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Case Report Open Access

Giant external iliac artery pseudoaneurysm following percutaneous coronary intervention: a rare case

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Invasive cardiac interventions have an important role in development of lower extremity arterial pseudoaneurysms. A 27-year-old male patient presented with the complaint of difficulty in walking following the discharge from the hospital after a successful emergent percutaneous transluminal coronary angioplasty and stent implantation for acute myocardial infarction in a cardiology clinic. Arterial Doppler ultrasonography showed a 90 mm of pseudoaneurysm in the right external iliac artery. Closure of aneurysm by compression and thrombin injection under ultrasonographic guidance was planned, but failed. Aorto-femoral bypass was performed eventually.

Keywords: Iliac artery; percutaneous intervention; pseudoaneurysm.

Invasive cardiac interventions play an important role in development of lower extremity arterial pseudoaneurysms. In this paper, we report a patient operated for a giant external iliac artery pseudoaneurysm developed after coronary artery intervention.

CASE REPORT

A 27-year-old male presented with the complaint of difficulty in walking, after he was discharged from a cardiology clinic following a successful emergent percutaneous transluminal coronary angioplasty and stent implantation for acute myocardial infarction. He was on dual antiplatelet therapy after the stent implantation.

At admission, he was complaining of spasm in the right foot, difficulty in walking erect, and distension in the right lower abdominal quadrant. Physical examination revealed a pulsatile mass in the right lower quadrant. An arterial Doppler ultrasonography showed a 53x28 mm pseudoaneurysm in right external iliac artery (Figure 1). Closure of aneurysm by compression and thrombin injection under ultrasonographic guidance failed. Thus, a surgical intervention was scheduled. Meanwhile, the aneurysm continued to grow in size. The patient was taken into operation under general anesthesia in appropriate position. A right flank and femoral incisions were made and joined. Femoral artery was exposed first, followed by aneurysm exploration via retroperitoneal approach (Figure 2). Near-full thickness injuries and dissections were detected in many parts of right external iliac artery up to the level of internal iliac artery. Following control of the iliac arteries with a vascular tape, aneurysmectomy was performed after 5000 IU intravenous heparin injection. A 90x50 mm pseudoaneurysm sac was removed (Figure 3). As severely dissected, the external iliac artery was excised. Since the common iliac artery was extremely fragile, we planned to perform an aortofemoral bypass by means of the abdominal incision. Abdominal aorta was controlled by abdominal incision. Aorto-femoral bypass was performed via retroperitoneal approach using a 6 mm polytetrafluoroethylene graft. Surgical layers were closed anatomically. Postoperative course was uneventful.

DISCUSSION

Cases of pseudoaneurysm in the artery of vascular access have been increasingly reported with the growing number of invasive cardiac (coronary angiography, angioplasty, and stenting) and vascular interventions each year.[1] Furthermore, rates of pseudoaneurysm are increased with antithrombotic therapy (heparin, warfarin, antiplatelet agents)

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Figure 1. Doppler ultrasonographic view of pseudoaneurysm.

given as an adjunct to interventional therapies due to inhibition of coagulation cascade.[2] Norwood et al.[3] reported in a retrospective study that pseudoaneurysm was located in femoral artery in 79 (83%) of 95 patients, whereas iliac arteries (common, external) were affected in only three (3.1%) cases. In our patient, the pseudoaneurysm was situated in the external iliac artery. The aforementioned study also found that the risk of pseudoaneurysm significantly increased in patients receiving Glycoprotein IIb/IIIa inhibitors.[3] Coronary angiography (with or without angioplasty/stenting) is the leading cause of pseudoaneurysms involving femoral artery (40.5% of cases), followed by pseudoaneurysms due to vascular graft anastomoses (29.15%), and peripheral vascular angiography (10.1%).[3] Currently, ultrasound-guided thrombin injection (UGTI) remains the mainstay of radiological pseudoaneurysm treatment. Studies have shown that UGTI is more effective than ultrasound-guided compression used in the past.[3-6] Surgery remains the treatment of choice in 41.8% of patients, followed by graft revision in 27.8%, UGTI in 24.1%, UG compression in 2.5% and stenting in 1.3%.[3] Management approaches to pseudoaneurysms have been changed, since 1995.[3] Today, surgical approach has been increasingly less common, while UGTI has become the treatment of choice.[3,7] We first employed UGTI method and performed surgical intervention, when the former failed.

Furthermore, endovascular therapy has some challenges related to iliofemoral access, despite the ever improving logistics provided by advancing stent graft technology and delivery platforms. Murray et al.[8] in a systematic review of studies on endovascular access techniques performed between 1994 and 2005, reported that majority of access problems are brought about by overly tortuous iliac arteries, circumferential vessel wall calcification, severe vessel obstruction, and small vessel caliber. It is usually not possible to use covered endovascular stent grafts, since there is a significant size mismatch between the common and external iliac arteries.[9]

The success and complication rates of non-surgical treatments of this pathology are heavily dependent on the width and length of pseudoaneurysm neck.

Figure 2. Intraoperative view of pseudoaneurysm.

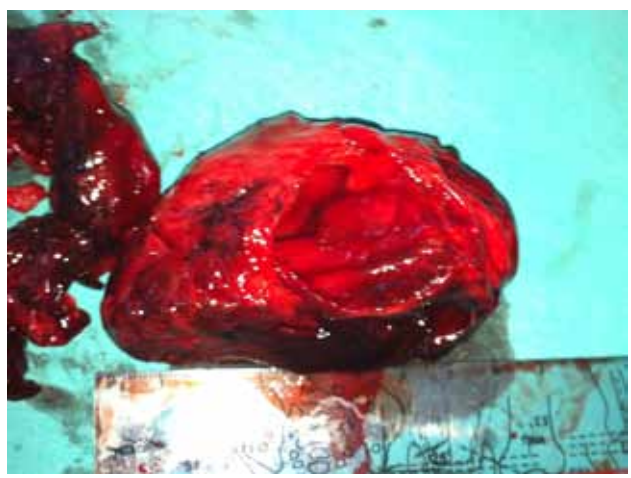

Figure 3. Sac of pseudoaneurysm (90x50 mm).

In conclusion, conventional surgical approach remains the gold standard for the management of pseudoaneurysms, although endovascular techniques and ultrasonographically-guided vessel compression and thrombin injection are increasingly used.[10,11] The primary surgical approach should be aneurysmectomy and arterial reconstruction. End-to-end anastomosis or primary repair with an appropriate graft should be performed, where possible.

Declaration of conflicting interests

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