CASE REPORT

# Case of a Non-Pulsatile Groin Swelling

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**Summary**

We report a case of a non-pulsatile groin swelling in a 38 years old male drug addict without the typical clinical signs of an aneurysm. Ultrasound revealed a left femoral artery pseudo-aneurysm. He was surgically treated and the vessels were ligated without revascularisation.

*Key Words:* Groin, Aneurysm, Ultrasound

## Case Report

A 38-year-old male was admitted to the Accident & Emergency Unit with a complaint of a painful left groin swelling for one month. He had just been released from jail for two weeks. He was a known intravenous drug abuser. He was initially given oral antibiotics. He was unemployed for 2 years. On examination, the swelling (Fig. 1) in the left groin was 10cm by 15cm in size. It was very tender, warm, indurated, firm and fixed to the deep tissues. He was febrile. The groin swelling was not pulsatile. There was no thrill on palpation and no bruit on auscultation. There was no oozing from the swelling. His blood pressure was normal. However, there were absent popliteal, dorsalis pedis and posterior tibial pulses. Blood tests revealed that he was anemic at 8.4 g/dl. His white cell count was raised at 31500 /mm3. His serum urea and electrolytes were normal.

An ultrasound investigation of the groin swelling was done on the within a day of admission revealed a large pseudo-aneurysm in the left groin with a fistulous communication with the left femoral artery. The left femoral vein was intact with no communication to the pseudo-aneurysm. He was treated initially with intravenous cefuroxime and metronidazole antibiotics. Blood transfusion was given. The plan then was to operate on the patient's swelling the first thing in the next day morning since his blood pressure was stable.

However, later in the night, while the patient was passing motions on the bed pan, he suddenly noticed a lot of blood spewing out from his left groin. He was taken to the operation theatre the same night. En route to theatre, he was further resuscitated with fluids and blood transfusion.

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Intra-operatively, the left external iliac artery was approached extraperitoneally via a left suprainguinal incision. The vessel was looped and controlled. The aneurysm was approached by extending the incision distally and longitudinally over the swelling. The false aneurysm was opened. Initial bleeding necessitated ligation of the external iliac artery. Blood clot and pus were evacuated. The ruptured femoral artery was sutured and ligated.

The surgical skin wound was left open and packed with gauze. Afterward in the ward, the wound was dressed daily. Intravenous antibiotics was continued. Culture and sensitivity examination of the clot and pus revealed moderate growth of Staphylococcus Aureus sensitive to cefuroxime, methicillin, erythromycin and cotrimoxazole.

The patient's condition gradually improved as the days went by. His fever subsided. His Haemoglobin level rose to 10.6 g/dl. The left groin wound became smaller and cleaner. Doppler ultrasound investigation done in the ward detected pulsations in his left dorsalis pedis artery. Clinically, the circulatory status was reasonable - his left leg and toes were pink, warm and had normal capillary filling. He was discharged ambulating 2 weeks after admission. The diagnosis was a mycotic pseudo-aneurysm of the left femoral artery.

**Fig. 1: The non-pulsatile left groin swelling**

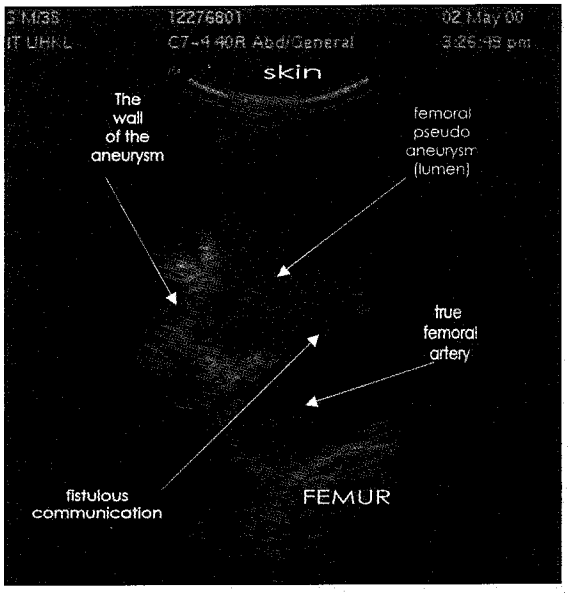


**Fig. 2 : The Ultrasound (digitized image), the transverse view on the left upper at the level of the groin swelling showing the aneurysm**

## Discussion

The groin swelling could have been mistaken for an ordinary abscess. This particular case revealed lack of typical clinical signs of an aneurysm eg. pulsatility, thrill and bruit. The absence of the distal pulses of the leg raised suspicion of aneurysm. Non-sterile injection into the wall of an artery can cause weakening of the arterial wall giving rise to an aneurysm which in turn thrombose within the lumen causing arterial obstruction. Therefore, this causes absent or weak distal pulses in the limb. Zainal et al rightly suggested that all swellings around vessels in intravenous drug abusers should be treated as pseudo-aneurysms [1].

