

Pseudoaneurysm of the Medial Femoral Circumflex Artery following Surgical Fixation of Trochanteric Femur Fracture: A Case Report

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Learning Point of the Article:

In cases of intertrochanteric fractures, clinicians should consider potential vascular damage if a patient exhibits ongoing thigh edema and unresolved post-operative anemia.

Abstract

Introduction: Pseudoaneurysm of the medial femoral circumflex artery is a rare but potentially serious vascular complication following surgical fixation of trochanteric femur fractures. It may present with thigh swelling, anemia, or persistent pain and can be easily overlooked in the post-operative period.

Case Report: We report a case of medial femoral circumflex pseudoaneurysm developing after internal fixation of an intertrochanteric femur fracture. The diagnosis was confirmed using color Doppler and successfully treated with exploration and ligation.

Conclusion: Early recognition and prompt management are essential to avoid life-threatening complications.

Keywords: Pseudoaneurysm, intertrochanteric fracture, proximal femoral nail.

Introduction

Trochanteric fractures of the femur are common injuries, especially in elderly patients, and are typically treated with internal fixation using devices such as dynamic hip screws or proximal femoral nails [1]. Although these procedures are generally safe, vascular complications may occasionally occur [2,3].

Pseudoaneurysm of the profunda femoris artery and its branches is an uncommon but important complication having the reported incidence of 0.2–0.49% [4]. Several factors may be contributing for its occurrence, including sharp displaced bone fragment, misdirected screws, over penetration during drilling, or improper placement of retractors and bone levers. In addition to these, limb positioning during surgery, excessive adduction,

internal rotation, or traction, or a large perineal post may contribute to increasing the risk of vascular compromise, particularly to the profunda femoris artery and its branches [4].

Because symptoms may be delayed and non-specific, diagnosis can be challenging, and delayed recognition may lead to significant morbidity. The most common presenting symptoms could be pain and swelling over the proximal thigh with associated lower limb edema. Given the diagnostic challenge and life-threatening consequence, the treating surgeon should maintain a high index of suspicion while treating peri trochanteric fracture in post-operative period [5]. We report a case of Medial circumflex artery pseudoaneurysm following surgical fixation of a trochanteric fracture with proximal femoral nail Antirodation II.

Author's Photo Gallery



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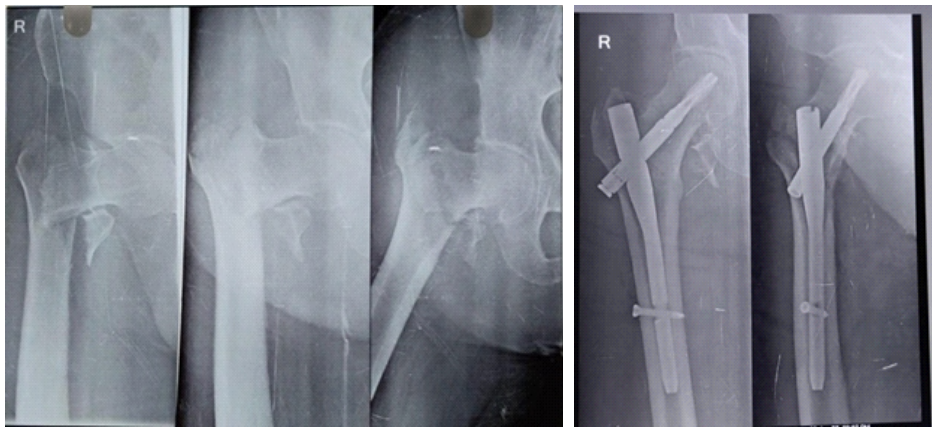


Figure 1: preop x ray and immediate post op

Case Report

A 65-year-old male presented to the emergency department following a fall from standing height, complaining of pain and inability to bear weight on his right lower limb. On examination, there was shortening of the limb and external rotation along with tenderness and fullness over groin and a restricted range of movement of the hip. Radiographs revealed an intertrochanteric fracture of the right femur, Boyd and Griffin Type II (Fig. 1a). The patient underwent surgical fixation using a proximal femoral nail under spinal anesthesia. The procedure was uneventful, and post-operative radiographs confirmed satisfactory fracture reduction and implant placement (Fig. 1b). Post-operative period was uneventful and was discharged on 5 post-operative days. Patient was mobilized on walker with partial weight bearing, and sutures were removed on 14th post-operative day with the surgical scar dry and health.

