İzmir Eğitim ve Araştırma Hastanesi Tıp Dergisi,2013;17:98-102

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SUCCESSFUL TREATMENT OF THE POSTTRAUMATIC PSEUDOANEURYSM OF THE SUPERFICIAL FEMORAL ARTERY WITH A HYBRID PROCEDURE AT THE SAME SESSION: A CASE REPORT

SÜPERFİCİAL FEMORAL ARTERDE POSTTRAVMATİK GELİŞEN PSÖDOANEVRİZMANIN AYNI SEANSTA HİBRİT YÖNTEMLER İLE TEDAVİSİ: OLGU SUNUMU

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ABSTRACT: Although the most common cause of pseudoaneurysms seen in the vascular system is the punctures during the invasive interventions, trauma may be encountered as an etiological factor as well. These pseudoaneurysms must be intervened especially when they reach to certain size, because they carry a risk for rupture and obstruction or extremity ischemia due to distal embolization. The most often used treatment method is surgery, although endoluminal methods can be used in suitable cases owing to the advancement in the invasive radiology. However, using of the hybrid procedure for treatment of the postraumatic pseudoaneurysms is extremely rare. In this study, treatment of the case with pseudoaneurysm defined in his superficial femoral artery (SFA) in the 1st month of the trauma which was performed with a hybrid procedure was presented in the light of the literature knowledge.

Keywords: Pseudoaneurysm, femoral artery, hybrid procedure

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ÖZET: Vasküler sistemde görülen psödoanevrizmaların en sık sebebi invaziv girişimler sırasında yapılan ponksiyonlar olmakla birlikte etiyolojik faktör olarak travmalarla da sıklıkla karşılaşılabiliriz. Bu psödoanevrizmalara özellikle belirli boyutlara ulaştıklarında rüptürasyon ve obstruksiyon ya da distal embolizasyona bağlı ekstremite iskemisine yol açma riski taşıdıkları için müdahale etmek gerekebilir. Tedavi olarak sıklıkla kullanılan yöntem cerrahi olmakla birlikte invaziv radyolojideki gelişmeler sayesinde uygun vakalarda endoluminal yöntemler de kullanılabilmektedir. Ancak postravmatik gelişen psödoanevrizma tedavisinde hibrit prosedür çok çok nadiren kullanılmaktadır. Bu çalışmada travma sonrası 1.ayda süperficial femoral arterinde (SFA) psödoanevrizma tespit edilen olgunun aynı seansta hibrit yöntemlerle tedavisi literatür bilgileri ışığında sunuldu.

Anahtar kelimeler: Psödoanevrizma, femoral arter, hibrit prosedür

INTRODUCTION

Hematoma occurs as a result of the blood extravasation after the vascular injuries caused both by arterial puncture or traumas.Occurred hematoma proceeds to a fibrous organization, surrounding with a thin layer which is devoid of smooth muscle fibers. Rupture and rupture-related morbidity and mortality are frequently seen in the pseudoaneurysms due to this thin layer (1,2). Although it differs according to the diameter and location of the aneurysm, most of the patients should be intervened (3). Despite the improvements in the endoluminal techniques, the treatment of choice is still surgery for the treatment of posttraumatic pseudoaneurysms. In this study, we present the treatment of a case with posttraumatic SFA pseudoaneurysm performed in our hybrid operating room at the same session in the light of the literature knowledge.

CASE REPORT

A 36-year-old male patient without any previous complaints had a sharp object injury in the medial right thigh region about one month ago. He was referred to our clinic with complaints of claudication at 100 m and swelling in the medial region of the right thigh. On the physical examination of the patient, there was a swelling about 4x5 cm in size in the medial region of his right thigh, which was pulsatile on palpation. In addition, popliteal and distal pulses could be detected only by a hand-held Doppler. Ankle Brachial Index was measured as 0.6 at the right side. On the previously taken peripheral angiogram of the patient, a pseudoaneurysm of 55x36 mm was seen in the right superficial femoral artery (SFA) (Figure 1).

Figure 1: Preoperative angiography

The case was assessed also with preoperative color Doppler ultrasound and the flow in the popliteal artery was defined to be decelerated within a pseudoaneurysm of 55x36 mm in the right SFA. The patient was taken to the operation under general anesthesia in the hybrid operating room. After exploration and removal of the pseudoaneurysm in the right SFA, a saphenous vein graft about 5 cm in length was interposed to this area. However, on the pulse examination following the graft placement, popliteal pulse was found weak on palpation. Hereon, a 7-Fr sheath was inserted to

the right common femoral artery, and a control angiogram was carried out. On the control angiogram, a short segment narrowing was observed in the native vessel at the proximal anastomosis of the saphenous vein graft and distally about 2-3 cm of the distal anastomosis (Figure 2).

