

Case Report

COMMON FEMORAL ARTERY MYCOTIC PSEUDOANEURYSM ASSOCIATED WITH INGUINAL ABSCESS IN INTRAVENOUS DRUG USER (IVDU): A CASE REPORT

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ABSTRACT

Mycotic aneurysms are defined as a localized, irreversible dilatation of an artery due to destruction of the vessel wall by infection; which can arise following an infection of a previously healthy artery wall, or through secondary infection of a preexisting aneurysm. Mycotic pseudoaneurysm of the common femoral artery as a consequence of inadvertent arterial self-injection in intravenous drug user (IVDU) remains a common presentation in areas where there are significant populations using intravenous heroin. This case describes an acute complication of self-injection in a 37-year-old intravenous drug user (IVDU) male presenting with a painful left inguinal swelling. Examination findings were consistent with common femoral artery aneurysm. Ultrasonography identified "yin-yang" sign with abnormal outpouching of left inguinal region compressing the left common femoral artery. Open left common femoral artery ligation was subsequently performed therapeutically with no complications. This case report illustrates the typical presentation of mycotic pseudoaneurysm of the common femoral artery and the significance of a widened knowledge of the complication of arterial self-injection in IVDU.

INTRODUCTION

Mycotic aneurysms are not exclusive of Staphylococcus Aureus (SA) bacteremia. Some other microorganisms may be implicated, such as Salmonella, Streptococcus pneumoniae, Mycobacterium tuberculosis and a long list of fungi as well as gram-negative and gram-positive bacteria that have been reported less frequently. However, since the introduction of antibiotics, the bacteriology of infected aneurysms has changed from Salmonella and Treponema species to SA and gram-negative bacilli [1]. Samarakoon et al reported that the majority of patients in Singapore were male (92.6%) and of Malay ethnicity (55.6%). Median age was 50 (range 31–62) years. Commonly abused drugs were buprenorphine (or Subutex; 59.3%) and midazolam (or Dormicum; 51.9%). Groin pain and swelling (100.0%), fever (66.7%) and presence of a pulsatile mass (51.9%) were the most common presenting symptoms [2]. Complications arising as a result of intravenous drug abuse have traditionally posed a unique challenge to vascular surgeons. Due to its easy accessibility, the femoral artery is the most commonly abused injection site for drug users [3,4].

CASE PRESENTATION

A 37-year-old male who presented to the accident &

emergency department (A&E) with a ten-day history of painful, gradually increasing left inguinal swelling noticed after self-needle injection. He has been using vascular access on bilateral inguinal region since the past three months due to inability to get venous access peripherally. One day after the onset, he noticed a minimal bleeding and started to have pain on pressure, however the bleeding stopped spontaneously (Figure 1). He also gave a history of fever. He had underlying Hepatitis C since 2012, and was not on any follow-ups or treatment. Patient was an active smoker with 7 to 8 sticks per day. He started to take heroine since 21 years of age for 3 to 4 years but stopped for more than 10 years as he was on Methadone therapy. However he resumed his habits of IVDU in the past 3 months.

During admission, he was afebrile with stable vital signs. Left inguinal region examination revealed a 4x4 cm erythematous tender pulsatile expansile mass at the left infra-inguinal region with hemopurulent discharge. Right inguinal region examination revealed multiple puncture marks with bruises. All pulses of bilateral lower limbs were palpable.

Blood investigations revealed leucocytosis and deranged liver enzymes. Left bedside femoral artery



Figure 1: Pre-operative swelling at left inguinal region

Doppler revealed biphasic; while popliteal artery, dorsalis pedis artery and posterior tibialis artery were monophasic. Ultrasonography (Figure 2) reveals abnormal outpouching sac measuring 4.5 cm x 3.0 cm (AP x W x CC) with evidence of “yin-yang” sign in which it showed narrow aneurysmal neck originating from the left common femoral artery. These findings were in keeping with left common femoral artery pseudoaneurysm.

