

Recurrent Femoral Artery Pseudoaneurysm: Anticoagulant No More A Life Savior

Firdaus Hayati¹, Nornazirah Azizan², Aishath Azna Ali³, Azim Idris⁴

¹Department of Surgery, Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah, Sabah, Malaysia

²Department of Pathobiology and Medical Diagnostics, Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah, Sabah, Malaysia

^{3,4}Department of Surgery, Universiti Kebangsaan Malaysia Medical Center, Kuala Lumpur, Malaysia

Abstract: Femoral artery pseudoaneurysm is a devastating complication after arterial access. It may thrombose spontaneously with conservative management. Failure to thrombose is multifactorial. We present a case of iatrogenic femoral artery pseudoaneurysm, developed recurrence after consumption of anticoagulant, which was surgically treated using traditional open repair.

Keywords: Femoral artery pseudoaneurysm, recurrent, iatrogenic, anticoagulant, open pseudoaneurysm repair.

I. INTRODUCTION

Femoral artery pseudoaneurysm is a dreadful and devastating complication related to the arterial access used for invasive cardiovascular procedures. The incidence of pseudoaneurysm after diagnostic catheterization accounts from 0.05 to 2%, nevertheless the percentage increases rapidly up to 5% in therapeutic intent. [1] This problem has become more significant due to the exponential growth of interventional procedures in cardiovascular and peripheral vascular diseases. It may thrombose spontaneously without any intervention. However, in certain literature, failure for pseudoaneurysm to thrombose is multifactorial. [1] We present a case of iatrogenic femoral artery pseudoaneurysm in which after lengthy conservative management developed recurrence after consumption of anticoagulants, which rendered traditional open surgical repair.

II. SUMMARY

A 62-year-old lady who underwent an elective coronary angiogram was newly diagnosed as mild left anterior descending artery (LAD) disease. During catheterization, her right femoral artery was used as the access point. The procedure was uneventful but after the procedure, she noticed a bruise at the puncture site. Since it was not expanding, she was discharged home. Her medical illnesses include ischaemic heart disease with cardiomyopathy, end stage renal failure on regular dialysis via left art eriovenous fistula, hypertension and dyslipidemia.

After 2 weeks of coronary angiogram, she started to develop upper respiratory tract symptoms with fever causing her to develop shortness of breath. In view of this, she had to visit emergency department for symptomatic relief. Upon assessment, despite having signs of pneumonia, there was accidental finding of right groin hematoma with a palpable, non-pulsatile mass measuring 6.0 x 8.0 cm in size. A doppler ultrasound of right lower limb revealed a well-defined encapsulated vascular structure measuring 4.0 x 4.3 x 7.1 cm at right femoral region compressing on common femoral artery and vein posteriorly. There was no swirl sign seen within hence diagnosis of thrombosed right femoral artery pseudoaneurysm was made. She was treated conservatively from surgical point of view. However, she was treated as healthcare-associated pneumonia in view of recent admission and was treated with intravenous Tazobactam-Piperacillin (Tazoscin). After a week of hospitalization, she was discharged home. Unfortunately, tablet cardiprin was provided accidentally during discharge.

After 3 weeks of discharge for pneumonia, she started to feel a worsening right expanding groin mass associated with right unilateral leg oedema. In view of unbearable pain at the groin, she enforced herself to come again to emergency department. She denied any neurological deficit. Upon assessment, the acute limb ischemia was ruled. The doppler signal was normal from femoral artery distally. However, the previous right groin mass was increasing in size to 8 x 10 cm with presence of pulsation. This later confirmed by ultrasound showing a recurrent pseudoaneurysm with positive swirl sign. The patient was posted for open pseudoaneurysm repair under emergency. Intraoperatively, there was pseudoaneurysm of superficial femoral artery with neck of 3 mm in size. We managed to evacuate 300 mLs of blood clot and aneurysmal vessel was repaired successfully. She had a good recovery period and after a week of recovery, she was allowed to go home without any complication.

III. DISCUSSION

Iatrogenic femoral artery pseudoaneurysm is a false aneurysm formed by a percutaneous procedure on an artery whether for diagnostic or therapeutic intent. The incidence has risen significantly due to the rapidly expanding growth of endovascular intervention. Based on a paper by Ates M et al, few risk factors that could lead to femoral pseudoaneurysm include body mass index, hypertension, diabetes mellitus, catheter diameter, coronary artery disease, atherosclerosis, and number of cases performed per day in a particular room. [2]

