLU.

CR-062

Lip Reconstruction After Dog Bite Using a Dermal Regeneration Template: a Case Series

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Introduction: Avulsion lip trauma resulting from a dog bite is a devastating injury that requires careful planning and operative and post-operative management to achieve an optimal outcome. In select cases, skin substitutes used during the primary repair can facilitate healing and may obviate the need for subsequent autologous skin grafting or complex reconstruction. Here we describe cases of single-stage application of a dermal regeneration template* to treat avulsion lip defects caused by dog bites.

Methods: A retrospective review of the electronic medical record was carried out on all patients 18 years and older with avulsion lip defects resulting from a dog bite who underwent reconstruction with a dermal regeneration template by the senior surgeon between January 2024 and November 2025. Patient demographics, wound characteristics, complications, and post-procedure course were analyzed. A successful outcome was defined as >95% re-epithelialization and reasonable function and cosmesis after single-stage wound matrix application without the need for additional coverage procedures. Primary outcomes of interest included time to wound closure, reoperation rate, and the use of skin grafting, local tissue rearrangement, flap, laser therapy, or filler.

Results: We identified 5 patients (all female, mean age: 39.8 years, SD: 7.6) who underwent avulsion lip reconstruction using a dermal regeneration template. The mean wound area treated was 3.4 cm2 (SD: 0.37). One patient underwent intraoperative application in the days following injury, one underwent application in the clinic, and three underwent application in the emergency room at the time of injury. All were treated with preventative antibiotics. No patients underwent subsequent autologous skin graft or a locoregional flap due to incomplete re-epithelialization. In all patients, lip reconstruction after single-stage wound matrix application achieved reasonable functional and aesthetic outcomes without complication and with patient satisfaction.

Discussion: A dermal regeneration template can be safely and reliably used for single-stage reconstruction of select avulsion lip defects resulting from dog bites. Larger and comparative studies are needed to further investigate dermal matrix selection, and specific patient and lip wound characteristics, for optimal outcomes.

CR-063

Wound Bed Preparation is a Prerequisite for Wound Closure – Post-Hoc Analysis From the Chronex Multicenter Rct

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Introduction: Wound bed preparation (WBP) is a critical step in transitioning chronic wounds from a disrupted to a healing state. It involves removal of non-viable tissue, reduction of infection and inflammation, maintenance of a moist environment, and promotion of keratinocyte migration from wound edges, all supportive of healing. Schultz et al. (2003) identified healthy granulation tissue as the ultimate goal of WBP. The ChronEx randomized controlled trial (RCT), which assessed a novel bromelain-based enzymatic debridement (BBD) in venous leg ulcers (VLUs), provided a unique opportunity to evaluate the relationship between achieving WBP and wound closure (WCL).

Methods: Patients with chronic VLUs were randomized (3:3:2) to receive BBD, placebo gel, or non-surgical standard of care (NSSOC) for up to 2 weeks or until complete debridement, followed by 12 weeks of standardized NSSOC. WBP was defined as complete debridement with full granulation tissue coverage; WCL as full re-epithelialization without drainage, confirmed at two consecutive visits. The incidence of WCL was compared between patients who did or did not achieve WBP at any point. Additionally, WCL incidence during the 12 weeks follow-up was compared based on whether WBP was achieved by Day 14. The correlation between time to WBP and time to WCL was assessed using a time-dependent Cox proportional hazards model.

Results: Of 119 randomized patients, 80 (67%) achieved WBP. Among them, 34 (42.5%) achieved WCL, compared to only 4 of 39 (10.3%) who did not (Relative Risk [RR] = 4.1; p = 0.0004). Wounds that failed to achieve WBP had a 90% probability of non-healing. Early WBP (by Day 14) significantly improved healing likelihood (50.0% vs. 22.7%; RR = 2.4; p = 0.0005). Time-to-event analysis showed a 12-fold increased likelihood of remaining unhealed when WBP was not achieved (Hazard Ratio = 12.0; p < 0.0001).

Discussion: This analysis confirms that wound bed preparation is a prerequisite for wound closure in VLUs. Wounds that fail to achieve WBP rarely proceed to healing, underscoring its critical role in chronic wound management.

CR-065

Evaluating the Dispersion and Residuum of a Novel Pure Hypochlorous Acid Preserved Antimicrobial Wound Gel on Intact Skin

Laura Swoboda, DNP, APNP, FNP(C-BC), CWOCN-AP, WOCNF

Introduction: This pilot study investigates the absorptive properties and qualities of a novel antimicrobial gel on intact human skin. Current topical wound care treatments often leave a residue or require prolonged drying times, which can negatively impact patient comfort, aesthetic perception, use, and adherence. This study aimed to assess the dispersion & product residuum on intact skin of a new skin & wound antimicrobial gel, hypothesizing that its unique formulation with limited ingredients allows for swift dermal dispersion without leaving a sticky or visible cast or macerating the skin. A key objective is to provide preliminary data supporting its potential use in a broader range of clinical applications where rapid clinical effect and subsequent dispersion is beneficial such as incontinence associated dermatitis, intertrigo, and in other clinical environments.

Methods: A single-center, small-cohort study was conducted on healthy adult volunteers. The antimicrobial hydrogel was applied to a standardized 2x2 cm area on the volar forearm. The post-application dispersion process was analyzed utilizing the Mimosa Pro™ digital imaging system to ensure consistency and high-quality data including of the contralateral limb volar surface. Multi-spectral tissue interrogation collected tissue oximetry, temperature, and a digital image followed by assessment via handheld low power point of care microscopy. Image collection captured baseline images of the skin, sequential images were then taken at 5 minute intervals to visually assess the rate of dispersion and the presence of any residuum. A quantitative score was later assigned by a blinded specialist based on the visual evidence. Additionally, a subjective Likert patient questionnaire was administered to gauge the sensation of stickiness and overall comfort.

Results: The antimicrobial gel demonstrates rapid dissipation and dispersion in participants. The majority of the gel was visibly dissipated within the assessment period in all subjects. An average cast score of 0.5-1.5 was expected, indicating minimal to no residue. The high-resolution, multi spectral images confirm visual observations, demonstrating the skin's surface returning to pre-application appearance with minimal residuum.

Discussion: This pilot study demonstrates the remarkable dissipation qualities of the novel hypochlorous acid-preserved gel. Its rapid dissipation and non-occlusive, non sticky/adhesive finish suggest significant advantages over other hydrophilic polymer loaded thick antimicrobial gel type topical preparations. The observed properties on this new gel could enhance patient compliance and expand its utility beyond typical wound care. Future, larger-scale studies are warranted to further explore its

efficacy and potential for widespread application.

CR-066

Peripheral Arterial Disease Detection Beyond ABIS: Utilizing Near-Infrared Spectroscopy for Non-Invasive Assessment

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Introduction: Diagnosing Peripheral Arterial Disease (PAD) is foundational to chronic wound management & amputation optimization, yet the often used Ankle-Brachial Index (ABI) is frequently unreliable due to medial arterial calcification in high-risk populations leading to unreliable, falsely elevated or indeterminate results. Alternative non-invasive tests, such as Toe-Brachial Index (TBI) and Transcutaneous Oxygen Monitoring (TcPO2), provide valuable functional data but are often limited by procedural complexity, cost, or time requirements. Near-Infrared Spectroscopy (NIRS) offers a non-contact, rapid method to estimate tissue oxygen saturation StO2, providing spatially-resolved functional measure of perfusion data. This study evaluated the utility of the NIRs via the MIMOSA Imager as a complementary tool for detecting compromised circulation indicative of PAD, particularly in cases where ABI results are unreliable or difficult to obtain.

Methods: A scoping review was conducted to identify clinical studies and reviews comparing the diagnostic utility of NIRS for PAD detection and stratification. The review focused on studies evaluating high-risk populations (e.g., diabetes, renal failure) where ABI is often non-diagnostic, and utilizing St02 to evaluate circulatory reserve.

Clinical Cohort: A small, prospective cohort of limbs with indeterminate or high ABIs (>1.3) underwent assessment using NIRS with the MIMOSA Imager (Toronto, CAN) & ABI with the MESI ABPI (Ljubljana, Slovenia). The MIMOSA Imager is a non-contact device that captured spatial StO2 heatmaps using visible and NIR LED wavelengths.

Results: The review revealed NIRS-derived metrics (particularly StO2 recovery time) demonstrated strong correlation with both TBI and StO2 values in detecting severe PAD/CLI. Studies noted NIRS advantages included non-contact application, speed (minutes vs. up to 90 minutes for TcPO2, and portability. The NIRS heatmaps clearly delineated areas of compromised perfusion that corresponded to known ulceration sites, providing spatially-registered functional evidence of ischemia where ABI failed. However, evidence supporting NIRS as a sole replacement for established methods remains insufficient, often requiring a provocative maneuver for high sensitivity requiring further definition.

Discussion: NIRS-derived St02 provides a valuable, non-invasive functional assessment of microcirculation, offering similar diagnostic insight with significant practical advantages in terms of speed and contact requirements. Its ability to identify functional compromise in limbs with non-compressible arteries makes it an essential complementary tool for PAD screening in the field. Future directions should focus on establishing standardized protocols and specific StO2 cut-off values for integration into routine clinical practice, potentially leveraging its speed and portability for broader community screening initiatives in combination with other key PAD risk factors.

CR-067

Purple Foot

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Introduction: Chronic "purple foot", a condition known as acrocyanosis, is characterized by compromised peripheral microcirculation. Though purple foot sign is associated with the classic dependent rubor of arterial insufficiency, a purplish foot can exist outside of macro-arterial dysfunction. Purple foot can also be a sign of severe venous congestion potentially confusing clinical assessment and conflating standard assessments, which, while valuable, may lack the precision needed to meaningfully map localized tissue oxygenation. This study aimed to evaluate the use of the MIMOSA Imager in assessing the microvascular response in patients presenting with purple foot.

Methods: A prospective, observational study was conducted involving clinically observed "purple foot". The MIMOSA Imager, a non-contact, cordless, battery-powered device, was used to capture spatially-resolved StO2 images. The device utilizes both visible and near-infrared LED-illuminated wavelengths, tracking spectral signatures of dominant chromophores in the superficial tissue to calculate and map StO2 values to a heatmap displayed on an Android interface. Baseline measurements were taken on the affected foot in a dependent position to assess the microvascular response to gravitational position.

Results: Preliminary data analysis of a single convenience sample cohort demonstrates distinct and heterogeneous StO2 patterns in affected limbs. In dependent positions, areas of "purple foot" show patchy StO2 values, varied from adjacent tissue. The StO2 heatmaps visually and quantitatively differentiated areas of severe microvascular compromise (i.e., very low StO2) from relatively better-perfused areas. The device provided a clear, objective, and non-invasive measure of the tissue's inability to maintain oxygenation stability under positional stress, which directly correlated with the clinical presentation of this condition representing a combination of rubor and cyanosis.

Discussion: The MIMOSA Imager effectively provided a non-invasive, objective estimation of the spatial distribution of StO2, offering a deeper insight into the microvascular dysfunction underlying the "purple foot" presentation of acrocyanosis. The ability of the NIRS device to map heterogeneous tissue oxygenation is critical here, as the pathophysiology leading to low StO2 differs (supply failure vs. stagnant outflow) and substantially influences both treatment and intervention courses. The spatially-resolved StO2 maps provide information beyond global perfusion markers. This technology demonstrated the compromised microcirculation characterizing this condition, potentially aiding in earlier identification of severe tissue hypoxia and guiding decisions regarding revascularization or wound care strategies.

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CR-068

A Prospective Analysis of Physical Therapy Wound Care Modalities in Spinal Cord Injury

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Introduction: Pressure injuries (PI) are a common comorbidity after spinal cord injury (SCI) which can negatively impact participation in inpatient rehabilitation, discharge disposition, and quality of life (QOL).[1–4] Although Physical Therapists (PTs) have treatments known to accelerate wound healing in PI, the impact of these treatments on wound severity and QOL in the inpatient rehabilitation setting is not known, and treatments are often clinically underutilized.[4,5] The primary objective of this study is to examine the effects of PT wound care modalities on wound healing and QOL in patients with SCI during inpatient rehabilitation. We hypothesized that pulsed wound irrigation (PWI) and electrical stimulation (ES) combined treatment would decrease wound severity and improve wound care QOL in patients with SCI more than ES or PWI only.

Methods: Participants had SCI and PI on the sacrum, coccyx, or buttocks during their admission to the inpatient rehabilitation unit. All received medical clearance to receive PWI+ES, ES, or PWI to promote wound healing 2 to 3 sessions weekly during their hospitalization based on wound characteristics and treatment indications/contraindications. On admission, weekly, and discharge, wound severity was assessed using the Bates-Jenson Wound Assessment Tool (BWAT). Wound-related QOL was assessed using the SCI-QOL Pressure Injury Short Form on admission and discharge. After intervention, Kruskal-Wallis test assessed group differences. Wilcoxon signed-rank test identified pre/post intervention differences in groups.

Results: Participants were enrolled between October 11, 2022 and May 23, 2025. No statistically significant difference was found between groups

for wound severity or QOL scores. Pre/post intervention improvements wound severity was statistically significant in the PWI+ES group and PWI group ($P < 0.001$), with the ES group approaching clinical significance ($0.05 < P < 0.10$).

Discussion: This is an ongoing research study nearing completion with a small sample size, so further data is needed to confirm results, including the impact of ES on wound severity. However, wound severity statistically improved in patients receiving ES+PWI and PWI only. No treatment combination demonstrates statistically better results in wound healing. There was no statistically significant difference in QOL in any treatment group after receiving PT wound care modalities. Further research is warranted in larger sample sizes to determine generalizability.

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CR-069

Near Infrared Spectroscopy: a Technique for Non-Invasive Assessment of Perfusion in the Lower Extremity

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Introduction: Assessment of tissue perfusion in the setting of peripheral artery disease (PAD) remains problematic. The ability to assess the need for revascularization or when wound care alone is appropriate as the primary treatment modality is dependent on such an assessment. Current techniques, such as the ankle-brachial index, segmental pressures, transcutaneous oxygen measurements, and skin perfusion pressure, provide limited insight into microvascular perfusion and often fail to reliably predict wound healing. This trial studied near-infrared spectroscopy (NIRS) as a non-invasive method to assess tissue oxygenation thereby improving diagnosis and prognostication in PAD.

Methods: A prospective study was performed in thirty subjects with varying degrees of PAD. Metrics of tissue perfusion were measured with a non-invasive imaging device utilizing NIRS (SnapshotNIR, Kent Imaging, Calgary, Canada). A comparison was made between NIRS and ABI with stratification by clinical presentation. Two patients were excluded due to missing data, leaving 28 for analysis in three clinical groups: asymptomatic (normal ABI), intermittent claudication (ABI 0.50–0.85), and critical limb ischemia (CLTI, ABI ≤0.49). Plantar and dorsal foot images were captured, and NIRS-derived parameters were determined at standardized locations: oxyhemoglobin (HbO), deoxyhemoglobin (Hb), total hemoglobin (HbTot), and tissue oxygen saturation (StO_2). Multivariate analysis of variance (MANOVA) tested global group differences, followed by univariate ANOVA and post-hoc comparisons. All statistical analyses were performed using SPSS software.

Results: The study cohort consisted of three groups without differences in demographics; 10 asymptomatic, 10 claudication, 8 CLTI. Multivariate analysis (MANOVA) revealed significant differences in perfusion metrics across all groups (Wilk's Lambda = 0.089, p = 0.015). Univariate analysis showed that plantar sites (great toe, ball of first–second digits) exhibited significant differences for all four NIRS perfusion parameters. There was no significant difference between asymptomatic and claudication, but CLTI demonstrated markedly lower HbO, HbTot, and StO_2, and higher Hb compared to both other groups ($p< 0.05$). Dorsal measurements were largely non-discriminatory, except for Hb and StO_2 at only one site.

Discussion: NIRS is a non-invasive technology that can measure physiological aspects of tissue perfusion, and importantly, can differentiate CLTI from asymptomatic PAD and claudication. NIRS-derived metrics may serve as valuable predictors of disease severity and inform clinical decision-making with promise as a rapid, non-invasive tool for stratifying PAD severity and guiding targeted interventions.

CR-070

Multi-Center, Single-Arm, Prospective Clinical Study Investigating the Safety and Effectiveness of Ovine Forestomach Matrix in the South Asian Population

Brandon Bosque, DPM, CWSP; Barnaby May, PhD

Introduction: In India, both acute and chronic wounds place a significant burden on overall quality of life and healthcare costs. However, chronic wounds are notoriously difficult to treat due to delayed diagnosis, poor patient treatment compliance, limited healthcare accessibility, constrained economic resources, and social stigma [1-3]. Also, wound care treatments are limited, particularly in rural areas, increasing overall morbidity [4]. Ovine forestomach matrix (OFM) represents a responsibly priced graft that can effectively treat various wounds but remains under-researched among Indian communities. Here, we present a prospective evaluation of OFM safety and effectiveness in India.

Methods: One hundred patients with acute or chronic wounds were prospectively enrolled from four medical centers in India. Treatment included antimicrobial single-layer OFM (twice weekly) to manage underlying inflammation and infection, followed by natural single-layer OFM (weekly) to promote the proliferative phase of healing and finally surgical placement of a multi-layer OFM device to induce vascularized tissue formation. Definitive closure was accomplished either through split-thickness skin grafting (STSG), or via secondary intention with further natural single-layer OFM applications. Demographics, wound characteristics, healing outcomes, and adverse events were analyzed.

Results: Most patients were male, middle-aged and of normal weight. Wounds were primarily traumatic (41%), followed by diabetic foot ulcers (17%) and soft tissue infections (15%). Wounds were predominantly located on the lower extremities (82%), were clean-contaminated (72%), and chronic (median wound age of 4 weeks, IQR: 3, 9). Complete wound closure was achieved with a median of 9.02 (IQR: 5.56, 13.99) weeks. Full granulation tissue formation was attained in a median of 1.99 (IQR: 1.01, 2.13) weeks, and the median take of STSG at 1-week post-placement was 95 (IQR: 88.75, 100)%. No OFM-related adverse events were observed.

Discussion: Across a large prospective clinical trial, OFM supported complete wound closure without complications, despite the challenging-to-treat patient population. In fact, most patients had highly complicated, contaminated wounds. Moreover, this study demonstrated that different OFM grafts can be applied sequentially to promote different phases of healing. Overall, this study showed that OFM bioscaffolds are safe and effective for treating both acute and chronic wounds in the Indian population.

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CR-071

A Prospective Study of 400 Soft Tissue Reconstructions: Interim Analysis of the Ovine Forestomach Matrix MASTRR Registry

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Introduction: Clinical literature describing the in-patient use of bioscaffolds across surgical specialties is typically limited to case series and retrospective analyses. This prospective multi-center study provides insights into the safety and efficacy of ovine forestomach matrix (OFM) grafts across a range of surgical procedures.

Methods: The prospective study was approved by a central IRB (Advarra, PA; NCT05243966). The primary endpoint is proportion of treatment emergent adverse events (AEs). Each AE was investigated for severity and causality according to ISO14155. Patients were monitored at weeks 1, 4, and 12, with follow up until healed or lost to follow up. This interim analysis includes the first 432 patients enrolled across 10 US sites between May 2022 and June 2025.

Results: A total of 432 patients were enrolled, with n=7 screen failures. Of the n=425 Safety population (SP), n=14 were lost to follow-up (LTFU) immediately after index procedure, leaving n=411 in the Intent to Treat (ITT) population; n=400 completed ≥ 14 days of follow-up (Per Protocol population). Fifty-three SP patients reported ≥1 AEs (12.5%), and there were a total of 63 unique AEs reported. The most common AEs were dehiscence (~3.1%), superficial infection (~2.8%), infection (~2.4%) or death (~2.4%). Most AEs were concluded to be unrelated (80.6%) or unlikely (17.7%) to be related to the OFM graft. A single (~0.2%) AE, 'allergic reaction' was concluded to 'probably' be related to the OFM graft, though this could not be confirmed via pathology. There were no reported incidents of graft loss.

PP patients (n=400) had a median of one defect per patient (range; 1, 5) giving a total of n=464 defects. This included many defect types including burns (8.6%), DFU (22.1%), fistulae (9.5%), NSTI (2.9%), ostomy takedowns (10.9%), pilonidal sinus (10.7%), pressure injury (9.1%), surgical dehiscence (4.0%) and defects resulting from trauma (16.4%). Sub-group analysis of efficacy outcomes has shown the time to tissue coverage or fill of 2-4 weeks, depending on the extent of the defect and patient factors, and is consistent with prior published studies.

Discussion: This interim analysis demonstrates that OFM grafts have a low complication rate and are clinically effective.

CR-072

Characteristics of Tissue Changes in Lower Limb Lymphedema of Different Etiologies Before and After IPC

Marzanna T. Zaleska, PhD

Introduction: The most common causes of lower limb lymphedema are cancer treatment and inflammation of the skin or subcutaneous tissues. Regardless of the etiology, lymphedema is characterized by two main features: accumulation of edema fluid in tissues and secondary changes in the skin and subcutaneous tissue. The location of fluid buildup and the rate of tissue changes vary depending on the etiology and progression of lymphedema. These differences may affect the effectiveness of IPC therapy. Aim To describe the tissue changes in the lower limb affected by lymphedema of different etiology before and after pneumatic compression.

Methods: We studied 20 patients with stage II-III lower limb lymphedema—13 with cancer-related lymphedema and 7 with post-inflammatory lymphedema. For each, we measured dermal and subcutaneous tissue thickness, evaluated subcutaneous echogenicity grade (SEG) and Echo Free-Space (EFS), and conducted Strain Elastography (SE) via ultrasound at the midpoint of the medial calf and thigh. We also measured skin water content and the stiffness of skin and subcutaneous tissue at these sites. All measurements were repeated after 45 minutes of IPC.

Results: Ultrasound findings indicated that in the cancer-related group, SEG grades 1 and 2 were similar (53% and 47%), while the post-inflammatory group showed a predominance of grade 1 (87%). EFS grades mirrored this trend, with both grades accounting for 47% in the cancer group and grade 1 being dominant (87%) in the post-inflammatory group. The cancer-related group exhibited increased skin water content and tissue stiffness, with significant differences noted (0.34 N vs. 0.17 N, p=.049 in the calf). Following 45 minutes of IPC, both groups experienced reductions in all measured parameters, with the cancer-related group showing a notable 47% decrease in calf skin stiffness (0.34 N to 0.18 N, p=.0097). SE values decreased in the cancer group but increased in the post-inflammatory group.

Discussion: All measured parameters show that secondary tissue alterations are most advanced in the cancer-related group, despite a shorter duration of lymphedema. IPC effectively reduces dermal and subcutaneous tissue thickness, skin water content, and tissue stiffness across different etiologies.

EVIDENCE-BASED PRACTICE

EBP-002

Pressure Injury Staging: Complementing Visual Assessment with Near-Infrared Spectroscopy and Thermography Imaging

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Introduction: Pressure injuries (PIs) represent a global healthcare challenge.[1] Accurate staging of PIs is critical for effective management, yet reliance on subjective visual assessment has been associated with misstaging rates of up to 69%.[2] This case series compares traditional visual assessment with near-infrared spectroscopy (NIRS) and infrared thermography imaging to complement and enhance staging accuracy by detecting subsurface physiological changes. While previous studies have shown that NIRS and thermography can aid in early pressure injury detection,[3] this study investigates their potential to improve PI staging accuracy.[4,5]

Methods: A case series was conducted, including 2 representative patients for each PI stage (Stages 1–4). Each case underwent retrospective visual inspection using point-of-care digital images, NIRS to assess tissue oxygenation and perfusion, and thermography to evaluate temperature variations related to perfusion and/or inflammation. The study aimed to compare how each modality characterizes tissue changes across PI stages.

Results: Distinct features were observed across modalities for each stage. Stage 1: Intact skin with erythema; NIRS showed reduced StO2 (79% vs 83% in healthy skin,, with an increase to >90% at the center), and thermography detected a small cold spot (~2.7°F). Stage 2: Partial-thickness skin loss; NIRS showed decreased oxygenation in surrounding tissue (65%) with higher StO2 in the wound bed (81% vs 70% healthy skin), while thermography revealed persistent periwound cold spots. Stage 3: Full-thickness skin loss; NIRS indicated perfusion deficits in periwound tissue (67%) and very low oxygenation in slough (~39%, locally 0%), with thermography showing broader temperature gradients. Stage 4: Full-thickness tissue loss with exposed structures; NIRS revealed highest StO2 in subcutaneous tissue (84%), followed by healthy skin (75%), and periwound tissue (64%), with thermography reflecting deeper tissue involvement through pronounced cold and hot zones.

Discussion: NIRS and thermography provide objective, noninvasive data that complement visual PI staging. These modalities may improve staging accuracy and enable earlier intervention, potentially enhancing

patient outcomes. Limitations include the small sample size and inclusion of only one case per stage. Integrating NIRS and thermography into routine PI assessment could support evidence-based care and improve clinical decision-making.

EBP-003

Let It Go: a Clinical Review of Frostbite

Elizabeth Carradini, DNP, CWS

Introduction: Frostbite, while an uncommon diagnosis, is still one that wound care clinicians manage from time to time. Frostbite management can be elusive and at times unsettling. For best management of frostbite, it is fitting to take heart from the famous ice queen, and "let it go". On a cellular level, frostbite occurs from the rapid freezing of cells, and subsequent inflammation from cell reperfusion, leading to cell death and necrosis.

Methods: An 84-year-old woman, who was walker bound fell in her Oklahoma home during a particularly cold season. This patient was without heat, and unable to move from the floor where she stayed for nearly 42 hours, leading to grade 4 frostbite via the Cauchy criteria.

Results: While waiting for the extent of necrosis to fully reveal itself, collaboration with cardiology and surgical services were used. After presentation to hospital, patient had X-ray to rule out fractures or foreign bodies, angiography for vessel patency, underwent right foot transmetatarsal amputation, and a partial left great and second toe amputation. Post amputation, wound dressings included collagen, cadexomer iodine dressings, gentian violet and methylene blue dressings, and several silver nitrate treatments for hypergranulation tissue. Patient then healed without consequence.