The role of ultrasound investigation was important in the diagnosis because it was readily available, non-invasive, cost effective and has less morbidity than the angiography. There is also less risk to the medical staff of being in contact

with the patient's blood or body fluids[1]. The ultrasound was helpful to determine the nature of the swelling superficial to the femur.

The pathogenesis of the mycotic pseudo-aneurysm in this patient's case was due to introduction of infected material by non-sterile injection using dirty needles combined with trauma to the vessel wall. The mechanism of the distal limb ischemia which gave rise to absent leg pulses could be caused by the following reasons. Intimal damage and vessel wall necrosis at the site of arterial puncture which causes thrombosis and occlusion. Microvascular embolization by filling agents such as milk powder, corn starch, talcum powder in illegal addictive preparations which cause a direct toxic effect on the small distal vessels causing vasculitis and thrombosis. With the diagnosis of a mycotic femoral pseudo-aneurysm, the operative treatment was considered an emergency. The aneurysm needed to be controlled proximally away from the infected area to prevent torrential bleeding.

Post operatively the circulatory status of the patient's left leg was satisfactory. It appeared that he had good collateral circulation. He was considered unsuitable for revascularisation at the time of operation in view of the infection.

Ligation of the external iliac artery or the femoral artery and its main branches i.e. the superficial femoral and profunda femoris is safe. The second author routinely ligates all branches involved after control of the external iliac artery, the majority do not need ligation of the external iliac. This has not led to limb loss in any of the 12 patients operated on by the second author.

Thirty–three drug addicts with femoral artery pseudo-anneurysms were surgically treated in the Department of Surgery, University of Hong Kong between 1993 and 1996. The patients had ligation of the common femoral artery or external iliac artery. Each patient in the group mentioned was discharged with a viable limb. No delayed limb loss was identified and no hospital mortality. Fifty percent of the patients grew methicillin sensitive Staphylococcus Aureus. However, the majority of the patients did have intermittent claudication [2].

Delayed reconstruction using iliopopliteal bypass either anatomically or through the obturator canal can be considered later. Briefly, the anastomotic channels to the distal lower limb after the ligation of the femoral artery proximal to the origin of the profunda femoris are principally from the branches of the internal iliac artery proximally with the perforating branches and medial circumflex branch of the profunda femoris distally. To a lesser extent, there is also anastomosis between the circumflex iliac branch of the external iliac artery proximally with the circumflex branches of the femoral and profunda arteries distally [3]. These pseudo-aneurysms are always associated with extensive abscesses and it is mandatory to perform a plain X ray of the thigh and pelvis to alert the surgeon to the presence of needle fragments before drainage. The wounds should always be left open to heal.

Arteriography has a reported sensitivity of 94-98% in the diagnosis of pseudo-aneurysms. It can identify the exact location of the lesions as well as help to plan the surgical approach. However, it may be considered to be expensive as well as being invasive. Duplex sonography in combination with gray scale imaging has a reported sensitivity (95%) and specificity (94%) approaching that of angiography [4]. In addition it is inexpensive, readily available as well as being portable. Magnetic Resonance Imaging (MRI) with or without angiography has also been used to diagnose pseudo-aneurysms though the exact role is not clearly defined. Iatrogenic or traumatic perforation can be treated by rapid, non-surgical percutaneous stent-graft placement. Injection of thrombin into is a recent method of occluding pseudo-aneurysms [5]. However, both these

methods are contraindicated in the presence of infection. Sonographically guided compression repair of pseudo-aneurysms can also be performed. Early diagnosis is essential for successful management of a pseudo-aneurysm requires an expedient examination prior to rupture. Therefore in the appropriate clinical context, when a groin mass is palpated, a duplex ultrasound examination is recommended.

A high index of suspicion is always necessary in any infected groin swelling in intravenous drug abusers even though there are lack of typical clinical features of an aneurysm. Absence of the distal leg pulses is a useful clinical feature in the diagnosis. Ultrasound investigation before drainage is recommended. Surgical eradication of infection is the priority. Ligation of the external iliac artery is safe without limb loss because of collateral circulation.


1. AA Zainalm, AW Yusha. A 3 years audit of infected pseudoaneurysms in intravenous drug users managed surgically in the vascular unit, Hospital Kuala Lumpur. Med. J. Malaysia 1998; 53(4): 372-75.
2. Ting AC, Cheng SW. Femoral pseudo-aneurysms in drug addicts. World J. Surg. 1997; 21 (8): 783-87.
3. Gray's Anatomy 38th. Edition Churchill & Livingstone 1995; p1568.
4. Benitz PR, Newell MA. Vascular trauma in drug abuse: patterns of injury. Ann Vasc Surg 1986; 1: 175.
5. Taylor BS, Rhee RY, Muluk S, Trachtenbery J, Walters D, Steed DL, Makaroun MS. Thrombin injection versus compression of femoral artery pseudoaneurysms. J Vasc Surg 1999;30:100-15.