Symptoms of pseudoaneurysm include pain due to increased pressure from swelling or nerve compression, extremity swelling due to venous compression, and deep venous thrombosis which increases with increasing pseudoaneurysm size. As a rule of thumb, presence of pain or swelling after catheterization may indicate pseudoaneurysm which warranted an urgent referral. The diagnosis of choice for pseudoaneurysm is duplex ultrasound. The sensitivity of using duplex ultrasound is 94% with specificity of 97%. [3] By using B-mode image, an echolucent sac that expands and contracts following cardiac contraction can be seen. Color Doppler in fact enhances the diagnostic accuracy by showing swirl colour turbulence in a mass separate from the affected artery, identifying a tract connecting the sac to the feeding vessel, which reveals a to-and-fro signal in the pseudoaneurysm neck. [4]

There are several treatment options for pseudoaneurysm, from conservative management to conventional surgical intervention. In 1991, Fellmeth et al introduced an alternative method of treating pseudoaneurysm: Ultrasound guided compression repair. [5] It has significantly reduced the need for surgical repair, beside showing to be safe and cost effective in achieving pseudoaneurysm thrombosis. However, there are several disadvantages with regard to this technique. These disadvantages include patient discomfort, muscular discomfort on the part of the staff carrying out the procedure, prolonged use of ultrasound equipment, early recurrence of pseudoaneurysm, and limited success in treating large pseudoaneurysms or patients requiring anticoagulation. [6]

In 1986, Cope and Zeit first reported the technique of percutaneous direct thrombin injection in pseudoaneurysm and Walker et al in 1987, demonstrated the use of thrombin via transcatheter route. [7,8] The procedure later adapted by Kang et al to utilize ultrasound as guidance for thrombin injection. [9] The current treatment consists of an injection of between 0.5 mL and 1.0 mL of thrombin (1000 units/mL), via a 20 to 22 gauge needle, into the aneurysm under colour-flow Doppler guidance. After injection, the feeding artery must be visualized via ultrasound examination to assure patency. Reeder et al later introduced a new method of low dose thrombin injection for the treatment of pseudoaneurysm. [10]

Despite of a usefulness of radiological or percutaneous treatment, there are situations when surgical operation may be indeed life-saving. Such conditions include rapid expansion of pseudoaneurysm, concomitant distal ischemia or neurological deficit due to local pressure or distal embolization from within it, infected (mycotic) pseudoaneurysm, failure of percutaneous intervention and compromise of soft tissue viability. [11]

IV. CONCLUSION

Iatrogenic femoral artery pseudoaneurysm is a relatively well-known entity. This problem has become more significant due to the exponential growth of interventional procedures. Any swelling or growth post catheterization warranted urgent referral. Anticoagulant should be withheld if conservative treatment is warranted to avoid unnecessary intervention and complication as what has been described in our case.

REFERENCES

- [1] Jessel SJ, Adams DF, Abrahams HL (1981) Complications of angiography. *Radiology* 138:273-281.
- [2] Ates M, Sahin S, Konuralp C, Gullu U, Cimen S, Kizilay M, Gunay R, Sensoz Y, Akcar M (2006) Evaluation of risk factors associated with femoral pseudoaneurysms after cardiac catheterization. *J Vasc Surg* 43:520-524.
- [3] Coughlin BF, Paushter DM (1988) Peripheral aneurysm: evaluation with duplex US. *Radiology* 168: 339-342.
- [4] Eisenberg L, Paulson EK, Kliewer MA, Hudgson MP, DeLong DM, Carol BA (1999) Sonographically guided compression repair of pseudoaneurysm: further experience from a single institution. *AJR Am J Roentgenol* 173:1567-1573.
- [5] Fellmeth BD, Roberts AC, Bookstein JJ, Freischlag JA, Forsythe JR, Bukner NK, Hye RJ (1991) Postangiographic femoral artery injuries: nonsurgical repair with US-guided compression. *Radiology* 178:671-675.
- [6] Mohler ER 3rd, Mitchell ME, Carpenter JP, Strandness DE Jr, Jaff MR, Beckman JA, Gerhard-Herman M (2001) Therapeutic thrombin injection of pseudoaneurysms: a multicenter experience. *Vasc Med* 6:241-244.
- [7] Cope C, Zeit R (1986) Coagulation of aneurysm by direct percutaneous thrombin injection. *AJR Am J Roentgenol* 147:383-387.
- [8] Walker TG, Geller SC, Brewster DC (1987) Transcatheter occlusion of a profunda femoral artery pseudoaneurysm using thrombin. *AJR Am J Roentgenol* 149:185-186.
- [9] Kang SS, Labropoulos N, Mansour MA, Michelini M, Filiung D, Baubly MP, Baker WH (2000) Expanded indications for ultrasound guided thrombin injection of pseudoaneurysm. *J Vasc Surg* 31:289-298.
- [10] Reeder SB1, Widlus DM, Lazinger M (2001) Low-dose thrombin injection to treat iatrogenic femoral artery pseudoaneurysms. *AJR Am J Roentgenol* 177:595-598 .
- [11] Lenartova M, Tak T (2003) Iatrogenic pseudoaneurysm of femoral artery: case report and literature review. *Clin Med Res* 1:243-247.