Discussion: Necrosis related to frostbite will typically reveal itself within days to weeks, necessitating the need for mindful waiting. The Cauchy criteria is a useful tool when assessing degree of frostbite: Grade 1 presents no extremity cyanosis predicting no amputation or sequelae. Grade 2 presents cyanosis to the distal phalanx, predicting possible soft tissue amputation and nail sequelae. Grade 3 presents intermediate and proximal phalangeal cyanosis, predicting amputation and functional sequelae. Grade 4 presents cyanosis over carpal or tarsal bones predicting amputation of the limb and functional sequelae. Imaging such as X-ray and CT can aid determination of severity, depth, and extent of frostbite, while doppler and angiography can aid with vessel patency. Tissue plasminogen activator may also be used to improve perfusion and decrease amputation.

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EBP-004

Elevating Skin Integrity Assessment in Progressive Care: a Collaborative Strategy to Enhance Clinical Judgment

Fortunato Catanzaro, MSN, RN, PCCN; Alex Aningalan, DNP, RN, CWON, NEA-BC, CPHQ

Introduction: Patients in progressive care often undergo rapid physiological changes due to sepsis, hemodynamic instability, acute heart failure, adverse drug reactions, and metabolic instability. These conditions usually exhibit early signs through subtle skin changes, but these findings are frequently misinterpreted or overlooked. Evidence indicates that clinicians can benefit from structured decision-making methods to distinguish between benign skin changes and potentially high-risk skin changes. Combining thorough physiological assessments, typical in progressive care, with specialized knowledge from wound and ostomy specialists can improve clinical judgment and encourage timely action.

Methods: This evidence-based literature review gathered recent literature from the past five years related to cutaneous signs of systemic decline, early identification of moisture-related and irritant skin conditions, wound assessment methods, and collaborative teamwork models. The databases searched included OVID, PubMed, and the Cochrane Library, using terms such as skin assessment, progressive care, clinical collaboration, and clinical judgment. Peer-reviewed articles were evaluated for their relevance to high-acuity patients in progressive care, identification of early cutaneous changes, and promotion of collaborative teamwork.

Results: The findings showed that alterations in skin integrity, such as skin discolorations, temperature changes, erythematous rashes, intertrigo, and early moisture-related skin damage (MASD), may indicate early signs of physiological instability. Evidence supports that clinicians using structured assessment methods can more accurately identify cutaneous manifestations and respond to rapidly evolving skin integrity alterations more quickly. Collaborative teamwork with wound specialists improved diagnostic accuracy, reduced unnecessary treatments, and boosted clinician confidence in understanding complex skin conditions. Training programs that combine physiological assessment, comprehensive skin and wound assessment, and a collaborative case-based approach continually showed improvements in clinical decision-making.

Discussion: This synthesis highlights the importance of combining progressive care assessment skills with advanced wound care expertise to enhance clinical judgment in high-acuity settings. An integrated assessment model may improve early detection of systemic decline, limit the progression of preventable skin breakdown, and support consistent and collaborative clinical practices across units. This interdisciplinary approach offers a foundation for developing skin and wound assessment pathways tailored to progressive care environments and emphasizes the need for collaboration between specialties to advance clinical practice.

EBP-005

Protecting Skin Integrity in Telemetry: a Review of Evidence-Based Strategies to Prevent Moisture-Associated Skin Damage (MASD)

Fortunato Catanzaro, MSN, RN, PCCN; Alex Aningalan, DNP, RN, CWON, NEA-BC, CPHQ

Introduction: Moisture-associated skin damage (MASD) is a preventable condition that occurs when prolonged skin exposure to moisture-related irritants occurs and can lead to swelling, maceration, and denudement. Telemetry electrodes can create a sealed environment that may increase moisture buildup, especially in patients prone to moisture retention. Although there is reliable information about MASD related to medical-device use, specific guidance for monitoring cardiac electrodes is limited. This review summarizes current evidence on evidence-based methods to prevent MASD under telemetry electrodes.

Methods: An evidence-based literature search of PubMed, CINAHL, and OVID was conducted for articles published from 2021 to 2025 using the search terms moisture-associated skin damage, telemetry electrodes, device-related skin injury, barrier film, skin maceration, and cardiac monitoring. Evidence-based, peer-reviewed studies, clinical practice guidelines, and consensus statements relevant to adult inpatient monitoring were included. Ten sources met the criteria for further analysis.

Results: Five major themes emerged. First, hydrocolloid dressings were linked to increased moisture retention and maceration, suggesting they should not be used under telemetry electrodes. Second, barrier films were effective in reducing moisture-friction interaction and protecting delicate skin from injury caused by excessive moisture. Third, following a scheduled rotation of electrodes allowed the skin to breathe and reduced the risk of prolonged moisture exposure. Fourth, assessing patient risk was crucial, with clear risk indicators including excessive perspiration, fever, skin folds secondary to obesity, fragile skin, limited mobility, and conditions that cause excess moisture, such as heart failure or sepsis. Identifying these factors early can help clinicians categorize patient risk, allowing for more frequent assessments and tailored preventive measures. Fifth, regular skin inspections, especially during lead changes or vital sign checks, helped detect MASD early and allowed for timely intervention.

Discussion: Evidence shows that MASD under telemetry electrodes can be reduced through a multifaceted prevention approach. Avoiding moisture-retaining surfaces, using barrier protection, rotating electrodes at set intervals, implementing risk-based prevention plans, and conduct-

ing systematic skin assessments enhance monitoring practices and lower the chances of preventable skin injuries. Future research should examine adherence to MASD prevention strategies and their effects on high-risk telemetry patients.

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EBP-006

Telemetry without Trauma: a Review of Evidence-Based Approaches to Prevent Medical-Adhesive Related Skin Injuries (MARSI)

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Introduction: The incidence of medical adhesive-related skin injury (MARSI) is steadily increasing among hospitalized adults who receive continuous cardiac monitoring secondary to electrode use and placement. Telemetry electrodes need frequent adhesive contact and removal. This process can lead to skin stripping, skin tears, and moisture-associated skin damage (MASD). These complications can increase pain, worsen the risk for infection, and prolong length of hospital stays. Although there are guidelines available, variations in practice and inconsistent preventive measures still contribute to the rising incidence of MARSI. This literature review brings together recent evidence on methods that can reduce MARSI linked to the use of telemetry electrodes.

Methods: that can reduce MARSI linked to the use of telemetry electrodes. Methods A structured literature search was conducted in PubMed, CINAHL, and OVID for evidence-based publications from 2021 to 2025. Search terms used included medical adhesive-related skin injury (MARSI), telemetry electrodes, cardiac monitoring, barrier film, skin preparation, and medical-device-related injuries. Only peer-reviewed studies, clinical practice guidelines, and consensus statements relevant to adult telemetry monitoring and MARSI was reviewed and utilized. Ten sources met the search criteria and were analyzed for common themes for MARSI prevention and quality improvement.

Results: A structured literature search was conducted in PubMed, CINAHL, and OVID for evidence-based publications from 2021 to 2025. Search terms used included medical adhesive-related skin injury (MARSI), telemetry electrodes, cardiac monitoring, barrier film, skin preparation, and medical-device-related injuries. Only peer-reviewed studies, clinical practice guidelines, and consensus statements relevant to adult telemetry monitoring and MARSI was reviewed and utilized. Ten sources met the search criteria and were analyzed for common themes for MARSI prevention and quality improvement.

Discussion: Four major themes emerged. First, improved skin preparation, which includes cleansing, reducing moisture, and avoiding shaving, was linked to a lower risk for MARSI. Second, using liquid barrier film consistently before placing electrodes showed significant reductions in skin stripping and medical-adhesive damage. Third, utilizing a scheduled electrode rotation and regular skin checks lowered localized mechanical stress on the skin. Finally, MARSI prevention bundles that combined assessment, barrier protection, device repositioning, and structured staff education led to noticeable decreases in medical adhesive-related injuries. The studies also highlighted that older adults and those with moisture imbalances or fragile skin faced a higher risk.

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EBP-008

Introducing a Novel Autologous Micrografting Technology

Mark S. Granick, MD

Introduction: During the past 2 decades, the wound healing community learned that skin cells will automatically polarize and layer appropriately regardless of how they are placed onto a wound. That bit of information led to a series of technologic developments taking advantage of skin polarity: A mincing apparatus that created small pieces of split thickness skin to spread onto a wound; a technique of disaggregating epithelial cells with an enzyme and applying a cell suspension; harvesting a skin sample, remote processing of a proprietary slurry to be applied. Newly introduced to the USA is a regenerative system based on micro-meshing full thickness skin.

Methods: Full thickness skin is harvested with a biopsy punch. The skin is placed in the micro-mesher. The device is handheld on the OR table. It takes 2-3 minutes to process and draw into a syringe. The expansion rate is 20-40X.

Results: Over 450,000 micrografting procedures have already been performed around the world. The surgeons in each area use the locally sourced collagen products of their preference to support the graft and cover the wound.

Discussion: There are over 80 publications in the literature documenting the basic science and clinical results. One multicenter study examined 70 patients with lower extremity wounds of varied etiologies. Follow up was 90% in 1 year. The ulcers were mostly traumatic or surgically created and unhealed for a mean of 7 weeks. At engraftment the size of the wounds averaged 14 cm2. At 7 days it was 11.6 cm2, at 14 days 9.3 cm2, at 21 days 4.5 cm2, and at 48 days 0 cm2. After closure, the wounds continued to contract up to 40% by day 60. At one-year, multiple skin quality

assessments were performed documenting that the skin was soft, flat and elastic. Twenty four patients had exposed bone and 12 had exposed tendon in their wounds when engrafted. All healed without infection at a mean of 48 days. While the results of this study were remarkable, many case reports and smaller clusters of operated patients had comparable data. I personally have used all of these techniques extensively. This one is the easiest, fastest and most economical that I have seen. Since I recently started using this product my patients have not yet gone through the full cycle of healing and scar maturation.

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EBP-009

Real-World Experience with Use of Traditional Negative Pressure Wound Therapy Versus Single Use Systems – Retrospective Case Review in an Acute Wound Care Setting

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Introduction: Despite widespread use of traditional negative pressure wound therapy (tNPWT) and single use negative pressure wound therapy (sNPWT) to manage hard-to-heal wounds, how and when the two systems should be used in optimized treatment pathways is poorly understood.1 This retrospective study aimed to evaluate which wounds were transitioned from tNPWT to sNPWT in a real-world setting and whether a change in approach may be warranted to improve clinical outcomes and healthcare resources.

Methods: A retrospective case review of the treatment pathway and clinical outcomes for all patients with wounds eligible for NPWT (tNPWT or sNPWT*) presenting at a single acute care facility in the USA from February 2023 to September 2024. All wounds were treated with continuous NPWT administered at either -80 or -120 mmHg.

Results: Electronic medical records for 27 patients with wounds eligible for NPWT were available for review. Mean duration of NPWT was 9.8±11.1 days (median 7 days; range: 3–60 days). Estimated daily mean wound area reduction was 5.8% (median value 3.2%) with improvements in median wound volume also observed. Of the 27 wounds treated with tNPWT, 8 were successfully transitioned to sNPWT. Review against clinical guidelines and published literature for use of tNPWT and sNPWT2,3 showed that at least 16 wounds were eligible for first line sNPWT use based on exudate levels, wound depth and wound area.

Discussion: Approximately 30% of wounds included in this retrospective review of real-world practice were successfully transitioned from tNPWT to sNPWT, facilitating earlier hospital discharge without compromising clinical outcomes. Despite more than half of wounds fulfilling the criteria for first line sNPWT therapy, no wounds were managed using this approach, suggesting potential underutilization in patients who may benefit from early adoption.

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EBP-010

Clinical Review: Chemical Wound Debridement with 0.50% Sodium Hypochlorite Solution

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Introduction: Microorganisms are the primary contributors to biofilm formation and subsequent infection. Wounds covered with necrotic or non-viable tissue require debridement to expose healthy connective tissue, reduce critical colonization, and to promote wound healing. However, there are circumstances in which sharp or ultrasonic wound debridement method is not appropriate. In these cases, the wound still requires timely and effective intervention to prevent deterioration and support the healing process. NaOCl solution has a long history of use as an endodontic irrigant, dating back to 1936, when it was first adopted for its potent germicidal properties and its ability to dissolve the soft tissues of the dental pulp. During root canal preparation, NaOCl solutions ranging from 2.5% to 6.0% are used to achieve effective chemical–mechanical debridement of the canal. Because sodium hypochlorite contains approximately 5% free chlorine, it breaks down proteins into amino groups through chloramination reactions. Its strong alkalinity, with a pH of around 12.

Methods: The five selected patients with full thickness wound were identified in the controlled treatment group. Wound size (Length x Width x Depth) and percentage of viable and non-viable tissue was measured at baseline and during the weekly assessments. Pain, characteristics of the wound base, and periwound skin erythema, edema, and maceration were assessed. Calcium Alginate sheet moistened with 0.50% of NaOCl solution was applied to three (5) selected full thickness wounds which were in inflammatory phase of wound healing. An ABD pad was applied to all wounds as a secondary dressing and wound dressings were changed once every 24 to 48 hours.

Results: All five (5) patients demonstrated a positive clinical response to the 0.50% sodium hypochlorite solution, evidenced by loosening of non-viable tissue, absence of wound odor, and lack of pain, burning, or pruritus, along with the development of a healthy, granular wound bed.

Discussion: As McCullough et al. highlighted, contemporary wound care has shifted the paradigm from merely preventing infection to actively creating an optimal environment for tissue repair. While some have expressed concerns that antiseptics may be excessively cytotoxic and potentially hinder healing and certain guidelines even discourage the use of agents such as NaOCl solution. This perspective overlooks the nuanced nature of wound management. Wound care is complex, and no single approach is universally superior. When used appropriately and tailored to the patient's specific clinical context, each agent offers distinct therapeutic advantages that can support, rather than impede, the healing process.

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EBP-012

A Synergistic Multimodality Treatment Approach to Address the Key Drivers of Wound Chronicity

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Introduction: Chronic wounds remain a major clinical and economic burden, affecting millions worldwide. Despite advances in wound care, many wounds fail to heal due to persistent tissue hypoxia, unresolved inflammation, lymphatic dysfunction, edema, and ischemia–reperfusion injury. These interrelated mechanisms are further compounded by comorbidities such as obesity, diabetes, and vascular disease, highlighting

the need for therapeutic approaches that address multiple barriers to repair simultaneously.

Methods: We review the pathophysiological drivers of wound chronicity—including the inflammation/edema/hypoxia cycle, endothelial dysfunction, and impaired lymphatic clearance—and summarize evidence on the roles of oxygen, nitric oxide, redox signaling, mechanotransduction, and specialized pro-resolving lipid mediators (SPMs) in tissue repair. We then evaluate two complementary, non-invasive interventions: topical oxygen therapy (TOT), which directly elevates wound tissue oxygen tension to support oxidative burst, angiogenesis, collagen synthesis, and SPM biosynthesis; and intermittent compression (IC), which enhances lymphatic drainage, reduces edema, normalizes capillary gradients, and activates mechanosensitive repair pathways in endothelial cells, macrophages, fibroblasts, and keratinocytes.

Results: Chronic wound pathophysiology involves overlapping mechanisms of hypoxia, inflammation, edema, endothelial dysfunction, and reperfusion injury. Both topical oxygen therapy and intermittent compression independently improve oxygen delivery, perfusion, inflammation resolution, and tissue remodeling. When combined as intermittent topical oxygen therapy (ITOT), these modalities exert synergistic effects, amplifying oxygen bioavailability and potentiating anti-inflammatory, angiogenic, and reparative signaling. Clinical studies demonstrate that ITOT significantly increases healing rates, reduces healing time, lowers recurrence, and decreases hospitalizations and amputations in chronic wounds. Cost-effectiveness analyses further indicate improved quality-adjusted life years and reduced long-term expenditures.

Discussion: Chronic wounds persist due to a self-sustaining cycle of hypoxia, edema, and inflammation. By integrating oxygen delivery with cyclical compression, ITOT directly addresses the multifactorial barriers to repair, promoting durable healing and reducing complications. This multi-modality approach represents a promising therapeutic advance in the management of refractory lower extremity wounds, with broad implications for improving outcomes and quality of life and reducing health care costs.

EBP-013

ACTIVATE: a Practical, Evidence-Based Wound Care Pathway for Clinician Decision-Making

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Introduction: Effective management of chronic wounds demands a systematic approach that recognizes both the underlying systemic contributors and the local factors impairing tissue repair. Variability in assessment and inconsistent clinical decision-making often lead to delays in treatment progression, prolonged healing times, and preventable complications. The ACTIVAATE framework was developed to provide a clear, stepwise structure for clinicians, ensuring thorough evaluation, timely intervention, and appropriate escalation to advanced or specialty care when necessary. It serves as a practical guide that promotes consistency, improves clinical reasoning at the bedside, and supports evidence-driven wound management.

Methods: The ACTIVATE framework organizes wound management into eight functional domains: Assess, Classify, Treat the Cause, Inflammation, Vascular Screening, Advanced Modalities/Apply Dressing, Teach, and Evaluate/Escalate. Clinicians begin with a full clinical assessment that incorporates patient-level risk factors and wound-level findings, followed by accurate wound classification to guide subsequent decisions. Systemic and local impediments to healing are identified and addressed early in the process. The model places particular emphasis on recognizing inflammatory and infectious burden, performing appropriate vascular evaluation, and introducing cellular and tissue-based products when clinically justified. Dressing selection and patient education are individualized to the wound's presentation and the care environment, ensuring that interventions remain aligned with best practice across the continuum of care.

Results: Early use of the ACTIVATE framework suggests that it may help bring greater consistency to wound assessment, care planning, and documentation. The structured sequence appears to support more reliable identification of modifiable barriers to healing and provides clearer cues for when vascular studies, advanced modalities, or specialty referrals should be considered. While formal outcome data are pending, the framework shows promise in guiding clinicians toward safer, more accurate, and evidence-aligned decision-making across various care settings.

Discussion: The ACTIVATE framework provides a practical structure for delivering coordinated, evidence-based wound care while accommodating the complexity of individual patient presentations. By reinforcing accurate classification, early intervention, and timely escalation to higher-level services, the approach has the potential to improve healing trajectories and reduce avoidable delays in chronic wound management. Its adaptability across care settings makes it a useful tool for promoting adherence to current best practices and supporting clinician competency in managing challenging wounds.

EBP-014

Near-Infrared Spectroscopy Imaging in Chronic Wound Care: a Comprehensive Review of Clinical Applications and Healing Insights

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Introduction: Chronic wounds remain a global healthcare challenge.1 A critical limitation in effective wound care is the inability to accurately assess microvascular tissue health in real time. Near-infrared (NIR) imaging addresses this gap by providing noninvasive, two-dimensional maps of tissue perfusion to depths of 2–3 mm, enabling early detection of perfusion deficits. This abstract builds upon a recent literature review2 of NIR imaging and its use in wound care, including relevant clinical endpoints and key measurement parameters assessed.

Methods: The aim is to identify, describe, and illustrate NIR imaging modalities and measurement parameters, along with their clinical applications. A literature review of 80 peer-reviewed publications and regulatory documents was conducted to assess NIR imaging use in wound care. Publications included20 clinical studies (patient cohorts n=15–81) and systematic reviews/meta-analyses, while regulatory documents included FDA 510(k) clearances for Class II devices. The review examined NIR imaging principles, historical development, and modern implementations. FDA-cleared devices and clinical applications across wound etiologies were analyzed and synthesized to summarize current evidence.

Results: Clinical studies demonstrated that NIR imaging can effectively detect poor wound healing early, facilitating timely interventions. Changes in parameters such as oxygenated hemoglobin, deoxygenated hemoglobin, and tissue oxygen saturation have shown strong correlations with wound healing progress, enabling clinicians to make more informed decisions. Findings indicate that NIR provides evidence-based measures of tissue perfusion that can inform patient-specific care.

Discussion: NIR imaging advances wound management by providing real-time, noninvasive, and objective data on tissue oxygenation and perfusion. It may objectively complement the standard percentage area reduction assessments during the wound treatment process, potentially reducing healing times and costs. Limitations include artifacts from skin tone or motion (potentially mitigated by algorithms) and lack of standardization. Future directions involve AI integration for predictive models and combination with other imaging for holistic care

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EBP-015

Evaluation of a Five-Layer Foam Dressing for Exudate

Management

Alicia Smith; Jennifer J. Gale, BA

Introduction: In the United States (US), 1 in 35 adults live with a chronic wound. These individuals require twice as many medical visits, medications, and products compared to unaffected adults and have a greater risk of mental health issues and social isolation. Foam dressings can aid in the healing process by absorbing and retaining exudate and bacteria. Selection of foam dressings should consider minimizing unnecessary dressing changes and preventing leaks as well as patient satisfaction levels. The aim of this evaluation was to gather information to assess how well a five-layer foam dressing* performs in managing exuding wounds.

Methods: Clinicians were asked to share feedback at dressing application and removal, and advised to follow their usual protocol for dressing examination and change. They were trained on dressing usage in line with their clinical judgement. The product evaluation form was accessible through use of a unique QR code and captured ratings on how well the dressing retained exudate as well as performance in other key areas, including the effectiveness of the change indicator and conformability.

Results: Between September and December 2025, 29 hospitals took part in data collection resulting in 231 responses (questions were non-mandatory). 100% (25/25 responses) of respondents were satisfied with the dressings ability to retain exudate during removal and 87.5% (21/24 responses) of respondents were satisfied with the change indicator. 98.5% (174/177) of respondents were satisfied with how the dressing conformed to the patient, and 98.6% (221/224) were satisfied with the overall dressing performance.

Discussion: The evaluation demonstrated high clinician satisfaction with the five-layer foam dressing in managing exuding wounds. Positive ratings for exudate retention, conformability, and overall performance highlight the product's reliability in supporting wound healing and patient comfort. The positive feedback on the dressing change indicator suggests potential to optimize wound management efficiency and reduce unnecessary dressing changes.

EBP-016

Evaluation of a Five-Layer Foam Dressing for Pressure Injury Prevention

Alicia Smith, DPT,CWS, LSSGB, NCS; Jennifer J. Gale, BA

Introduction: 1 in 10 adult patients in the United States (US) are impacted by hospital acquired pressure injuries (HAPIs) resulting in an average of 9.5 extra days in hospital, 95% are preventable. Foam dressings are applied as part of pressure injury prevention (PIP) to decrease strain on soft tissues and absorb shear forces, therefore lowering the risk of HAPIs. The aim of this evaluation was to assess clinician satisfaction with a dressing designed to prevent pressure injuries.

Methods: Respondents in the US accessed the product evaluation form using a unique QR code to input data during a defined survey period. Clinicians were asked to follow their usual protocol for dressing examination and removal and trained on five-layer foam dressing* use in line with their clinical judgement. The evaluation captured ratings on comfortability as well as performance in other key areas, including how well the dressing stayed in place and wear time.

Results: Between September and December 2025, 385 responses were received from 31 hospitals (questions were non-mandatory). 96.3% (362/376 responses) of respondents were satisfied with the wear time of the dressing and 93.9% (339/361 responses) of respondents stated their expectations were met in terms of the dressings ability to be lifted and reapplied for skin inspection. Further to this, 97.8% (361/369 responses) of respondents stated their expectations were met with how the dressing conformed to body contours and 95.2% (362/380 responses) of respondents would continue to use the dressing for PIP.

Discussion: Feedback from clinicians indicated they were satisfied with the five-layer foam dressing being applied for PIP. High ratings were received for dressing conformability as well as wear time, and over 95% of respondents indicated they would continue to use the dressing. These findings support the dressing's role in enhancing patient care and reducing pressure injuries.

EBP-018

A Systematic Review with Semi-Quantitative Synthesis and GRADE Qualification of the Effectiveness of a Keratin-Based Matrix in Treating Hard-to-Heal Wounds

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Introduction: "Hard-to-heal wounds impose substantial morbidity, cost, and, in the case of diabetic foot ulcers, elevated mortality risk. Venous leg ulcers (VLUs) and variants of epidermolysis bullosa (EB) likewise impose major chronic-disease burden and healthcare cost. Keratin biomaterials.

Methods: Literature from 2006–2025, including a randomized controlled trial (RCT), prospective cohorts, and case-series data, was extracted into a master evidence table. Studies were assessed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) and evaluated across five GRADE domains with appropriate downgrading and upgrading factors. Data were synthesized narratively and semi-quantitatively, with directional summaries of epithelialization and closure outcomes rather than formal meta-analytic pooling due to heterogeneity among studies.

Results: Thirty-two studies (n≈700 human wounds) were identified: one RCT (High certainty), six comparative or cohort studies (Moderate), fifteen case series, and ten case reports or preclinical studies (Low–Very Low). Across seven comparative studies (n≈400 wounds), keratin-based matrix (KBM) treated groups achieved 60–80% complete or ≥ 50% partial closure by 8–12 weeks versus 25–40% among controls (approximate RR 1.97; 95% CI 1.2–3.2). This finding, based on a fixed-effect inverse-variance summary of study-level risk ratios, reflects a semi-quantitative directional effect rather than a formal meta-analysis. Owing to heterogeneity of endpoints, this estimate is reported as a semi-quantitative directional effect rather than a formal meta-analysis. Uncontrolled series reported similar healing rates in treated wounds without formal comparators. No serious adverse events were reported.

Discussion: Using formal GRADE qualification, the KBM used in these studies demonstrate consistent clinical efficacy and favorable safety across diabetic foot ulcers, venous leg ulcers, and epidermolysis bullosa. Evidence certainty is moderate overall, driven by one high-certainty RCT and multiple concordant cohort studies. The findings support CMS formulary inclusion of Keramatrix as a reasonable and necessary adjunctive therapy following failure of standard of care techniques. Ongoing real-world data continue to corroborate and expand these findings across diverse care settings.

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EBP-019

Comparative Outcomes of a Placenta-Based Tissue Product to Other LCD Covered Cellular and Matrix-Based Products for the Treatment of Lower Extremity Diabetic Ulcers: a Medicare Real World Evidence Study

Travis Tucker, MA, MBA; Kimberly Cot, MAS

Introduction: To compare clinical and economic outcomes of the Artacent placental allograft to 18 other covered cellular and matrix-based products (CAMPs) using data from a Medicare database.

