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Case Report

Pseudoaneurysm of the profunda femoris artery following hip surgery

Pratiksha Viral Patel*, Jayesh S. Patel, Saurabh C. Parmar

Department of Vascular Surgery, PSMC, Anand, Gujarat, India

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***Correspondence:**
Dr. Pratiksha Viral Patel,
E-mail: Pratikshavpatel@hotmail.com

ABSTRACT

Pseudoaneurysm of the profunda femoris artery has been described as an iatrogenic phenomenon following orthopedic surgery. It may result due to trauma or direct arterial wall injury during dynamic hip screw fixation for proximal femur fracture. We present a case of a 65-year-old female who developed sudden pain and left thigh swelling one month after surgery for left sided intertrochanteric femur fracture. Computed tomography angiography of the left lower limb revealed the presence of a pseudoaneurysm in the upper left thigh. It was successfully treated with endovascular glue embolization followed by surgical excision of the pseudoaneurysm.

Keywords: Pseudoaneurysm, Profunda femoris artery, Endovascular glue embolization

INTRODUCTION

Pseudoaneurysm is a rare complication of orthopedic surgical procedures which require early detection and treatment. Femoral pseudoaneurysm most commonly develop due to iatrogenic causes during fracture fixation. Pseudoaneurysm is a false aneurysm which forms due to injury to the arterial wall resulting in hematoma formation. It communicates with the arterial lumen and its wall is surrounded by soft tissue, unlike a true aneurysm which is composed of elements of the arterial wall.[1]

Pseudoaneurysm of the profunda femoris artery following internal fixation for an intertrochanteric femur fracture with dynamic hip screw is infrequently encountered in clinical practice. Imaging modalities such as computed tomography angiography allows for the early diagnosis and treatment of pseudoaneurysm which arise secondary to trauma during fixation of femur fracture. The management of profunda femoris artery pseudoaneurysm depends on its site and size. Treatment modalities currently available include ultrasound-guided thrombin injection, ultrasound-guided compression, endovascular management, and surgical repair.[2] Prompt diagnosis and intervention are paramount to minimise the risk of complications.

CASE REPORT

We report a case of a 65-year-old female with history of fall at home. She had sustained injury over left femur for which she was operated with dynamic hip screw fixation (Figure 1). On discharge she was hemodynamically stable and distal pulsations of both lower limbs were present. Three weeks after hip surgery she developed pain and swelling over left upper thigh. The swelling rapidly increased in size and the pain was sudden in onset, throbbing in nature, non-radiating, and was not associated with any aggravating or relieving factors. On clinical examination, patient appeared pale and tachycardic. Diffuse tense swelling was noted over the medial aspect of the left thigh with evident dilated veins and tenderness (Figure 2). The operative site did not exhibit any signs of inflammation or discharge. Computed tomography angiography of the left lower limb revealed a 13×12×7 size pseudoaneurysm located predominantly in the medial aspect of the upper thigh arising from the distal part of the profunda femoris artery (Figure 3).

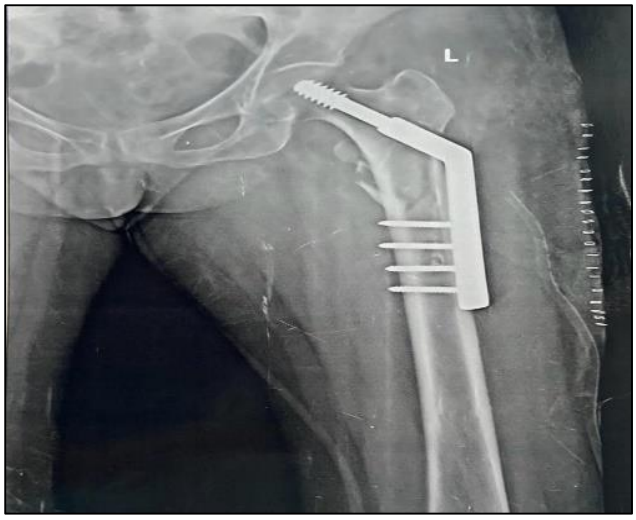

Figure 1: Fixation of left sided intertrochanteric fracture with dynamic hip screw.

Figure 2- Swelling over left thigh.

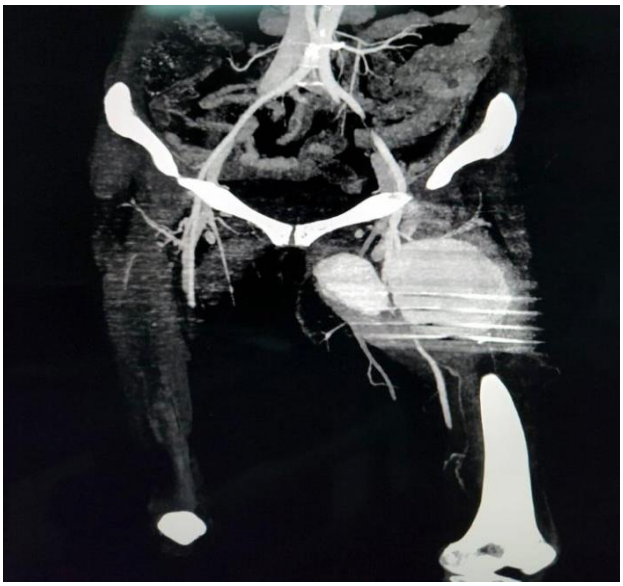

Figure 3: Computed tomography angiography of pseudoaneurysm of the profunda femoris artery.

