

# Percutaneous Screw Fixation

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# Disclosures

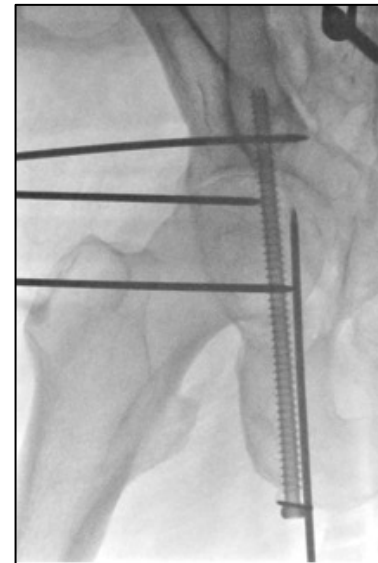
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None Relevant

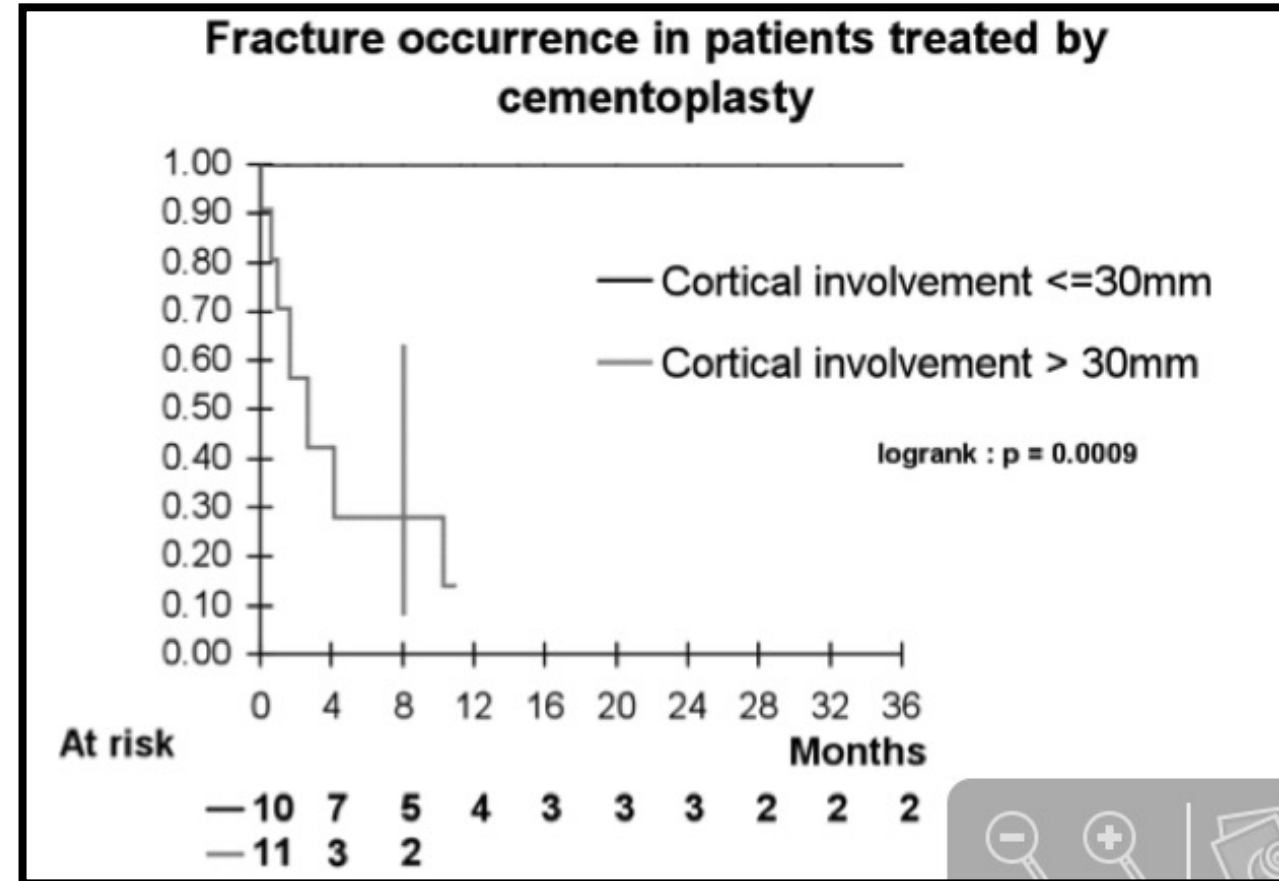
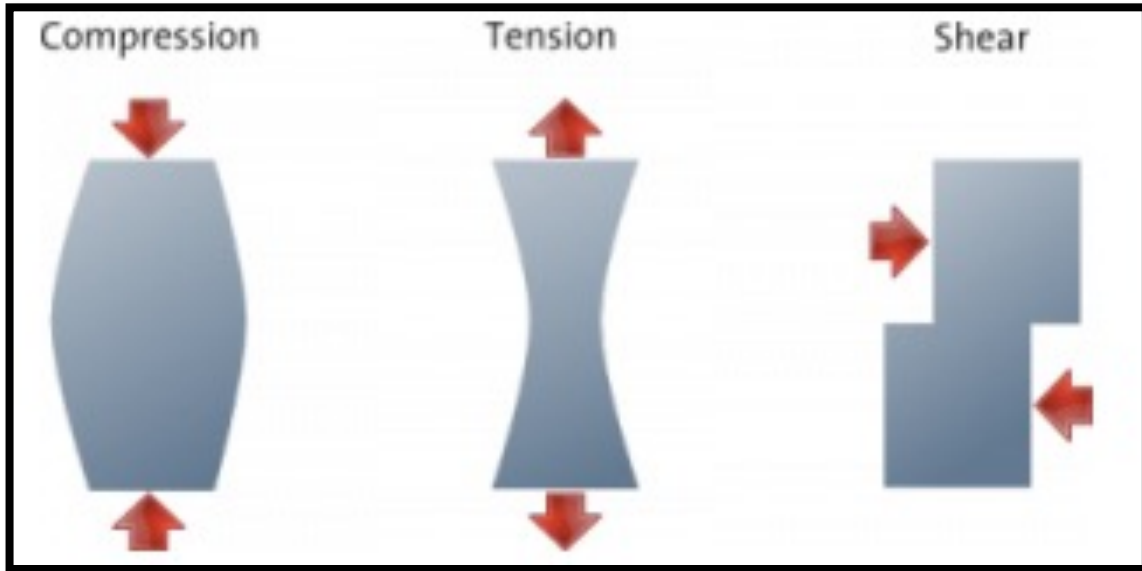
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# Screw Fixation - Indications