Methods: We conducted a retrospective cohort study using data from the Centers for Medicare and Medicaid Services (CMS), employing a 1:1 matching procedure based on six pre-specified baseline covariates for Medicare patients who received Artacent or 18 other covered CAMPs for the treatment of lower extremity diabetic ulcer (LEDUs) between 2020 and 2023. LEDU episodes were constructed from claims data by linking sequential services until a 60-day clean period without LEDU related claims was observed, which signified the end of an episode. Outcomes assessed within each completed episode included major and minor amputations, as well as emergency department visits, hospital readmissions, or care transitions to other sites of service.

Results: A total of 2,226,571 episodes were identified in the CMS database, of which 1,192 LEDU episodes (596 in each cohort) met the study eligibility criteria and were analyzed. Rate of major and minor amputation in the Artacent group was 2.7% and 13.6% respectively as compared to 3.4% and 14.8% in the pooled CAMP group (p = 0.498 and 0.561 respectively). Visits or re-admissions to a hospital were also lower in the Artacent group; however, the results were not statistically significant.

Discussion: Analysis of CMS data revealed similar outcomes when comparing Artacent placental allograft to 18 other covered CAMPs available on the market. It is reasonable to conclude that Artacent may be integrated into the treatment paradigms for LEDUs.

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EBP-020

Real-World Outcomes of a Placenta-Based Tissue Product Versus Standard of Care for Lower Extremity Diabetic Ulcers: a Medicare Cohort Study

Travis Tucker, MA, MBA; Kim Kot, MAS

Introduction: To review data from the Centers for Medicare and Medicaid Services (CMS) database in order to compare clinical outcomes of patients who were treated with Artacent Wound and Artacent AC (Tides Medical, US), a dual-layer amniotic membrane (DLAM), with patients who received debridement alone.

Methods: A retrospective cohort study was conducted using a 1:1 matching procedure based on six pre-specified baseline covariates of Medicare patients who received DLAM or debridement alone for the treatment of lower extremity diabetic ulcers (LEDUs) between 2020 and 2023. LEDU episodes were constructed from claims data by linking sequential services until a 60-day clean period without LEDU-related claims was observed, which signified the end of an episode. Outcomes assessed within each completed episode included major and minor amputations, as well as emergency department (ED) visits, hospital readmissions, or care transitions to other sites of service, such as skilled nursing facilities.

Results: There were >2 million eligible episodes identified in the CMS database, of which 1244 LEDU episodes (622 in each cohort) met study eligibility and were analysed. Based on the analysis, approximately one major amputation was prevented for every 32 patients treated with DLAM as compared to debridement alone. Inpatient admissions, ED visits and skilled nursing facility visits were significantly reduced in the DLAM cohort.

Discussion: Medicare patients treated with DLAM experienced significantly lower rates of major amputations and reduced healthcare use compared with those treated with debridement alone. Promising results from this study may provide another advanced wound care option to add to the treatment armamentarium.

EBP-021

Reducing Risk, Enhancing Outcomes: Pressure Injury Prevention Strategies in the Hyperbaric Setting

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Introduction: This initiative was developed to establish a standardized pre-treatment offloading and positioning protocol across nine hyperbaric oxygen therapy (HBOT) facilities to reduce pressure-injury incidence. HBOT requires extended immobility; many patients cannot reposition independently once in the chamber, increasing risk for pressure-related harm, including deep tissue injury (DTI). The intervention required proactive heel elevation and individualized positioning to offload known risk areas before chamber entry, addressing a documented lack of consistent pre-treatment protocols across sites.

Methods: After an internal review identified inconsistent pre-treatment offloading, we implemented a policy requiring a documented pressure-risk assessment before each HBOT session. Clinicians floated heels, applied positioning devices, and offloaded any vulnerable sites prior to chamber closure. Staff were trained on the revised workflow, and adherence was monitored via direct observation. We tracked outcomes using patient-reported pain, incidence of new pressure injuries, and rates of heel deep tissue injury (DTI).

Results: Implementation of this practice innovation resulted in measurable improvements across facilities. Patients reported reduced pain during and after HBOT sessions, and incidence of heel DTI significantly declined compared to baseline. Additionally, early observations indicated enhanced staff awareness of pressure prevention strategies and increased consistency in patient preparation practices.

Discussion: Small, deliberate workflow changes can meaningfully improve outcomes for vulnerable HBOT patients. By cutting pressure-injury rates and related pain, this approach improves comfort, lowers complication-related costs, and provides a practical model other HBOT programs can adopt. Proactive offloading and positioning before chamber entry is a low-cost, reproducible step that reduces preventable harm. Embedding it into routine HBOT protocols strengthens patient safety and overall quality of care.

HEALTH ECONOMICS

HE-001

Purified Native Type I Collagen Matrix Plus Polyhexamethylene Biguanide (PHMB) Antimicrobial Wound Matrix (PCMP) Is Associated with Lower Amputation Rates Among Medicare Beneficiaries with Diabetic Foot Ulcers

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Introduction: Prior research indicates that use of the PHMB antimicrobial wound matrix ("PCMP*") is frequently delayed until individuals develop more severe diabetic foot ulcers ("DFUs"). This study evaluated rates of non-traumatic lower-limb amputations ("amputations") among beneficiaries with DFUs who initiated PCMP within 6 months of diagnosis compared with those who never receiving PCMP.

Methods: Two mutually exclusive cohorts of beneficiaries with DFUs were identified from 100% Medicare Fee-for-Service Standard Analytic Files (Q1 2015–Q3 2023): (i) those receiving PCMP within 6 months of DFU diagnosis (first PCMP claim defined as the index date) and (ii) those receiving standard wound care (e.g., debridement, offloading) without PCMP (index date randomly assigned). Beneficiaries were matched 1:1 and required to have continuous Medicare Parts A and B enrollment for ≥6 months pre- and post-index. Six-month post-index amputation rates were compared using statistical tests for matched pairs. Additionally, amputation rates among beneficiaries initiating PCMP within 45, 60, or 90 days of diagnosis—and receiving follow-up applications every 7–14 days for one month—were descriptively compared with rates among those never receiving PCMP. Standardized mean differences (SMD) >10% and p-values < 0.05 were considered statistically significant.

Results: Before matching, beneficiaries receiving PCMP (N=10,939) had greater disease severity, as indicated by longer duration of active ulceration and higher amputation rates in the 6 months pre-index than those never treated with PCMP (N=657,233). Post-matching, baseline differences were eliminated. During the 6-month follow-up period, beneficiaries receiving PCMP (N=10,862) had lower amputation rates than matched controls (9.9% vs. 12.2%; SMD=−7.34%; p< 0.001). Further, among beneficiaries initiating PCMP within 45, 60, or 90 days of diagnosis (N=506; 684; 946), 6-month amputation rates were 4.0%, 4.1%, and 4.8%, respectively, compared with 8.4% among non-PCMP recipients (all p< 0.001).

Discussion: Findings from this study reaffirm that PCMP treatment is often delayed until DFUs become more severe. However, after adjusting for baseline differences, PCMP use was associated with lower rates of non-traumatic lower-limb amputations during the 6-month follow-up period. Earlier initiation—particularly within 90 days of DFU diagnosis—

may further reduce amputation risk.

HE-003

Economic Impact of Longitudinal Remote Thermovisual Foot Monitoring in High-Risk Patients with Diabetes: Interim Findings from an Extended Monitoring Cohort

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Introduction: Diabetic foot ulcers (DFUs) drive disproportionate healthcare costs, a burden that becomes markedly greater in individuals with higher-risk feet, where delayed detection often results in more severe presentations and substantially higher treatment intensity. At-home remote thermovisual monitoring provides timely surveillance to identify risk early, and emerging assessment tools, such as a Visual Risk Assessment Index (VRAI), offer an opportunity to tailor monitoring to initial assessment. This analysis evaluates the potential cost implications of remote monitoring while incorporating a visual risk–stratification approach to contextualize outcomes.

Methods: This retrospective, multisite analysis included adults with diabetes and prior ulcer history using an in-home thermovisual monitoring device and who have undergone at least three quarterly podiatric record reviews. Daily scans were remotely evaluated, and abnormalities were escalated per protocol. Each participant's initial scan was categorized using a visual risk framework similar to the VRAI concept described in prior work, aligning monitoring outcomes with the underlying level of risk at enrollment. Outcomes assessed included severity of ulcers at first presentation, detection of pre-ulcerative lesions, and expected implications for healthcare resource utilization.

Results: Signs of foot risk were consistently identified and communicated prior to severe ulceration. Visual risk classifications at time of first scan revealed that many individuals exhibited notable foot-health vulnerabilities, including superficial ulcers on admission that were treated prior to referral, helping contextualize the need for subsequent escalations and emphasizes the value of ongoing, routine surveillance. Ulcers that developed during monitoring were generally identified while low severity, and pre-ulcerative tissue changes were frequently flagged and managed promptly, preventing progression. These trends suggest that remote monitoring may shift many clinical encounters from higher-intensity, higher-cost interventions toward earlier, lower-cost, and lower-intensity management.

Discussion: Proactive detection and management of foot complications in a high-risk population have meaningful health-economic implications. By limiting disease progression, averting preventable ulcer formation, and reducing the likelihood of severe presentations, remote thermovisual monitoring may substantially reduce downstream care costs. Incorporating a visual risk assessment model helps identify those most likely to benefit. While full economic modelling is ongoing, interim findings indicate that sustained monitoring may yield significant cost avoidance through timely intervention and more efficient use of clinical resources.

HE-004 (RPT-007)

Early Outcomes of Implementing a New Multilayer Foam Dressing in an Acute Setting: Assessing Clinical and Financial Impact Through Value-Based Procurement

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Introduction: The rising burden of chronic wounds and increasing product costs make cost-effective procurement essential.[1] Traditional models that prioritise lowest upfront price risk higher long-term costs and poorer outcomes by neglecting healing time, resource use, and nurse workload.[2] Value-based procurement (VBP), aligned with value-based healthcare, shifts focus from price to overall value-health outcomes achieved relative to costs.[3] In wound care, advanced dressings can reduce dressing changes, resource use, and healing time. Europe's MEAT framework reflects this by integrating cost-effectiveness, innovation, and sustainability in procurement decisions.[4] The aim of this study was to demonstrate the clinical and economic impact of introducing a multilayer foam dressing* within a VBP framework, focusing on improving wear time through effective exudate management, enhanced adhesive performance, and reduced need for dressing layering.

Methods: 28 patients (31 wounds) were evaluated across two care settings at the Countess of Chester NHS Trust over a 3-year period using a standardised assessment form. Objectives for changing to the foam dressing were: improved exudate control, extended wear time, reduced need for primary and secondary dressings, enhanced adhesion, and decreased maceration. Following formulary inclusion, a phased site-wide implementation supported by education and training was completed. Post-implementation analysis compared monthly volumes and spend for silicone foams, gelling fibres, and alginates across the respective months of 2023/24, 2024/25 and 2025/26 (year-to-date).

Results: Clinical objectives were met in 98% of cases (30/31). Dressing changes were reduced in 84% of wounds (26/31), and 96% achieved reduced need for additional dressings (25/26). All evaluations (100%) rated the new dressing more effective than previous options. Post-implementation analysis showed a 27% reduction in foam volumes and 70% in gelling fibre/alginate volumes over three years. Corresponding spend decreased by 24% for foams and 74% for gelling fibres/alginate dressings.

Discussion: Introducing a multilayer foam dressing* within a VBP framework improved clinical outcomes and optimised resource utilization, reducing dressing changes and overall expenditure. These findings support structured, evidence-informed procurement strategies that prioritise value over lowest upfront cost and drives sustainable improvements in wound care.

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HE-006

Treatment with Advanced Skin Substitute Products Is Associated with Lower Amputation Rates Among Medicare Beneficiaries with Diabetic Foot Ulcers

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Introduction: Previous studies indicate that initiation of advanced skin substitutes* is often delayed until patients develop more severe diabetic foot ulcers (DFUs). This study assessed non-traumatic lower-limb amputation ("amputation") rates among Medicare beneficiaries with DFUs who received skin substitutes within 6 months of diagnosis versus those who did not receive such treatment.

Methods: Two mutually exclusive DFU cohorts were identified using 100% Medicare Fee-for-Service Standard Analytic Files (Q1 2015–Q3 2023): (i) beneficiaries receiving skin substitutes within 6 months of diagnosis (first skin substitute claim defined as the index date) and (ii) those receiving standard wound care (e.g., debridement, offloading) without skin substitutes (index date randomly assigned). Beneficiaries were matched 1:1 and required to have continuous enrollment in Medicare Parts A and B for ≥6 months pre- and post-index. Six-month post-index amputation rates were compared using statistical tests for matched pairs. Amputation rates among beneficiaries initiating skin substitutes within 45, 60, or 90 days of diagnosis—and receiving follow-up applications every 7–14 days for one month—were also descriptively compared with rates among those never receiving skin substitutes. Standardized mean differences (SMD) >10% and p-values < 0.05 denoted statistical significance.

Results: The analysis included 65,810 beneficiaries with and 628,743 beneficiaries without skin substitute use. Before matching, beneficiaries

receiving skin substitutes had longer duration of active ulceration and higher pre-index amputation rates than those never treated with skin substitutes. After matching, baseline characteristics were balanced. During the 6-month follow-up, beneficiaries treated with skin substitutes (N=64,437) had lower amputation rates than matched controls (10.6% vs. 13.0%; SMD=−7.45%; p< 0.001). Among those initiating treatment within 45, 60, or 90 days of diagnosis (N=2,135; 2,934; 4,289), 6-month amputation rates were 5.5%, 5.7%, and 6.3%, respectively, compared with 8.2% among beneficiaries without any skin substitute treatment (all p< 0.001).

Discussion: Findings reinforce that skin substitute therapy is frequently delayed until DFUs become more advanced. After adjustment for baseline differences, skin substitute use was associated with lower 6-month amputation rates. Earlier initiation, particularly within 90 days of diagnosis, may further reduce amputation risk.

HE-008

Transition of Care - Navigating the Wound Healing Gaps

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Introduction: Chronic wounds impact 6.8 million Americans and cost over $25 billion yearly. Limited awareness and/or access to advanced trained/certified wound care specialists leads to suboptimal and outdated treatment, delayed healing, more complications, including higher amputation rates. Barriers include limited resources, lack of advanced wound care dressings, wound specific advanced modalities, insurance issues, and lengthy referral times. Enhanced discharge planning to include wound healing pathways, provider communication, clinician training, resource allocation, and standardized protocols are essential to improve outcomes, decrease readmissions/ER visits and reduce overall costs.[1][2][3]

Methods: The study highlights barriers to wound healing: few certified specialists, limited training for general practitioners and nurses, and restricted access to advanced wound care. These issues worsen outcomes, such as increased readmissions and amputations. The mission aims to improve discharge planning, primary care, and community nursing through education, specialist recognition, standardized protocols, collaboration, outcome tracking, and building local wound healing networks to enhance post-acute wound management and continuity of care.[6]

Results: Only 30–40% of chronic wound patients see advanced trained/certified wound care specialists, resulting in slower healing and annual costs exceeding $34,000 per patient. Improved access could accelerate recovery by 30%, reduce readmissions by 15%, and save up to $3.75 billion each year. Missed appointments and transportation issues raise ER visits; larger health systems have nearly 20% of Medicare patients are readmitted within 30 days, costing $26 billion, with $17 billion potentially avoidable. Limited specialists and lack of access to advanced wound care dressings increase long-term expenses for complex chronic wounds. [6] [7] Increasing community awareness enhances communication among wound care providers and boosts patient and caregiver satisfaction. This project examines gaps in wound healing and explores ways to improve outcomes.

Discussion: High costs and frequent readmissions from wound healing complications are driven by resource shortages and limited training; only 10% of diabetic foot ulcer patients see multidisciplinary specialists, contributing to chronic wounds, readmissions, and amputations.[2][3] Expanding access to advanced wound care dressings, expert guidance, and coordinated discharge planning can improve outcomes. Community collaboration and comprehensive education are necessary to reduce disparities and address wound healing gaps nationwide.[5][6]

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HE-009

Cost-Effectiveness of Advanced Wound Modalities in a Mobile Wound Clinic

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Introduction: Chronic, non-healing wounds pose a significant burden on the healthcare system, leading to poor patient outcomes, frequent hospitalizations, and substantial costs. Mobile wound care, which brings specialized treatment to patients in their homes or residential facilities, has shown promise in improving access and clinical outcomes. However, the specific financial advantages of using advanced wound products (AWPs) within this mobile model have not been fully elucidated. This abstract analyzes the effectiveness of integrating AWPs into a mobile wound care program compared to traditional outpatient wound center care.

Methods: This analysis reviewed the complex non-healing wounds managed by a mobile wound care clinic. Patients received comprehensive, evidence-based care, including the application of various AWPs such as cellular, acellular, and matrix-like products (CAMPs), and other advanced dressings. Key financial metrics considered were total treatment costs, wound-related hospitalizations, and time to wound closure. Cost data included product expenses, provider time, and transportation.

Results: The mobile wound care group demonstrated significant improvements in patient outcomes and substantial cost savings. Reduced Costs: Compared to the facility-driven care model consistent with findings from other pilot studies, the mobile wound clinic saw a 4-fold decrease in cost. Fewer Hospitalizations: Hospital admissions related to wound complications were reduced in the mobile group mostly due to patient compliance and convenience of mobile visits. Faster Healing: The mobile group showed an increase in ulcer-free months and a higher probability of healing, aligning with evidence on effective CAMP treatments. Operational Efficiency: Eliminating the need for patient transportation to ambulatory wound centers led to improved efficiency and reduced administrative burden for both patients and facilities. Improved Communication: Enhanced communication and faster delivery of new orders to home health agencies were also observed in the mobile care setting.

Discussion: This analysis supports the compelling evidence that mobile wound care, when utilizing advanced wound products and innovative technologies, is a cost-effective and clinically superior alternative to traditional outpatient wound care. By delivering personalized, evidence-based care directly to patients, mobile programs can significantly reduce costly hospital admissions and improve healing rates. The financial benefits, alongside improved patient access and outcomes, make this a scalable and effective model for future wound care delivery, particularly for immobile or post-acute patients.

HE-010

Clinical and Economic Impact of a Two-Layer Compression System with Zinc, Odor, and Itch Control Compared to Unna's Boot for the Treatment of Lower Extremity Ulcers: a Systematic Review

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Introduction: A systematic review aimed to identify key economic and patient reported outcome measures to inform the design of a multi-site quality improvement collaborative project regarding the clinical advantages & cost-effectiveness of a modern, two-component system with zinc-impregnated foam with itch, odor control, and cohesive wrap (TLC+). This updated evidence review focuses on the PICO question regarding clinical effectiveness demonstrated by patient reported outcome measures & product use, over the traditional Unnas Boot (UB) for lower extremity management.

Methods: The literature search was conducted via the PubMED, MEDLINE, EMBASE, CINAHL, Cochrane library databases from inception up to December 11th 2025. The Pubmed search was updated January 2025. Study selection, quality assessment, data synthesis were undertaken in transparent accordance with recommended PRISMA standards including extraction by multiple expert clinician scientist reviewers. Findings are presented narratively. Patient reported outcome measures of itch and odor were assessed as the patient's subjective experience is paramount.

Results: The primary economic driver in wound care is time to complete healing, impacting both labor and supply costs. A comparison of two-layer and four-layer bandages demonstrated better Health-Related Quality of Life (HRQoL) and lower 6-month costs for combined populations ($3,218.22 vs. $3,610.33 or $3,531.64) and newly diagnosed patients using the two-layer option. Supply chain efficiency is improved by using all-in-one kits (zinc+foam, wrap, stocking) over sourcing multiple components. Guided application visual indicators enhance safety, reduce treatment failures, and decrease costly re-visits due to bandage slippage. The foam layer provides odor/itch control and improved envelopment, addressing common UB discomfort and enhancing patient adherence. Device comparison noted significant differences in dermal micro-environment and compression mechanisms.

Discussion: Based on these findings, TLC systems with zinc, odor, and itch control may result in lower treatment costs, better ulcer healing, and improved HRQoL compared with Unnas boot multicomponent therapy in patients with diagnosed lower extremity ulcers. Observed reductions in patient visits without reductions in outcomes reflected savings in nurse time, facility overhead, and patient travel. Thus, non-inferiority dictates a health economics position centered on paying a subtly higher material price for a superior, safer delivery system that leads to better clinical outcomes and lower overall resource use. However, further high-quality research is needed on bandage wear time and its impact on the lower extremity tissue microclimate, especially for patient related quality of life outcomes such as itch, odor.

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HE-011

Unna Problem with the Economics: Updating Lower Extremity Compression Practice from Unna Boots to a Two-Layer System with Zinc-Impregnated Foam, Odor, and Itch Control

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Introduction: The semi-rigid Unnas boot (UB) -a generic zinc oxide impregnated gauze sometimes coupled with a long stretch compression second layer- was considered the traditional gold standard in the late 1900s. This quality improvement study evaluated the clinical advantages and cost effectiveness of a modern two-component system with zinc-impregnated foam and cohesive wrap (TLC+) compared with UB for the treatment of lower extremity ulcers. While TLC+ may have a higher unit price than a standard UB, the economic advantage is demonstrated by examining key factors that contribute to total cost of care per successfully healed ulcer. The aim is to maximize improvements in health status given the resources available while acknowledging that patient quality of life factors such as odor and itch control are not commonly reflected in economic decision making.

Methods: This quality improvement study evaluated the clinical advantages and cost effectiveness of a TLC+ compared with UB for the treatment of lower extremity ulcers. A retrospective/prospective cohort design was chosen for the quality improvement study. Variables assessed include economic indicators and patient related outcomes. Improved patient comfort and compliance are demonstrated through a combination of HRQoL and visit frequency data.

Results: Prospective evaluation of TLC+ implementation was evaluated at multiple sites including a patient questionnaire assessing patient health related quality of life (HRQoL) via a single validated global health screening question scored quantitatively on a likert scale. Overall wrap comfort, itch and odor negative stimuli perceived from their wound wrap system were assessed, rating the intensity of the negative stimuli from their wound wrap system using a numerical rating scale at baseline and follow-up visits. Visit frequency of wraps was analyzed and environments encountered were catechized. Dermal microclimate management was non-inferior. The visit frequency was noted to be an expected decrease in the TLC+ group. Comparative analysis and product specifications suggest several key benefits of the advanced two-component system.

Discussion: The economic argument for the TLC+ system versus the traditional UB hinges on value. While UB may have a lower material cost, the TLC+ system cost-effectiveness is evidenced by improved health outcomes measured via the reductions in key resource utilization. Though the historical practice of UB remains, the newer generation of zinc-impregnated foam cohesive wrap systems with itch & odor control also offer improved patient related outcome measures making them a clear choice for the definitive management of lower extremity leg ulcers.

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HE-012

Rethinking Regulatory Tiers: Medicare Real-World Evidence Shows Cellular, Acellular, and Matrix-Like Product (CAMP) Outcomes Are Independent of FDA Regulatory Classification

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Introduction: CAMPs are widely used for lower-extremity diabetic ulcers (LEDUs) and venous leg ulcers (VLUs), yet reimbursement

frameworks often assume that the FDA regulatory category 361, 510(k), or premarket approval (PMA), reflects differences in clinical performance. Evidence validating these assumptions is limited. This study evaluated whether regulatory classification predicts real-world effectiveness and how episodes treated with these technologies compare with standard of care (SOC) alone.

Methods: Using a CMS limited data set (2016–2024), we analysed 2.65 million LEDU and 745,411 VLU episodes. CAMP-treated episodes were assigned to regulatory categories and matched with SOC using four-way matching on age, sex, comorbidities, time to treatment, debridement depth, and episode year. Episodes receiving CAMPs were stratified by regulatory categories, and 4-way 1:1 matching was used to balance cohorts across age, comorbidities, episode year, time to treatment, and debridement depth. Bonferroni correction addressed multiple comparisons.

Results: Regulatory classification did not meaningfully predict clinical outcomes. Across matched LEDU (n=3,585/group) and VLU (n=2,492/group) cohorts, differences among PMA, 510(k), and 361 products were mainly non-significant. In contrast, allCAMP groups significantly outperformed SOC. CAMP-treated episodes showed lower mortality (LEDUs: 9.5–11.1% vs 12.7% SOC; VLUs: 10.0–12.2% vs 13.2% SOC), fewer amputations, and substantially reduced ED, ICU, and CCU utilization. Benefits were consistent across wound sizes. SOC episodes showed slightly shorter length-of-treatment (LOT) but substantially higher complication rates.

Discussion: The FDA regulatory pathway does not predict real-world CAMP effectiveness in Medicare beneficiaries with hard-to-heal ulcers. CAMPs, regardless of category, consistently reduce mortality, amputations, infections, and hospital utilization compared with SOC alone. These findings challenge reimbursement models tiered by regulatory category, as outcomes across these technologies appear statistically similar.

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LABORATORY RESEARCH

LR-002

Preventing or Minimizing MARSI (Medical Adhesive-Related Skin Injury) with New Technology - Mechanical Evaluation of Light-Switchable Adhesive Film Dressings Used as a Skin Protectant Under Aggressive Medical Adhesive Dressings

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Introduction: Medical adhesives are designed to keep dressings and medical devices securely in place, but their strong adhesion often leads to medical adhesive-related skin injury (MARSI), especially when aggressive adhesives are involved, or when dressings are left on for several days or are frequently removed.[1-3] The risk of MARSI can range widely, from 16% to 77%, and can add significant costs—up to $88.50 per case.[3-6] To address this, clinicians may use skin barriers or adhesive removers, though these interventions increase both cost and time. A light-switchable adhesive film dressing (LSFD) provides strong adhesion but releases gently with near-UV light exposure on human skin.[7-9] However, in certain instances, clinicians must use adhesives supplied with the devices, such as ostomy baseplates or dressing kits for NPWT devices.[3,6] This study examines whether LSFDs can serve as a barrier between aggressive adhesives and skin, enabling gentle removal when exposed to near-UV light.

Methods: The research involved applying LSFD samples to the ventral forearm of a healthy volunteer. Over these and on skin, either colostomy securement strips (CSS) with hydrocolloid adhesive or NPWT drapes were applied. After an hour, the dressings were removed—those over LSFDs were switched with near-UV light before removal. In paired tests, peel strength was measured by pulling at 180O at 5 mm/s. Redness was noted immediately following removal. Statistical analysis was performed to compare the strength required for removal across conditions, with significance set at $p < 0.05$ and adjustments for multiple comparisons.

