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Recurrent True Brachial Artery Aneurysm

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True aneurysm of the brachial artery is a rare disease entity. The mechanism of aneurysm formation is considered to be compression of the arterial wall, producing contusion of the media and subsequent weakness of the wall and fusiform dilatation. It can be caused by arteriosclerotic, congenital, and metabolic disorders, and can be associated with diseases such as Kawasaki's disease. Doppler ultrasonography, computed tomography, arteriography, and selective upper extremity angiography may be performed for establishing the diagnosis of aneurysm. The best therapeutic option is operative repair, and it should be performed without any delay, in order to prevent upper extremity ischemic or thrombotic sequelae. Here, we report a case of recurrent brachial artery aneurysm with review of the literature.

Key words: 1. Aneurysm
2. Brachial artery

CASE REPORT

A 32-year-old woman presented with progressive swelling, pain and a pulsatile mass in the right antecubital space. She had undergone aneurysmectomy and autologous saphenous vein graft interposition at the same site in another hospital three years ago. The aneurysm recurred 1 month after surgery (Fig. 1). Physical examination revealed a pulsatile mass in the right antecubital space measuring 5×4 cm in size. Her vital signs were stable with a heart rate of 72 beats/min, systolic blood pressure of 120 mmHg, respiratory rate of 18 breaths/min, body temperature of 36.5°C. Other laboratory examination findings were within their normal ranges. The aorta, pulmonary arteries and the other peripheral arteries were normal on preoperative computed tomography. The distal radial artery flow was normal on Doppler examination. The initial diagnosis was recurrent brachial artery aneurysm. We decided to treat the patient with redo operation. After admission, echocardiography was performed. The findings on this examination were nonspecific. The operation was performed after disinfection of the right arm and left leg. A longitudinal incision was made on the prior surgical incision scar and adhesiolysis was performed. The saphenous vein graft which is anastomosed during the previous surgery was intact, but the distal part of the anastomotic site showed aneurysmal change. Aneurysmectomy including the implanted saphenous vein graft and autologous vessel graft interposition with the new saphenous vein graft which was harvested at the distal portion of the left leg were performed. The resected aneurysm revealed a true aneurysmal sac filled with internal thrombus (Fig. 2). After anastomosis of the saphenous vein graft at both the proximal and distal part of the brachial artery, the

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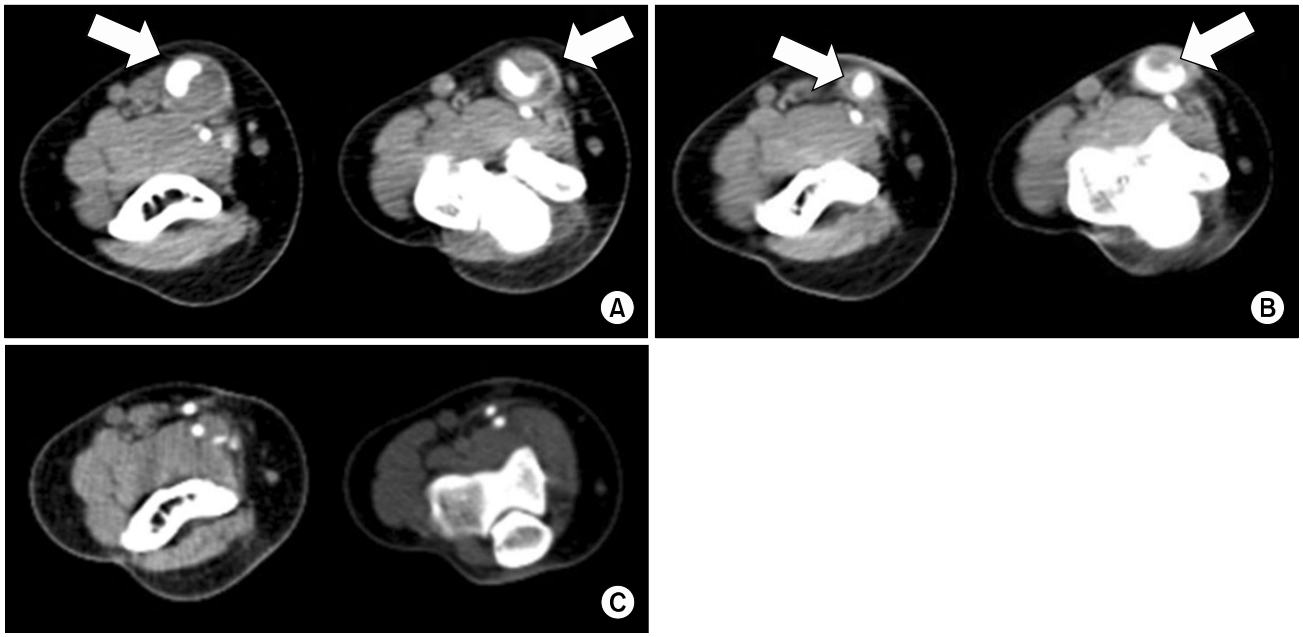