- Severe Pain
  - Mechanical
  - Limiting activities of daily living
- Poor response to alternative treatments
  - Conservative
  - Systemic therapy/XRT
  - Cementoplasty
- Large osseous defects (>3cm)
- Prevention of impending fracture

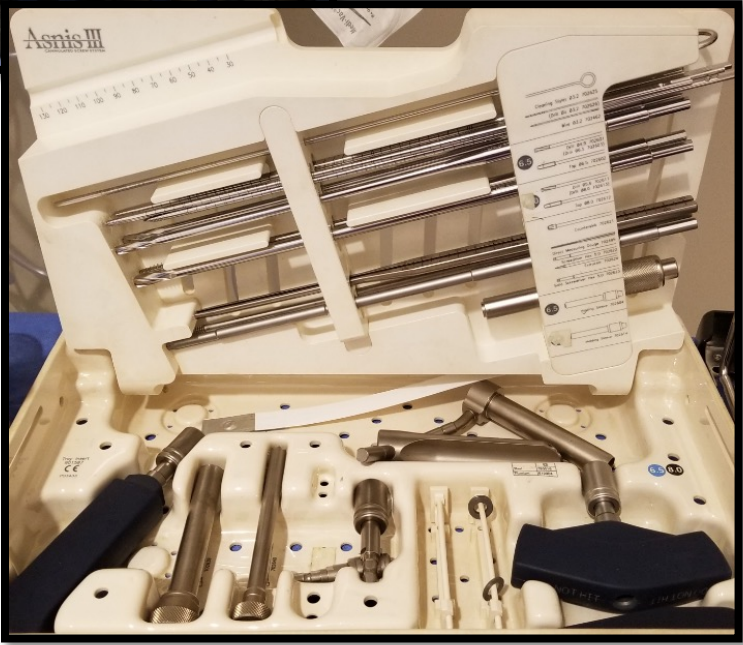


# Appreciating physical stresses



Deschamps F et al. CIRSE 2011

# The Tools

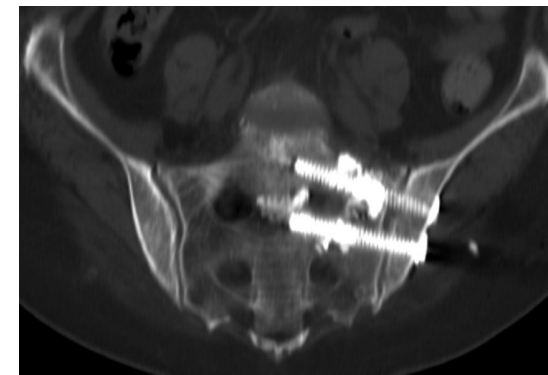


# Sacral Screw Fixation



Preprocedure Pain: 10/10 (bedbound)

Post-procedure Pain: 4/10 (walking)



# Clinical Expectations

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- Pain decreased, but not completely resolved
  - Anticipate approximately 50%
  - Expect 4/10 point drop, with increased ability to ambulate
  - Full pain benefits realized within 1-14 days
- Post Procedure care:
  - Minimally invasive (1.5 cm incisions)
  - PT/OT encouraged next day
  - Oral antibiotics for 7 days (personal suggestion)
- No contraindications for radiation therapy
- Request chemotherapy held for 5 days

# Recent Literature – Femoral neck

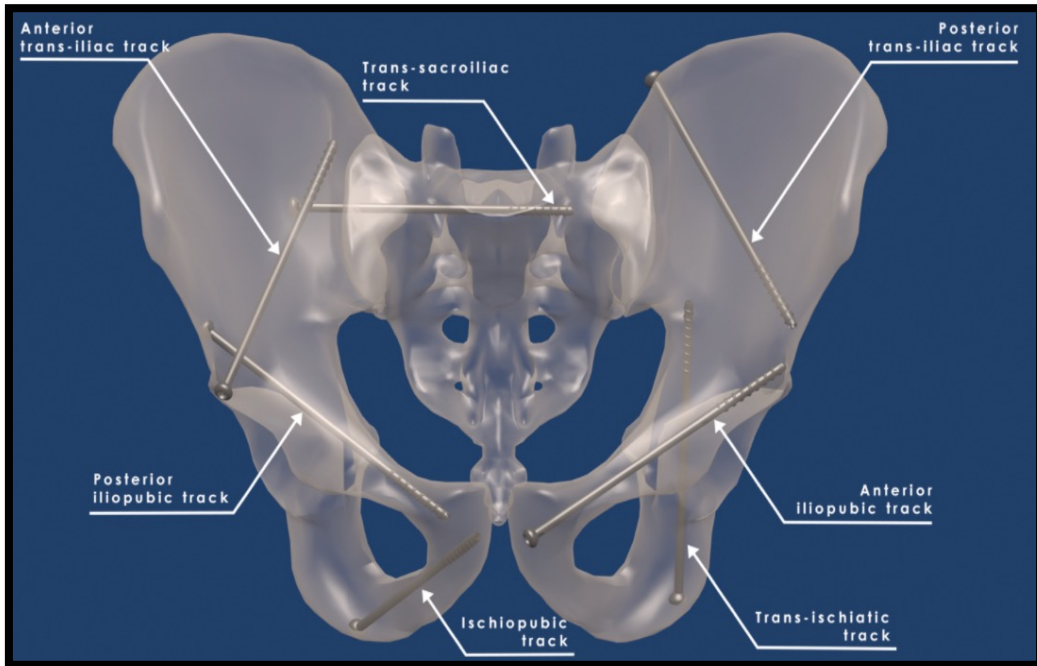


## Image-guided Percutaneous Fixation with Internal Cemented Screws of Impending Femoral Neck Pathologic Fractures in Patients with Metastatic Cancer: Safety, Efficacy, and Durability

[id](#) Michael Dassa\*, [id](#) Charles Roux\* ✉, [id](#) Lambros Tselikas, [id](#) Alexandre Delpla, [id](#) Steven Yevich, Matthieu Faron, Christophe Teriitehau, Antoine Hakime, Marc Al Ahmar, [id](#) Thierry de Baère, [id](#) Frédéric Deschamps

- **Prophylactic treatment of femoral neck lytic disease**
- **61 patients**
- **92% efficacy in prevention of fracture development**

# Recent Literature - Pelvic



[Radiology](#). 2018 Nov 13;181105. doi: 10.1148/radiol.2018181105. [Epub ahead of print]