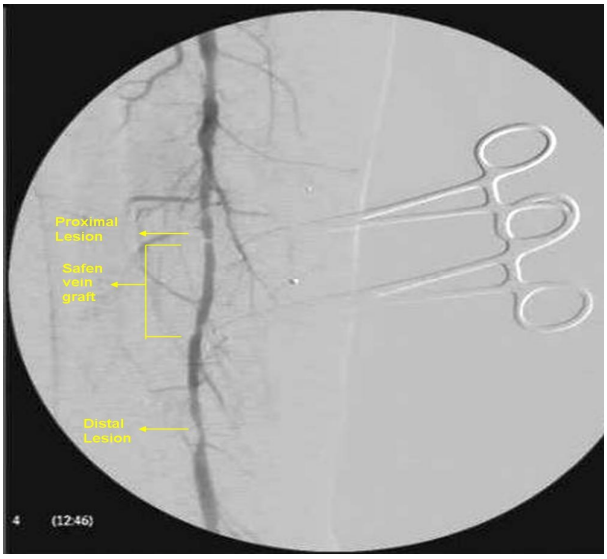

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Figure 2: A control angiography after surgical reconstruction of the patient.

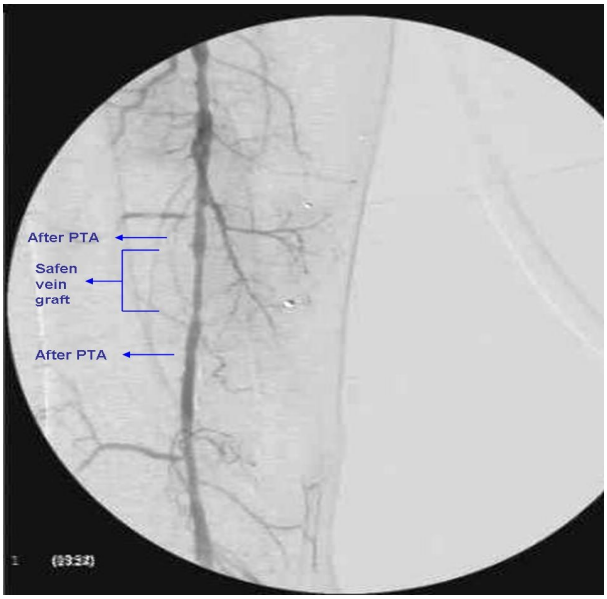

Figure 3: Intraoperative control angiography after application of PTA.

The lesions in the both regions were decided to be suitable for treatment with percutaneous transluminal angioplasty (PTA). PTA was performed both for the narrowing in the proximal anastomosis and in the distal anastomosis. Repeat control angiogram was taken following PTA, and both lesions were seen to be resolved (Figure 3). On the post-surgery examination, the pulses were palpable. The patient was kept in the intensive care unit till next day of the operation and discharged on the 5th postoperative day.

DISCUSSION

Today, pseudoaneurysms are encountered more frequently because of the increase in the number of invasive interventions performed for diagnosis and treatment. The most common cause is invasive radiological interventions, while traumas, infections and congenital arterial defects also play a role in the etiology (2). Trauma was the etiological factor in our case. Despite the developments in the invasive radiological interventions, the most effective treatment is still surgery for the treatment of pseudoaneurysms (2,4). In a study examining the surgical outcome in post-traumatic vascular injuries with 550 patients, limb salvage rate was found as 83.3% and survival as 98.5% (5). The options which can be applied out of the surgery are ultrasound-guided compression, percutaneous thrombin injection (PTI) or percutaneous stent placement. PTI is a relatively new treatment method used widely especially in iatrogenic femoral artery pseudoaneurysms (3,4). In addition, this method has been used in combination with grafted stent replacement for the pseudoaneurysm treatment (6). However, this procedure is technically more difficult to carry out, especially in cases in which vascular integrity is severely disrupted due to trauma. Percutaneous stent placement in the post-traumatic vascular injuries is a more recent application (7). In their study, Baltacıoğlu et al. reported successful treatment in 8 patients with arteriovenous fistula (AVF) and 5 patients with arterial pseudoaneurysm

developed as a result of iatrogenic vascular injury. Similarly, Piffaretti et al., treated 10 cases with pseudoaneurysm, AVF and dissections developed due to peripheral arterial blunt trauma. They followed-up their cases for a mean of 16 months and reported that there was not any major complication and limb salvage rate was 100% (8). Since in our patient there was tissue loss due to the sharp object injury, and the pseudoaneurysm did not have a marked neck, PTI and stent grafting were not considered. Conventional surgical intervention was performed because of the pseudoaneurysm was chronic and the patient had no comorbid factors.

When examining the literature, one may see that endoluminal interventions are frequently used besides surgery for treatment of the arterial pseudoaneurysm and arteriovenous fistulae (3,4,6-10), whereas the hybrid procedures are used extremely rare. In the unique study reporting use of the hybrid procedure for the treatment of pseudoaneurysm, Chaudry et al. presented the successful treatment of a case with AVF between the deep femoral artery and vein (11). In this case, femoral artery and femoral vein were surgically explored, and AVF was endovascularly closed with placement of 7 Fr sheaths in both. Whereas in our case, pseudoaneurysm was reconstructed with open surgery, but on detection of a narrowing in the native vessel in the proximal anastomosis and 2-3 cm distally to distal anastomosis of the reconstruction area on the control angiogram, PTA was performed to these regions at the same session.

In conclusion, it should be kept in mind that pseudoaneurysms developed as a result of a traumatic injury can be successfully operated by experienced teams in the hybrid operating rooms at the same session.

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Yazının alınma tarihi:08.04.2013

Kabül tarihi:30.04.2013

Online basım:02.05.2013