Results: CSS on skin showed a mean maximum peel strength of 2.39 ± 0.25 N, and mean average peel strength of 2.14 ± 0.21 N. NPWT drape on skin showed mean maximum peel strength of 4.36 ± 1.93 N and mean average of 3.07 ± 1.31 N. Switched LSFD under CSS reduced mean maximum peel strength to 0.88 ± 0.22 N ($p = 0.0044$) and average to 0.58 ± 0.17 N ($p = 0.0002$). Under NPWT drape, switched LSFD reduced mean maximum peel strength to 0.85 ± 0.48 N ($p = 0.0052$) and average to 0.54 ± 0.32 N ($p = 0.0003$). Mild redness was observed for samples placed directly on skin.

Discussion: This study demonstrates the potential for LSFDs to serve as a skin protectant under other dressings and medical adhesives in clinical practice, potentially minimizing the risk of MARSI and reducing patient pain, which may lead to improved outcomes

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LR-003

Prototype Gelling Fiber Dressings Incorporating Quaternary Polyethyleneimine Demonstrate Superior Anti-Microbial Activity Compared to Commercially Available Products Containing Silver

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Introduction: The use of silver in anti-microbial wound dressings has been associated with negative impacts on wound healing and the development of anti-microbial resistance. To counteract these issues, we aimed to determine the anti-microbial characteristics of prototype gelling fiber wound dressings incorporating quaternary polyethyleneimine (QPEI) polymers, designed with functional groups to enhance anti-microbial potency and prevent leaching into the wound bed. The characteristics of QPEI-incorporated prototype gelling fibers were evaluated relative to other commercially available gelling fibers containing silver.

Methods: Prototype QPEI-dressings were assessed for anti-microbial efficacy against the key wound pathogens Staphylococcus aureus and Pseudomonas aeruginosa in vitro using modifications of the EN 17854 test method. Characteristics evaluated included anti-microbial efficacy against high bioburden, durability of anti-microbial activity, as well as speed of action. In vivo efficacy (wound and dressing bioburden assessment) was also evaluated in a murine wound infection model.

Results: In vitro, prototype QPEI-dressings effectively controlled increasing S. aureus inoculum densities (up to 1x109 CFU) compared to silver-containing comparator dressings and QPEI-free controls. Moreover, the anti-microbial effect of prototype QPEI-dressings was sustained over repeated daily challenges for up to seven days. Importantly, prototype QPEI-dressings exhibited significantly faster anti-microbial kinetics as compared to silver-containing dressings. Finally, prototype QPEI dressings were significantly more effective at managing S. aureus wound infection in vivo relative to dressings containing silver.

Discussion: These findings indicate that prototype QPEI-wound dressings may provide a superior approach to preventing or controlling bacterial infections within the wound. Crucially, QPEI polymers act through a unique physical mechanism that, unlike traditional silver dressings, may limit the development of antimicrobial resistance. The rapid and sustained anti-microbial activity and the ability of prototype QPEI-dressings to manage high bioburdens may lead to better outcomes for patients with chronic wounds. Clinical studies will be required to confirm these promising in vitro and in vivo results.

LR-004

Assessing the Speed of Antimicrobial Activity Within a Nitric Oxide-Generating Dressing Against Antibiotic-Resistant Wound Pathogens

Matilda Coleborn, MSc; Emma Griffiths, PhD; Kate Meredith, PhD; Daniel G. Metcalf, PhD

Introduction: Hard-to-heal wounds, such as diabetic foot ulcers, are at high risk of developing local infection. A multimodal nitric oxide-generating dressing (NOGD) has been designed to generate antimicrobial nitric oxide within the dressing. The aim of this study was to evaluate the speed of antimicrobial activity of NOGD against the common wound pathogens, multidrug-resistant Pseudomonas aeruginosa (RPA) and methicillin-resistant Staphylococcus aureus (MRSA), using an in vitro direct inoculation model.

Methods: An adapted version of the AATCC 100 antimicrobial susceptibility standard test method was used. Test dressings were inoculated with approximately 1×106 colony-forming units (CFU) of challenge bacteria and then incubated at 35±3°C for 5, 10, 15 or 30 minutes, or 1, 4, or 24 hours. Viable counts were determined at these timepoints using dressing extracts after neutralization of nitric oxide activity. A non-antimicrobial dressing served as control throughout the test period.

Results: NOGD demonstrated rapid antimicrobial activity, reducing RPA to undetectable levels (< 30 CFU) within 1 hour, and reducing MRSA to undetectable levels within 4 hours. Initial rapid reductions were evident at just 10 minutes for RPA and 15 minutes for MRSA. The non-antimicrobial dressing maintained bacterial viability throughout the test period.

Discussion: NOGD was demonstrated to provide rapid and sustained antimicrobial activity against clinically relevant resistant pathogens, achieving notable reductions of challenging bacteria in minutes, and complete kill within hours. Gaining rapid source control in locally infected wounds is an appealing prospect for clinicians, especially in wounds at high risk of infection complications. The speed of action of NOGD has the potential to support improved infection prevention and resolution in hard-to-heal wounds.

LR-005

Assessing the Sustained Antimicrobial Activity Within a Nitric Oxide-Generating Dressing Using Antibiotic-Resistant

Wound Pathogens in a Repeated Inoculation Model

Emma Griffiths, PhD; Kate Meredith, PhD; Daniel G. Metcalf, PhD

Introduction: Hard-to-heal wounds, such as diabetic foot ulcers, are at high risk of local infection. A multimodal nitric oxide-generating dressing (NOGD) has been designed to generate antimicrobial nitric oxide within the dressing. The aim of this study was to evaluate the sustained nature of the antimicrobial activity within NOGD following repeated inoculations of antibiotic-resistant pathogens into the same test dressings over 168 hours.

Methods: An in vitro direct inoculation model adapted from the AATCC 100 antimicrobial susceptibility standard test method was used. The same test dressings were directly inoculated, then re-inoculated, with approximately 1x106 colony-forming units (CFU) of either multi-drug-resistant Pseudomonas aeruginosa (RPA) or Methicillin-resistant Staphylococcus aureus (MRSA) at 0, 24, 48, 72 or 144 hours. Viable counts of dressing extracts, after neutralization of nitric oxide activity, were conducted at 1, 4 or 24 hours after each inoculation or re-inoculation. A non-antimicrobial dressing served as control throughout the 35±3°C, 168-hour test period.

Results: NOGD consistently reduced both RPA and MRSA counts to near or below the limit of detection (< 30 CFU/dressing) within 24 hours of each inoculation/re-inoculation, often within 1–4 hours, demonstrating rapid and sustained antimicrobial action within the dressing. After the final re-inoculation at 144 hours, both RPA and MRSA were still reduced by at least 4 log10 within 24 hours. The non-antimicrobial dressing maintained bacterial viability throughout. These results confirm the sustained antimicrobial activity within NOGD under prolonged and repeated bacterial challenge.

Discussion: NOGD demonstrated rapid and sustained antimicrobial protection against antibiotic-resistant pathogens over extended periods, highlighting its potential in managing hard-to-heal wounds with ever-present infection risk.

LR-006

Efficacy of Nitric Oxide-Releasing Dressings to Reduce Bioburden and Enhance Healing in a Second Degree Porcine Wound Model

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Introduction: Burn wound healing is slower when compared to other mechanisms of injury and made challenging by frequent complications like infections which further delay healing.[1-3] Nitric Oxide (NO) has been demonstrated to have antimicrobial efficacy and to accelerate the wound healing process through multiple mechanisms.[4] The objective of this study was to evaluate NO-releasing dressings against wound infections by common pathogens, using a porcine model due to morphological and immunological similarities to human skin.[5,6]

Methods: Thirty second degree burn wounds measuring 27 mm in diameter were created on each of six animals. The wounds were immediately inoculated with either methicillin-resistant Staphylococcus aureus (MRSA USA300) or Pseudomonas aeruginosa (PA09-010)[7] and then treated with either (A) 10 wt.% SNAP, (B) TPS10, (C) PDMS Vehicle Control, (D) Silver Sulfadiazine Positive Control (SSD), or (E) Untreated Control and then covered with polyurethane film dressing. Treatments were replaced every three days and wounds were recovered for microbiological and histology analysis on days 6, 9, or 21.

Results: The NO-releasing dressings 10 wt.% SNAP and TPS10 produced significant reductions ($p \leq 0.05$) in MRSA bioburden at all assessment times compared to the PDMS Vehicle Control, SSD, and Untreated Control groups. Against PA09-010, the TPS10 and SSD groups had PA09-010 counts significantly lower ($p \leq 0.05$) than PDMS Vehicle Control and Untreated Control at all assessment times. Against both pathogens granulation tissue formation and epithelial thickness were significantly ($p \leq 0.05$) greater in TPS10 treated wounds on day 21 compared to SSD and Untreated Control, respectively.

Discussion: The NO-releasing dressings were effective in decreasing the bioburden of both MRSA and P. aeruginosa in burn wound infections. The broad-spectrum antimicrobial efficacy, coupled with enhanced wound healing observed in this study, makes NO therapies a promising therapeutic approach for the management of burn wounds. Further investigation should assess efficacy against additional wound pathogens and evaluate the effects on healing in non-infected wounds.

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LR-008

Multiscale Characterization of a Novel, Dehydrated Full-Thickness Amnion/Chorion Allograft

Emily DiNicola, PhD; Jerry Chang, BS; Jeremy Mercuri, PhD

Introduction: Cellular, acellular, and matrix-like products (CAMPs) have gained recognition as adjunctive therapies for chronic wound management. Among these are processed, perinatal tissue allografts which act as protective barriers to wound sites. However, the methods used to process these allografts can significantly impact their structural and functional properties, underscoring the importance of comprehensively characterizing these allografts at a multiscale level.

Methods: Dehydrated, full-thickness amnion/chorion allografts* were produced from placentas that were donated via informed consent following cesarean section deliveries. Tissue processing was performed in accordance with Food and Drug Administration's Good Tissue Practices and the American Association of Tissue Banks (AATB) guidelines prior to dehydration and terminal sterilization to a sterility assurance level of 10-6.

To evaluate the histological microarchitecture and extracellular matrix (ECM) composition of the resultant allografts*, samples underwent routine processing, staining and microscopic imaging. To biochemically characterize the allografts*, glycosaminoglycan (GAG), collagen, and growth factor content was quantified via a dimethylmethylene blue assay, hydroxyproline assay, and a multiplex cytokine array, respectively. To evaluate allograft* bioactivity, soluble extracts (1mg/ml) prepared from the grafts were added to basal cell culture media and incubated with human dermal fibroblasts (HDF's). HDF metabolic activity, proliferation and migration were evaluated. Of note, all analyses were performed by independent, third-party vendors.

Results: Allograft* histology demonstrated a full-thickness amnion/chorion allograft with a dense, intact ECM containing all zones of the native amnion, intermediate layer, and chorion while being comprised

of collagen, glycosaminoglycan, and elastin. Average GAG content of the allograft* was 18.0±4.4 µg GAG/mg dry weight. Average collagen content of the allograft* was 179.7±46.6 µg collagen/mg dry weight. The allografts* contained 240 different species of growth factors, including those involved in ECM remodeling, angiogenesis and tissue regeneration. Furthermore, extracts from the allografts* supported enhanced fibroblast metabolism and migration compared to basal media controls.

Discussion: The results herein demonstrate retention of native biophysical properties in this dehydrated, full-thickness amnion/chorion allograft*, where the allografts are comprised of an intact placental membrane microarchitecture containing a variety of ECM components and growth factors that can influence HDF behavior. These results also reveal preservation of the original relevant characteristics of the amnion/chorion relating to its utility to serve as a covering and offer protection from the surrounding environment.

LR-011

Moisture-Responsive Changes in Friction and Heat Transfer of a Prophylactic Dressing Interface

Amit Gefen, PHD; Lauren Bagshaw, Masters; Jordyn Bunker, Masters; Jordan Fisk, Masters

Introduction: Pressure injuries often develop when sustained soft tissue loading, inflammation, ischemia and an unfavorable skin microclimate interact. Prophylactic dressings are used to protect high-risk body regions, yet conventional silicone interfaces often maintain high coefficients of friction (COF) and have limited adaptability to changing moisture conditions.1 This study evaluated how a sodium carboxymethylcellulose (CMC)-based skin-contact layer* responds to hydration in terms of friction and thermal conductivity (TC), with potential implications for pressure injury prevention (PIP).

Methods: Two complementary experiments were conducted to evaluate frictional and thermal responses to increasing moisture levels at the skin-contact dressing layer. The friction testing used a tribological sled to measure the static and kinetic COF for a CMC-based interface* and a silicone interface, against a skin-simulating substrate under progressively increasing hydration. Thermal testing employed a heat-flow meter to quantify the TC of the CMC material versus polyurethane (PU) foam at 32°C and 40°C (representing normothermic and febrile conditions), under increasing hydration. Statistical analyses compared material-dependent responses under identical conditions.

Results: he CMC-based interface* exhibited significantly and consistently lower COFs than silicone at all the evaluated moisture levels above zero. With only 10% hydration, the COF decreased sharply to approximately 0.2, and this low-friction state was maintained up to full saturation, whereas silicone interfaces exhibited substantially higher COF values (>1) regardless of the hydration level. In parallel, the TC of the dry CMC-based interface* was double that of PU foam at 32°C (0.43 ± 0.01 versus 0.20 ± 0.01 W/m·K; p< 0.001). With increasing hydration, the TC of the CMC-based material rose nonlinearly to 4.73 ± 0.12 W/m·K at 15% moisture and 32°C, representing a more than fivefold greater response than PU foam. This TC advantage also persisted under simulated febrile conditions (40°C).

Discussion: The CMC-based skin-contact dressing* material demonstrated a superior dual biomechanical advantage, by concurrently lowering potential skin-dressing frictional forces and improving the heat clearance (flux) from skin in response to relatively low hydration exposures, characteristic to natural perspiration. This moisture-driven material responsiveness helps reduce the shear-induced tissue deformations and also limits local heat buildup under the dressing, supporting skin integrity under loading. Thus, the friction and thermal performance should be considered, along with fluid handling and mechanical properties, when designing or selecting prophylactic dressings for PIP.

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LR-012

The Antimicrobial Effects of a Standard-Issue Copper-Based Antimicrobial Military Wound Dressing to Reduce Bioburden in a Full Thickness Porcine Wound Model

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Introduction: Methicillin-resistant Staphylococcus aureus (MRSA), Acinetobacter baumannii and Candida albicans have been shown presence in wound infection.[1-3] Copper has been previously shown to have antimicrobial activity against various pathogens.[4] There have also been reported wound healing effects with the use of copper.[5] The present study was performed to investigate the antimicrobial activity of two novel copper dressings to reduce the bioburden using a full thickness in a porcine model.[6]

Methods: Full thickness wounds (punch biopsy 10 mm, n=48 per animal) were created on six animals and immediately inoculated with either methicillin-resistant Staphylococcus aureus (MRSA USA300) Acinetobacter baumannii ATCC19606 (AB19606) or Candida albicans ATCC64550 (CA64550). Wounds were treated (A) Copper-based wound dressings [CWD]*, (B) Cu-Dressing Formulation 1, (C) Cu-Dressing Formulation 2, (D) Vehicle Control 1, (E) Vehicle Control 2, or (F) left untreated, then covered with polyurethane film. All dressings were applied on day 0 and day 3. Wounds were recovered for microbiological counts on days 3 and 6, after treatment application.

Results: Cu-Dressing Formulation 2 significantly reduced MRSA USA300, AB19606 and CA64550 burden ($p \leq 0.05$) at all timepoints compared to all treatment's groups. Cu-Dressing Formulation 1 significantly reduced MRSA USA300 and AB19606 relative to CWD ($p \leq 0.05$). Both copper formulations showed more than 99% reduction six days after initial treatment compared to those wounds left untreated against all microorganisms tested ($p \leq 0.05$). Wounds infected CA64550 and treated with Cu-Dressing Formulation 2 exhibited 3.24±0.32 Log CFU/g (99.95% of reduction) on day 6 compared to untreated control wounds ($p \leq 0.05$). CWD and both Cu formulations showed significative microbial reduction ($p \leq 0.05$) between day 3 and day 6.

Discussion: Cu-Dressing Formulations demonstrated broad-spectrum antimicrobial activity in infected full thickness wound model. These findings support the use of copper therapies as promising new treatments for wound infection. Clinical trials examine the use of Cu-dressings are warranted.

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LR-014

Gas Marble Technology for Chronic Wounds: a Novel Atomic Drug-Delivery System Backed by Computational Discovery

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BS; Shriya Singh, Undergraduate Student; Yeju Lee, BS; Waldo G. Barrientos, BS; Jerome Lacombe, PhD; Justin Moser, MD; Michael Gordon, MD; David A. Winkler, PhD; Frederic Zenhausern, PhD, MBA

Introduction: Effective wound healing remains a global challenge, where chronic, nonhealing wounds persist due to oxidative stress, inflammation, and insufficient angiogenesis. Current strategies often fail to address these overlapping deficits, underscoring the need for innovative therapies1. As atomic drugs (H2, Xe) are investigated as potent therapeutic molecules, molecular hydrogen has demonstrated selective antioxidant (Nrf2, SOD, MDA, CAT) and anti-inflammatory (IL-6/10/1β, I-CAM, TNFα) properties2,3. However, its therapeutic delivery has been largely limited to inhalation, resulting in non-targeted biodistribution. Herein, we introduce a novel gas marble delivery technology, where therapeutic gas is entrapped within a nanoparticle-fortified liquid film, forming stable structures capable of withstanding up to 10× the Laplace pressure. For transdermal delivery to chronic wounds, these "marbles" are formulated into a topical patch. In parallel, this study utilizes a computational pipeline to investigate the interactions of gases with proteins dysregulated in the wound environment to discover new therapeutic capabilities of atomic drugs.

Methods: Biomaterials: Gas marble-entrapped biomaterial gels were formed from 5% alginate/0.5% xanthan gum. Hydrophobic silica nanoparticles (10 mg/mL; 14nm diameter) and surfactant (Tween-20 0.1%) were incorporated, followed by sparging with H2 gas (5sl/m, 25 µm pores, 5min.) and crosslinked with CaCl2 (1%). Hydrogen concentration was measured by Unisense microsensor. Computational modeling: Protein structures were obtained from RCSB PDB. Non-standard residues and water molecules were removed, hydrogens added, and Gasteiger charges assigned. AutoGrid4 computed Xenon-protein interaction energy maps, and sites with binding energies < 0 kcal/mol were extracted.

Results: Gas marble–entrapped biomaterials exhibited a cumulative H2 release (AUC) of ~3,573 µmol-h over 24 h. Franz cell diffusion studies demonstrated ~21.31 µmol-h release (0–6 h vs. 0.0 mM N2-filled control), implying transdermal compatibility. Fibroblasts treated with H2-filled marbles under oxidative stress showed a downregulation trend in Nrf-2 pathway genes (SOD1, CAT, HO-1, TXNRD1) and inflammatory markers (IL-6, IL-8, IL-β1), indicative of mitigation of oxidative stress-induced cellular damage. Binding energy calculations predicted Xe interacts with MMP9 (-1.367 - -0.917 kcal/mol), suggesting biological modulation.

Discussion: Gas marble technology demonstrated potential as a targeted delivery system for chronic wound management. Computationally, the favorable interactions of Xe suggest a new application for Xenon in modulating tissue repair activity.

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LR-016

Biocompatibility Assessment of a Bacteria-Responsive Colorimetric Nanofiber Membrane

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Introduction: Effective early detection of wound infections remains a major challenge in both clinical and home-care settings. Conventional diagnostic approaches, including swabbing and culturing, are time-consuming, require trained personnel, and often delay intervention. By the time visible symptoms emerge, bacterial loads may have already surpassed critical thresholds, increasing the risk of systemic infection. To address this limitation, we developed an in situ colorimetric nanofiber membrane capable of real-time bacterial detection at concentrations below infection-level thresholds. The biocompatibility of this nanofibrous membrane was evaluated in accordance with ISO 10993 standards to ensure its suitability for future clinical application.

Methods: The membrane was fabricated via electrospinning using a core solution of polyurethane and a shell solution composed of polyurethane, polyvinylpyrrolidone, hemicyanine dye, citric acid, and Tween 80. Brunauer–Emmett–Teller (BET) analysis was conducted to determine the active surface area. Biocompatibility testing (3rd party) followed ISO 10993 guidelines, including cytotoxicity, sensitization, pyrogenicity, and intracutaneous reactivity assessments.

Results: The nanofibrous membranes exhibited a distinct color change within 6 hours upon exposure to Pseudomonas aeruginosa and MRSA at concentrations as low as 105 CFU/cm^2 which is well within clinically relevant ranges. The color transition was clearly distinguishable under both warm and cool light sources. Cytocompatibility testing demonstrated >75% cell viability. No dermal reactions were observed in the sensitization assay in guinea pigs. Intracutaneous reactivity testing in rabbits showed no erythema or edema, with a mean score difference < 0.1 compared to controls. Pyrogenicity testing confirmed no temperature increase >0.5 °C relative to controls.

Discussion: Collectively, the in vitro and in vivo evaluations confirm that the colorimetric, bacteria-responsive nanofibrous membrane provides rapid and visually distinct detection of pathogenic bacteria while meeting key biocompatibility requirements. These findings support its potential for safe and effective clinical integration.

LR-018

Acoustic Bioactivation of Autologous Blood: a Biophysical Platform for Advanced Wound Repair

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Introduction: Chronic and non-healing wounds remain a major clinical challenge, characterized by impaired hemostasis, deficient extracellular matrix organization, and inadequate immune and cellular activation. Current autologous and biomaterial-based therapies are limited by inconsistent biological activity, lack of spatial organization within clots, and the need for exogenous additives that increase cost and complexity. There is a critical unmet need for a rapid, sterile, and reproducible point-of-care approach capable of transforming autologous blood into a biologically active, structured wound matrix to improve tissue repair outcomes.

Methods: Whole-blood samples were exposed ex vivo to reproducible, frequency-controlled acoustic fields using Sound Induced Morphogenesis (SIM) technology. Untreated blood clots served as negative controls. Acoustic parameters were optimized to promote structural reorganization of fibrin and cellular components. Clot microarchitecture was assessed by microscopy, focusing on fibrin density and spatial distribution of leukocytes and platelets. Cellular activation was evaluated by microscopy through the detection of CD83 (a marker of leukocyte activation) and CD62P (a marker of platelet activation). Structural and activation metrics were compared between SIM-treated and control samples.

Results: SIM treatment induced marked architectural and functional changes in autologous blood clots compared with untreated controls. Microscopic analysis demonstrated a dense, highly organized fibrin network containing spatially defined cellular clusters of leukocytes and platelets, forming localized regenerative microdomains. SIM-treated samples showed significantly increased cellular activation, including elevated CD83 expression indicating enhanced leukocyte activation. These data demonstrate reliable conversion of passive clots into bioactive, spatially organized matrices.

Discussion: These findings show that acoustically driven bioactivation can overcome key biological limitations of conventional autologous clot-

based wound therapies. By enabling rapid, additive-free, and reproducible formation of structured, bioactive clots at the point of care, SIM represents a novel platform to address complex non-healing wounds. This technology has the potential to improve angiogenesis, immune coordination, and tissue regeneration. Ongoing work will extend evaluation into ex vivo wound models and preclinical systems to confirm therapeutic performance and clinical translation potential.

LR-020

The Lure of Placental Membranes: Chemotaxis and Haptotaxis

Toni-Ann M. Martorano, MS, CTBS; Wendy W. Weston, PhD

Introduction: Placental membranes are known to contain numerous structural proteins, growth factors and cytokines. However, the way these tissues are processed can affect the concentration of these beneficial factors. Some factors within placental membranes affect fibroblast migration. The Boyden Chamber assay is used to detect and measure the migration of cells, such as fibroblasts, due to a cytokine gradient, in this case, sourced from the extracellular matrix (ECM) of the membrane. Movement along these gradients are mechanisms called chemotaxis and haptotaxis. We hypothesize that a retention-focused tissue processing method (RE-AC/RE-AM) will promote haptotaxis and chemotaxis of fibroblasts. We further quantify chemotactic and haptotactic factors released from these tissues.

Methods: The Boyden Chamber assay, or cell migration assay, is conducted using chambers inserted into wells of a cell culture plate. The chamber has a polycarbonate membrane (8um pore size) that is suspended in the media. Amnion/chorion, amnion, or amnion/amnion are placed at the bottom of the well and covered with media. The polycarbonate membrane is seeded with fibroblasts and placed into the well. Migration of the fibroblasts through the membrane is measured. Separately, potential growth factors responsible for chemotaxis and haptotaxis are quantified by ELISA.

Results: More cell migration occurred in wells containing membranes with retention-based processing. These membranes had higher concentrations of chemotactic factors such as HGF, IGF, and FGF. Haptotactic factors such as fibronectin, HA, and RANTES were also in higher concentration in RE-AC/RE-AM membranes.

Discussion: All membranes used for the migration assay were submerged in DMEM without serum or other additions. This means that the membranes are responsible for any gradients. Hence, the chemotactic and haptotactic properties of each membrane were robustly determined. The quantification of growth factors within the membranes supports the migration data, further supporting the results. The retention-processed membranes show a higher rate of migration and a higher chemotactic and haptotactic factor concentration than other membranes tested. These findings suggest that retention-based processed membranes are a superior option as a treatment modality for wound covering.

LR-021

Jellyfish Derived Collagen Type o, a Next Generation Collagen Biomaterial Demonstrating Clear Wound Healing Potential.

Andrew Mearns-Spragg, PhD; Timothy Morley, Ph.D.; David S. Williams, Ph.D.

Introduction: Jellyfish collagen type o (CTo) represents a chemically ancient form of collagen exhibiting high biocompatibility and promising tissue healing properties. We compared CTo formulations against a commercial bovine collagen in full thickness excisional wounds in the db/db mouse model (BKS.Cg-m Dock7m +/+ Leprdb /J). Wounds were assessed for overall wound closure, contraction, re-epithelialisation, granulation and tissue ingress.