## Fluoroscopy and Cone-Beam CT-guided Fixation by Internal Cemented Screw for Pathologic Pelvic Fractures.

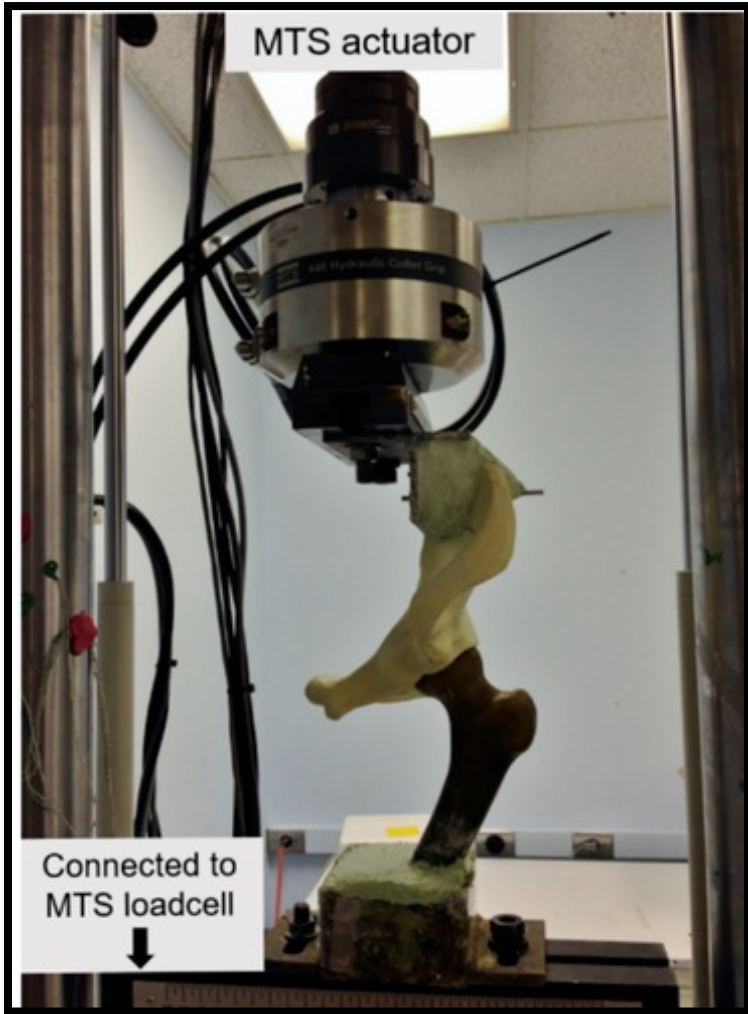
[Roux C](#)<sup>1</sup>, [Tselikas L](#)<sup>1</sup>, [Yevich S](#)<sup>1</sup>, [Sandes Solha R](#)<sup>1</sup>, [Hakime A](#)<sup>1</sup>, [Teriitehau C](#)<sup>1</sup>, [Gravel G](#)<sup>1</sup>, [de Baere T](#)<sup>1</sup>, [Deschamps F](#)<sup>1</sup>.

**100 patients**

**4 point drop in VAS at 6 weeks follow up**

**Decreased opioid use**

# Recent Literature – Peri-acetabular



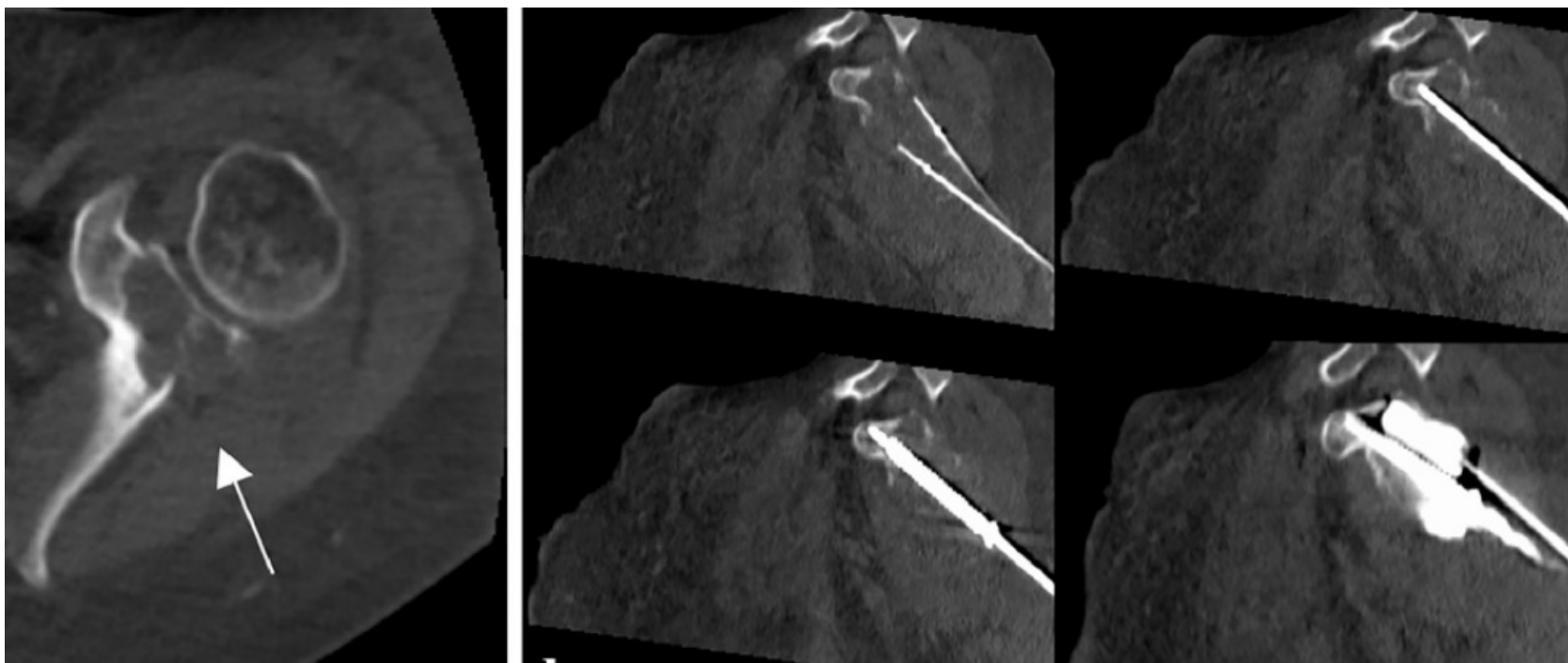
Pelvis weight-bearing ability after minimally invasive stabilizations for periacetabular lesion

William B. Lea, Sean M. Tutton, Naif Alsaikhan, John C. Neilson, Sebastian Schafer, David M. King, Mei Wang ✉

**Evaluation of weight-bearing behaviors of stabilization methods in composite hemipelvis**

**“When large periacetabular lesions are present, augmented screw fixation appears to be the superior choice of treatment.”**

