

CASE REPORT

Femoral Artery and Vein Insulated Injury with Piercing ToolSonay OĞUZ¹, Müslim GÜL², Hasan Başçıl³¹Çanakkale Onsekiz Mart Üniversitesi Kalp ve Damar Cerr. AD, ²Sivas Numune Hastanesi Kalp ve Damar Cerr. Servisi, ³Sivas Numune Hastanesi Kalp ve Damar Cerr. Servisi

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ABSTRACT

Vascular injuries have high mortality and morbidity rates with active bleeding and shock symptoms. Early and rapid intervention is extremely important in such injuries. In this case report, we present the results of a rapid and coordinated operation of a 19-year-old male patient with right femoral artery and vein were injured by a piercing cutting tool in hypovolemic shock. We aimed to emphasize the importance of rapid and coordinated work with the necessary procedures in this type of stab wounds, the time until the operation from the scene of surgery and the value of emergency primary vascular repair in reducing mortality and morbidity.

Keywords: Vascular injury, team coordination, emergency bleeding control.

Femoral Arter ve Venin İzole Delici Kesici Aletle Yaralanması**ÖZET**

Damar yaralanmaları aktif kanama ve şok tablosu oluşturmaları ile birlikte yüksek mortalite ve morbidite oranlarına sahiptirler. Bu tür yaralanmalarda erken ve hızlı müdahale son derece önemli olmaktadır. Bu olgu sunumunda sağ femoral arter ve venin delici kesici aletle yaralandığı, aktif kanamasının sürdüğü acil servise hipovolemik şok tablosunda getirilen, 19 yaşındaki erkek hastaya yapılan hızlı ve koordineli bir operasyonun sonuçları anlatılmıştır. Bu tip delici kesici alet yaralanmalarında olay yerinden ameliyata alınmaya kadar geçen sürenin, hastaya yapılması gerekli işlemlerde hızlı ve koordineli çalışmanın önemini, acil primer vasküler tamirin mortalite ve morbiditeyi azaltmadaki değerini bir kez daha vurgulayı amaçladık

Anahtar Kelimeler: Damar yaralanması, ekip koordinasyonu, acil kanama kontrolü.

INTRODUCTION

Injuries of the extremities with a piercing cutting tool in peripheral vessels, It causes complications that require urgent surgical intervention with high morbidity and mortality rates . Most of these cases can be injured in the

adjacent nerves along with the artery and vein. Hypovolemia and hypotension are the most common clinical findings in penetrating vascular injuries. In severe vascular injuries, early control of hemostasis is extremely important in maintaining the patient's life and recovering the extremity affected by ischemia.

In this study, we presented a case with right thigh medial region (adductor canal) wounded with penetrating cutting tool and femoral artery and femoral vein isolated (full-thickness) but not injury in saphenous nerve passing through the same region.

CASE REPORT

In the first intervention in the ambulance and emergency room, a 19-year-old male patient, who was brought to the emergency room of Sivas numune hospital, from the middle thigh, 1/3 middle medial region, with a puncturing cutting tool; The tourniquet and tamponade were applied to the incision site and the active bleeding was partially controlled, but due to excessive blood loss at the patient's site (at the time of stabbing), hypovolemic shock developed during transport to the hospital. In the first examination of the emergency department; consciousness was blurred, pupils were mydriatic, skin was pale and cold sweat was detected.

There were active (arterial) hemorrhage, 3 cm long, 4 cm depth and 1 cm wide incision area with a penetrating cutting tool in the right thigh, 1/3 medial portion of the hunter canal area. The patient who had active bleeding and signs of shock when compression and tourniquet was removed (blood pressure 60/40 mmHg and heart rate 110 / min, respiration tachypnea, hemoglobin value 6.2 g / dl, hematocrit 25%). He was operated on with urgent mai replacement without detailed vascular and neurological examination. The patient underwent

emergency cross-match and blood group determination and the treatment of IV mai replacement (erythrocyte, crystalloid, colloid) was continued. While anesthesia was intubated, pressure was applied to the patient on the active bleeding area (penetrating injury area). The patient is covered in sterile after very quickly applied povidon, the femoral artery was pressed from the inguinal canal and the bleeding was tried to stop with clamps from the incision area. However, adequate exposure and bleeding control could not be achieved due to intensive collateral network. A second surgical site was created by placing a vertical incision in the right femoral region (2/3 distal of the inguinal ligament) to prevent the patient from losing more blood. Then the common femoral artery (CFA) was found and put aside and it was clamped after administration of 1cc Heparin IV. Active

bleeding stopped after clamping. After bleeding control, the penetrating injury area was expanded up to 2 cm from the upper and lower parts of the vertical axis. After exploration, it was found that the superficial femoral artery (SFA) was completely cut (Figure 1) and the superficial femoral vein (SFV) was almost completely cut (Figure 2).