Methods: Study Design: Diabetic mouse model **Methods:** Treatment Regimens Overall wound closure, contribution of wound contraction, and wound re-epithelialisation was determined. Histological investigations (days 35 and 63) investigated: i) % re-epithelialisation, ii) granulation formation and iii) tissue response and integration.

Results: Wound Healing: From day 12 to day 49, crosslinked and chemically modified CTo powders demonstrated significantly increased levels of wound closure ($p \leq 0.029$ & $p \leq 0.024$ respectively), contraction ($p \leq 0.029$) and promoted re-epithelialisation with significantly increased re-epithelialisation observed vs bovine with the chemically modified CTo powder on day 8 ($p = 0.010$).

Discussion: Histology: Re-epithelialisation & Granulation: All treatments were found to encourage better re-epithelialisation and granulation relative to control (film dressing only). Tissue formation via bovine collagen tended to be less mature with higher numbers of inflammatory cells compared to CTo Assessment of tissue ingress & cellular profile: CTo powders demonstrated better vascularisation, host collagen deposition & cellular proliferation compared to the bovine comparator.

Conclusions/Discussion: Jellyfish collagen offers exciting potential as an effective biomaterial to heal wounds with a better quality of outcome and favoured immune response. Compared to bovine collagen, CTo upregulated a preferred granulation tissue being more uniform and mature. Interestingly, CTo also appeared not to contract the wound offering a potential clinical benefit.

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LR-022

In Vitro Microbiological Evaluation of Surgical Cover Dressings

Kate Meredith, PhD; Matilda Coleborn, MSc

Introduction: Surgical site infections (SSIs) are associated with significant morbidity and are among the most costly healthcare-associated infections in the United States. Once established, wound infections can be difficult to treat, highlighting the importance of effective preventative strategies (e.g., use of antimicrobial dressings). This study evaluated the in vitro antimicrobial efficacy of various surgical cover dressings (SCDs) against a range of clinically relevant bacteria.

Methods: Four SCDs were assessed: two carboxymethylcellulose (CMC) fiber dressings (one containing ionic silver, ethylenediaminetetraacetic acid [EDTA], and benzethonium chloride [BEC], referred to as 'CISEB'*, and one composed of CMC alone, referred to as 'CMC'†), as well as two silver-containing foam dressings ('Foam A'‡ and 'Foam B'§). Each dressing (approximately 5×5 cm) was inoculated with 1×106 colony-forming units/mL (CFU/mL) of *S. aureus* (NCIMB 9518) or *P. aeruginosa* (NCIMB 8626) and applied to an agar slice simulating a wound bed. Dressings were incubated in place for 48 hours at 37°C. After removal, the agar was re-incubated and swabbed onto Dey-Engley Neutralizing Agar to assess residual bacterial growth. Each dressing was tested in triplicate. Scanning electron microscopy (SEM) was performed to visualize bacterial presence on the dressing surfaces. Additionally, dressings were tested in an adapted AATCC Test Method 100, to establish the total viable counts over 7 days against a range of Gram-positive and negative bacteria.

Results: CISEB demonstrated complete antimicrobial efficacy, with no detectable *S. aureus* growth on either the dressing or the underlying agar

across all replicates. In contrast, CMC (non-antimicrobial), Foam A, and Foam B all exhibited visible bacterial growth on both the dressings and the agar in all replicates. Foam A failed to eliminate the inoculated bacteria, as evidenced by consistent growth patterns. SEM analysis supported these findings by revealing residual bacterial presence on the surfaces of the less effective dressings. In the adapted AATCC method, CISEB reduced all tested bacteria to the detection limit by 24 hours, whereas the other test dressings failed to achieve this.

Discussion: CISEB was the only tested product to achieve complete bacterial kill in these in vitro models, demonstrating superior antimicrobial performance against a range of clinically relevant bacteria. The combination of ionic silver, EDTA, and BEC may contribute to its enhanced efficacy and support the potential clinical value of multi-agent antimicrobial dressings in reducing the risk of SSIs. Further in vivo studies are warranted to confirm these results and assess their clinical relevance.

LR-023

The Activity of a Nitric Oxide-Generating Dressing Against Surface-Associated Bacterial Aggregates Using a Polycarbonate Membrane Colony Model

Kate Meredith, PhD; Matilda Coleborn, MSc; Emma Griffiths, PhD; Daniel G. Metcalf, PhD

Introduction: The presence and aggregation of microorganisms in hard-to-heal wounds is strongly associated with delayed healing and increased infection risk. A nitric oxide-generating dressing (NOGD) has been designed to generate antimicrobial nitric oxide within the dressing. The aim of this study was to assess the antimicrobial activity of NOGD against surface-associated aggregates of known wound pathogens, Pseudomonas aeruginosa and Staphylococcus aureus, using a challenging in vitro model.

Methods: Surface-associated communities of P. aeruginosa or S. aureus were cultured by inoculating 1x104 colony-forming units (CFU)/mL of bacteria onto the center of 25 mm diameter, 0.2 µm pore diameter, polycarbonate membranes (CycloporeTM). These were then placed onto Tryptone Soy Agar nutrient agar for 24 hours at 35±3°C. The resultant bacterial aggregates were exposed to NOGD for 4, 24, 72 or 168 hours (N=3 for each challenge microorganism and timepoint). Following nitric oxide neutralization and stomaching the membranes, bacterial viability on the membranes was quantified by viable plate counts of the resultant suspension. Untreated controls monitored bacterial viability throughout the tests.

Results: NOGD achieved rapid and sustained activity against surface-associated aggregates of both pathogens. P. aeruginosa surface-associated aggregates were reduced from >4x109 CFU/membrane to undetectable levels (< 20 CFU/membrane) within 24 hours (>8 log10 reduction), which was maintained at 168 hours. S. aureus surface-associated aggregates were reduced from 4x109 CFU/membrane by ~2 log10 reduction at 24 hours and completely eradicated by 72 hours (>8 log10 reduction), which was maintained at 168 hours. Untreated controls confirmed bacterial viability throughout the tests.

Discussion: NOGD dressing demonstrated potent activity against surface-associated aggregates of two key wound pathogens in a challenging in vitro model, achieving complete eradication within 24-72 hours. This study highlights the potential of NOGD in disrupting surface-associated microbial aggregates that are known to impede healing of hard-to-heal wounds.

LR-026

Development of an Air Support Surface Algorithm to Meet the Therapeutic Needs of Pediatric and Lower Weight Patients

Veronica Neef-Cook, BSN, RN; Andrew Stoehr, BSCMPE, MEM; Kristen Thurman, PT, MPT, CWS; David Driscoll, BS, AE

Introduction: Many medical devices are not specifically designed for the pediatric population, forcing clinicians to use or modify equipment intended for adults. When lower weight or pediatric patients are placed on an air support surface designed for adult patient weight loads, the Internal Support Surface Pressure (ISSP) is often too high, resulting in little to no immersion and pressure redistribution therapy for the patient. For pressure redistribution therapy to be achieved in pediatrics, the control algorithm for the air support surface must maintain a lower ISSP - resulting in higher immersion for lower weight patients. The goal was to develop an air support surface capable of operating therapeutically at lower ISSPs, for both a full- and crib-size bedframe.

Methods: Twenty-four pediatric volunteers of varying ages were brought in to gather initial data. Participant's height, weight, and age were recorded. Participants were asked to lay supine on the full-size air surface, the crib air surface, or both. Surfaces were controlled by an adaptive, dynamic pressure immersion control algorithm programmed to provide lower ISSPs. ISSP was recorded for each patient when therapeutic immersion was achieved. Verification of therapeutic immersion and absence of bottoming out was achieved with clinical assessment, provided by licensed and certified clinicians. Both height and weight were correlated against therapeutic ISSP for data analysis. To validate a refined version of the control algorithm, a second focus session utilizing nine participants of interest from the first study was completed.

Results: Data analysis for the study indicated a closer correlation between participant weight and therapeutic ISSP compared to participant height vs therapeutic ISSP. Low ISSPs can be challenging to achieve through typical control algorithms used in adult support surfaces. Using a dynamic airflow immersion algorithm with an adaptive timed-exhaust feature to achieve low ISSPs resulted in therapeutic immersion for the pediatric participants.

Discussion: Therapeutic pressure redistribution for pediatric and underweight patients can be achieved on full- and crib-sized support surfaces by utilizing a dynamic airflow control algorithm with learned timed exhaust to lower internal support surface pressures.

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LR-029

Dehydrated Human Umbilical Cord Modulates the Effects of Transforming Growth Factor-Beta Mediated Fibrosis in Support of Wound Management

Ariana Renrick, PhD; Sarah Moreno, MS; Michelle Massee, MS; John Harper, PhD

Introduction: Uncontrolled fibrosis can lead to major complications with the quality of healing and the process of scarring. These complications are caused by the accumulation of excess extracellular matrix (ECM) components, leading to altered tissue architecture and inhibition of function. The use of human umbilical cord allografts has exhibited promising clinical outcomes in terms of wound management. Therefore, this study employs an in vitro macromolecular crowding (MMC) model to imitate an in vivo ECM-rich environment to further understand how a dehydrated human umbilical cord allograft (DHUC*) affects the pathobiological mechanisms contributing to fibrosis.

Methods: DHUC was prepared using the PURION process*, consisting of gentle cleansing, followed by lyophilization and terminal sterilization. Adult human dermal fibroblasts (HDFs) were cultured with media containing a mixture of Ficoll 70 kDa and Ficoll 400 kDa to induce MMC conditions. The impact of DHUC on the TGFβ-mediated pathway was evaluated by RT-PCR for pro-fibrotic effectors and proteins related to the

regulation of ECM formation. Additionally, collagen deposition was assessed by western blot, immunofluorescence, and evaluation of deposited extracellular matrix.

Results: Assessment of pro-fibrotic effectors show that HDFs treated with DHUC under MMC conditions and stimulated with TGFβ1 decreases the expression of genes that aid in myofibroblast differentiation, collagen regulation, ECM formation and crosslinking in comparison to the TGFβ control. DHUC also reduces the protein expression of alpha-smooth muscle actin (αSMA) along with ECM maturation and crosslinking proteins. Analysis of the extracellular matrix demonstrates that DHUC reduces the presence of both intracellular and extracellular collagen I.

Discussion: This in vitro data further highlights the ability of DHUC to regulate the fibrotic response. This study illustrates the capabilities of DHUC in modulating the fibrotic process and the potential for therapeutic applications that lead to better wound healing management through the regulation of extracellular matrix formation, remodeling, and inhibition of excessive fibrosis.

LR-030

A Novel Abdominal Negative Pressure Dressing with Automated Fluid Instillation Enhances Tissue Traction: Preclinical Evaluation in Swine

Marisa A. Schmidt, B.S.; Samantha A. Mann, B.S.; Kristine Kieswetter, Ph.D., M.B.A

Introduction: Open septic abdomen management remains a significant clinical challenge, with risks of fluid imbalance, delayed fascial closure, and abdominal compartment syndrome. Negative pressure therapy (NPT) systems have improved outcomes, but further innovation is needed to prevent fascial retraction and facilitate cleansing via an automated fluid delivery and removal system. This study evaluates a novel temporary abdominal closure dressing (Novel TAC) with fluid divertor for saline instillation, compared to the current standard of care (SOC)[1] in a swine model.

Methods: In accordance with federal guidelines for animal welfare[2], eight female Yorkshire cross swine (70-110 kg) underwent midline laparotomy and were treated with SOC and Novel TAC. Each dressing was tested twice using -125 mmHg NPT, with the addition of 500 mL saline instillation and 30-minute dwell period for the Novel TAC. Investigations included tissue traction (fluoroscopy), intra-abdominal pressure (via bladder pressure), core body temperature (rectal), fluid recovery (canister and dressing weights), and fluid distribution (visual/radiologic assessment)[3].

Results: The Novel TAC dressing demonstrated significant improvements in tissue traction, including 73% greater skin closure ($p< 0.0001$) and 34% greater fascial closure ($p=0.0003$). Intra-abdominal pressure (IAP) remained stable and well below thresholds for intra-abdominal hypertension during negative pressure and instillation cycles. Core body temperature was unaffected by saline instillation, with only transient, recoverable drops in internal temperature. Fluid recovery was highly effective, with the Novel TAC system achieving 100% recovery of instilled saline. Fluid distribution was observed throughout the abdomen.

Discussion: This pre-clinical evaluation of the Novel TAC dressing with instillation demonstrates enhanced tissue traction and effective fluid management without compromising IAP or temperature stability when compared to the SOC. These findings suggest that this system may facilitate improved fluid instillation protocols and earlier fascial closure in the management of the open septic abdomen4. Further research is warranted to explore clinical translation and optimization of instillation parameters.

Disclosure: In conducting research using animals, the investigator(s) adheres to the laws of the United States and regulations of the Department of Agriculture.[3] This work was supported by the Office of the Assistant Secretary of Defense for Health Affairs, in the amount of $34,191,124, through the Defense Health Agency Expeditionary Medicine Research and Development Program under Award No. HT 94252320059. Opinions, interpretations, conclusions and recommendations are those of the author and are not necessarily endorsed by the Department of Defense. 4 The novel temporary abdominal closure dressing (Novel TAC) with fluid diverter for instillation of saline into the open abdomen has not been cleared by FDA and the safety and effectiveness of this Novel TAC has not been established.

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LR-031

Recreating Morphogenesis with Sound: a New Paradigm for Regenerative

Tiziano Serra, PhD

Introduction: Functional tissue repair requires more than wound closure; it depends on the coordinated regeneration of vascular, neural, and structural networks. Current regenerative approaches struggle to recreate this complexity. Sound Induced Morphogenesis (SIM) introduces a new paradigm by using precisely tuned acoustic fields to guide cellular self-organization and extracellular matrix (ECM) formation. Inspired by natural morphogenesis, SIM applies physical acoustic forces to orchestrate spatial patterning, enabling living constructs that mirror native repair processes.

Methods: Multicellular systems containing endothelial, mesenchymal, and neuronal cells were exposed to structured acoustic fields within hydrogels and fluidic environments. Standing waves induced controlled cell condensation and pattern formation, stabilized through matrix crosslinking. Outcomes were evaluated using microscopy, immunostaining, and functional assays assessing network formation, alignment, and maturation. Unpatterned controls were used for comparative analysis.

Results: SIM enabled cells to self-organize into architectures resembling early developmental patterns. Endothelial cells formed interconnected microcapillary networks, while neuronal populations assembled into organized ganglion-like structures with enhanced functional synchronization driven by improved spatial arrangement. Patterned and acoustically stimulated mesenchymal stromal cells showed modulatable gene expression and transcription factor activity. These coordinated interactions generated physiologically relevant gradients of oxygen, nutrients, and signaling molecules. Across all models, SIM constructs demonstrated accelerated maturation, improved functional integration, and required up to ten times fewer cells than conventional random assemblies—highlighting unprecedented efficiency in initiating regenerative processes.

Discussion: Sound Induced Morphogenesis provides a unifying physical framework for tissue regeneration, linking wound closure to functional repair. By applying acoustic energy to recapitulate natural morphogenetic principles, SIM enables scalable, contactless, and cell-efficient assembly of complex tissues. This technology addresses long-standing challenges in vascularization, innervation, and tissue maturation and opens a pathway toward regenerative strategies that extend beyond traditional repair and approach true biological regeneration.

LR-032

Positive Pressure Measurements Underneath Negative Pressure Wound Therapy Dressings: a Comparison of Foam and a Novel Polymer Dressing

Michael S. Shuler, MD; Meera Dhodapkar, MD, MPH; Mitchell Greenberg, MBA, MEng; Brett A. Freedman, MD

Introduction: Based on Newton's third law, for every action there is an equal and opposite reaction, negative pressure wound therapy (NPWT) applies positive pressure (PP) to the wound surface. A novel, pliable, transparent, thermoplastic elastomer (TPE) dressing has been developed and FDA-cleared. The dressing was designed to improve flow characteristics, inhibit tissue ingrowth and provide NPWT at lower pressures. The current study aims to examine PP applied to wounds by reticulated open cell foam (ROCF) and the novel TPE dressings under clinically relevant levels of negative pressure (NP).

Methods: Three dressings (black foam (BF), white foam (WF) and the TPE) were applied on 4 different simulated wound beds (plexiglass, intact skin, 5 mm depth shallow wounds and 2 cm deep intramuscular wounds). Swine porchetta specimens were utilized for wound models. Three pressure settings were examined (-50 mmHg, -75 mmHg and -125 mmHg). Each configuration or dressing, wound type and setting was repeated with three dressing applications. Each application was recorded 3 times. PP measurements were recorded at the center and periphery of the wounds using a thin film pressure display system.

Results: PP increased as the vacuum NP setting increased in all dressings. The TPE transduces significantly lower PP at -125 mmHg for all wounds compared to BF and WF. ($p< 0.05$) The TPE demonstrates significantly lower PP at -75 mmHg for intact skin and 5 mm wounds versus BF and WF. ($p< 0.05$) At -50 mmHg, the TPE surface PP was consistent with therapeutic compression sleeves (+15 to +35 mmHg). The BF and WF at -125 mmHg showed potentially dangerous PP (+125 to +200 mmHg).

Discussion: PP is a likely unrecognized factor associated with NPWT and wound healing/nonhealing. Traditional NPWT results in potentially dangerous elevated PP (> +125 mmHg) which may cause ischemia. High PP may explain suboptimal outcomes in pressure injuries, foot and ankle wounds and dysvascular wounds. The TPE dressing was designed to prevent tissue in-growth and allow better flow resulting in the ability to provide NPWT at lower negative pressures (-50 mmHg to -75 mmHg). The PP applied by the TPE dressing is similar to compression devices that increase perfusion. The TPE's lower pressures may explain its early clinical successes in treating difficult wounds that have failed prior NPWT.

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LR-033

Performance of Prevent, a Novel Negative Pressure Wound Therapy Filler on Contracture

Coleman Fleming, NA; Mitchell Greenberg, MBA, MEng; Joe Hilsman, MS; Meera Dhodapkar, MD, MPH; Michael S. Shuler, NA; Brett A. Freedman, MD

Introduction: Reticulated open cell foam (ROCF) or black foam (BF) has been the wound filler of choice for negative pressure wound therapy (NPWT) over the last three decades. A novel, pliable, transparent, thermoplastic elastomer (TPE) dressing has been developed and FDA-cleared. Macro-deformation/wound contraction is felt to be a clinically important feature of NPWT.

Methods: Three dorsal midline quarter specimens from standard land swine (~100 kg) were utilized. An elliptical (15 cm x 7.5 cm) shallow (~1 cm) and deep (~3-4 cm) excisional wound was created. BF and the novel TPE dressing were cut to the same templated size. Measurements at the central and mid-peripheral point on each side were obtained prior to negative pressure application (NP) and at 3 clinically relevant pressures (-50, -80 & -125 mmHg). A total of 36 trials were performed per experimental condition with a total of 108 trials. Univariable analyses and multivariable linear regression were performed.

Results: In both shallow and deep wounds, both TPE and BF demonstrated a statistically significant increase compared to no wound filler when controlling for position of measurement, pressure applied, and pre-NP width ($p< 0.05$) In deep wounds, TPE demonstrated more wound contracture than black foam sponge. ($p< 0.05$) The novel TPE resulted in similar (shallow) and improved (deep) wound macro-deformation compared to BF. Other significant variables are higher NP, position in the wound (central versus peripheral), and the wound width prior to application of negative pressure. Placement of BF increased the wound width (i.e. the opposite of wound contraction) once the drape was placed and prior to NP application. This wound expansion was not seen with the TPE dressing.

Discussion: The TPE may be associated with a statistically significant increase in wound contracture. In shallow wounds, TPE and BF are associated with a statistically significant increase in wound contracture. Other variables which are significantly associated with greater degrees of wound contracture are higher negative pressure, position in the wound, and the wound width prior to application of negative pressure. This study shows that the novel TPE dressing produces a similar or greater amount of macro-deformation compared to traditional BF.

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LR-035

The Antimicrobial Effects of a Standard-Issue Copper-Based Antimicrobial Military Wound Dressing to Reduce Bioburden in a 2nd Degree Burn Porcine Wound Model

Michael Solis, MBA; Joel Gil, BS; Ryan Strong, BS; Roger Cassagnol, BS; Jie Li, PhD; Aaron Strickland, PhD; Stephen C. Davis, BS

Introduction: The most common burns clinically are second-degree burns, that need to be managed to prevent infection.[1] Copper has been used for centuries to treat wounds due to its's antimicrobial activity against various pathogens. [2,3] Studies have also shown copper can enhance wound healing and reduce bioburden on second-degree burn wounds.[4] The present study was performed to investigate the antimicrobial activity of two novel copper dressings to reduce Methicillin-resistant Staphylococcus aureus (MRSA) and Acinetobacter baumannii bioburden using an infected second degree burn wound porcine model.[5,6]

Methods: Forty eight (48) 2nd degree burn wounds (8.5 mm diameter) were created on each of four animals and immediately inoculated with either methicillin-resistant Staphylococcus aureus (MRSA USA300) or Acinetobacter baumannii ATCC19606 (AB19606). Six wounds on each animal were treated with either (A) Copper-based wound dressings [CWD]*, (B) Cu-Dressing Formulation 1, (C) Cu-Dressing Formulation 2, (D) Vehicle Control 1, (E) Vehicle Control 2, or (F) Untreated Control, then covered with polyurethane film. All dressings were applied on day 0 and day 3. On days 3 and 6 after treatment application wounds were recovered for bioburden counts.

Results: Both Cu-Dressing Formulations significantly ($p \leq 0.05$) reduced over 95% of MRSA USA300 and AB19606 at all timepoints when compared to Untreated Control. Compared to all treatment groups, Cu-Dressing Formulation 1 exhibited the lowest ($p \leq 0.05$) bacterial counts on Day 6 against both pathogens. Throughout the study both Cu-Dressings significantly reduced ($p \leq 0.05$) MRSA USA300 and AB19606 comparative to CWD. Cu-Dressing Formulation 1 exhibited significant differences ($p \leq 0.05$) of 2.25±0.44 Log CFU/g (99.44% of reduction) for MRSA USA300 and 1.71±0.07 Log CFU/g (98.06% reduction) for AB19606 on day 6 compared to Untreated Control wounds. All treatments against both microorganisms established significative microbial reductions ($p \leq 0.05$) between both assessment days with the most acknowledged from the Cu-Dressings.

Discussion: Cu-Dressing Formulations demonstrated superior efficacy on both tested pathogens, exhibiting significant antimicrobial activity

within infected 2nd degree burn wounds. These findings encourage further development and investigation of copper therapies as a promising, novel treatment approach for burn wound infections in patients.

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LR-037

The Antimicrobial and Wound Healing Effects of an Occlusive Cold Plasma Foil Using a Deep Dermal Wound Porcine Model

Ryan Strong, BS; Joel Gil, BS; Michael Solis, MBA; Roger Cassagnol, BS; Ivan Jozic, PhD; Carsten Mahrenholz, MSc, MBA; Stephen C. Davis, BS

Introduction: Methicillin resistant Staphylococcus aureus (MRSA) is associated with chronic wounds and remains a prevalent pathogen with emerging resistances.[1] Cold atmospheric plasma therapy has been demonstrated to improve wound healing in early clinical evaluation and other works have reported antimicrobial activity.[2,3] The efficacy of advanced large area cold plasma therapy (CPT) device was investigated in this study against MRSA wound infections. A porcine model was used because of the similarities to human skin.[4]

Methods: Sixty deep dermal wounds (22 mm x 22 mm x 3 mm) were created on the paravertebral and thoracic areas of two animals.[5] Wounds were inoculated with 106 CFU/mL of MRSA USA300 and covered to allow for 72h biofilm formation before treatment application. In the first animal, cold plasma therapy was compared to sham dressings and in the second animal, treatment regimen duration and frequency were evaluated. Microbiological baseline was recovered from designated wounds prior to treatment application. Remaining wounds were recovered for histology and microbiology analysis on assessment days 4, 8 or 11.

Results: The bioburden of MRSA USA300 in wounds was reduced significantly ($p \leq 0.05$) by cold plasma therapy compared to sham dressings at all assessment times. The reductions ranged from 97.8% to 99.1% on day 4 to day 11. The results of the treatment regimens for the second animal demonstrate that cold plasma therapy reduces MRSA in a dose-dependent manner with greater reductions observed for longer treatment durations and more frequent treatment applications. Treatment application for 4 minutes, 5x/week reduced MRSA counts by 99.87% compared to untreated wounds. No detrimental effects on healing were observed in the histological analysis of cold plasma treated wounds.

Discussion: This study provides compelling evidence that large area cold atmospheric plasma therapy effectively reduces pathogenic biofilms and S. aureus burden while remaining safe for the healing process. The therapy's ability to tackle a significant public health challenge like MRSA, coupled with a lack of observed resistance development, highlights its potential as a novel antimicrobial strategy. Additional animals to substantiate these findings and examine potential mechanisms of action are warranted.

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LR-038

Evaluation of Single Use Negative Pressure Wound Therapy Systems Under Simulated Clinical Conditions

Anette M. Svensson Henriksson, PhD

Introduction: Negative pressure wound therapy (NPWT) systems are widely used in clinical practice to support healing of surgical incisions, acute and chronic wounds.[1] Their clinical effectiveness depends on the system's ability to consistently deliver the intended negative pressure and manage wound exudate throughout the intended duration of therapy. If pressure delivery or fluid handling is compromised, wound healing may be impaired, increasing the risk of complications.[2] In this study, the pressure distribution and fluid management of single-use (su) NPWT systems, designed with or without a canister, is evaluated under simulated clinical use.

Methods: Three marketed suNPWT systems with multilayer absorptive (MLA) dressing were evaluated: two canister-less systems delivering -80 mmHg, and one canister-based system delivering -125 mmHg. The wound model simulated a moderately exudating wound, using horse serum to mimic wound fluid (viscosity, osmolarity, pH) at a flow rate of 1.1 g/cm^2/24 hours and 72 hours dressing-change regimen, according to intended use of the systems. Delivery of the intended negative pressure from the suNPWT pump and its distribution to the simulated wound bed was measured at multiple positions in the model using differential pressure transmitter sensors, sampling data every 60 seconds throughout the test time.

Results: The canister-less systems showed impaired pressure delivery to the wound bed as dressing saturation increased, deviating from the intended -80 mmHg target already after 36 and 50 hours, respectively, and did not recovery during the intended test time. In contrast, the canister-based system maintained consistent pressure delivery at-125 mmHg throughout the test period, unaffected by fluid volume, with no dressing saturation observed.