Patient was started on intravenous (IV) Ceftriaxone. Consent was obtained for inguinal exploration. A left external iliac artery ligation and wound debridement of mycotic aneurysm was done. Left horizontal incision was made just above the inguinal region. Then by approaching retroperitoneally, external iliac artery was identified. Left epigastric artery was ligated. External iliac artery was identified and ligated proximally and distally. Then left superficial femoral artery was identified and ligated. Lastly, left saphenous vein was also ligated. Wound at the inguinal region and unhealthy tissues were debrided. There was left common femoral artery aneurysm with the size of 3 x 4 cm with multiple collaterals. Aneurysmectomy was done and bleeding from the collaterals secured. Abdominal wound closed in layers. Skin was closed with monofilament polyamide (Dafilon 4/0). Bactigrass dressing applied at the wound bed. Aneurysmectomy tissue was sent for culture and sensitivity which Staphylococcus aureus growth was identified. The patient completed IV Rocephine 2g for 1 week. Blood culture and sensitivity showed no growth.

He recovered well with no complications. He had no lower limb ischaemia and walked home after 7 days in hospital. Wound dressing was done daily at a nearby healthcare clinic. During the follow-up, the wound was noted to have minimal slough and granulating well (Figure 2). He was given further follow up to review his wound.

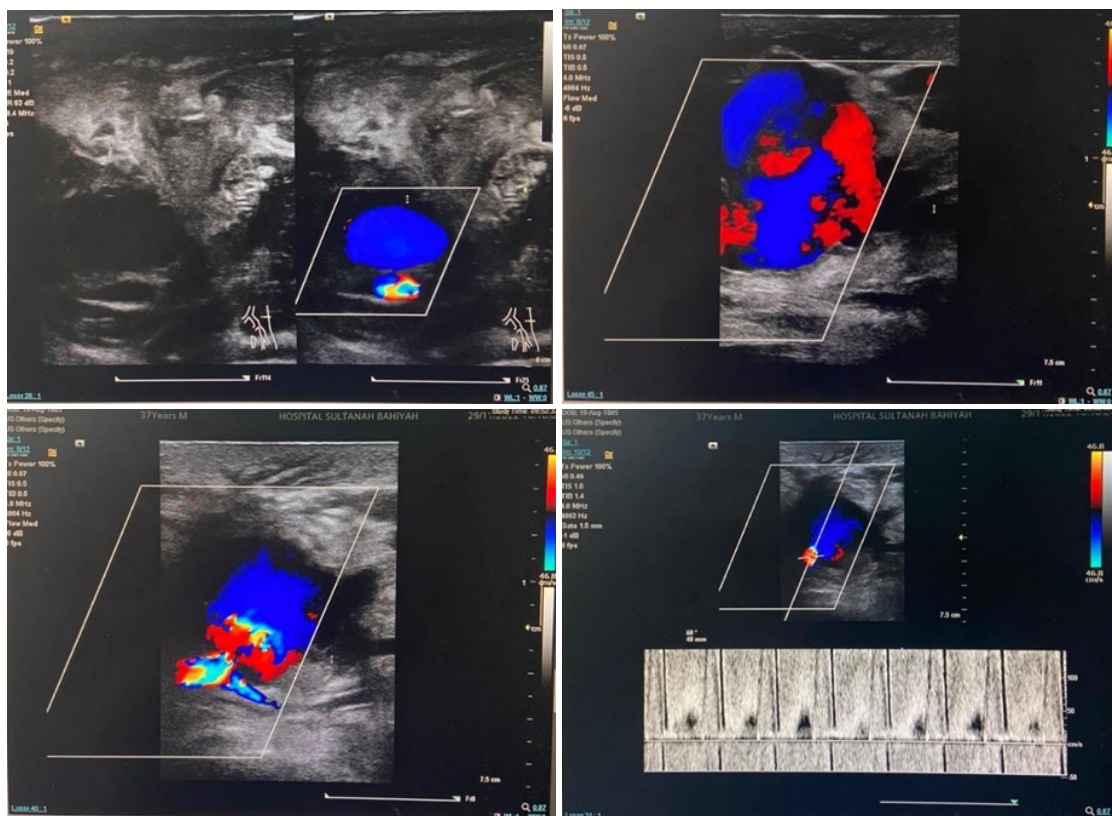


Figure 2: Ultrasonography: “yin-yang” sign indicating bidirectional flow due to swirling of blood within the pseudoaneurysm as the portion that is moving toward the transducer is red and the portion that is moving away from the transducer is blue [5]. Note the surrounding subcutaneous oedema.

DISCUSSION

The femoral artery is the most common site for an infected pseudoaneurysm in IVDUs due to its easily accessible location. Pseudoaneurysms occur in this group due to the inadvertent arterial injection of illicit drugs, resulting in periarterial extravasation and haematoma formation. Subsequent contamination of this haematoma can cause erosion and eventual rupture of the vessel wall, and pseudoaneurysm formation. If left untreated, potential sequelae include sepsis, haemorrhage, digital embolisation, limb loss and even death due to exsanguination or septicaemia [6]. In this patient, an active IVDU who relapsed since the past 3 months after more than 10 years on Methadone therapy utilizes femoral artery to inject drugs as he was unable to access veins peripherally.