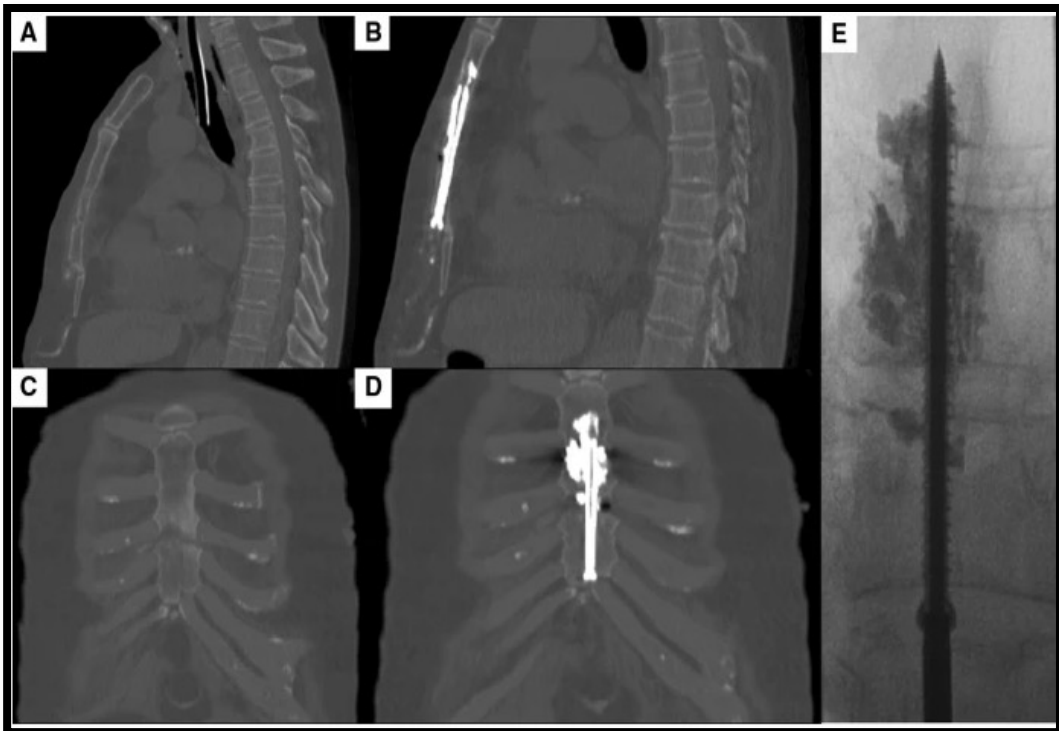
# Recent Literature - Scapula



Advanced Interventional Pain Management  
Approach to Neoplastic Disease Outside the  
Spine

Brandon M. Key MD, Matthew J. Scheidt MD, Sean M. Tutton MD, FSIR [R](#) [✉](#)

# Recent Literature - Sternum



## Percutaneous Fixation by Internal Cemented Screws of the Sternum

[Benjamin Poussot](#), [Frederic Deschamps](#), [Florent Varin](#), [Abdelhai Abed](#), [Benjamin Moulin](#), [Clara Prud'homme](#), [Marc Al Ahmar](#), [Christophe Teriitehau](#), [Antoine Hakime](#), [Sophie Laurent](#), [Thierry de Baere](#) & [Lambros Tselikas](#) ✉

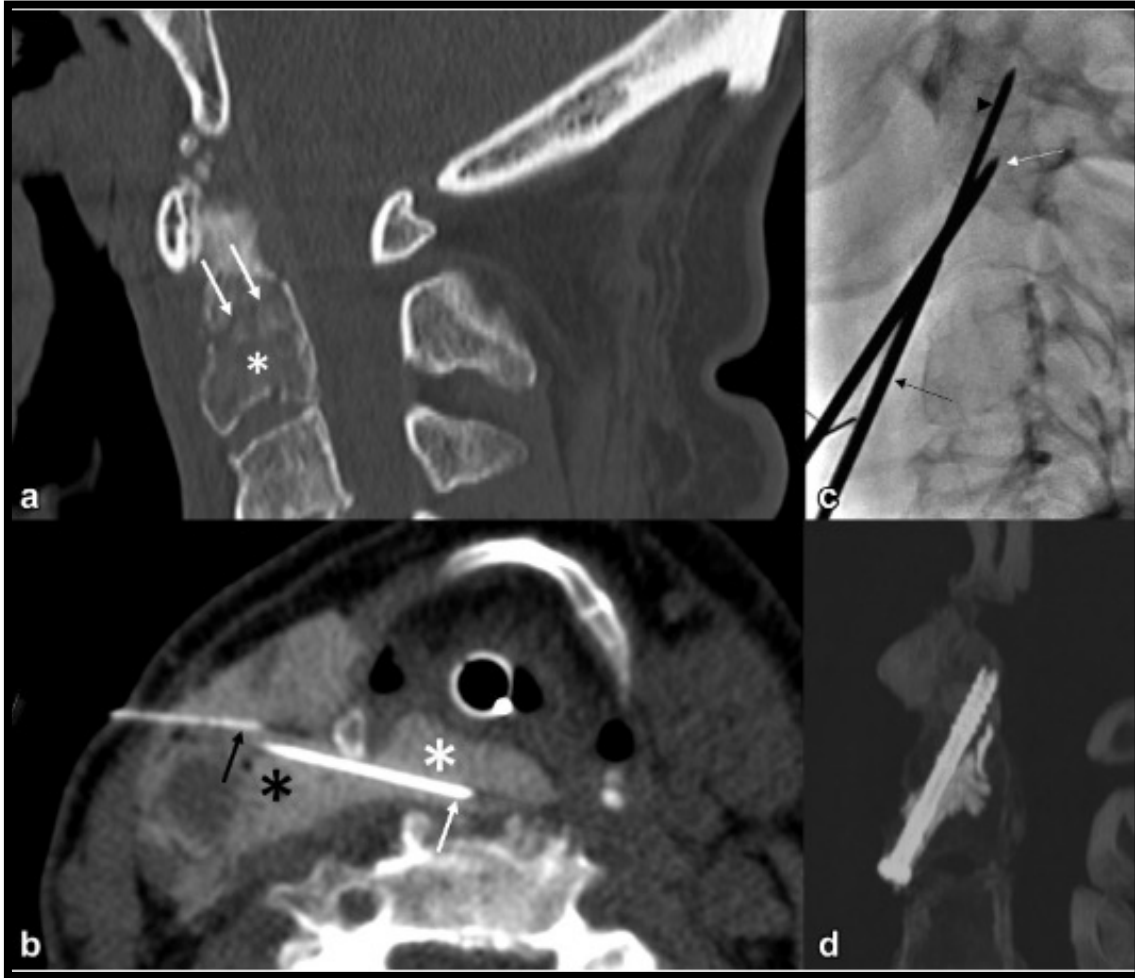
*CardioVascular and Interventional Radiology* 43, 103–109(2020) | [Cite this article](#)