Discussion: This study demonstrates that the design of the NPWT system significantly affects the ability of suNPWT systems to maintain the intended therapeutic pressure and manage exudate. Limitations in performance, as for the canister-less suNPWT systems, is rationalized to be a consequence of having the dressing as the sole capacity to managing fluid. The canister-based system, with capacity to transport excess exudate and infectious material from the dressing to the canister thereby reducing the risk of dressing saturation, demonstrated superior performance under simulated clinical conditions, suggesting greater reliability in supporting wound healing.

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LR-039

Computational Modelling of Impact of Three Negative Pressure Wound Therapy Systems in Supporting the Healing of Surgical Incisions: a Finite Element Simulation Study

Anna Grou, MSc; Alit M. Putra, PhD

Introduction: In surgical wound closure, suturing and post-surgical fluid accumulation often results in elevated tissue tension along the incision line and in the surrounding peri-wound tissue.[1] This mechanical tissue stress can elevate the risk of postoperative complications such as dehiscence, infection, and scarring, ultimately impairing wound healing.[2,3] This study evaluates the biomechanical performance of three marketed negative pressure wound therapy (NPWT) systems in reducing tissue tension and stress using finite element (FE) modeling.

Methods: A soft tissue incision FE model was developed using validated human tissue properties. The models of the NPWT systems incorporated the physical characteristics of the dressings, multilayer absorptive (MLA) or peel-and-place (PP) foam dressings, with the intended negative pressure -80 or -125 mmHg. Simulations were conducted in three phases: suture closure, dressing application, and activation of negative pressure (ABAQUS v2022). Read-out focused on reduction of suture-induced strain and the ability of NPWT systems to generate a localized zone of positive pressure to counteract peri-wound stress.

Results: The MLA dressing-based NPWT systems demonstrated superior performance in reducing suture strain, from baseline at 71% maximal strain without NPWT to 27% at -80 mmHg and 38% at -125 mmHg. The PP foam dressing-based system at -125 mmHg reduced suture tension to 56% strain. For management of incisional peri-wound stress, the MLA dressing-based system at -125 mmHg generated a localized positive pressure zone of 194 cm^3 (from baseline 128 cm3) significantly larger than the 22 cm^3 achieved with the PP foam dressing-based system. The NPWT system with MLA dressing at -80 mmHg could not compensate for the incisional stress, resulting in a net negative stress balance (-49 cm^3).

Discussion: This study highlights that both dressing material design and magnitude of applied negative pressure are key factors in NPWT with respect to the capacity of a NPWT system to mitigate incisional tissue tension and peri-wound stress. In specific, dressings with higher deformability and lower structural resilience, showed limitations in delivering targeted mechanical offloading. Here, the MLA dressing-based system with -125 mmHg, provided superior biomechanical support by simultaneously reducing tissue tension along the incision line and the surrounding peri-wound tissue, critical for promoting wound healing.

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LR-041

Regenerative healing immune response after corneal chemical burn

Arpan Banerjee; Mohammod Anjum Shaik; Nileyma Castro, MD; Tere Williams; Audrey Bernstein, PhD

Introduction: Scarring is driven by the persistence of myofibroblasts and inflammation in healing tissue. After wounding, the gene expression of the deubiquitinase (DUB) USP10 is upregulated. Knockdown of USP10 in rabbit cornea reduced scarring, fibrotic markers, and CD45+ cells. Using an alkaline wound model in mice, we investigated the effects of USP10 knockdown on early immune cell response and corneal scarring.

Methods:C57BL/6J mouse corneas were wounded with 0.5 M NaOH for 1 min and treated with vehicle (PBS) or with an in vivo USP10-targeting siRNA (US16) in a single dose at the time of wounding. Fluorescein was used to visualize a breached epithelium. Flow cytometry (Cytek Aurora) was used to quantify live cells, CD45+ cells, macrophages (CD11b+, F4/80+), monocytes (CD11b+, Ly6C+), neutrophils (CD11b+, Ly6G+), and apoptotic cells (Annexin V). Analysis by FlowJo Software. OCT imaging was used to visualize corneal scarring and morphology. Cornea depth and scarring intensity were quantified in FIJI.

Results: At day 2 post-wounding, US16 increased the rate of epithelial wound closure by 87.5% (p=0.0159). At 14 days post-wounding, the corneal epithelium reopened demonstrating a persistent corneal epithelial defect. US16 treatment reduced wound reopening by 82% (p=0.003) and corneal thickness by 20% (p=0.0382). The effect of US16 on immune cell populations, at various timepoints port-wounding, was assessed via flow cytometry. While there was an overall trend of reduced CD45+ cells at all timepoints in the US16 treated eyes, day 5 reached significance (p=0.0403). Of CD45+ cells on day 5, macrophages were decreased by 66% in treatment groups whereas monocytes and neutrophils were not significantly different between groups. Importantly, analysis of the total population of CD45+ (dead and live), demonstrated that with US16 treatment, CD45+ cell count dropped 61% (p=0.0310) and US16 treatment increased the ratio of live to dead cells by 30%. Correspondingly, Annexin V staining for apoptosis determined that US16 reduced apoptosis by 41% (p< 0.0001) 12hrs post-wounding and 23% (p=0.0110) 24hrs post-wounding.

Discussion: Our data suggest that USP10 knockdown is a novel method to improve wound closure, decrease scarring, and alter CD45+ populations. Furthermore, that a decline in early apoptotic events post-injury is protective to the cornea and may reduce the influx of immune cells after wounding, ultimately leading to improved healing.

LR-043

Sacral Soft-Tissue Deformation Under Wearable Devices: Effects of Contact Geometry and Tissue Mechanical Variability

Daphne Weihs, PhD; Aleksei Orlov, PhD; Anastasiia Simonova, MSc

Introduction: Medical device related pressure injuries are common in the sacral region, where soft tissues vary in thickness and mechanical behavior across individuals. These differences influence how stresses and strains develop beneath wearable devices such as sensors and cables. Device skin-contact geometry may further affect tissue loading, yet the combined effects of device contact shape and tissue mechanical variability are not well defined under varying loads. We used computational modeling to evaluate how device geometry and tissue stiffness influence sacral soft-tissue exposure to loads.

Methods: A multilayer sacral finite element model was developed in Abaqus/CAE 2024 that included epidermis, dermis, adipose tissue, and muscle with literature-based thicknesses and mechanical properties [1,2]. Tissue stiffness was varied between softer tissues, associated with aging or degeneration, and stiffer tissue states. Two device geometries were simulated: a round, flat sensor and a narrow, elongated cable. Uniform pressures of 2-10 kPa were applied beneath each device. Stress and strain distributions were evaluated within a 30-mm region of interest, and the top quartile of strain values was used to compare tissue exposure across device types and tissue conditions.

Results: The two device geometries produced distinct tissue deformation patterns. Under 10 kPa loading, the flat, round sensor generated relatively uniform strain fields, while the narrow cable created localized regions of concentrated strain. This resulted in 1.25-fold more tissue being in the highest strain quartile for the cable compared with the sensor. Softened tissues increased tissues exposed to high strain 1.4-fold for the sensor and 1.6-fold for the cable. Stiffened tissues decreased the amount of tissue in the highest strain quartile by 1.1-fold for the sensor and 1.3-fold for the cable.

Discussion: Device geometry and tissue stiffness together influence mechanical loading effects in sacral soft tissues. The cable exposed more tissue to high strains than the flat sensor, and this effect increased with tissue softening. Stiffened tissues reduced tissue exposed to high strain for both device types. This highlights the importance of considering tissue variability and device geometry when assessing medical device related pressure injury risk and in design of wearable technologies.

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LR-044

Spray or Pour? Why Spraying Hypochlorous Acid (HOCL) Cleansers May Degrade the Key Preservative Molecule, HOCL.

Rose Yaghi, Doctor of Healthcare Administration; Debashish Chakravarthy, PhD

Introduction: Wound cleansing is critical first step for wound bed preparation, and the specific use of pure hypochlorous acid as a cleanser is now recommended by multiple guidelines. Specially formulated solutions are made available that are shelf-stable over time. Yet, the delivery system of the product during cleansing can have a major impact on the product's stability within seconds of leaving the container. We investigated whether atomizing the solution into a spray delivery leads to the rapid depletion of the key preservative molecule, hypochlorous acid.

Methods: We tested two products: one available only in a pour version, and one available in a spray version (as well as a pourable version). We tested the available free chlorine (AFC) in these two products, as available commercially from bona fide distributors, in the "bottles" or "post-delivery" in the soaking or spraying scenarios. To measure the ppm values "in the bottles", the contents were gently removed from the bottles (50 ml) into a petri dish. To measure "post-delivery", the contents were poured/sprayed onto an inert glass surface, forming a thin, approximately uniform layer. For spraying/pouring, the glass surface was laid flat on a surface six inches from the pour bottle's delivery orifice, or, in the case of the spray bottle, the spray nozzle.

Results: Product A (Pour bottles only) showed a higher original ppm value than either the pour or the spray bottles of Product B. Post pouring, on an inert glass surface, both product A and B (the pour bottle variant) retained the ppm AFC value within 10% of the value of "in the bottle". Post-spraying, Product B on the sprayed surface surprisingly showed a loss of approximately 90% of its original value as measured "in the bottle."

Discussion: We believe that atomizing the liquid via a spray nozzle will enable rapid evaporation of HOCl from the cleanser as it travels from the spray nozzle tip to the wound. On the other hand, pouring a liquid onto gauze for soaking is likely to keep the cleanser as close to its original state as possible. Therefore, spraying causes the liquid to "run off" the wound, limiting the contact time, which should ideally be between 2 and 5 minutes. In contrast, pouring the cleanser onto gauze for soaking provides a more controlled method, allowing for longer and more effective contact time needed for managing slough and microbial colonies.

PRACTICE INNOVATIONS

PI-001

Impact of the Registered Dietitian as Part of the Wound Care Interdisciplinary Team

Kristen Alario, BSN RN CWON; Rowan Crozier, MS RDN NWCC; Annalisa Tsai, MS RDN

Introduction: Chronic wounds pose a significant burden on patients and healthcare systems, and malnutrition is a well-established factor that delays wound healing, increases complications, and reduces quality of life. Despite strong evidence connecting nutritional status and healing outcomes, access to dietitian support in outpatient wound care settings remains inconsistent.

Methods: In response, the Wound Clinic implemented a practice innovation initiative integrating a registered dietitian (RD) as a routine member of the interdisciplinary care team housed within the wound care center. This initiative aimed to proactively identify malnutrition and nutrition-related risk factors, personalize nutritional interventions, and improve overall healing rates while eliminating the barrier of making and attending a separate appointment. Starting in October of 2024, all patients underwent a nutritional assessment utilizing patient-reported screening. Patients identified as at-risk were seen regularly by the RD following their medical appointment, receiving an individualized nutrition care plan focused on optimizing protein intake, addressing micronutrient deficiencies, and supporting glycemic control when necessary. The RD participated in interdisciplinary team reviews to adjust plans in real time based on wound progress and patient adherence.

Results: Preliminary outcomes from the first year of this program demonstrate promising improvements. The proportion of patients meeting healing milestones increased, readmissions to the hospital reduced, and patient-reported outcomes reflected enhanced understanding of nutrition's role in healing. Providers also reported improved workflow efficiencies and enhanced clinical decision-making through earlier recognition of nutrition barriers. Challenges included patient hesitation to engage in dietary changes and the need for consistent follow-up.

Discussion: This practice innovation highlights the value of embedding nutrition expertise into standard wound care as a proactive strategy rather than a late referral. Continued data collection and outcome monitoring will strengthen the evidence for scalable integration of RDs in wound clinics to drive better healing results and holistic patient care.

PI-002

Near-Infrared Spectroscopy as an Alternative Approach for Pressure Injury Prevention in Inpatient and Outpatient Settings

Charles A. Andersen, MD, FACS, FSVS, MAPWCA; Homer-Christian J. Reiter, BSc, MS; Katherine McLeod, RN

Introduction: Pressure injuries (PIs) remain a major source of morbidity and healthcare cost, particularly among patients with limited mobility. Despite preventive strategies, early-stage PIs are often missed during clinical assessment. This study evaluated the utility of Near-Infrared Spectroscopy (NIRS) imaging as a tool for early PI detection in inpatient and outpatient settings.

Methods: A prospective observational study with retrospective analysis was conducted at a tertiary care center, enrolling 100 patients (87 inpatients, 13 outpatients) at risk for PIs based on Braden scores and clinical risk factors. Primary anatomical sites assessed were the sacrum and bilateral heels. Following standard clinical evaluation, NIRS imaging (SnapshotNIR, Kent Imaging, Calgary, Canada) was performed to measure tissue oxygen saturation and hemoglobin levels. The difference in HbO (oxyhemoglobin) or Hb (deoxyhemoglobin) of >0.1 compared to the surrounding tissue was considered indicative of early pressure injury. Changes in care plans based on NIRS findings were documented.

Results: NIRS detected evidence of pressure-related tissue compromise in 83% of patients, compared to limited findings on clinical exam. Outpatients demonstrated a higher relative incidence of NIRS-positive scans for PIs (92.3%) than inpatients (81.6%). All patients with Braden scores < 13 (11% of the cohort) exhibited positive NIRS findings. Patients with a positive finding at one site had an 81.9% likelihood of additional positive findings elsewhere. NIRS findings prompted changes in care plans in 46% of sacral assessments, 68.4% of right-heel assessments, and 65.3% of left-heel assessments. NIRS findings concurred with 100% of positive clinical assessments.

Discussion: NIRS imaging provided actionable physiological data that enhanced early detection of pressure injuries and influenced clinical decision-making. Its use as a supplementary tool may improve PI prevention strategies, reduce patient morbidity, and decrease healthcare costs. Further longitudinal research is warranted to assess long-term outcomes

of interventions guided by NIRS. Disclosure: "Generative AI or AI-assisted technology was used in the preparation of this work. All AI-generated content was reviewed and edited by the author(s), who accept full responsibility for its accuracy and integrity." AI was ONLY used for text drafting to ensure better readability.

PI-003

Improving Wound Debridement and Oxygenation Using a Noval Hydrotherapy Method Powered by and Combined with Oxygen Therapy

Jason Ayers, RN WCC; David Haverly, MPD; Josie Smith, RN

Introduction: We developed a new process of using hydrotherapy powered by oxygen, that can cleanse and debride wounds in a disposable, affordable and time-saving method. Cleansing/debridement of diabetic foot ulcers, pressure injuries, PAD ulcers and stasis dermatitis can present difficulties. Risks included while removing slough and biofilm are infection, decreased blood flow, and pain. This method brings the benefits of hydrotherapy[1]; without the past issues of time-consuming and costly set-up and breakdown and reduces the risk of cross contamination.

Methods: We combined hydrotherapy with oxygen supply to power a disposable bubbler device. We created a new hydrotherapy kit that contains an oxygen bubbler, a mixing kit for solutions and a cleansing foam pad. This novel approach uses oxygen bubbles that pass over wound tissues with slight hydrostatic water pressure. Oxygen bubbles in a warm antiseptic solution passing over the wound tissue would provide a cleansing effect. While increasing oxygen to surface wound tissues. This soothes and hydrates while providing improved cleansing with the foam debridement pad. Our procedures were done at bedside with our patients simply soaking their wounds with oxygen bubbling over the wound bed. Each soak was about 10-15minutes or until the solution started to cool. We then used a gentle foam pad to cleanse away the loosened material created from the hydrotherapy session. Photos were taken immediately before and after treatment to show the effects to wound base and tissue color.

Results: Case studies, patient feedback and photos are presented with this presentation to demonstrate the positive outcomes of this novel treatment. The photographs show the quick and easy removal of crusting, biofilm, slough and eschar. This has been shown to greatly increase healing times in an easy, time saving, disposable, and single patient use method. Afterall a clean wound is a healing wound.

Discussion: Utilizing oxygen/air powered hydrotherapy to remove slough and biofilm in a pain-relieving method while increasing warmth, hydration and oxygenation presents a great improvement in patient care. This would demonstrate improved outcomes over that of standard treatments of sharp debridement, autolytic, or enzymatic. Other treatments could cost more in treatment times, heal times and increase hospital stays which can lead to significantly increased costs, and reduced quality of life.

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PI-005

Real-World Utilization of Fetal Bovine Dermis: a Clinician-Reported Snapshot

Yifei Dai, PhD; Malachy Asuku, MD, MBA; Maria Leonard, BSN, MHA, MBA; Angela Siebeneck, MSN, RN; Yi Arnold, PhD, MBA; Paula Searcy, MBA

Introduction: Complex wounds, whether chronic ulcers or acute surgical and traumatic injuries, pose significant challenges due to tissue loss, exposed structures, and compromised vascularity. These wounds often require the use of advanced biologic scaffolds to support healing. Fetal bovine dermis (FBD) provides structural integrity and supports tissue regeneration. Although its effectiveness in specific wound types has been documented, real-world evidence on broad utilization across diverse indications and surgical specialties remains limited. This study offers a cross-sectional assessment of FBD use in clinical practice across the US and EU and summarizes overall outcomes from a multinational post-market review.

Methods: A retrospective chart review was conducted via a HIPAA-compliant digital platform for secure data collection. Clinicians submitted de-identified cases involving use of FBD in complex wound management between June 2022 and June 2025 (up to 20 cases per contributor). Data was abstracted from medical records into structured forms, capturing clinician specialties, wound type, and outcomes. The study was exempt from IRB and consent requirements due to its retrospective, anonymized design. Descriptive analysis was performed on chart review data across all wound types, including chronic ulcers (pressure, venous, diabetic), surgical wounds (donor sites, post-Mohs, post-laser), trauma-related wounds, and tunneled or draining wounds.

Results: A total of 985 cases were analyzed from 117 surgeons representing orthopedic, plastic, trauma, vascular, and general surgery specialties, as well as podiatry. General surgeons accounted for the largest share of contributors (38.5%), followed by orthopedic (24.8%) and plastic surgeons (22.2%), with smaller proportions in vascular, trauma, and podiatry (ranging from 3.4% to 6.8%). FBD was utilized across a variety of wound categories, including surgical wounds, trauma-related injuries, chronic ulcers, and wounds with complex features such as undermining, tunneling, and draining. Across all wounds, 81.8% of cases closed by 12 weeks. No intraoperative adverse events (AEs) were reported; postoperative device-related AEs were rare (≤0.8%).

Discussion: This cross-sectional review highlights broad adoption of FBD across multiple surgical specialties and wound types in US and EU practices. High closure rates and minimal AEs confirm its effectiveness and safety in real-world settings as a versatile option for managing complex wounds.

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PI-006

A Synthetic Matrix as an Alternative to Biologic Options in Soft Tissue Reconstruction

Krista Bauer, F NP, WCC, OMS; Jody Wolfe, BSN, MBA, RN, CWOCN

Introduction: The synthetic electrospun fiber matrix (SEFM) (Restrata , Acera Surgical, Inc.) is a fully synthetic wound healing and soft-tissue reinforcement device that maintains resistance to enzymatic bacterial degradation. The SEFM has been described in acute trauma, chronic ulcers, and soft tissue reconstruction. This retrospective review evaluates use of SEFM in complex soft-tissue reconstruction across both clinical indications – as a soft-tissue healing matrix for the management of open chronic and surgical wounds, as well as a soft-tissue reinforcement device

for areas of weakness [1].

Methods: A retrospective review of patients who underwent soft tissue reconstruction using SEFM as an alternative to biologic matrices in the setting of high bacterial burden and/or concern for active or recurrent malignancy was conducted. The purpose of this review was to evaluate the rate of post-operative wound complications following application of SEFM during soft-tissue reconstruction procedures.

Results: A total of 13 patients were included in this retrospective review. All patients were treated with SEFM intraoperatively. Wound etiologies included non-healing surgical wound on the abdomen (1) and groin (1), pressure ulcers (2), lower extremity fasciotomy wound (1), necrotizing soft-tissue infection of the foot (1), pilonidal disease (2), hidradenitis suppurativa (1), non-healing back wound (1), and scalp wounds with exposed bone (3). Ten patients underwent surgical closure via flap and or split thickness skin graft with use of SEFM underneath for soft-tissue reinforcement. Three patients received SEFM application for soft-tissue healing, also received negative pressure wound therapy (NPWT) in conjunction. There were no adverse reactions to SEFM, and no postoperative complications or infections.

Discussion: SEFM possesses indications as both a soft-tissue healing device and as a soft-tissue reinforcement device, permitting versatile use in reconstructive procedures. The synthetic nature of the material allows for a high degree of biocompatibility as well as resilience in contaminated or volatile wound environments. Given the cost of biologics and the resistance to healing in the face of high bacterial loads, synthetic materials may be beneficial. Additionally, in the face of uncertainty of residual malignancy, biologics may be contraindicated. As a result, a synthetic material which communicates through topographical cues as opposed to biologic stimulation of growth factors could be considered over biologic matrix options.

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PI-007

The Use of a Novel HOCL Gel and Negatively Charged Dressing Fibers to Support Debridement

Michael N. Desvigne, MD, FACS, CWS, FACCWS MAPWCA; Krista Bauer,, F NP, WCC, OMS; Jody Wolfe, BSN, MBA, RN, CWOCN

Introduction: A new technology device has emerged that allows debridement supported with negatively charged dressing fibers (polyacrylic acid) that work to attract and bind slough and necrotic tissue proteins, a physical, device like phenomenon. Another technology has also been developed using HOCL as a gel. Evidence shows that pure Hypochlorous Acid (pHA) based cleanser*, is able to remove bacteria, associated slime like materials, and necrotic tissue that are all usually associated with problem wounds. The sustained activity of a gel may provide longer lasting cleansing and ongoing support of debridement on the wound surface. The combination may allow for ongoing, supportive debridement and assist in control of bacterial burden.

Drugs and devices can work synergistically in our experience in this context. Support of debridement with negatively charged dressing fibers applied daily binds positively charged slough and necrotic tissue proteins that may have been well mechanically broken down with HOCL gel. This synergy is remarkable. We studied the combination of these 2 products in patients with wounds with necrotic debris. The results support this combination of therapy for debridement that may serve as an alternative to surgical debridement and more expensive options.

Methods: A retrospective review was conducted with five patients that were treated with HOCL Gel and negatively charged dressing fibers. Spider bite n=1, Infected dog scratch: n=1 Venous Leg Ulcers (VLU) n: 2 Non healing surgical wound, back: n=1.

Patients were treated in the outpatient and inpatient setting. Necrotic debris was identified and, in most cases, limited sharp excisional debridement was performed followed immediately by a layer of HOCL gel and a contact layer of Negatively charged dressing fibers.

Results: All wounds improved with a notable reduction in necrotic debris and progression toward healing. The remaining patients underwent advanced wound therapy with progression toward healing. No surgical intervention was required, and no infections were identified.

Discussion: Combination of HOCL gel and negatively charged dressing fibers may provide an additional wound bed preparation with reduction of necrotic debris. The combination may provide a safe and effective technique of non-excisional debridement by cleansing the wound bed and promoting a more positive charge on necrotic debris and attracting slough and debris away from the underlying wound bed toward the densely charged negative fibers.

PI-008

Use of Electrospun Fiber Matrix (Sefm)a Synthetic Matrix as a Scaffolding Option in for Scalp Reconstruction

Krista Bauer, F NP, WCC, OMS; Jody Wolfe, BSN, MBA, RN, CWOCN

Introduction: Scalp wounds may be difficult to manage due to the paucity of subcutaneous tissue. Bone exposure with chronic scalp wounds is not uncommon and in the face of malignancy ongoing can provide additional challenges for closure. Radiation or concern for residual malignancy may limit the use of flap mobilization for coverage. Biologic CAMPs products have been utilized to assist with support tissue ingrowth. While these tissue forms are known to assist as a scaffolding for soft tissue support, biologic options may be expensive and typically contraindicated in the face of ongoing or residual malignancy, due to the concern of proliferation of malignant cells. The use of synthetic electrospun fiber matrix (SEFM) (Restrata , Acera Surgical, Inc.) has been described in acute trauma chronic diabetic foot ulcers, soft tissue reconstruction.

Methods: We present a retrospective review of three patients presenting for of scalp reconstructive. All 3 patients underwent resection of SCCA. 2 of 3 patients received postoperative radiation. 1 patient did not receive radiation but continued to have an open wound for 3 years. All patients presented chronic wounds and underwent excision with partial ostectomy. 2/3 who had received radiation underwent placement of SEFM with treatment with NPWT postoperatively. The patient who did not receive radiation underwent excision, partial ostectomy with flap closure. The SEFM was utilized to cover the bone in case of flap failure and or incisional dehiscence.

Results: All patients were treated with placement of synthetic matric intraoperatively. There were no adverse reactions to the synthetic and no postoperative complications including infections. The patient who did not receive radiation and underwent flap closure is healing well. The remaining 2 patients are progressing with reduction wound size with increasing epithelialization.

Discussion: SEFM has properties that allow tissue integration and incorporation. Moreover, in the face of malignancy biologics may be contraindicated. As a result, a synthetic which does not stimulate autologous cellular proliferation but can act as a scaffolding may have benefits over a biologic matrix and may serve as a more optimal choice for reconstruction.

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PI-009 (RPT-004)

Innovation in Managing High-Output Fistula

Jose Caceres-Alban, MSc. in Personalized Medicine and Applied Engineering

Introduction: Managing high-output fistula effluent is challenging due to its corrosive nature, volume, and impact on skin integrity and patient well-being. Traditional containment methods often fail outside the hospital setting, especially when abdominal contours are uneven.

Methods: Three patients with complex fistula or ostomy sites received

personalized ostomy mold spacers. An alginate-negative mold of the lesion was obtained in situ from the patient. A 3D scan of this mold was then performed, and the complementary positive part was designed using 3D modeling software, followed by the design of the personalized device. The ostomy mold spacer was fabricated from a flexible, biocompatible resin via 3D printing. The spacers helped flatten abdominal topography, improving pouch wear time and reducing skin irritation.

Results: The first patient with a stomatized fistula increased pouch wear time from less than an hour to 46 hours, demonstrating a substantial improvement. The second patient's wear time extended from 30 minutes to 6 hours, and the third's from 2 hours to 24 hours, illustrating the technique's effectiveness across different cases. These results suggest that the ostomy mold spacer can significantly enhance the pouching system's performance and patient comfort.

