

Cath Lab Digest

A product, news & clinical update for the cardiac catheterization laboratory specialist



CASE REPORT

Novel Transpedal Percutaneous Treatment of Delayed Recurrent Hemarthrosis Post Total Knee Arthroplasty With Coil Embolization of the Inferior Genicular Artery

Zeeshan Ali, HSII; Som A. Bailey, DO;
Ajai Cadambi, MD;
Mohammad Alqaim, MD, MS

Recurrent hemarthrosis following total knee replacement (TKR) is a rare complication, with an incidence reported as less than 1%.¹ Symptoms include abrupt knee pain, swelling, and decreased range of motion without an inciting traumatic event.^{2,3} Recurrent hemarthrosis has been attributable to hypervascular hypertrophied synovium, arteriovenous fistula, pseudoaneurysm, pigmented villonodular synovitis, coagulopathy, anticoagulant therapy, implant malalignment or instability, and trauma.¹ Often no single etiology is identified.

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CASE REPORT

Serranator PTA Serration Balloon Utilized in CLTI Patient: Wound Healed

Robert J. Meisner, MD, FACS

Patient Presentation

A 61-year-old patient with type 2 diabetes and end-stage renal disease on hemodialysis was referred from podiatry with a worsening left foot wound for the last year. He previously had right foot wounds that had healed after successful treatment with tibial atherectomy and angioplasty. At this time, the left foot had an approximately 3 cm x 3 cm wound affecting the left lateral hindfoot, see image (inside page, Figure 1).



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CASE REPORT

Crossing in a Severe, Complex, Calcified PCI With the New FineCross M3 Micro-Guide Catheter After Crossing Failure of Multiple Wires

Elise Sturm Anderson, DO, MS

Earlier this year, Terumo Interventional Systems launched the FineCross M3 Micro-Guide Coronary Catheter, an upgrade of the original FineCross, to aid in crossing tight coronary lesions. We present a case in which the FineCross M3 Micro-Guide Coronary Catheter aided in crossing a severely calcified, tortuous left anterior descending (LAD) lesion to deliver a ViperWire (Cardiovascular Systems, Inc.) for orbital atherectomy, subsequent intravascular lithotripsy (IVL) (Shockwave Medical), and successful percutaneous coronary intervention (PCI).



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Novel Transpedal Percutaneous Treatment of Delayed Recurrent Hemarthrosis Post Total Knee Arthroplasty With Coil Embolization of the Inferior Genicular Artery

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Joint fluid aspiration can be helpful in making a diagnosis and ruling out infectious etiology. Conservative management, including rest, ice, and compression, is the first-line therapy. If conservative management fails, selective embolization has proved to be an effective treatment option.^{4,5} Here we present a case of recurrent hemarthrosis following TKR successfully treated with embolization of the lateral inferior genicular artery after the failure of conservative measures.

Case Report

A 68-year-old female presented to our office with recurrent, painful swelling to her right knee following total knee replacement 2 years prior. She reported recurrent swelling and pain shortly following the surgery with no other inciting traumatic event (Figure 1). Multiple joint aspirations showed bloody fluid. Infectious and inflammatory arthritis had been ruled

out via joint fluid analysis and serological testing. In addition, testing ruled out bleeding disorders and the patient was not on anticoagulant medications. Further evaluation for implant failure and malalignment was benign. Conservative management was attempted initially, including repeated joint aspiration. When conservative measures failed, interventional angiography with selective embolization was performed for diagnosis and treatment. The patient had lateral-dominant osteoarthritis and a decision was made to target the inferior lateral genicular artery.

Procedure

The left common femoral artery was accessed, the right external iliac artery was selectively engaged, and an angiogram was performed for delineation of the popliteal artery and its branches (Figure 2). Transpedal access was then obtained to the right anterior tibial artery for a better approach to the



Figure 1. Moderate lateral predominant hemarthrosis of right lower extremity.

Recurrent hemarthrosis is a relatively rare complication following total knee replacement. It is typically characterized as intermittent acute bleeding. Clinically, most patients present with pain, swelling, and decreased range of motion, with no inciting traumatic event.



Figure 2. Angiography demonstrating increased vascularity involving the inferior lateral genicular artery (black arrow).



Figure 3. Multipurpose catheter (black arrow) with Cantata microcatheter (Cook Medical) (red arrow) selectively engaging the inferior lateral genicular artery deploying coils via a transpedal approach.

acute upward angle takeoff of the inferior genicular artery. A multipurpose catheter was then advanced to the level of the P2 segment of the popliteal artery. Using a combination of an .014 Advantage Glidewire (Terumo Interventional Systems) and Cantata Microcatheter (Cook Medical), the lateral inferior genicular artery was selected and the catheter was advanced to the intraluminal position. Two coils, a 2 mm x 7 mm Nester coil (Cook Medical) and then a 2 mm x 2 mm Nester coil, were deployed in standard fashion (Figure 3). Subsequent angiography showed successful coiling of the lateral inferior genicular branch. The microcatheter and multipurpose catheter were removed (Figure 4). Hemostasis was obtained using manual pressure for the right transpedal access and Angio-Seal (Terumo Interventional Systems) for the left femoral artery.

Follow-up

The patient did well post procedure and was discharged home the same day after several hours of observation. She was evaluated multiple times in the following months post procedure. Her symptoms of swelling, pain, and decreased range of motion resolved. No recurrence of hemarthrosis has been observed 12 months postoperatively.