On the 4 post-operative weeks, the patient developed progressive swelling of the proximal thigh associated with persistent pain. Clinical examination revealed tense swelling over the lateral thigh without signs of wound infection. Pitting edema was present. Distal pulses were palpable. However, the patient showed a progressive drop in hemoglobin levels despite no obvious external bleeding.

Ultrasonography with Doppler revealed a vascular lesion suggestive of a pseudoaneurysm measuring approximately 2.5 cm originating from a branch of the profunda femoris artery. Preoperative computed tomography (CT) angiography was not performed as the patient deteriorated hemodynamically. The patient was referred to the cardiothoracic and vascular surgery team, and immediate exploration of femoral artery along with its branches was done which revealed a loose bony fragment causing pseudoaneurysm (size 4 × 5 cm) of medial circumflex artery branch of profunda femoris artery, which was explored,

debrided, ligated with removal of bony fragment.

Following the procedure, the patient showed rapid clinical improvement shows reduction in thigh swelling and stabilization of hemoglobin levels. The post-operative recovery was uneventful, and the patient was discharged with instructions for follow-up. At the 3-month follow-up visit, the fracture was progressing toward union, and the patient had no vascular symptoms.

Discussion

A Pseudoaneurysm develops when arterial integrity is compromised, causing blood to escape and form a fibrous capsule containing hematoma that remains in communication with the main artery. Unlike a true aneurysm, pseudoaneurysm lacks all arterial walls, making them prone to expansion, rupture, and secondary complications such as infection, neurovascular compression, ischemia, and pain [3,5,6]. The profunda femoris artery originates from the posterolateral aspect of the femoral artery approximately 3 cm below the inguinal ligament. It travels medially and posteriorly along the thigh, giving rise to the medial and lateral circumflex femoral artery, and continues through the adductor muscles to supply