**9 patients**

**Pain decrease by 4/10 points**

**No complications with 1 year follow up**

# Recent Literature – Cervical spine



## Combined Percutaneous Screw Fixation and Cementoplasty of the Odontoid Process

Julien Garnon MD, MSc<sup>a</sup>, Pierre Auloge MD<sup>a</sup>, Danoob Dalili MD<sup>b</sup>, Guillaume Koch MD<sup>a</sup>, Roberto Luigi Cazzato MD<sup>a</sup>, Afshin Gangi MD, PhD<sup>a</sup>

## Percutaneous C2-C3 screw fixation combined with cementoplasty to consolidate an impending fracture of C2

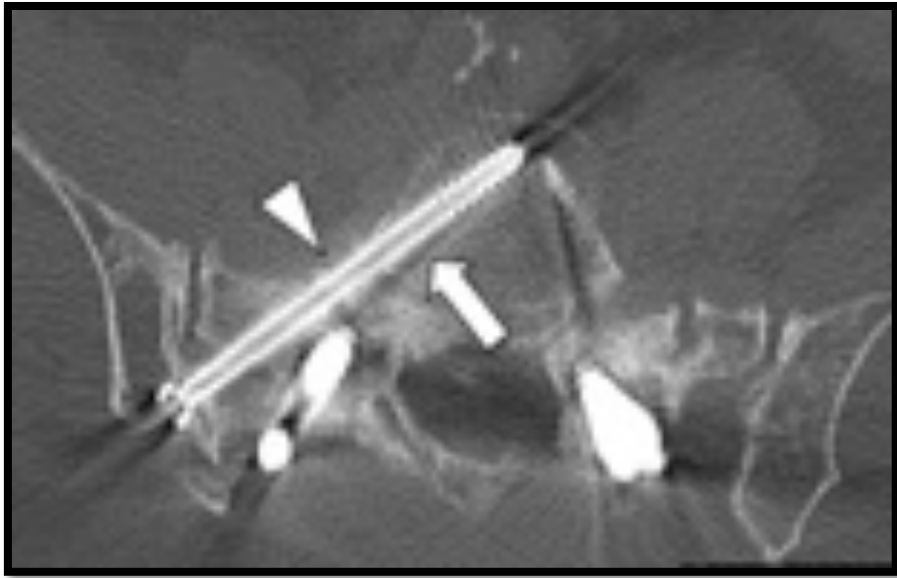
P.-A. Autruseau<sup>a</sup> ✉, J. Garnon<sup>a</sup>, P. Auloge<sup>a</sup>, D. Dalili<sup>b, c</sup>, R.L. Cazzato<sup>a</sup>, A. Gangi<sup>a</sup>

<sup>a</sup> Department of Interventional Radiology, Hôpitaux Universitaires de Strasbourg, 1, place de l'hôpital, 67000 Strasbourg, France



<sup>b</sup> Department of Diagnostic and Interventional Radiology, Guy's and St. Thomas' Hospitals NHS Foundation Trust, London, SE1 9RT, United Kingdom

<sup>c</sup> Section of Musculoskeletal Radiology, Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD 21205-2100, USA

# Recent Literature - Complications



Complications of percutaneous image-guided screw fixation: An analysis of 94 consecutive patients

Pierre-A. Autrusseau <sup>a</sup>  , Julien Garnon <sup>a</sup>, Grégory Bertucci <sup>a</sup>, Danoob Dalili <sup>b, c</sup>, Pierre De Marini <sup>a</sup>, Pierre Auloge <sup>a</sup>, Guillaume Koch <sup>a</sup>, Jean Caudrelier <sup>a</sup>, Julia Weiss <sup>a</sup>, Roberto L. Cazzato <sup>a</sup>, Afshin Gangi <sup>a</sup>