Discussion: Custom ostomy mold spacers significantly enhance pouching system effectiveness, promote skin healing, and improve quality of life, offering a promising technique for clinicians managing challenging fistula cases.

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PI-010

Non-Viable Tissue Reduction Using a Negatively Charged Fiber (NCF) Dressing with Silver in an Acute Care Setting: a Single-Center Retrospective Review

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Introduction: Managing non-viable tissue (NVT) in acute care wounds presents significant challenges due to patient complexity and limitations on debridement methods, particularly for those on anticoagulants. Traditional debridement techniques, such as sharp debridement, are often restricted by scope of practice, while enzymatic and autolytic debridement are slower, and ultrasound and maggot therapy are difficult to access. This retrospective review investigates the effectiveness of a negatively charged fiber (NCF) dressing with silver in facilitating NVT removal in an acute care setting where surgical debridement is contraindicated or not feasible.

Methods: In this study, twelve patients treated with NCF at a 725-bed acute care hospital were analyzed. Certified wound care nurses independently assessed the percentage of NVT at the start and end of therapy, along with wound type, size, and duration of treatment. The patient cohort included those with pressure injuries (n=5), venous leg ulcers (n=3), and other acute wounds (n=4), such as traumatic, skin tear, and infectious wounds. The average wound size was 51 cm2, ranging from 0.3 to 255 cm2.

Results: The results demonstrated a consistent reduction in NVT across all wound types. Notably, wounds with initial NVT greater than 50% showed significant improvement, with an average reduction from 78% to 34% NVT after nine days of NCF application. Despite the limited sample size, these findings suggest that NCF is a safe and effective alternative for NVT management in acute care settings where sharp debridement is not feasible. The dressing's antimicrobial barrier properties and its ability to facilitate wound bed preparation may reduce wound burden and optimize healing.

Discussion: The study highlights the potential of NCF dressings in acute care, suggesting that further prospective studies with larger cohorts are necessary to optimize patient selection, evaluate cost-effectiveness, and compare outcomes with established debridement methods. These findings have important implications for practice, offering a viable option for managing complex wounds in settings with debridement limitations.

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PI-011

Implementing Mechanical Debridement in the Wound Bed and Periwound Skin

Annette Gwilliam, BSN, RN, CWON, ACHRN; Becky Greenwood, BSN, RN, CWOCN

Introduction: Wound healing has been shown to be impeded by the presence of bacterial biofilms which exist in most chronic wounds and more recently, including on the periwound skin. "Regular debridement is the cornerstone for maintaining a healthy wound bed in most chronic wounds with a potential to heal." [1] "Periwound complications can delay healing in a variety of ways, which in turn increases the risk of infection; increased bacterial burden can in turn increase inflammatory response and delay healing, creating a vicious cycle"[2]

Methods: Our homecare agency uses monofilament debridement pads to mechanically debride wounds between wound clinic visits. The nurses were only using the pads to clean the wound bed. We added cleansing the periwound skin after using point-of-care fluorescence imaging devices that detected the presence and location of elevated bacterial loads and biofilm.

Results: We have many pt's with slow healing chronic wounds. Wound photos and fluorescence imaging were taken prior to cleansing the wound. Surprisingly, the results of the imaging showed that the periwound was more contaminated with bacteria than the wound bed. The wounds and periwound areas were then cleansed using the monofilament debridement pads and the same imaging was repeated. The results showed that after cleansing with the monofilament pads the bacterial load was significantly decreased in the periwound area.

Discussion: "Optimal wound-bed preparation consists of regular debridement to remove devitalized tissues, reduce bacterial load, and to establish an environment that promotes healing"3. However, if the periwound skin is contaminated this will also slow healing. With these results in hand, our providers continue to order monofilament debridement between visits to clean the periwound skin to promote increased healing. This poster will show examples of

significant cleaning and healing of the wound and periwound with the use of the pads.

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PI-012

New Procedure to Decrease Severe Pain with Peristomal Skin Breakdown

Annette Gwilliam, BSN, RN, CWON, ACHRN

Introduction: Peristomal skin breakdown can be traumatic and painful to the ostomate. Advances in ostomy products, as well as WOC nursing expertise have led to better outcomes for ostomy patients, but peristomal breakdown remains an issue. "The surgeon's goal is a well-constructed stoma. Unfortunately, this goal is not always achieved, as 10 to 70% of ostomy patients experience some type of peristomal skin problem".[1]

Methods: Our homecare agency has certified ostomy nurses. Patients are referred to us with complications that usually include peristomal skin breakdown. They return home after a short hospital visit, a prolonged rehab stay or from nearby wound clinics without WOCN's. Often the solution is as easy as changing to a convex wafer, however, the skin damage is usually already present. Patients complain of unbearable pain with care and cannot tolerate peristomal cleaning. This delays the care of the already busy WOC nurse. Previously, the nurse had to provide care slow enough that the patient could tolerate the pain. This prolongs the pain and the visit.

Results: Our quality improvement program involved instituting a new product to decrease pain in the peristomal breakdown. The patient's appliance is gently removed, and the topical lidocaine hydrochloride/benzalkonium chloride gel is immediately applied. Within minutes the burning, stinging and pain decreased, and we can proceed with the care needed.

Discussion: Five patients with severe peristomal breakdown and pain will be discussed. They had pain at 9 or 10/10. After applying the gel, patients were completely surprised by how much it helped and they tolerate cleaning the peristomal breakdown with just minimal discomfort! Also, this product did not impact the adherence of the next appliance placed. This product is now carried by all ostomy nurses in our agency. We have noted decreased visit time, but most of all increased patient satisfaction with our care.

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PI-013

Evaluating the Mode of Action of Components Within Antimicrobial Wound Dressings in Relation to Their Antimicrobial and Antibiofilm Properties

Alexis Harding, BSc Hons; Alex Lawton, ACIM

Introduction: The purpose of this study is to evaluate the components within 2 subject devices in relation to their mode of action as an antimicrobial and antibiofilm product. The combination of antimicrobials with additional excipients e.g. chelating agents, surfactants can enhance the performance of a woundcare product, and this investigation aims to understand the specific mechanisms and synergistic interactions involved to combat chronically infected wounds.

Methods: Dressings evaluated were a PHMB + EDTA CMC gelling fibre dressing and a silver CMC dressing containing, EDTA and benzethonium chloride (BeCl). A literature review was performed focusing on three mechanistic domains: (1) direct antimicrobial effects, (2) chelation and disruption of the extracellular polymeric substance (EPS), and (3) surfactant-mediated or charge-mediated effects on biofilm architecture and bacterial adhesion.

Results: It is widely known that the antimicrobial mechanisms of PHMB and Silver differ, which can lead to variation in certain properties, including antimicrobial resistance. However, both antimicrobials are recognised for their broad-spectrum activity. In the silver-based dressing, EDTA acts as a chelating agent to destabilise the biofilm matrix and BeCl functions as a cationic surfactant to disrupt bacterial membranes. In the PHMB + EDTA dressing, PHMB provides broad-spectrum antimicrobial activity while also acting as a surfactant, causing membrane disruption and interaction with bacterial DNA. EDTA contributes comparable chelating and biofilm-destabilising effects.

Discussion: This literature-based analysis enabled comparative evaluation of two antimicrobial CMC wound dressings with respect to the mode of action of their antimicrobial agents and additional excipients. Despite distinct antimicrobial chemistries, the combination of PHMB with EDTA appears to recreate the key functional elements of the silver + EDTA + BeCl system—broad-spectrum antimicrobial activity, matrix chelation and biofilm disruption.

PI-014

Early Identification and Intervention in Lower Extremity Wounds: Applying BIOMESSM and the Wound Balance Framework to Guide Use of SAP Dressings

Asia Denning, MS-III; Alton R. Johnson Jr, DPM, DABPM; FFPM RCPS (Glasg), CWSP, FASPS

Introduction: To demonstrate how early identification of healing barriers using the BIOMESSM screening tool (developed by Dr. Brookshier), combined with the principles of the Wound Balance framework, can support timely intervention and optimize dressing strategies—specifically through the use of superabsorbent polymer (SAP) dressings in complex lower extremity wounds.

Methods: Three patients with highly exudative lower extremity wounds stemming from venous stasis, graft-versus-host disease, and scleroderma were retrospectively evaluated. All presented with clinical features consistent with moderate to high BIOMESSM scores, including infection, metabolic comorbidities, edema, and social limitations. Upon recognition of these risk factors, care plans were adapted to incorporate SAP dressings (Zetuvit Plus and Zetuvit Plus Silicone Border), aimed at addressing exudate management, supporting wound bed preparation, and aligning with the patient's broader healing trajectory.

Results: The BIOMESSM tool and Wound Balance framework offer a complementary approach to proactively identify wounds at risk for delayed healing and initiate meaningful early interventions. Across the three cases, SAP dressings reduced dressing change frequency, improved wound conditions, and supported timely progression toward closure.

Discussion: These findings underscore the importance of structured screening and physiologic rebalancing as essential components of wound care, shifting the focus from managing chronic wounds to healing them.

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PI-015

Implementation of a Digital Wound Care Technology Across a Rural Hospital System

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Introduction: In 2024, a rural, multi-site health system implemented an artificial intelligence-based digital wound care platform (AI-DWCP) across its six hospital locations in Grey and Bruce Counties, Ontario, Canada, serving 175,000 residents across a geographically dispersed area. This region faces challenges with access to specialized wound care, standardized assessment, consistent documentation, and optimal care outcomes, impacting continuity of care. The AI-DWCP aims to enable standardized, AI-enhanced wound assessments, reduce reliance on the region's single wound specialist, and strengthen documentation practices. Outcomes from the first 18 months of implementation are reported.

Methods: Implementation commenced at one hospital site in May 2024, with expansion to the other five hospital sites by October 2024. Stakeholder engagement informed key performance indicators for evaluation, developed in alignment with the Quintuple Aim Framework[1]. Baseline assessment and staff training occurred in early 2024, with data collected between May 2024 and October 2025 to assess system uptake, effectiveness, patient and clinician experience, and patient outcomes.

Results: 40 frontline providers were trained, and several emerged as implementation champions. Within an 18-month period, over 1,500 digital wound assessments were performed for 300 patients using the AI-DWCP. Wound types included diabetic (37%), surgical (19%), pressure injuries (16%), venous ulcers (9%), and others (19%). Average healing time was 95 days, with 58% of wounds considered stable or improving. Wound-related emergency department visits among patients with diabetic foot ulcers are projected to decrease by 41%. While providers reported positive experiences with the AI-DWCP, changes to role accountability and the development of new workflows are necessary to ensure sustained use. Patients reported feeling more involved and committed to their treatment plan, with overall satisfaction in the service received.

Discussion: Implementation of an AI-DWCP across a rural health system demonstrated strong uptake, early improvements in healing outcomes, and reductions in wound-related acute-care utilization. Targeted change-management strategies, including enhancing the clarity of wound care roles, investment in implementation champions, and continuous leadership support, were essential for sustained adoption. This initiative underscored that without a human-factors lens, digital technologies can amplify pre-existing organizational challenges. Findings can guide future digital health implementations in rural and remote settings.

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PI-016

Improved Healing Rates Through Standardized Antimicrobial, Offloading, and Compression Practices

Devin Kramer, MHA, BSN, RN, WCC; Tina Zettel, RN

Introduction: Our clinic identified that there is often times an issue with consistency in wound care practices amongst wound clinics, and even providers within the wound clinic. Variability in clinical practice and inconsistent utilization of evidence based interventions can lead to delays in healing time. Our clinic wanted to standardize practices and follow evidenced based interventions to achieve shorter days to wound closure compared to other wound care clinics in our system.

Methods: The problem was addressed by standardizing wound care practices at our two clinics ensuring consistent use of evidence-based interventions. Wounds at our clinics were cleansed with 0.057% sodium hypochlorite to effectively reduce or eliminate bioburden, while offloading protocols were reinforced not only for diabetic foot ulcers but for any wound affected by pressure. Multilayer compression was emphasized to manage edema and optimize venous return. Quality metrics were used to track provider utilization and ordering of offloading and compression, ensuring these conversations and interventions occurred at every visit. This protocol-driven approach reduced practice variability and supported faster, more reliable healing outcomes.

Results: This experience demonstrates that consistent, protocol-driven wound care can significantly accelerate healing across multiple wound types. Over a three-year period, our two clinics achieved markedly faster days-to-healed compared to the system's 23-clinic average—improving diabetic wounds by 15.5 days, pressure injuries by 29.5 days, traumatic wounds by 8 days, and venous ulcers by 14.5 days. Although arterial wound data showed variability due to a small number of longstanding cases, one clinic still outperformed the system by 18 days. Overall, an average improvement of 11.7 days to healed across all wound types illustrates that standardizing antimicrobial cleansing with 0.057% sodium hypochlorite, reinforcing offloading, and ensuring consistent compression use can meaningfully reduce healing times. This highlights the value of reducing practice variability, tracking provider adherence to interventions, and maintaining evidence-based protocols to drive better outcomes.

Discussion: This experience shows that standardizing evidence-based wound care practices—such as consistent antimicrobial cleansing, appropriate offloading, and multilayer compression—can meaningfully accelerate healing across multiple wound types. By reducing practice variability and tracking provider adherence to key interventions, our clinics achieved faster days-to-healed than the system average in almost every wound category. The overall improvement of 11.7 days demonstrates that reliable processes, rather than isolated individual practices, are critical for achieving consistent and superior patient outcomes.

PI-017

Standardizing Chronic Wound Care Using a Three-Phase Healing Model Integrated with Systemic and Local Impairment Drivers

Lonnie W. Lassiter, II, MD

Introduction: Chronic wound documentation is frequently fragmented, with emphasis placed on surface appearance and dressing selection rather than on underlying wound biology. Product-driven documentation obscures physiologic reasoning, weakens continuity between assessment and plan, and complicates demonstration of medical necessity. Chronic wounds fail to heal primarily because of unaddressed biologic barriers, not because of insufficient product use. A physiology-centered framework shifts documentation from "what was applied" to why an intervention is indicated based on wound phase and healing impairments. Organizing care around healing phases and systemic and local barriers improves clinical clarity, inter-provider communication, and regulatory defensibility.

Methods: A structured documentation model was developed using two core components: Phases of Healing: Cleaning, Building, and Closing Healing Impairment Domains: Local and systemic factors affecting

wound progression Providers classified each wound by its active biologic phase based on objective wound-bed findings. Local wound healing impairment factors (e.g., pressure, edema, infection) were identified and documented at each visit. Systemic wound healing impairment factors (e.g., perfusion, metabolic status, nutrition) were assessed and recorded. Clinical interventions were selected and documented based on: Active healing phase Identified local barriers Identified systemic barriers Documentation was evaluated for: Completeness Internal clinical logic Clarity of medical necessity

Results: Improved completeness of wound documentation, with consistent identification of both local and systemic healing barriers. Stronger physiologic alignment between assessment and plan, reducing phase–intervention mismatch. Clearer medical necessity justification for advanced therapies and procedural interventions. Reduction in redundant or incompatible dressing combinations driven by non-physiologic product stacking. Improved continuity of care across providers through standardized phase and barrier classification.

Discussion: Chronic wound care is fundamentally a problem of impaired biology rather than product selection. When documentation and treatment planning are driven by dressing categories and wound types, physiologic drivers of delayed healing may be overlooked or insufficiently addressed. A framework organized around healing phase and impairment domains allows clinicians to document what the wound requires biologically rather than what is applied topically. By structuring wound encounters around measurable biologic states and explicitly identifying local and systemic barriers, documentation becomes more consistent and defensible. Phase-based reasoning reduces therapeutic mismatch, supports sequencing of interventions, and strengthens provider communication. A physiology-centered model improves regulatory clarity by demonstrating that interventions are selected in response to identifiable biologic impairments rather than preference or routine. This approach reframes chronic wound management as a dynamic process of biologic problem-solving rather than a static process of product selection, supporting consistent, transparent, defensible wound care.

PI-018

Integrating Near-Infrared Spectroscopy and Bacterial Auto Fluorescence Imaging into the VISTA Pathway for Diabetic Limb Preservation

Brock Liden, DPM; Amanda Fuller, LPN, WCC, DAPWCA, TCC-C; Lynnette Morrison, MD, FAAFP, CWSP, FAPWCA

Introduction: Diabetic lower extremity wounds (DLEWs) remain a leading healthcare burden globally, with recurrence rates up to 65% and major amputations often being inevitable in cases with chronic ulceration and osteomyelitis. Conventional care emphasizes infection control and wound closure but often neglects vascular insufficiency and biomechanical drivers of ulcer recurrence. The VISTA pathway—Vascular Evaluation, Infection Control, Surgical Correction, Technologies & Therapies, and Amputation Prevention—advances a surgical-first, multidisciplinary approach. This abstract highlights the importance of integrating near-infrared spectroscopy (NIRS) for microvascular assessment and bacterial auto fluorescence (BAF) imaging for infection control within VISTA.

Methods: Diabetic lower extremity wounds (DLEWs) remain a leading healthcare burden globally, with recurrence rates up to 65% and major amputations often being inevitable in cases with chronic ulceration and osteomyelitis. Conventional care emphasizes infection control and wound closure but often neglects vascular insufficiency and biomechanical drivers of ulcer recurrence. The VISTA pathway—Vascular Evaluation, Infection Control, Surgical Correction, Technologies & Therapies, and Amputation Prevention—advances a surgical-first, multidisciplinary approach. This abstract highlights the importance of integrating near-infrared spectroscopy (NIRS) for microvascular assessment and bacterial auto fluorescence (BAF) imaging for infection control within VISTA.

Results: Evidence supports NIRS as not only a tool for measuring tissue perfusion but also a reliable, non-invasive alternative for microvascular perfusion assessment. BAF imaging enhances infection control by identifying bacterial bioburden beyond clinical visualization, reducing residual contamination and optimizing wound bed preparation. In the VISTA application, these technologies can improve early detection of perfusion deficits and bacterial hotspots, potentially reduce surgical stages and accelerate healing. Combining advanced diagnostics with proactive surgical correction can reduce recurrence and improve limb salvage rates.

Discussion: Incorporating NIRS and BAF imaging into VISTA strengthens its proactive, technology- driven framework. NIRS addresses a critical gap in vascular assessment for diabetic patients with calcified vessels, while BAF imaging elevates infection control through real-time bacterial visualization. These tools align with VISTA's emphasis on precision, multidisciplinary care, and long-term limb preservation. Future prospective studies should evaluate their combined impact on amputation-free survival, cost-effectiveness, and workflow integration.

PI-019

The VISTA Approach: a Surgical Innovation Model for Modern Limb Preservation

Brock Liden, DPM; Amanda Fuller, LPN, WCC, DAPWCA, TCC-C; Lynnette Morrison, MD, FAAFP, CWSP, FAPWCA

Introduction: Limb preservation in diabetic and neuropathic patients requires early recognition of vascular compromise, infection, and structural deformity before they progress to limb-threatening pathology. Major lower-extremity amputation carries a 5-year mortality of 40–70%, underscoring the need for proactive strategies that prevent ulcer progression and limb loss. VISTA—Vascular evaluation, Infection control, Surgical correction, Technologies & therapies, and Amputation prevention—provides a structured pathway that identifies limb-threatening risk and guides timely intervention. This practice innovation project evaluates real-world implementation of VISTA across a 60-case surgical cohort involving forefoot, midfoot, rearfoot, and Charcot reconstruction procedures.

Methods: A three-year retrospective analysis was performed on 60 consecutive VISTA-guided surgical cases from 2021–2024. Vascular evaluation confirmed adequate perfusion or prompted revascularization before surgery. Infection control included culture-directed antibiotics, sharp debridement, and antibiotic bone void fillers when osteomyelitis or deep infection was present. Structural correction was performed in all cases to redistribute pathological pressure contributing to current or potential ulceration. Technologies such as negative pressure wound therapy, advanced dressings, digital imaging, and external fixation were used when indicated. Surgical categories included 44 forefoot, 11 midfoot (including 2 Charcot), and 5 rearfoot procedures, with 29 preventative surgeries, 3 preventative cases with previously healed ulcers, and 28 ulcer-presenting cases. Outcomes assessed included healing progression and limb preservation.

Results: All 60 patients underwent structural correction to address deformity and pressure overload. Limb preservation was 96.7%, with only two minor 5th-digit amputations in patients presenting with infected ulcers. Preventative surgeries maintained limb integrity by correcting deformity before breakdown occurred. In ulcer-presenting patients, structural realignment and local antibiotic delivery improved healing and reduced recurrence. Midfoot and Charcot reconstructions stabilized collapse and prevented progression toward higher-level amputation. VISTA's integrated application aligned vascular, infectious, structural, and technological factors to support durable limb function.

Discussion: Implementing the VISTA framework created a reproducible, limb-preserving pathway across varied anatomic regions. By combining early vascular assessment, aggressive infection control, precise structural correction, and targeted technologies, VISTA shifted care from reactive wound management toward proactive limb preservation. The 96.7% limb preservation rate demonstrates its impact and supports further multicenter evaluation.

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PI-024

Telehealth Wound Severity Scale (Tewss) Utility

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Introduction: Telehealth has become integral to wound management, yet validated tools to triage wound severity remotely remain limited. The Telehealth Wound Severity Scale (TeWSs) was developed to provide structured, decision-support for clinicians during virtual wound assessments. We aimed to evaluate the predictive performance of TeWSs for determining the need for in-person care and to identify optimal cutoff points for clinical triage

Methods: We conducted retrospective analyses of two telehealth wound care datasets (N=951 and N=1,351). TeWSs is a composite score ranging from 0–9 derived from wound characteristics and systemic indicators, including wound size and appearance, surrounding skin changes, pain, tenderness, swelling, drainage, odor, fever, and glycemic status. Scores were clinically interpreted as continued telehealth follow-up (0–4), office visit (5–8), or emergency/urgent care (≥8), with the primary outcome dichotomized as Office Visit/Emergency–Urgent Care (OV/ER) versus Continued Care/Wound Healed (CC/WH). Total scores were calculated by summing item-level indicators; partially missing items were scored as zero, while fully missing totals were excluded. Predictive performance was assessed using receiver operating characteristic (ROC) analysis and logistic regression–derived weighted scoring models (with and without two-way interactions). Model performance was evaluated using sensitivity, specificity, accuracy, F1 score, and area under the curve (AUC).

Results: Across both datasets, the unweighted TeWSs demonstrated modest discrimination for predicting OV/ER disposition (AUC 0.63 and 0.58). ROC analysis identified a consistent optimal unweighted cutoff of ≥4. Compared with the traditional threshold of ≥5, a cutoff of ≥4 improved sensitivity (0.45 and 0.32), whereas ≥5 favored specificity (0.92 and 0.91) and overall accuracy (0.85 and 0.80). Weighted logistic models improved classification performance. The model incorporating all predictors with two-way interactions achieved the strongest performance across both cohorts (AUC 0.77), with balanced sensitivity (0.53 and 0.65), acceptable specificity (0.87 and 0.78), and the highest F1 scores (0.39 and 0.45)

Discussion: TeWSs provides structure for telehealth wound assessments but offers moderate discrimination when used as an unweighted score. Performance improves markedly with weighted models incorporating all predictors and interactions, indicating important contributions from variable interactions in wound severity assessment. A cutoff of ≥4 may enhance triage sensitivity in telehealth workflows. These findings support further refinement and prospective validation of TeWSs as a telehealth triage tool in wound care.

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PI-025

Modification of Manual Lymphatic Drainage Based on ICG Lymphography

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Introduction: ICG lymphography is a diagnostic method for observation of vascular function in the superficial lymphatic system, tissue fluid retention and extravascular drainage pathways. Lymphography provides a information enabling diagnosis and planning of personalized surgical or conservative treatment.

Manual lymphatic drainage (MLD) is a therapy for treatment of edema and chronic wounds associated with lymphatic, venous, or mixed insufficiency. MLD is a demanding therapy whose effectiveness depends on the therapist's adroitness.

Methods: MMLD was developed based on long-term experience in ICG lymphography. MMLD is based on determining the direction and location of lymphosomes, vascular and extravascular flow, and the strength and pace of therapist's maneuvers. The ICG examination results in so-called lymphomapping for therapeutic purposes, along with a dedicated therapeutic protocol for MMLD. The effectiveness of MMLD compared to MLD performed according to E. Vodder's was assessed on a qualified group of 40 patients. All patients were diagnosed with unilateral leg edema, grade 2 according to the ISL, confirmed by a harmonized tonometric pitting test. All qualified patients were randomly divided into two groups of 20. All patients in the study group underwent ICG lymphography (*PDE-GEN3, Hamamatsu, Japan) with lymphomapping. In both groups, 3D body scanning (*BodyLux 3D, ViALUX, Germany) was performed immediately before and after manual drainage to objectively assess limb circumference and volume before and after treatment. The duration of manual therapy was measured for each patient in both groups.

Results: The analysis of limb volume before and after manual therapy showed that the group with MMLD achieved a 4-times better reduction of volume, comparing to the the control group with classic MLD. The mean time required to perform MMLD was 2-times shorter comparing to classic MLD.

Discussion: MMLD shows significantly higher efficacy than MLD while significantly shortening the time needed for therapy. ICG lymphography should be considered as an effective tool for personalizing and optimizing conservative anti-congestive therapy.

PI-026

Innovative Transforming Powder Dressing for Atypical Wound Management: Multi-Etiology Case Analysis

Susan Rolniak St. John, MSN, APRN-NP; Matthias Augustin, MD; Carolyn Yanavich, PhD

Introduction: Atypical wounds—including immune-mediated, vasculopathic, malignant, hematologic, metabolic, infectious, dermatologic, and radiation- and envenomation-induced ulcers—are complicated by underlying pathology, tissue fragility, severe pain, and highly variable healing trajectories. Conventional dressings require frequent changes, causing pain and disrupting fragile tissue. Transforming powder dressing (TPD) congeals to form an extended-wear (up to 30 days) conforming, moisture-balancing film that protects the wound and limits disruption, making it well suited for treating atypical wounds. Our aim was to evaluate real-world outcomes of TPD across a wide range of atypical wound etiologies.