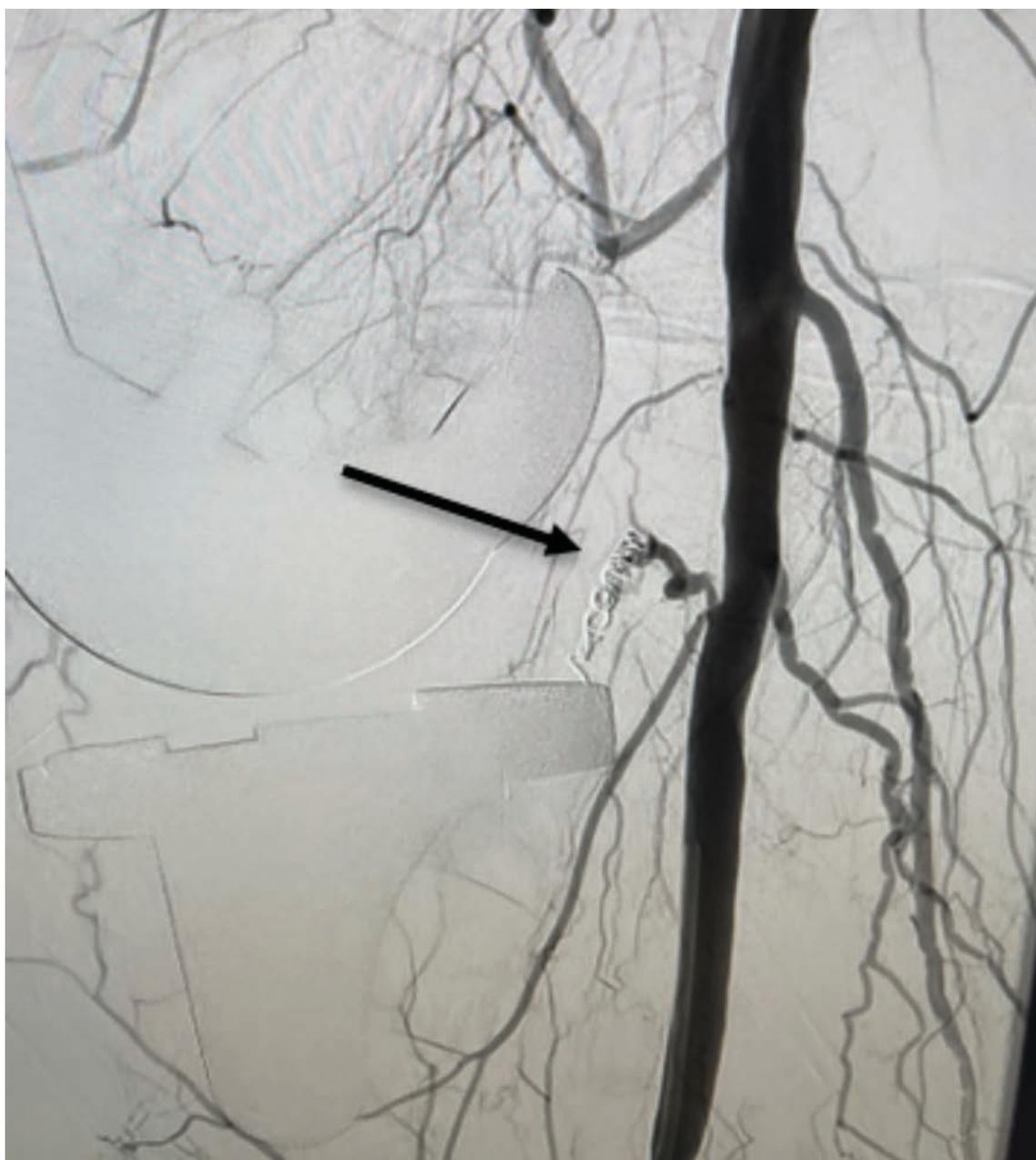


Figure 4. Angiogram post coil closure showing embolization of the inferior lateral genicular artery (arrow).

Discussion

Recurrent hemarthrosis is a relatively rare complication following TKR. It is typically characterized as intermittent acute bleeding. Clinically, most patients present with pain, swelling, and decreased range of motion, with no inciting traumatic event. Work-up includes ruling out inflammatory and infectious etiologies, ruling out coagulation disorders, and stopping anticoagulation unless contraindicated. The majority of cases respond well to conservative measures including rest, ice, compression, elevation, and arthrocentesis. When conservative measures fail, genicular artery embolization is an effective treatment option.⁵⁻⁸ Localization of the appropriate artery is based on clinical presentation, radiography, and, on occasion, angiography. A characteristic bluish hue thought to represent synovial vascularity has been described in the culprit artery. When lateral-dominant arthritis persists, the lateral inferior genicular artery is thought to commonly be involved secondary to its anatomical course

and large size.⁸⁻¹⁰ Accessing the inferior genicular arteries can be technically challenging due to their acute angulation. In our case, the lateral inferior genicular artery had an acute angulation off the popliteal artery. We were able to circumvent the acute angulation by using transpedal access, which allowed our catheter to sit more coaxial along with a microcatheter for improved support.

Summary

Recurrent hemarthrosis is a rare postoperative complication following TKR. Initial management should include conservative measures. In cases refractory to conservative therapy, angiography with embolization has been shown to be an effective treatment option. Localization of embolization can be difficult to discern and a thorough review of clinical presentation, radiography, and angiography should be performed. Transpedal access may be a beneficial approach at coil embolization if the inferior lateral genicular artery is the culprit. ■

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