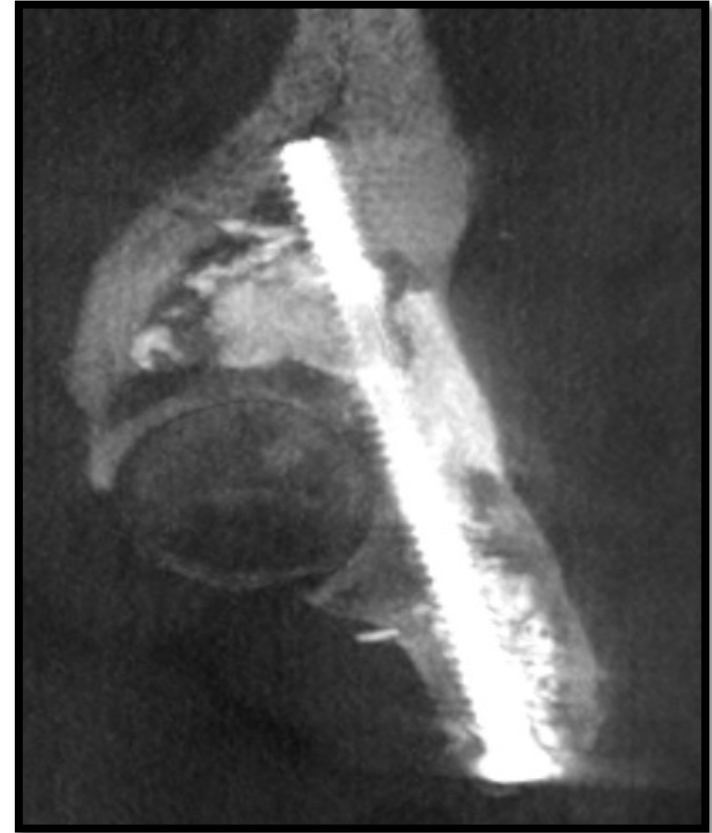
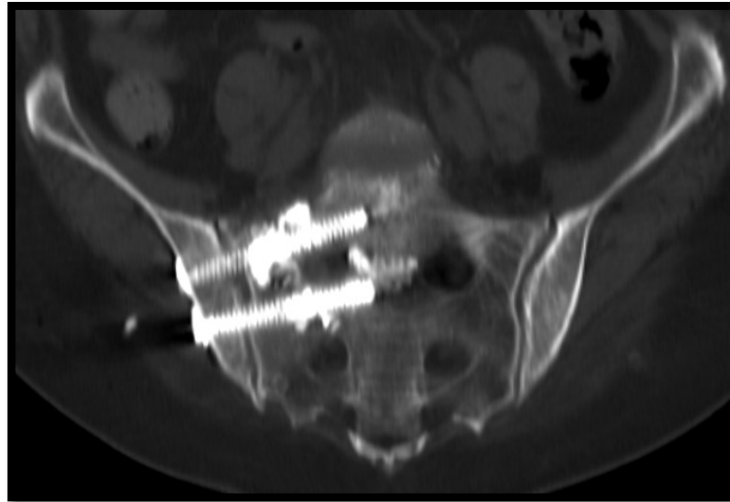
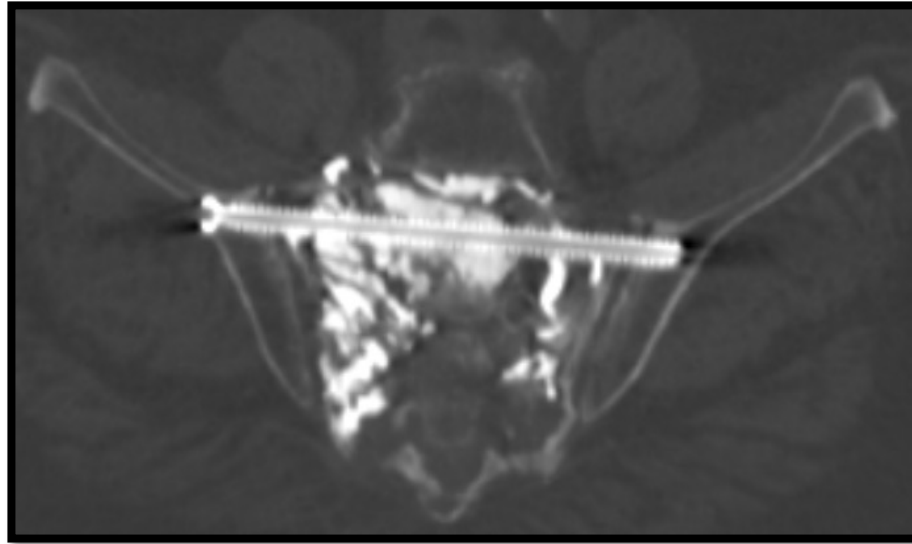
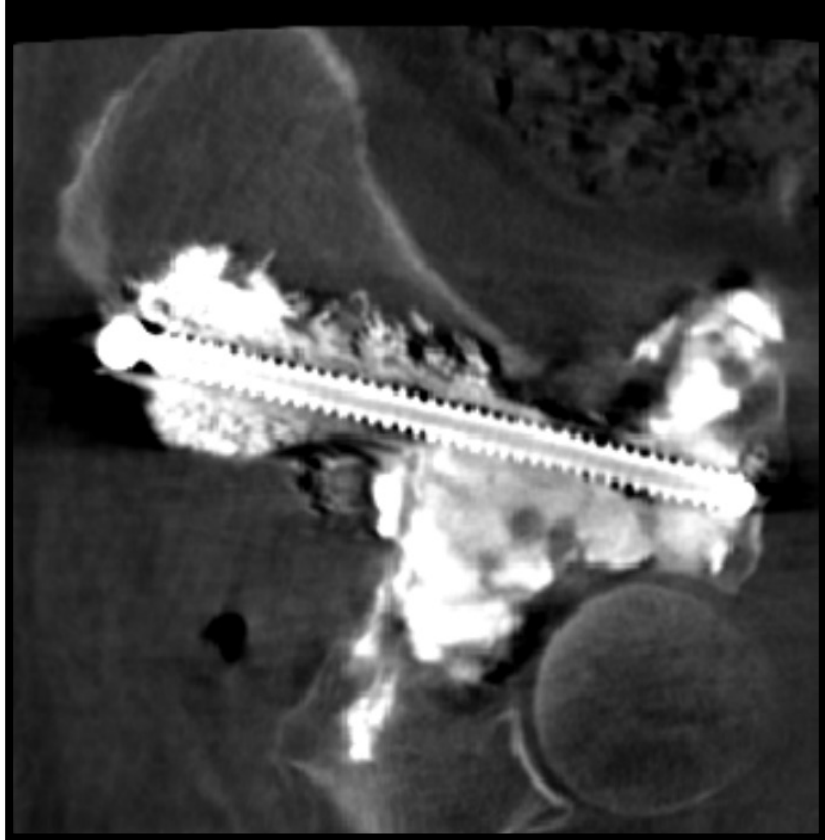
**110 fractures (94 patients)**