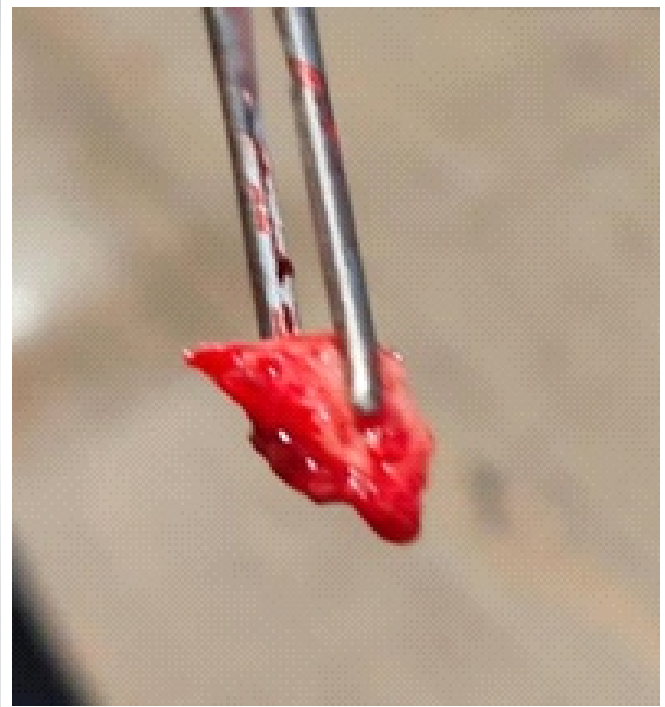


Figure 2: Removed bony fragment causing pseudoaneurysm

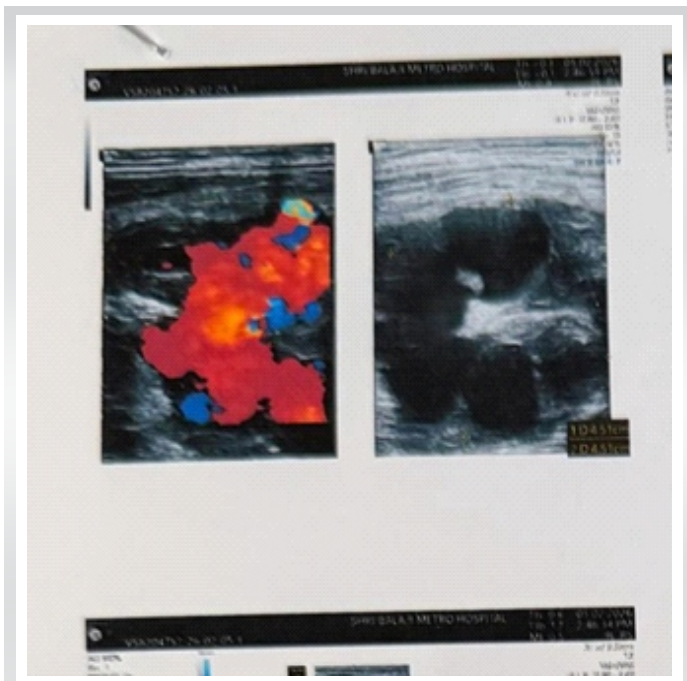


Figure 3: preop colour doppler

the posterior compartment of the thigh through its perforating branches [7].

Pseudoaneurysm of the medial femoral circumflex artery is a rare complication following hip fracture surgery. The medial femoral circumflex artery lies near the femur, making it vulnerable to injury during fracture or surgical intervention.

Several mechanisms have been proposed for vascular injury, including penetration by drill bits or screws, over-penetration of cortical drilling, injury from displaced fracture fragments, retraction or manipulation during surgery [8].

Clinical presentation can vary. Patients may present with thigh swelling, persistent pain, pulsatile mass, unexplained anemia, or delayed wound bleeding. Because symptoms are often non-specific, a high index of suspicion is necessary.

In our case, the likely cause of pseudoaneurysm was the displaced lesser trochanter fragment as identified during the exploration and suggested by the anatomical correlation. (Fig. 2 with clinical picture) Persistence of progressive pulsatile swelling unexplained anemia should have prompted early vascular evaluation. Early Doppler (Fig. 3) identified the collection however sudden clinical and hemodynamic deterioration didn't allow further evaluation by CT angiography, and clinical exploration was performed, thereby identifying and treating the pseudoaneurysm, avoiding the catastrophic complication, including rupture and hemorrhagic shock. Contrast-enhanced CT scanning and angiography are considered as gold standard for diagnosis; however, duplex and color Doppler ultrasound are excellent for confirming the diagnosis with a sensitivity and

specificity of 97% and 93%, respectively [9].

Transcatheter arterial embolization is a less invasive treatment than surgery, but surgical exploration resection, and ligation may be necessary in cases in unstable general conditions or urgent thigh decompression [10]. As in our case surgeon opted for immediate exploration and decompression as the general condition was unstable.

Occurrence of scalloping on the medial femoral cortex on X-ray can be an important finding to suspect PA, in addition to a pulsatile mass on the medial side of the thigh [11]. However, we observed a lytic lesion over the greater trochanter (Fig. 4), which was not evident on immediate post-operative period. The collection and pressure effect of the pseudoaneurysm was more over the Greater Trochanter; we assume that resulted in the bony erosion of Greater Trochanter. Similar radiographic findings in the form of scalloping in the medial femoral cortex have been reported by Vande Voorde et al. [12].

A high degree of suspicion, timely recognition, and proper investigation could prevent catastrophic complications in cases of Post-operative PA cases.

Conclusion

Pseudoaneurysm of the medial femoral circumflex artery is a rare but important vascular complication following surgical fixation of trochanteric femur fractures.



Figure 4: post op xray after 1 month with GT lysis

Clinical Message

Persistent thigh swelling and unexplained post-operative anemia should raise suspicion of vascular injury in intertrochanteric fracture. Early imaging and endovascular management can lead to excellent outcomes.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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