The classic clinical presentation of a femoral artery pseudoaneurysm is that of a painful, pulsatile, enlarged mass with systemic symptoms such as fever, hemorrhage or thrombosis [7,8,9]. Diagnosis can be made on the basis of clinical grounds and is generally uncomplicated. Appropriate early administration of antibiotic therapy is essential. If arterial imaging is considered necessary, CT angiography is the modality of choice as it allows assessment of the retroperitoneum and allows exclusion of a significant proximal extension of sepsis.

Surgical management involves arterial ligation, drainage of sepsis and debridement of non-viable tissue. The evidence available suggests that arterial ligation is safe, although in a small proportion of patients, limbs may be lost with this strategy. From the limited data presented in the literature with regard to endovascular techniques, these strategies may have a role, although as yet, they remain undefined [2,6].

CONCLUSION

To conclude, this was 37-year-old male who presented with painful left inguinal swelling and was diagnosed with common femoral artery mycotic pseudoaneurysm associated with inguinal abscess. Groin pain and swelling in an IVDU should prompt a high index of suspicion for the presence of a pseudoaneurysm. It is of paramount importance to be able to clinically differentiate a femoral pseudoaneurysm from a groin abscess. Previous studies have shown that an erroneous diagnosis can lead to massive haemorrhage especially if surgical drainage is attempted for a presumed groin abscess [10]. For this reason, thorough history-taking and physical examination are essential for any patient presenting with groin swelling, especially with previous history of intravenous drug abuse.

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I would like to thank the patient for his consent to allow us to publish his medical information in this manuscript.

CONSENT

I have obtained verbal consent from the patient.

REFERENCES

1. Bell RE, Taylor PR, Aukett M, Evans GH, Reidy JF: Successful endoluminal repair of an infected thoracic pseudoaneurysm caused by methicillin-resistant *Staphylococcus aureus*. *J Endovasc Ther.* 2003, 10 (1): 29-32. 10.1583/1545-1550(2003)010<0029:SEROAI>2.0.CO;
2. Samarakoon LB, Ho DCY, Tan YK, Kum SWC, Lim DM. Infected femoral pseudoaneurysms in intravenous drug abusers: a decade of experience from a Singapore tertiary centre. *Singapore Med J.* 2021 Mar;62(3):135-138. doi: 10.11622/smedj.2020011. Epub 2020 Mar 9. PMID: 32147737; PMCID: PMC8027151.
3. Reddy DJ, Smith RF, Elliott JP, Jr, Haddad GK, Wanek EA. Infected femoral artery false aneurysms in drug addicts: evolution of selective vascular reconstruction. *J Vasc Surg.* 1986;3:718-24.
4. Patel KR, Semel L, Clauss RH. Routine revascularization with resection of infection femoral pseudoaneurysms from substance abuse. *J Vasc Surg.* 1988;8:321-8.
5. Mistry KA, Bashir O. Yin-Yang sign (Internet) (Accessed March 03 2015) <http://radiopaedia.org/articles/yin-yangsign>
6. Padberg F, Jr, Hobson R, 2nd, Lee B, et al. Femoral pseudoaneurysm from drugs of abuse: ligation or reconstruction? *J Vasc Surg.* 1992;15:642-8.
7. Brown SL, Busutil RW, Baker JD, Machleder HI, Moore WS, Barker WF: Arterial reconstruction of infected femoral artery pseudoaneurysms using superficial femoral-popliteal vein. *J Am Coll Surg.* 2005, 200 (6): 831-836.
8. Bell RE, Taylor PR, Aukett M, Evans GH, Reidy JF: Arterial infections in the new millenium: an old problem revisited. *Ann Vasc Surg.* 2006, 20 (5): 590-595.
9. Georgiadis GS, Lazarides MK, Polychronidis A, Simopoulos C: Surgical treatment of femoral artery infected false aneurysms in drug abusers. *ANZ J Surg.* 2005, 75 (11): 1005-1010.
10. Cheema MA, Shafique A. Presentation and management of pseudoaneurysms of femoral artery. *J Coll Physicians Surg Pak.* 2005;15:162-4.