The patient was subjected to diagnostic angiography which showed diffuse large, bilobed pseudoaneurysm arising from distal part of profunda femoris artery and displacing the superficial femoral artery laterally (Figure 4). It was successfully treated with endovascular glue embolization under local anesthesia (Figure 5) followed by excision of the pseudoaneurysm under spinal anesthesia 1 week later. Postoperative recovery was uneventful and on subsequent follow up examination after one month swelling had subsided, bilateral lower limb distal pulsations were palpable, and minimal pain was present. She was able to ambulate with the help of a walker.

Figure 4: Digital subtraction angiography of pseudoaneurysm of profunda femoris artery.

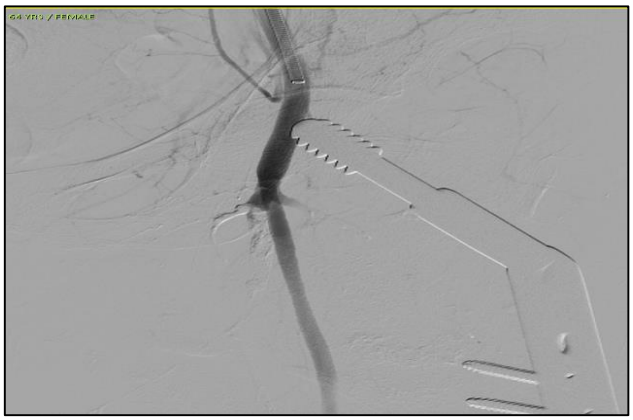

Figure 5: Endovascular glue embolization of profunda femoris artery.

DISCUSSION

Pseudoaneurysms of the profunda femoris artery as a complication of orthopaedic procedures and trauma to the thigh have rarely been described in literature.[3] It can arise as a result of trauma, infection, or direct injury due to fractured bone fragments, over drilling, displaced

implants, or improperly positioned retractors during fracture fixation.[4] The proximity of the profunda femoris artery to proximal femoral shaft makes it highly vulnerable to injury during dynamic hip screw fixation.[1] Pseudoaneurysm may have an early or delayed presentation. Due to nonspecific clinical symptoms such as swelling and pain, the diagnosis of pseudoaneurysm is often neglected due to overlapping symptomatology from fracture fixation.

In our case, the patient presented with complaints three weeks after hip fracture surgery. Symptoms such as increasing pain and swelling in the thigh following fracture fixation should raise the suspicion of a pseudoaneurysm formation. Excessive thigh swelling, persistent hip pain, bleeding from the surgical site, and decreasing haemoglobin levels should prompt the development of a profunda femoris artery pseudoaneurysm.[5] Although, pseudoaneurysm is an infrequent complication, it should not be neglected when thigh swelling following orthopedic surgery is encountered. If left undiagnosed, it may rupture leading to haemorrhage, infection, compartment syndrome, and neuropathy due to femoral nerve compression.[6] Compression of the femoral vein and femoral nerve increase the likelihood of deep vein thrombosis and symptoms of nerve compression such as tingling and numbness in thigh.

Diagnosis should be confirmed by radiological investigations such as computed tomography angiography or arterial duplex ultrasound.[7] Computed tomography angiography is non-invasive method with high sensitivity and specificity. The treatment modalities currently available include ultrasound-guided compression, ultrasound-guided thrombin injection, endovascular glue or coil embolization, stent graft insertion, and open surgical repair.[8] Surgical intervention for pseudoaneurysms is considered when the swelling is rapidly expanding.[9] Surgical principles consist of controlling the artery proximally and distally and primary repair or ligation of arterial defect with excision of sac. In our case, the profunda femoris artery was glue embolised, thus completely excluding pseudoaneurysm from the circulation. Embolization into the distal circulation can occur up to 2-4% of the cases; hence a thorough pulse examination should be carried out prior and after the procedure. If distal embolization is suspected a Fogarty catheter should be passed both proximally and distally to establish the flow.

CONCLUSION

Pseudoaneurysm of the profunda femoris artery shall not be overlooked following trauma to the hip or orthopedic procedures for proximal femur fracture. Expansile thigh swelling and persistent hip pain should raise the suspicion of a pseudoaneurysm formation to avoid possible complications such as rupture, hemorrhage, infection, limb ischemia, and compressive neuropathy. Early diagnosis and treatment are crucial to avoid such complications.

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