

## Duplex-guided compression treatment of femoral pseudo-aneurysms first time in bsmmu: A case report

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DOI: <https://doi.org/10.33545/26649020.2019.v1.i1a.5>

### Abstract

**Purpose:** To represent the clinical usefulness of duplex-guided compression in the evaluation and treatment of iatrogenic femoral pseudo-aneurysms. **Case Report:** A 48-year-old man presented with a pulsatile mass and reddish discoloration of skin in right upper thigh several hours after discharge from the BSMMU hospital, and about 5.2-cm pseudo-aneurysm arising from the right common femoral artery was confirmed on duplex ultrasound scanning as demonstrated in Figure 2. Ultrasound-guided compression was done two times as an initial treatment and successful outcome. **Conclusions:** This procedure reveals the clinical usefulness of duplex-guided compression in the evaluation and treatment of femoral pseudo-aneurysm.

**Keywords:** pseudo aneurysms; duplex ultrasound, femoral pseudo-aneurysms

### 1. Introduction

The femoral artery pseudo-aneurysm (FAP) is a troublesome groin complication related to the femoral arterial access commonly used for invasive cardiovascular procedures. FAP occurs in 0.1% to 0.2% of diagnostic angiograms and 0.8% to 2.2% following interventional procedures. More than one million cardiac catheterizations being performed in the United States each year, post procedure pseudo aneurysm is a relatively rare occurrence. FAPs are usually caused by punctures of the femoral artery which are too distal, that is, at the level of bifurcation of the femoral artery or below [1]. Iatrogenic pseudo-aneurysms (IPA) form when an arterial puncture site fails to seal, allowing arterial blood to jet into the surrounding tissues and form a pulsatile hematoma [3]. These lesions lack arterial wall and are contained by a surrounding shell of hematoma and the overlying soft tissues. It can present as thrill, bruit, pulsatile hematoma, or marked pain or tenderness. The other complications of pseudo-aneurysms include rupture, distal embolization, local pain, neuropathy and local skin ischemia [3]. Duplex scanning, along with pulsed and color Doppler flow mapping has been the mainstay in diagnosing FAP.

### 2. Case Report

A patient, 48 years old male patient was admitted with the diagnosis of ischemic heart disease and undergone PCI. At day of discharge after several hours following PTCA the patient experienced severe sharp pain in the right groin with skin discoloration of the right inguinal region.

On physical examination, a pulsatile mass was noted in the right groin. Ultrasound confirmed a right FAP (figure 1) which was treated with ultrasound-guided compression repeatedly of the neck of the pseudo-aneurysm. The "neck" of the pseudo aneurysm is the narrow path of blood flow between the artery, through the arterial wall, and into the pseudo-aneurysm cavity. The artery, neck, and pseudo-aneurysm are seen on ultrasound. The ultrasound probe can be pushed firmly against the underlying bone to compress the neck of the pseudo-aneurysm for about 30 minutes. During this time, the blood within the pseudo-aneurysm clots; after the probe is then removed, the pseudo-aneurysm remain clotted And hematoma eventually absorbed. Color flow demonstrating blood flow in right superficial femoral artery (open arrow) through the neck into the pseudo-aneurysm. Pseudo aneurysm sacs immediate after compression blood inside the sac become clotted. Pseudo aneurysmal sac five days after compression. Blood follow after five days after compression ante grade blood flow in the superficial femoral artery.

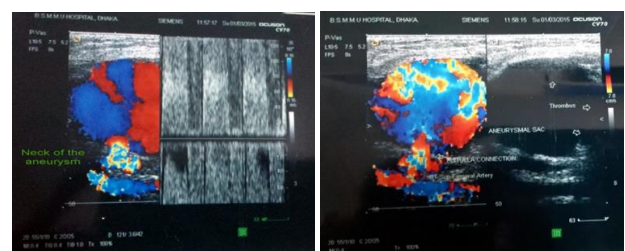


Fig 1

Fig 1(a)

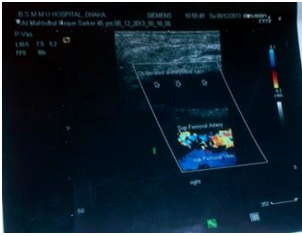


Fig 2



Fig 3



Fig 4

### 3. Discussion

Criteria used to diagnose a pseudo-aneurysm include: swirling color flow seen in a mass separate from the affected artery, color flow within a tract leading from the artery to the mass consistent with pseudo-aneurysm neck, and a typical “to and fro” Doppler waveform in the pseudo-aneurysm neck [3]. Several therapeutic strategies have been developed to treat pseudo-aneurysm. They include ultrasound-guided compression repair (UGCR), surgical repair, and minimally invasive percutaneous treatments (thrombin injection, coil embolization and insertion of covered stents) [1]. Compared with surgical repair, treatment of pseudo-aneurysms with ultrasound-guided compression repair and thrombin injection offers many advantages. The success rate of thrombin injection and ultrasound-guided compression repair reported in the literature has been consistently high, even with patients treated with therapeutic levels of anticoagulants. Treatment can usually be completed within several minutes. Other non-operative methods of treating pseudo-aneurysms include placement of covered stents/endo luminal prostheses. Majority of the prostheses reported in the literature have been used for the exclusion of atherosclerotic aneurysms. A few reports have focused on the use of percutaneous coil placement (stents) to occlude the FAP. In some cases the coil was placed in the neck, while in other patients the coil was placed inside the pseudo-aneurysm in order to achieve closure and local thrombosis [10, 11]. Due to the procedural simplicity, ultrasound-guided compression repair and injection of

thrombin remains a very appealing treatment to most physicians. Currently, research efforts are directed at developing a sponge-like application form of collagen. Then small quantities of sponge-like collagen would suffice to obliterate the FAP cavity, which could be monitored by ultrasound.

### 4. Conclusion

It is unfortunate that most pseudo-aneurysms occur in patients least tolerant to general anesthesia, vascular reconstruction and associated blood loss. Treatment by UGCR or percutaneous embolization is an attractive option and probably the first choice at many institutions for these reasons and cost-effective also. However, there are situations when surgical treatment may be necessary. Surgery is usually effective and definitive. Nevertheless, it is also a relatively expensive means of IPA repair. Although costs of the various procedures utilized for closure of FAP will vary between institutions depends on facility, logistics and expertise of the particular institutions.

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