**21 complications (15 minor, 6 major)**

**Infection = Most common complication**

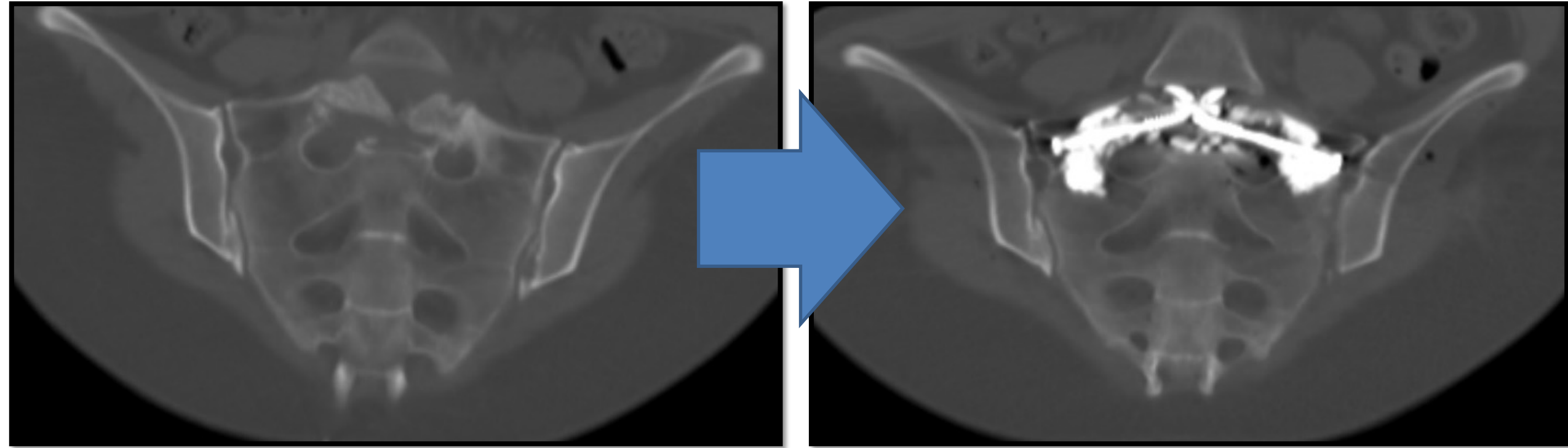
# Screw Fixation Potential

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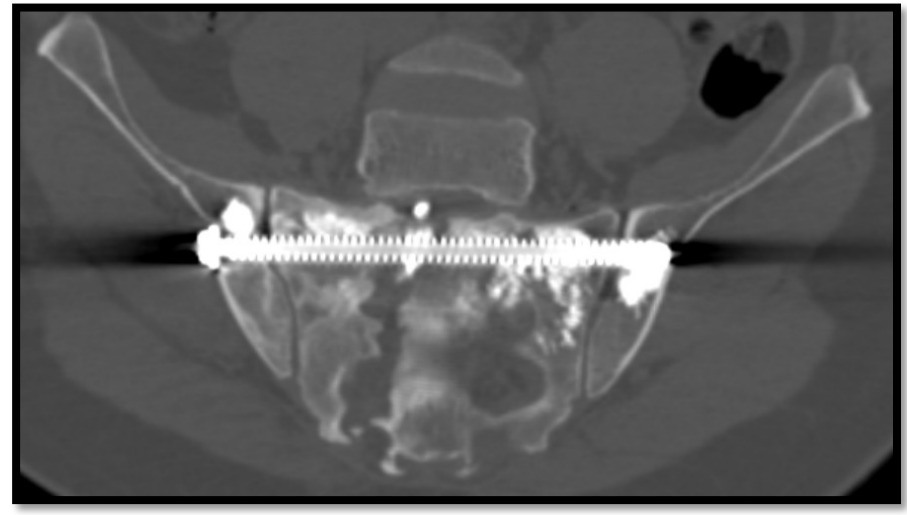
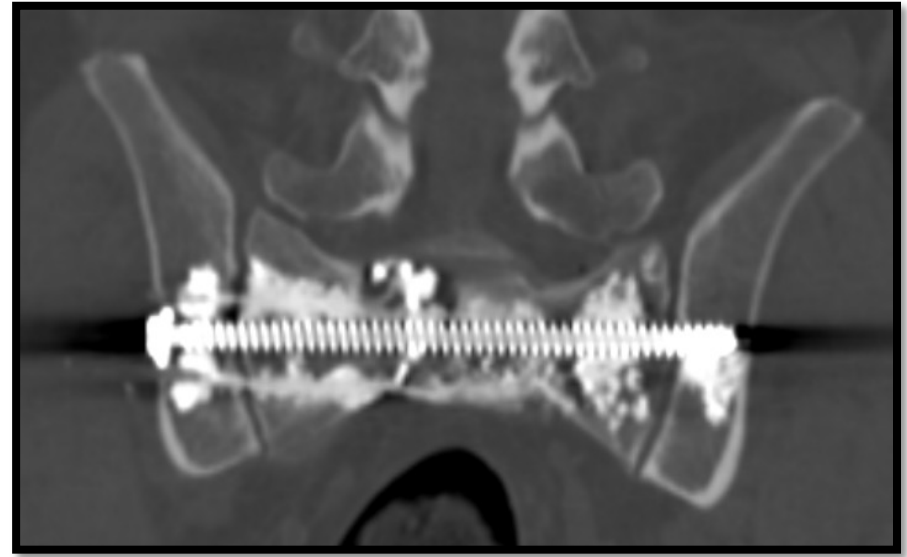
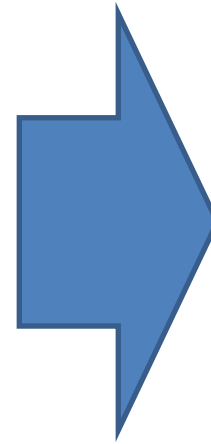
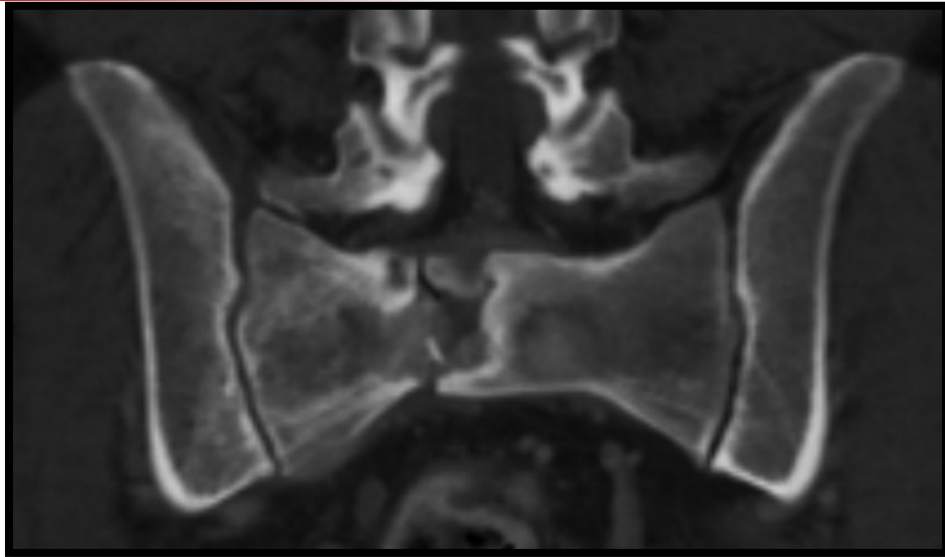