Fig. 1. A comparison of the brachial artery at the same level. (A) Preoperative computed tomography of the first surgery showed aneurysmal changes with partial thrombotic aneurysm (Arrow). (B) Postoperative images of the first surgery (Arrow). The arrows show the recurrent aneurysm. (C) After the second surgery, the saphenous vein graft was intact without aneurysmal changes.

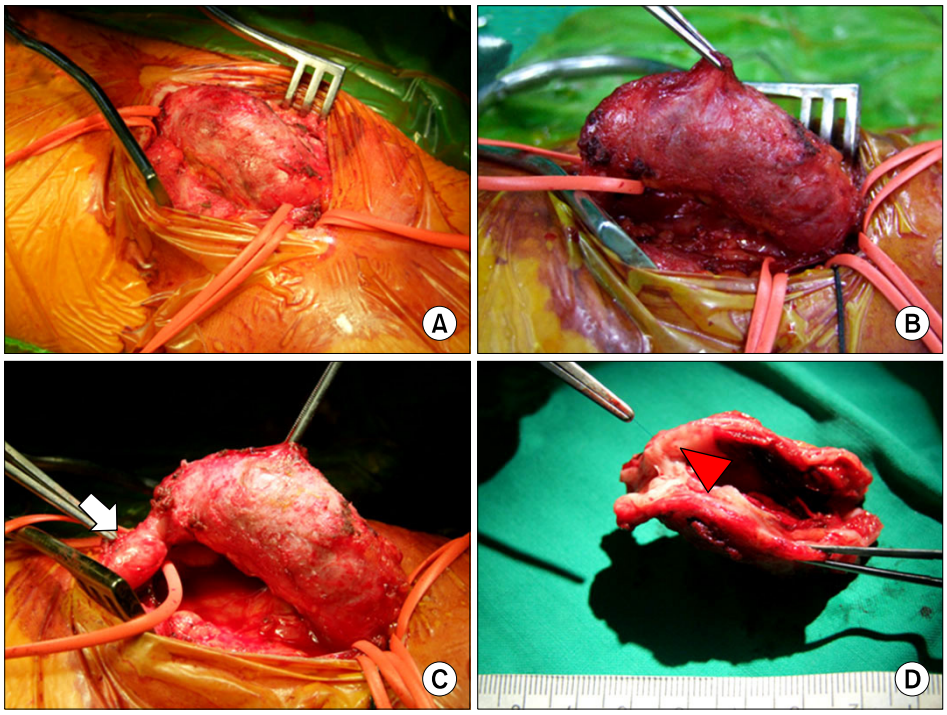

Fig. 2. (A) A Longitudinal incision was made. Snaring was done at the proximal and distal brachial artery. (B) Aneurysmal sac after adhesiolysis. (C) The site of the previous distal anastomosis was intact (Arrow). (D) Distal portion of the previous anastomosis showed aneurysmal changes (Arrow head) and internal thrombus.

distal radial artery showed good patency on intraoperative Doppler examination. The histopathologic examination revealed elastic fiber disruption of the brachial artery and saccular dilatation of aneurysm (Fig. 3). There was an organized fibrin clot on the aneurysm wall. The patient was discharged without complications on the 10th day after surgery. During