CFA clamp was removed after clamping the artery- vein ends in the injury site and exist of jet flow was controlled from proximal of SFA in lesion area. Retrograde flow from distal SFA was sufficient. Therefore, the proximal and distal parts of the SFA were repaired with 6/0 and 7/0 polypropylene sutures using end-to-end anastomosis technique without additional intervention (Figure 3).

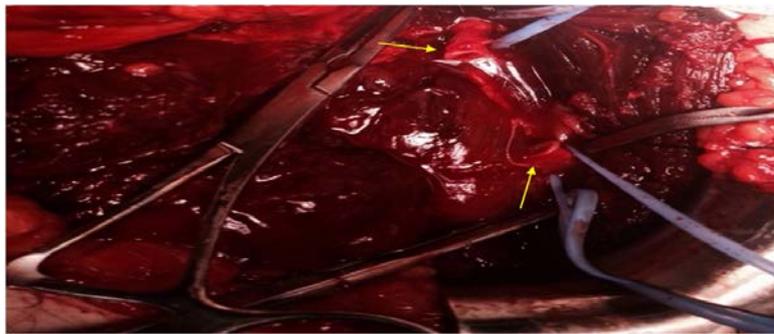


Figure 1. View of the proximal and distal part of the full-cut SFA

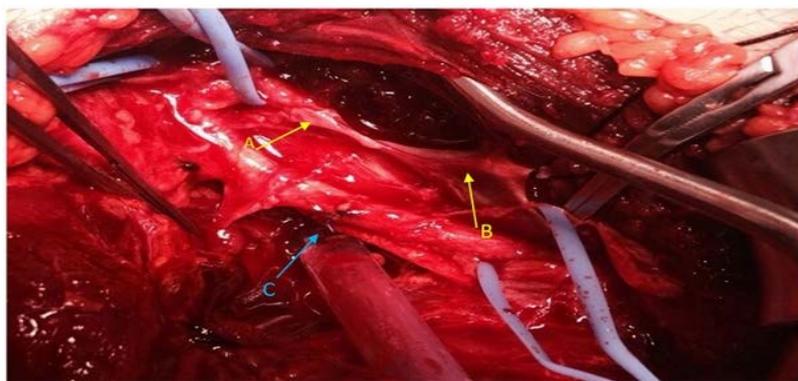


Figure 2. The superficial femoral vein (SFV) was almost completely cut

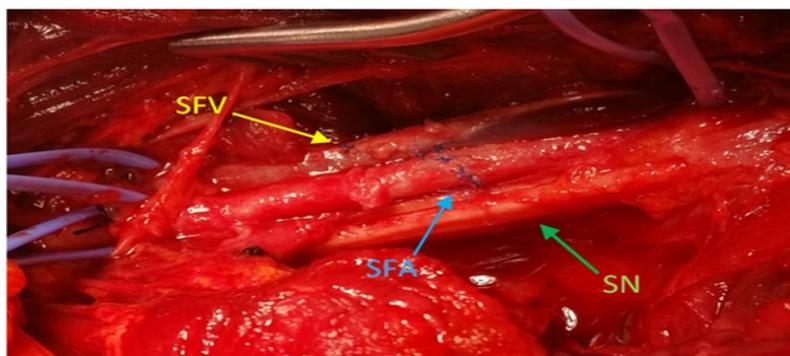


Figure 3. Anastomosis technique without additional intervention

Removed all the clamps in the artery segment. There was no bleeding from the anastomosis area and distal passage was checked. The distal circulation was confirmed by mini hand doppler ultrasound. The oblique incision in the vein segment was examined in detail. Did not develop thrombus formation and endothelium was intact. Adequate blood flow was exist from the distal SFV. On this, without additional technique, adduct sutures were placed and repaired with primary end-to-end anastomosis technique. Then removed all clamps. The patient's peripheral pulses were palpated by hand. After the bleeding control, intra-operative consultation was requested from neurosurgeon. It was decided that there was no visible damage and incision in the saphenous nerve in the neurosurgeon control (Figure 3).