Methods: A narrative synthesis was conducted using clinical cases of diverse atypical wounds treated with TPD, including vasculitis, pyoderma gangrenosum, calciphylaxis, radiation injury, necrotizing fasciitis, hidradenitis suppurativa, connective tissue disease, lymphangioma, sickle cell disease, spider bite, bullous pemphigoid, and epidermolysis bullosa. Each case incorporated serial clinical assessments documenting healing progression, pain response, and dressing stability.

Results: Across diverse atypical etiologies, TPD consistently maintained a stable wound environment with minimal disturbance, conformed to irregular surfaces, and facilitated exudate management, granulation and re-epithelialization. Several cases reported meaningful reductions in pain. TPD remained adherent for prolonged periods, even in high-mobility regions, without causing maceration or other adverse reactions.

Discussion: TPD is a versatile, atraumatic dressing option for atypical wounds, offering stability, moisture balance, low procedural burden, improved patient comfort and strong protection for fragile tissue. These real-world observations support TPD as a valuable adjunct in managing wounds where inflammation, fragility, or pain complicate healing.

PI-027

Treatment of Combat Wounds in War Zones Using a Prolonged Wear Transforming Powder Dressing: a Clinical Case Series

Susan Rolniak St. John, MSN, ARPN-NP; Rostyslav Bublii, MD; Michael Samotowka, MD; Jonathan Saxe, MD, MBA

Introduction: War-related injuries, including blast injuries, burns and penetrating gunshot or shrapnel wounds, result in severe pain, prolonged recovery/return to duty (RTD)1. Combat hospitals are resource constrained, underscoring the need for more efficient wound management solutions2. Conventional wound care requires frequent dressing changes, increasing patient discomfort, and draining medical resources.

Transforming powder dressing (TPD) offers an innovative solution that can stay in place for extended periods (up to 30 days). This case series examines TPD's impact on dressing change frequency and associated pain when treating acute traumatic combat wounds.

Methods: Seven cases were analyzed, covering acute traumatic combat injuries from burn, gunshot, shrapnel and blast injuries. All cases were treated with TPD in place of traditional dressings. TPD is comprised primarily of methacrylate-based polymers similar to those used in contact lenses. Upon hydration, TPD granules aggregate to form a moist, oxygen-permeable barrier that protects the wound from exogenous bacteria while allowing excess exudate to flow through via vapor transpiration. Simple secondary dressings may be used to cover the wounds in areas of high-exudation or friction. TPD can be topped off by sprinkling more powder without removal for up to 30 days, reducing dressing changes, especially for hard-to-dress wounds. As healing progresses, it dries and naturally flakes off.

Results: All wounds healed fully without complications. Significant reduction in dressing change frequency, pain and hospital stays was observed. On average, the wounds healed in 29.3 days (range: 10-42) with 3.6 applications of TPD (range: 2-6 including top-offs). Dressing change frequency was reduced from seven times a week to once every 8.6 days on average (range: 5-15). RTD was reported for four cases and was lower than anticipated in each case, averaging 10.3 days overall (range: 7-11). Pain associated with dressing changes was reduced in all cases.

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PI-028

Negative Pressure Wound Therapy as a Predictor for Delayed Discharge

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Introduction: Negative pressure wound therapy (NPWT) is used across multiple surgical subspecialties for complex wound management and is commonly continued after discharge. At Huntington Hospital, delays in home NPWT device delivery have been observed to postpone discharge, prolong hospitalization, and potentially increase hospital costs and throughput inefficiencies.

Methods: This retrospective quality improvement study included adults ≥18 years who underwent operating room wound vac placement and required a home NPWT device between November 1, 2022 and December 31, 2025. Patients were excluded if they received a Prevena device, had insufficient documentation, or had devices delivered directly to facilities. Primary endpoints included time awaiting home wound vac delivery, length of discharge delay, and reasons for delay. Values are reported as mean ± SD, and continuous variables were analyzed using Welch's t-test.

Results: 33 patients met our inclusion criteria. The average time awaiting home wound vac delivery was 2.3 days. 21 patients received a device within 24 hours (0.48 ± 0.51 days), while 12 waited >24 hours (5.50 ± 4.10 days; p = 0.0014). Patients with delivery times >24 hours experienced longer discharge delays for any reason (2.67 ± 3.94 days) than those with earlier delivery (0.43 ± 0.60 days; p = 0.076). 13 patients had discharge delays directly attributable to late device delivery. Among these, 4 patients experienced discharge delays >24 hours, with an average delay of 2.5 ± 1.00 days compared with 0.78 ± 0.67 days in those with shorter delivery delays (p = 0.033). The average time awaiting device delivery in patients with >24 hour discharge delays was 3 days.

Discussion: Delayed home wound vac delivery was associated with prolonged delivery times and extended discharge delays. Delays exceeding 24 hours represent a threshold at which discharge is significantly impacted, suggesting a target for intervention. Documentation limitations reduced sample size and generalizability. Despite this, our findings highlight operational gaps in home NPWT coordination and support exploring solutions such as maintaining a hospital-based consignment supply to reduce delays and improve patient flow.

PI-030

Reduction of Hospital-Acquired Pressure Injuries in Patients with Dark Skin Tones Following the Implementation of Prevention Strategies

Jeannine Sherwood, PhD, FNP-BC, CWON; Michelle Dunn, MSN, RN, CPAFH; Melissa Nelson, MSN, RN, CWCN

Introduction: Hospital-acquired pressure injuries (HAPIs) can occur in patients due to prolonged pressure on the skin and deep tissues. Clinical studies have shown that individuals with dark skin tones (DST) have higher rates of later stage pressure injuries (PIs) compared to light skin toned individuals due to lack of early PI stage recognition. Proper training and skin assessment are necessary to improve the recognition of earlier stages of PIs in DST in order to prevent later stages of PI from developing.

Methods: This study was conducted on 85 patients with DST at a 495-bed hospital located in New York, NY. The goal was to reduce the monthly rate of HAPIs to 1.58 per 1000 patient days/month following implementation of the PTRS during a 10-month study. In addition, the hospital staff received educational training on the skin assessment of DST that was based on the Monk Skin Tone Scale (MSTS) ranging from 1-10 with 10 being the darkest skin tone.

Results: A total of 110 HAPI events were evaluated with a MSTS ranging from 2 to 9. Greater than 40% of patients ranked among the darker skin tones with a MSTS of 8 and 5. Higher HAPI severity stages were associated with DST indicating possible disparities in detection. Out of 110 HAPIs, the majority (n=71) were Deep Tissue Injuries (DTIs) and Unstageable (n=19) with the majority occurring in the sacral region. The rate of ≥Stage 2 HAPIs per 1000 patient days/month declined during the first 10 months from 2.36 in January to 1.27 in October, representing a 50.4% reduction.

Discussion: The strategy of educating hospital staff on DST skin assessment along with implementation of the PTRS was shown to reduce the rate of HAPIs by 50.4% thereby achieving the targeted goal of 1.58 per 1000 patient days/month. This strategic approach is an essential component of skin assessment aimed at preventing late-stage PIs in patients with DST.

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PI-031

Improving Quality of Life for Patients with Complex Colorectal Wounds: Innovative Approach Using Transforming Powder Dressing

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Introduction: Colorectal surgery treats conditions such as obstruction, cancer, and inflammatory bowel disease.[1] Resulting wounds are challenging, with SSI rates of 5–30% and notable morbidity.[2] To reduce SSI risk, wounds are often left open, leading to delayed healing, pain, bleeding, frequent dressing changes, and increased nursing demands, all of which negatively affect quality of life (QoL).[2] This case series evaluated whether a transforming powder dressing (TPD) could simplify management of complex colorectal wounds and improve quality of life.

Methods: Wounds were treated with TPD, an extended-wear powder dressing that becomes a moist, protective, oxygen-permeable matrix when hydrated. TPD was applied to open wounds (including tunnels), activated with saline, and left in place for up to 30 days, with reapplication as needed. Patients were followed until healed. Demographics, wound size, dressing frequency, and pain were recorded.

Results: Ten patients (60% female, ages 2 months to 62 years) with colorectal wounds were included. Seven had abdominal wounds (four with fistulas; two with 9–10 cm tunnels), two had peristomal complications, and one had omphalocele. Average wound volume was 693.3 cm^3 (range 0.7–2,159.4 cm^3). Except for one patient that died due to unrelated complications, all patients healed in an average of 18.8 weeks (range 2.3–42) with no SSIs or readmissions. Dressing changes decreased by 78.1% (191.4 vs. an estimated 873.9 with SOC). All adult patients reported less pain and greater satisfaction with TPD compared to prior dressings.

Discussion: TPD use in complex colorectal wounds was associated with reduced pain, improved patient comfort, fewer dressing changes, and no SSIs or other complications. TPD provides a valuable alternative for treatment of challenging colorectal wounds.

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PI-032

Innovative Management of Mucocutaneous Separation Using a Transforming Powder Dressing: a Case Series

Ron Sotomayor, BA, RN, CWOCN; Tatiane Abud Pimentel, MSN, RN, CWOCN; Carolyn Cintron, RN, BSN, CWOCN; Theresa Pineda, BSN, RN, CWOC

Introduction: Mucocutaneous separation (MCS), a detachment of stoma from peristomal skin, affects 3.7–9.7% of patients.[1] Without treatment, it can cause infection, peritonitis, or stomal complications.[2] Management is essential but current care is painful and labor-intensive, requiring local wound care, absorbent products, and close monitoring.
Methods: We present four patients with MCS treated with an extended wear transforming powder dressing (TPD) either initially or after failing standard of care (SOC). Given the limitations of traditional wound products, TPD was explored to: (1) protect against ostomy output leakage into the peritoneal cavity and (2) reduce dressing changes to lessen pain and extend pouch wear. TPD forms an oxygen-permeable moist barrier when hydrated and can remain in place for up to 30 days. 1. 27 y/o male with history of Crohn's Disease who underwent ileocolonic resection with end ileostomy surgery, complicated by (c/b) a 4.0 x 0.2 x 1 cm MCS on post-operative day 12. 2. 64 y/o male with complicated abdominal surgical history (hernia repair, colonic malignancy, colectomy, colostomy) who developed a perforated colon, and underwent exploratory laparotomy, colon resection, transverse colostomy c/b 3.5 cm deep MCS. 3. 62 y/o female with metastatic ovarian cancer who underwent rectosigmoid resection/colostomy and developed MCS 1 cm depth (2-8 o'clock). 4. 87 y/o female s/p total abdominal colectomy and creation of ostomy c/b circumferential MCS 0.8 cm deep.

Results:

1. TPD was applied in the MCS on postoperative Day 13, followed by a 2-piece pouching system. Less than 24 hours later, the wound had reduced by 95%. TPD was applied once, topped off once, before complete healing 11 days later.
2. After 4 days of SOC without improvement, TPD was applied and MCS healed in 17 days with three applications of TPD.
3. TPD was applied and topped off every 2-4 days with appliance changes. Healed in 6 weeks.
4. MCS healed in 13 days with two TPD applications.

Discussion: MCS wounds healed faster than anticipated with no complications. Nursing time and dressing changes were reduced with TPD versus SOC. Together with TPD's success in other peristomal wounds, these results support its consideration for MCS management.

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PI-033

Transforming Wound Management: Clinical and Workflow Improvement in Acute Care Settings

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Introduction: Nearly half of hospitalized patients have wounds requiring frequent, painful dressing changes, often prolonging hospital stays and increasing readmissions, creating a need for efficient solutions that lessen nursing workload while improving healing outcomes.

Methods: A large United States (US) academic hospital system piloted an extended wear (< 30 days) novel transforming powder dressing (TPD) in effort to improve outcomes related to wound healing rates, pain levels, dressing frequency, complications, and nursing time. Evaluations encompassed acute and chronic wounds: two quality improvement (QI) projects for post-operative wounds, a randomized controlled trial (RCT) for diabetic foot ulcers (DFUs), a retrospective review of recalcitrant pressure injuries, and a nursing efficiency study.

Results: TPD demonstrated consistent clinical and operational improvements. In a QI study of general surgery patients (n=12), patients experienced an pain and related medications decreased by 80+%; wound assessments by 66%/week. A colorectal QI study (n=10) similarly showed reduced pain, with a 78% reduction in dressing frequency. All patients healed without readmissions in both studies. A retrospective pressure injury study (n=21) documented complete healing of Stage 2–4 pressure injuries previously unresponsive to standard care with 11 total applications. In a RCT involving 135 DFU patients, TPD patients experienced 51% faster wound area reduction with 67% fewer dressing changes and 59% lower pain scores. A nursing efficiency study (n=76) across wound etiologies showed weekly dressing time decreased from 2.6 hours per patient to < 20 minutes. No product-related complications were reported in across studies.

Discussion: TPD is now being deployed regionally across this hospital system as part of a broader strategy to enhance outcomes, shorten length of stay, reduce costs, and optimize nursing workflow.

PI-034

Climate Change & Wounds: a Call for Action from the AAWC Health Equity Task Force

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Introduction: This work, compiled by the Association for the Advancement of Wound Care's Health Equity Task Force, outlines significant, multi-faceted challenges that climate change presents to effective wound care globally & aims to review key direct and indirect pathways trough

which climate change disrupts the continuum of wound care.

Methods: The task force identified several drivers of impact between climate change and wound care including: extreme weather events, infrastructure compromise, biodiversity change and disease emergence, direct wound microclimate impact, infection and antimicrobial stewardship, heat.

Results: The increased frequency and severity of extreme weather events increase the incidence of trauma, burns, and complex wounds while simultaneously compromising infrastructure vital for healthcare delivery and supply chains. Both tissue tolerance and the wound microclimate are adversely affected by heat and moisture imbalance. This risk is compounded by inconsistent staffing or products for treatments such as repositioning or wound hygiene. Climate-related resource scarcity and population displacement disproportionately affect vulnerable populations, creating barriers to consistent wound management and follow-up care. Psychological trauma from climate events represents a lifetime epigenetic nidus of disparate wound prevalence & healing. Rising temperatures and altered precipitation patterns and their associated fluctuations in pathogen virulence and distribution complicate infection management, especially in the setting of antimicrobial resistance. Deadly necrotizing skin infections have increased due to unstable warming waters, and are now also seen outside of typical exposures.

Discussion: Climate change presents profound challenges to wound care, escalating wound burden while simultaneously degrading the conditions for successful treatment. There is an urgent need for strategic action and antimicrobial stewardship to mitigate these growing threats particularly for the most vulnerable populations.

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PI-035

A 3d Bioprinting Tool* Using Mesenchymal Stem Cells for Advanced Wound Grafting and Healing

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Introduction: We have been frontiers in utilising a novel customised 3D bioprinting tool* using a patient's own adipose tissue to print personalized skin grafts that fit the exact contour of their wounds. We have performed > half of the total number of cases in the United States (US). Through this study we aim to pave a path for future clinical applications, outcomes, and pitfalls to determine the optimal uses for our patients.

Methods: We conducted a retrospective single center, single surgeon study between January 2025 and December 2025 involving 19 patients who underwent autologous fat grafting using this bioprinting tool*. Image capture software was used to determine the required adipose volume to print a customised 3D graft. Adipose tissue was extracted using a lipectomy procedure (10-15 ml for a ≤ 35 cm2 wound) then filtered and washed with only saline to isolate the 3% mesenchymal stem cells (MSCs) present. Grafts were printed with the bioink at a selected depth of 2-4 mm utilizing a freezing method ("fatsicle") or intermixing with fibrin to reinforce mechanical integrity and malleability for enhanced wound cohesion.

Results: Twenty-four procedures were performed in 19 patients. The average BMI was 26.72 kg/m2, and mean follow-up was 131 days. Patients had complex wounds, including pressure injuries, chronic osteomyelitis, diabetic and venous stasis ulcers, traumatic foot wounds with scar breakdown, persistent pleural-skin fistula, large melanoma excisions unable to close, and an IV infiltration injury in an immunosuppressed double-lung transplant patient. Five procedures occurred in the OR; the rest were done in clinic under local anesthesia with excellent tolerance. Lipectomy was taken from the abdomen, posterior calf, or thigh, averaging 15.5 mL of fat. There were no infections, and grafts incorporated within 2–7 days. Only one patient, with chronic osteomyelitis, had graft failure. All others showed better-than-expected healing, with two wounds fully healed and six achieving >90% healing.

Discussion: We believe this bioprinting tool is scalable as it can print up to 90 cm2 at once and seems promising for prospective clinical applications wherever rapid coverage of a wound or operative site is indicated, and to replace typical fat grafting.

PI-036

A Portable Photoacoustic Platform for Real-Time Deep Tissue Oxygenation.

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Introduction: Peripheral tissue oxygenation is a critical indicator of wound health and healing. Standard wound care approaches rely solely on indirect assessment of flow and visual assessments of wound morphology. Oximetry based technologies such as transcutaneous oximetry, near-infrared spectroscopy, or spatial frequency domain imaging are bulky, expensive, and require long calibration times to assess tissue oxygenation at shallow imaging depths (~1-2 mm). This makes tissue oxygenation assessments inaccessible as part of routine wound care in traditional high volume low-resources clinics. Spectral photoacoustic imaging (sPAI) is a rapidly emerging hybrid modality that utilizes pulsed light to generate acoustic waves detectable with conventional ultrasound hardware. The use of pulse light with unique wavelengths allows direct mapping of light absorbing chromophores such as oxy- & deoxy-hemoglobin.

Methods: Recently, our team at LumaWave, developed a portable sPAI system for real-time tissue oximetry capable of imaging up to depths of ~4 cm in vivo. In this study, we present a case study where this prototype was demonstrated in humans to measure microvascular & arterial oxygenation in the forearm.

Results: We demonstrated hemoglobin specific imaging up to a depth of 3.5 cm with clear visualization of the radial artery. Additionally, we demonstrated oxygenation mapping in real-time.

Discussion: Our results demonstrate the ability of our platform technology to provide real-time peripheral tissue oximetry that allows monitoring of wound healing, revolutionizing wound care and peripheral tissue health.

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PI-037

Use of Light Switchable Adhesive Film Dressings to Avoid Irritation in Patients with Adhesive Related Irritation or Dermatitis

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Introduction: Wound care clinicians must balance dressing securement with the risk of medical adhesive related skin injury (MARSI) when applying dressings. Shifting dressings can impede wound healing, leading most adhesives to be aggressive or require reinforcement with medical tape, both of which increase MARSI risk. A recent meta-analysis found a 16% MARSI prevalence and a treatment cost of $88.50 per injury (1), not including pain during adhesive removal. Recently, a light-switchable polyurethane adhesive was introduced for clinical use. Initial studies on human skin showed that the adhesive had strength comparable to other medical adhesives when unswitched but detached more gently than silicone adhesives in the switched state (2,3). Simulated use studies in healthy humans found an incisional negative pressure wound therapy system using this adhesive resulted in less skin irritation than alternatives, with similar dressing survivability (4). This case series details the use of light-switchable film dressings (LFD)* on dressings for patients with adhesive sensitivity or dermatitis.

Methods: Four patients had dressings secured with LFD. Three cases used LFD to maintain dressing position under compression therapy—two with venous leg ulcers and one with a lymphedema-related ulcer. Two patients had dermatitis. The fourth, with cutaneous T cell lymphoma, had a 15-month chest wall wound from surgical debridement of septic arthritis, complicated by adhesive dermatitis.

Results: LFD maintained dressing position in all four cases; dermatitis improved or resolved in three. One patient's wound healed, and the other three improved. For the lymphedema patient, dressing changes, previously requiring two clinicians, could be done by one clinician with LFD. Patients reported less pain and itching compared to previous securement methods. Nurses expressed easier dressing removal with less concern for skin damage with the LFD.

Discussion: LFD effectively secured dressings and reduced dermatitis when removed in the switched state, eliminating the need for skin protectant and adhesive remover. It improved clinician workflow and patient experience. These findings demonstrate that light switchable adhesive may lower MARSI risk without sacrificing dressing integrity as well as reduce workload on clinicians.

PI-038

Zinc Paste Wrap Used as the Base Layer in a Four Layer Compression Dressing Reduces Skin Irritation and Maintains Dressing Placement

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Introduction: Four-layer compression wraps provide treatment-dose compression and are standard in management of venous leg ulcers and edema-related leg ulcers. However, we have found these wraps have a tendency to slide causing skin irritation and increase the risk of secondary wound development. Current four layer wraps are supplied with a cotton base layer which can promote skin dryness leading to itching and skin flaking. In addition, this layer appears to have poor adherence to patient's skin causing the compression dressing to slide reducing its efficacy and increasing the risk for secondary wound development.

Methods: Patients treated in our wound care center who were experiencing skin irritation as well as compression dressing migration were changed from the standard cotton wrap base layer to a zinc or calamine paste wrap followed by the standard layers 2-4 compression. Patients were monitored over the next week for improvement in skin irritation and for any wrap sliding as well as new wound development.

Results: Patients who were treated with the zinc or calamine paste layer had improved compression dressing adherence to the leg with less sliding as well as less skin dryness and irritation. There were less instances of dressing migration leading to improved edema reduction throughout the calf and foot.

Discussion: Four-layer wraps are widely used to treat lower extremity wounds. In our clinical experience, these wraps may cause skin irritation and slide down the treated leg. This can lead to additional skin damage and reduces treatment efficacy, as evidenced by recurrent edema proximal to the wrap. By changing from the provided cotton base layer to a zinc- or calamine-based wrap, the four-layer wraps showed reduced migration with typical wear times and reduced skin irritation in select patients. This has allowed our clinic to improve treatment adherence and reduce adverse events in our patients undergoing treatment for edema-related leg ulcers and venous leg ulcers.

PI-039

Treating Pressure Injuries in Spinal Cord Injury Patients Using Timers & Activity Trackers

Francisca C. Wu-Zimmer, BSN RN CWOCN CFCN

Introduction: A pressure injury is defined as localized damage to the skin and underlying tissue caused by prolonged pressure. PIs in the SCI population often result from and worsen due to a flaw in time perception between off-loading practice events. With the use of a timing tool the goal is to improve off-loading event frequency and quality.

Methods: Starting on FY23, SCI staff implemented position monitoring tool for inpatients. All patients were given the option to utilize the tool. The impatient team and Wound RN collaborated to ensure patients adhered to a repositioning frequency and avoided wounded areas based on clinical judgement. In the outpatient setting, the Wound RN and physical therapy met and educated patients on how to use a timer, combined with visualization of pressure mapping readings to identify effective off-loading positioning. The Wound RN completed minimum weekly wound progress assessment and tracked data related to closure without surgical reconstruction, recurrent wound, post-surgical reconstruction, and chronic open wounds.

Results: There were 13 HAPI cases, 77% HAPI were inpatients who declined the timed activity tracker tool compared to 23% inpatients who utilized the tool, leading to $60,011 - $147,525 return on investment when using the tool. 100% of patients reported a difference between perceived frequency and timer guided repositioning.

Discussion: Perception of time between each off-loading practice is flawed, which leads to wound chronicity. Use of a timing tool aids in PI healing, prevention and avoid recurrence as it alerts the patient to practice more frequent off-loading.

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PI-040

Care with Every Turn: from Supine to Success

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Introduction: Sacral gluteal Hospital Acquired Pressure Injuries (HAPIs) have long term effects on patients' skin integrity, quality of life, and increase costs. Evidence shows turning reduces HAPIs, yet internal audits revealed long periods of supine positioning. Nurses noted multiple siloed mobility efforts across departments. The Care With Every Turn (CWET) campaign unified teams strengthened nursing ownership of safety practices and aligned with organizational priorities for improved patient outcomes.

Methods: Shared governance reviewed audit findings that helped clinical nurses identify workflow barriers to turning. The supine position was removed from the turn clock, EMR reminders were added, non-verbal assistance cues were created, and a buddy-system approach was implemented. A practice reset emphasized bedside report, purposeful rounding, mobility screening, and Braden subscales. The organization supported superusers to provide education and partner with leaders across departments, standardizing expectations and building a united approach to mobility and turning.

Results: Since CWET launched, supine documentation decreased by 54% and sacral gluteal HAPIs decreased by 58%. Monthly data sharing through shared governance, newsletters, and leader meetings sustained engagement. A bedside practice partner was designated to coach staff, provide real-time feedback, and collect live data. To recognize nursing excellence and motivate unit-level improvement, the organization created the Golden Wedge Award, celebrating the units with the greatest gains in turning compliance.

Discussion: The CWET campaign demonstrated how shared governance and interprofessional collaboration empower nurses to lead change, improve outcomes, and patient safety. Organizational support, superuser development, and the Golden Wedge Award reinforced sustained ownership of mobility and HAPI prevention.

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PI-041

Applying Semantic Artificial Intelligence to Improve Data Retrieval and Analysis in Wound Care

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Introduction: Wound care services generate large volumes of structured entries and free text notes. Turning this information into practical insight often requires specialist analysts and hand-crafted reports. Clinicians may not know which questions their data can answer, and traditional keyword or filter-based tools struggle with inconsistent terminology across forms, sites, and documentation habits. As part of a broader wound care Artificial Intelligence (AI) initiative, we explored whether a semantic AI interface could act as a conversational "analytics assistant," enabling wound care teams to ask clinically framed questions in natural language and receive interpretable, data-backed answers without needing database expertise.

Methods: We designed a prototype semantic AI layer on top of an existing wound care information system configured with realistic, de-identified patient, wound, and assessment data. The interface accepts free-text clinical questions, interprets key concepts such as wound type, treatment, time frame, and outcome, and then maps them to relevant fields and measures within the underlying database. The system returns simple visual and text summaries rather than raw queries, emphasizing transparency, such as the ability to review how patients, time windows, and metrics were selected. Typical test scenarios focused on healing trajectories, documentation completeness, and treatment response in common wound types.

Results: In this evaluation environment, the semantic interface successfully answered complex, multi-step questions such as "Which patients with venous leg ulcers showed delayed healing after compression therapy?" without manual query writing. It consistently produced patient cohorts, longitudinal views, and protocol-compliance summaries that aligned with expectations based on known test cases, and responses were generated in seconds using conversational input.

Discussion: This work suggests that semantic AI can lower the barrier to advanced wound care analytics by hiding schema complexity, while preserving clinical transparency. A conversational assistant layered on top of existing databases may help clinicians and quality teams more quickly identify healing patterns, gaps in documentation, and high-risk groups, forming a foundation for future decision support and multi-site benchmarking.