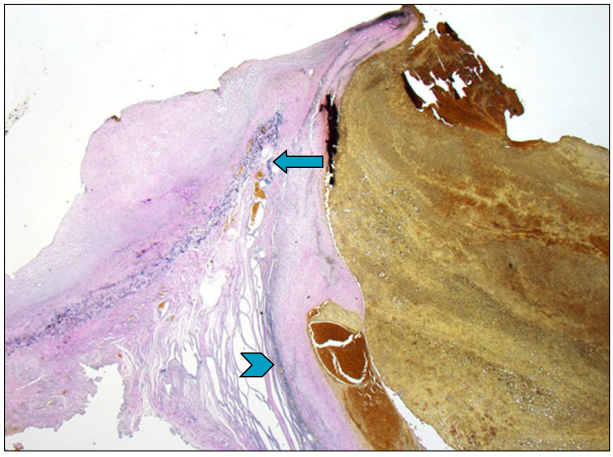

Fig. 3. Disrupted elastic fibers of the brachial artery (arrow) and dilated fibrous wall of the aneurysmal sac (arrow head) (Elastic stain, ×10).

follow-up at the outpatient department, there were no signs of recurrence of aneurysmal change (Fig. 1).

DISCUSSION

True aneurysm of the brachial artery is a rare disease entity. The mechanism of aneurysm formation is considered to be compression of the arterial wall, producing contusion of the media and subsequent weakness of the wall and fusiform dilatation [1]. As with other arterial aneurysms, there are two types of aneurysms; true aneurysms and pseudoaneurysms of the brachial artery. The pseudoaneurysm can be a complication of cardiac catheterization performed for congenital heart disease, arterial and venous puncture for the evaluation of blood gases, and invasive arterial monitoring etc [2]. True aneurysm, which is even more rare, can be caused by arteriosclerotic, congenital, and metabolic disorders [3], and can be associated with diseases such as Kawasaki's syndrome, Buerger's disease, Kaposi's sarcoma, and cystic adventitial disease [4]. In our case, the patient did not have any of the previously mentioned diseases and other diseases of thromboembolic origin. We suggest that trauma to the vessel or to the remnant aneurysmal sac of the previous surgery could be the cause of recurrence. Most of the patients visited the hospital with a pulsatile mass in the antecubital space [1-6]. Doppler ultrasonography, computed tomographic arteriography (CTA), and selective upper extremity angiography can be performed for establishing the diagnosis of aneurysm [2]. But, CTA is the preferred method for diagnostic evaluation of upper limb vascular diseases, due to its high imaging capacity, no arterial invasion, and absence of radiation exposure [4]. Since the brachial artery aneurysm is a rare disease globally, the exact surgical procedure and definite treatment option for true upper extremity artery aneurysm has not been established [4]. Ultrasound-guided compression and injection of thrombin, radiologic intervention and surgical resection, all could be considered as one of the therapeutic modalities. Ultrasound-guided compression and thrombin injection has the advantages of a non-invasive procedure, but significant disadvantages such as pain and less efficacy in anticoagulation patients are associated with it [4]. Radiologic intervention for the brachial artery aneurysm was not possible or was not advisable around the elbow joint. A covered stent would have been technically feasible but certainly not indicated in an area developing such flexion amplitude [5]. Since there are not many reports of brachial artery aneurysm, comparison of the nonsurgical and the surgical treatment is controversial. Considering that many authors have reported surgical resection as the therapeutic modality [1-5], the best therapeutic option in brachial artery aneurysm could be operative repair, and it should be performed without any delay, in order to prevent upper extremity ischemic sequelae [6]. When surgical resection is performed, it is important that the aneurysm wall with the changes should be resected with adequate resection margins. In our case, the previous saphenous vein graft was intact without any aneurysmal changes, but the distal portion of the anastomosis of the brachial artery showed aneurysmal changes. It can be considered that the changes in the remnant aneurysm, either macroscopic or microscopic, were the sites of recurrence after surgery. It is also considered that a traumatic procedure and instrument application such as careful snaring and vessel clamping is needed so as not to injure the native vessels. The recurrence of true brachial artery aneurysm is even more unusual worldwide. We have reported a case of recurrent true brachial artery aneurysm with review of the literature.

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