# An Option when Cement Leakage Expected

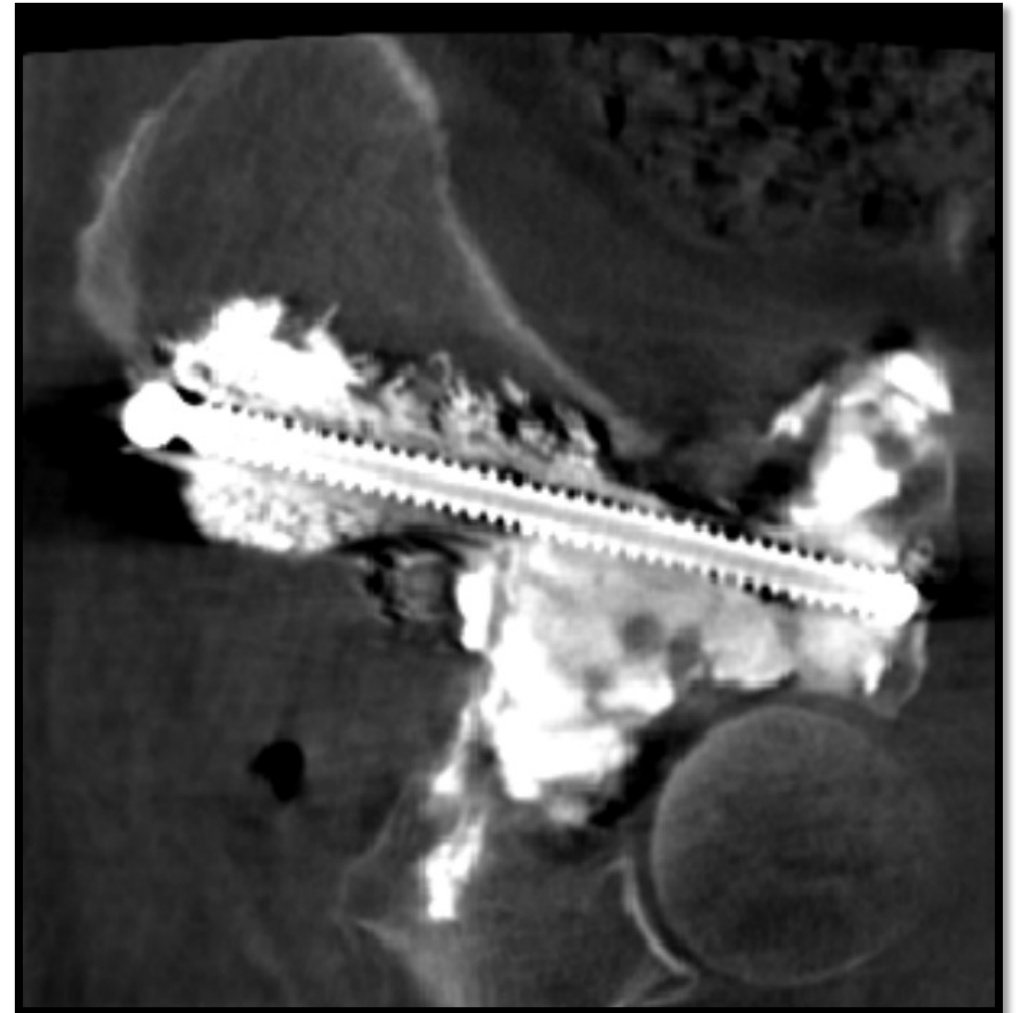
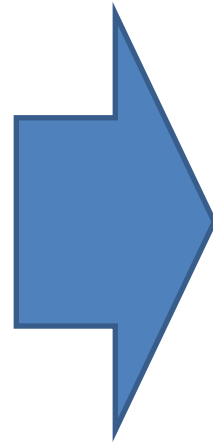
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# An Option to Resist Tension/Shear Stresses

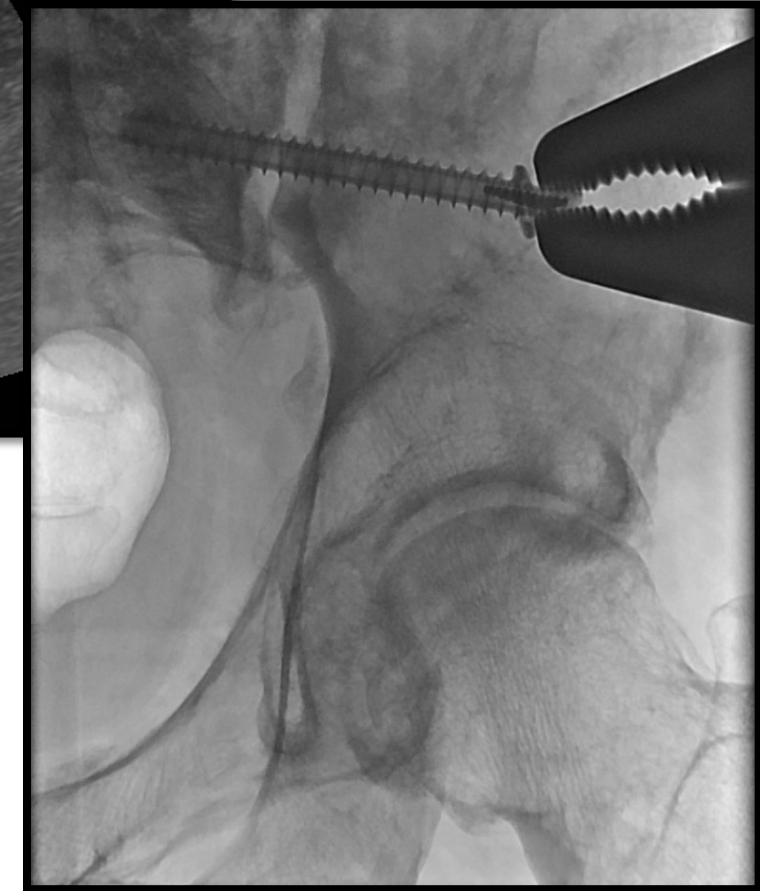
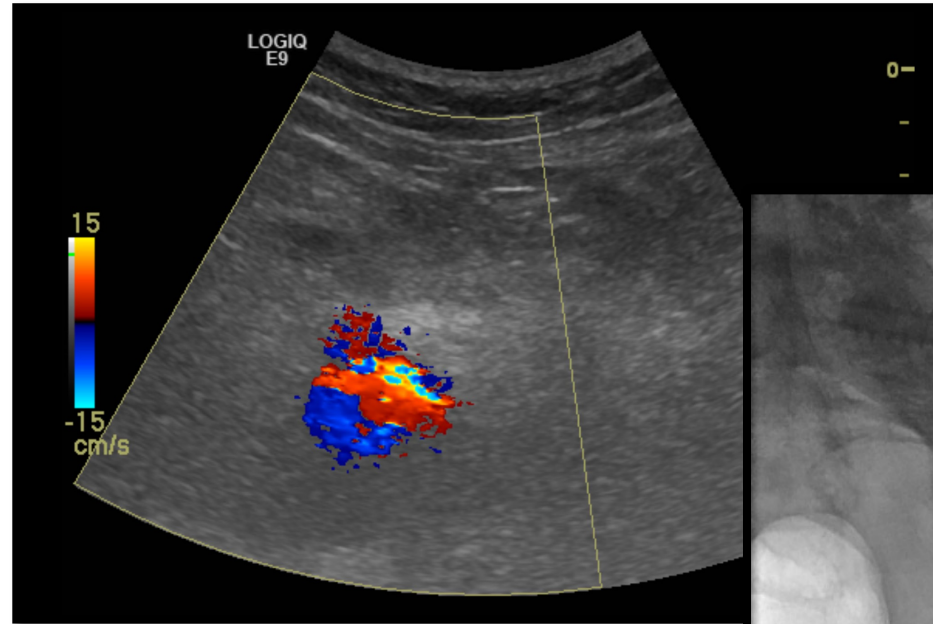


# An Option For Large Osseous Defects




# Potential Complications

- Incomplete pain relief
- Cement leakage
- Screw migration
- Hardware failure
- Arterial Damage
  - Bleeding
  - Pseudoaneurysm
- Infection
  - Cutaneous /subcutaneous
  - Hardware
- Nerve damage/impingement



Thank you



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Cancer Center