Case report

Management of iatrogenic brachial artery pseudoaneurysm☆,☆☆
Surgical treatment of iatrogenic brachial artery pseudoaneurysm

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ABSTRACT

Penetrating trauma, blunt trauma, percutaneous coronary artery intervention, drug abuse and arterial gas sampling may lead to pseudoaneurysms. Pulsatile mass, bruit, and adjacent nerve injury are the main clinical findings. Open surgery and percutaneous interventions and ultrasound-guided compression can be performed for the treatment. External compression should be applied to the brachial artery site for at least 10 min after the sheath was withdrawn for patients who underwent percutaneous coronary artery intervention. Here, we present a 55-year-old male who had an iatrogenic brachial artery pseudoaneurysm on his left upper arm.

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Introduction

Aneurysms can be either a true aneurysm or pseudoaneurysm. A true aneurysm is defined as the dilatation of all layers of the arterial wall however, pseudoaneurysm involves one or more layers and/or neointima, fibrous tissue, and thrombus. Penetrating/blunt trauma, catheterization, drug abuse and arterial gas sampling may lead to pseudoaneurysms. Pseudoaneurysms of the brachial artery usually occur as a result of either trauma (0.5%) or iatrogenic injury (3–7%) (1). Pseudoaneurysms may present weeks to years after trauma. Pulsatile mass, bruit, and adjacent nerve injury are the main clinical findings. Rupture of the pseudoaneurysm may result as infection, bleeding and distal arterial ischemia. Ultrasound, computed tomography angiography, magnetic resonance angiography or conventional arteriography can be used for diagnosing (2).

Case Report

A 55-year-old male was presented with significant swelling and pain on his left upper arm one month ago was admitted to our clinic. He had a history of coronary artery disease, hypertension, and percutaneous coronary intervention via his left arm, one month ago. On admission, his blood pressure was 125/85 mmHg and his heart rate was 84 beats/min. On physical examination both radial and ulnar pulses were palpable and a large pulsatile mass was identified on his left upper arm with a systolic bruit on auscultation (Fig. 1A). Motor function deficiency and paraesthesia were not detected. The rest of the physical examination was unremarkable. Ultrasound confirmed the presence of a 10 × 12 cm brachial artery pseudoaneurysm. We decided to perform open surgery due to the high volume of hematoma. Routine preparation for surgery was made and informed consent was taken. Under local anesthesia, a medial longitudinal incision was performed over the pseudoaneurysm. The proximal and distal brachial artery was identified. The hematoma was extracted. The puncture injury site was identified and sutured with 6/0 running prolene suture (Fig. 1A, B). The patient had an uncomplicated postoperative period and was discharged 2 days after the surgery. Six months later he was doing well with stable vital signs and pulses.

Discussion

The presentation of the pseudoaneurysm may often be delayed by weeks or years. Clinical findings are including neurological deficits, tenderness, pain and swelling, compartment syndrome, hemorrhage, hematoma, ischemia, nerve injury and venous edema which can be limb or life threatening (3). External compression should be applied to the brachial artery site for at least 10 min after the sheath was withdrawn for patients who underwent coronary artery intervention. In order to gain total hemostasis, further compression should be applied with an elastic tape. Females, patients with the peripheral vascular disease, compulsory anticoagulation, large sheaths have the higher risk for vascular complications. A pseudoaneurysm, thrombosis, dissections, median nerve injury are the major complications of the brachial artery puncture site. Early diagnosis and prompt treatment should be carried out. The treatment of pseudoaneurysm is based on its size, location,
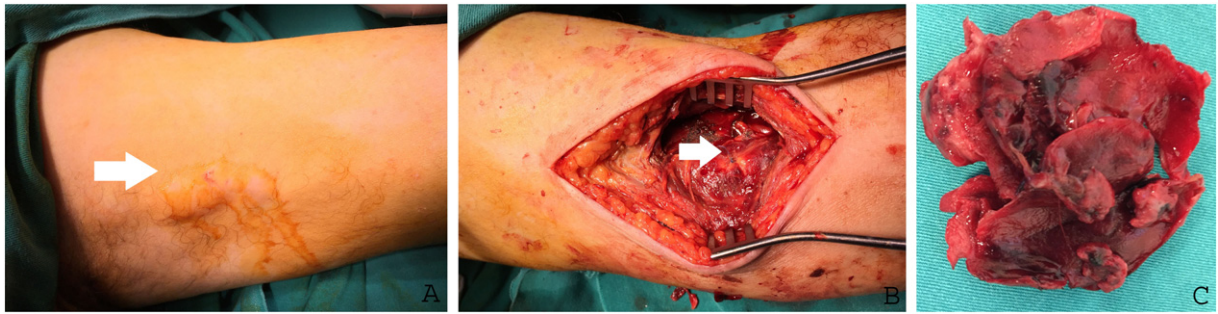
Fig. 1. External view of the pulsatile mass on the left upper arm (a), the intraoperative image of the pseudoaneurysm sac and the brachial artery injury site showed by the white arrow (b), extracted hematoma (c).

and etiology. Endovascular intervention is performed more common. The indications for open surgery consist of a rapidly expanding aneurysm, neurological deficits which are caused by local pressure and accompanying ischemia (4). Open surgical treatment includes graft interposition or primary suturing however, percutaneous interventions include bare stent or covered stent placement, coil embolization, ultrasound-guided thrombin injection and ultrasound-guided compression. Etiology, location, size and accessibility of the pseudoaneurysm should be considered for selecting the optimal treatment modality. Open surgery is preferred when there is rupture and infection (5).

In conclusion, careful and delicate puncture technique and adequate external compression to the brachial artery puncture site after the percutaneous coronary artery intervention play an essential role for cardiologists.

Conflicts of interest

None.

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