

Delayed and Fatal Presentation of Femoral Pseudoaneurysm after Percutaneous Coronary Intervention

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Abstract- We report a case of a 42 year old female patient who presented with a large femoral pseudoaneurysm 18 days after femoral catheterization, for percutaneous coronary intervention, with life threatening bleeding. Diagnosis of the condition was made by ultra sound examination and CT angiogram of femoral vessels. The method of management for pseudoaneurysm is local ultrasound guided compression if the neck is amenable to compression, minimally invasive percutaneous treatment and surgical repair if the other methods fail.

Index Terms- Pseudoaneurysm, Common Femoral Artery (CFA), Percutaneous Coronary Intervention (PCI), Right Coronary Artery (RCA), Ultrasound Compression

I. INTRODUCTION

Cannulation of the femoral artery, done with only anterior wall puncture, i.e, by Seldinger technique is a safe procedure¹. Complications occur in less than 1% patients. They include hematoma, pseudoaneurysm, ischemic damage, AV fistula².

Pseudoaneurysm is a collection of blood, formed as a result of a vascular wound and retained in the tissues surrounding the vessel breached. It consists of a perfused sac, the false lumen, connected to the femoral artery by a neck¹. It's incidence varies from less than 1% for diagnostic procedures to upto 10% for therapeutic procedures³. The risk factors are catheterization of both femoral artery and vein, low puncture, i.e. of superficial femoral artery instead of common femoral artery, female sex, age more than 60years, obesity, calcified arteries, anticoagulation, thrombolytic state and inadequate post procedure compression⁴. The average time of onset is 5 to 6 days after catheter removal⁶.

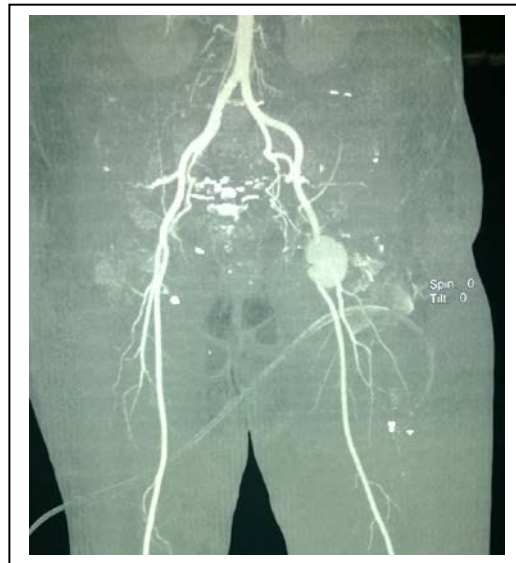
II. CASE REPORT

A forty two year old female patient was admitted to that ICCU with history of rest angina of three days duration. She was a known diabetic and hypertensive since six years, on regular treatment with Tab. Telmisartan 40 mg daily and Tab Glimipride 1 mg twice daily. On examination the patient was obese. (Wt: 82 kg; ht 1.5 sq.cm: BMI: 36.4. Her vitals were stable. The resting ECG revealed evolved inferior wall MI. 2D Echo revealed RWMA in RCA territory and fair LV function. RV function was normal. She was initially stabilized with IV heparin, oral antiplatelet agents, anti anginal agents and statins. As she continued to have intermittent rest angina, the next day she was

taken up for CAG, via Rt. radial route, which revealed subtotal occlusion of proximal RCA. She was taken up for PCI the next morning once the financial clearance was obtained. Rt. Radial puncture and Rt. femoral puncture was attempted but access could not be obtained. Arterial access was obtained through the left femoral route, with a single puncture, using Seldinger's Technique. PCI with deployment of a drug eluting stent was done to proximal RCA and the patient was shifted to ICCU. The immediate post procedure period was uneventful. On the third day after the procedure, patient developed rest angina. ECG revealed ST elevations in inferior leads. Check angiogram, done again through left femoral route revealed 100% occlusion of the stent in proximal RCA. A diagnosis of sub acute stent thrombosis was made and repeat PCI of proximal RCA was done. The patient developed a small hematoma over the puncture site post procedurally. Clinically there was no bruit over the puncture site, .Arterial Doppler study of left femoral vessels revealed no pseudoaneurysm. It was treated with sand bag, painkillers and oral serratiopeptidase. She was discharged on the fifth day after the second procedure and was asked to come for review after one week.

Pt came to OPD after ten days. She complained of pain and swelling at the puncture site and bleeding from the puncture site. Clinical examination revealed pulsatile swelling in the left groin, with necrosis of the overlying skin and a bleeding point. The blood pressure was under control. There was a systolic bruit over the swelling. She was admitted in ICCU. On investigation, her hemoglobin dropped from 11gm% to 8gm%. Her blood sugars were out of control and her renal function was normal. Doppler examination of left lower limb arteries revealed a large pseudoaneurysm in left common femoral artery (CFA) with a relatively broad neck. CT angiogram of left femoral artery revealed a large pseudoaneurysm measuring 5.1 x 5.9 x 4.2 cm with extravasation of dye into the adjacent soft tissue. The neck of the pseudoaneurysm was not amenable to ultrasound guided compression. The patient had another episode of moderate bleeding from the site on the next day. She was stabilized with immobilization, compressive dressing and three fresh blood transfusions.

She was taken up for surgical repair of the pseudoaneurysm the next day, under general anesthesia. The antiplatelet agents were continued. During surgery, after induction of anesthesia, once the wound was opened and clamping of the common femoral artery was done, patient had massive haemorrhage from the site of pseudoaneurysm, followed by cardiac arrest, from which she could not be resuscitated.



CT angiogram of left lower limb vessels showing a large pseudoaneurysm of left common femoral artery



Femoral puncture site with pseudoaneurysm and pressure necrosis of the overlying skin

III. DISCUSSION

Pseudoneurysms after femoral puncture for diagnostic or therapeutic procedures generally present 5 to 6 days after the puncture. However, we report the presentation of pseudoneurysm 18 days after sheath removal, presenting with pain at the puncture site, pulsatile swelling, a new bruit, a classic presentation.

Ultrasound is the usual mode of diagnosis, with 94 to 97% sensitivity. The findings will be 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 the neck of pseudoneurysm, and a typical to and fro Doppler wave form in the neck⁶.

CT angiogram of the affected limb helps in the measurement of the pseudoaneurysm, in the visualization of the anatomy of the distal vessel⁶

Complications of pseudoaneurysm are distal embolization, overlying skin necrosis due to pressure effect, rupture with catastrophic bleeding⁶

Treatment options are ultrasound guided compression, minimally invasive percutaneous treatment with thrombin injection, coil embolization, covered stent, and surgical repair⁷

In our patient, surgery had to be attempted as ultrasound guided compression caused moderate bleeding from the site and the pseudoaneurysm was rapidly expanding.

IV. CONCLUSION

Based on this unusual and catastrophic experience, we could make the following recommendations for prevention and management of iatrogenic pseudoaneurysms: nontraumatic fluoro guided puncture of common femoral artery, using Seldinger technique.(puncture of only the anterior wall of the artery.),use of smaller introducer sheaths, manual or mechanical compression of puncture site for 15 to 20 minutes, followed by bed rest and compressive bandage, close follow up of the patient who develops even a small hematoma following catheterization ,for extended periods, including serial ultrasound and Doppler exams.

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