Surgical incision area in the right femoral region; The floors were closed to fit anatomy. The cut muscle groups in the lesion area in the Hunter canal were sutured by finding their own fibers. The patient was extubated into intensive care unit. The patient was given tetanus prophylaxis and prophylactic antibiotherapy. At the post-op 3rd hour, low molecular weight heparin was started at 0.1 ml / kg. The patient was taken to the cardiovascular department 6 hours later.

DISCUSSION

Peripheral vascular injuries, mostly male sex, 20-30 years of age and localization of the lower extremities is the first place. Penetrating traumas, which result in direct vascular injury, often occurs with firearms or piercing tools. Injury of the puncturing tool creates 36% [1] of all arterial injuries and 22% of all vascular

injuries [2]. With the first and emergency intervention, bleeding control is very important in arterial injuries. The best method for emergency control of bleeding is directly compression. Turnstile usage are rarely require. If the tourniquet application cannot be performed properly, it may cause permanent damage to the distal tissues. Vascular clamps should never be use in a masked wound by blood and thrombus, because it may cause irreversible damage to adjacent nerves. Patients are brought to emergency services mostly in hypovolemic shock, especially in major arterial injuries. In this case, the emergency service team should be immediately ensure circulation by replacing the blood-volume gap. It is essential to perform blood volume restoration with whole blood and crystalloid solutions both preoperatively and intraoperatively. Immediate surgical repair should be initiated after these procedures for the control of the patient's hemostasis. The first condition of arterial repair in arterial injuries is to be performed within 8 hours after injury [3,4,5,6]. In this case, arterial repair was performed within 1 hour from the beginning of the event. If the patient is late for arterial reconstruction, the patient may develop as a result of acute ischemia, resulting in loss of limb which is the biggest and feared complication of peripheral artery injuries. The shorter the duration of exposure of the extremity to the ischemia, the less the morbidity. The duration of endurance to extremity ischemia is inversely proportional to the size of the surgical bleeding. Clinical findings such as arterial hemorrhage, hypotension and shock findings that weak the distal pulses, or the absence of any distal pulses, and the continued decline of

hematocrit, indicate severe arterial injury, and the only solution to save the extremity against ischemia is emergency surgery. However, even in a severe artery injury, the ischemia findings of the distal part of the injury may not always be present, or the findings may not be typical [7-8]. Although the surgical procedure to be performed in peripheral vascular injuries varies according to the characteristics of the lesion, it has been reported that the primary repair and end-to-end anastomosis procedure is performed [9,10,11]. In our case, end-to-end anastomosis and primary repair procedures were used together. Repair of vein injuries associated with arterial injuries affects prognosis in a good way [12]. In the literature, 30-40% of major vascular injuries have been reported together with venous injury [6,10,13]. Anticoagulation should be performed in patients with major vein repair. In our case, LMWH treatment was started 3 hours after the operation. Distal pulse may not be taken immediately or weak after repair. A local papaverine solution can be used to prevent and eliminate arterial spasm, a problem that may develop peroperatively [14]. In our case, local papaverine application was not required during the operation but pentoxifylline infusion was started peroperatively.

In the presented case, as soon as the news of the 112 Emergency Service was received, informing the hospital emergency department and cardiovascular surgeons provided the preparations for the interventions to be made to the patient early and complete. Buffering to the active bleeding site of the patient during transfer and serum replacement allowed the patient not to lose from the hypovolemic shock until the patient arrived at the emergency room. When the patient came to the emergency room, the emergency examinations were performed quickly and the early intervention was made by cardiovascular surgeon and Emergency specialist doctors. As is known, this type of large, full layer, artery and vein cuttings can cause very fast volume losses (within minutes) that will threaten life or cause organ damage. In our case, despite the rapid intervention, blood loss at the scene of the incident and in the transfer time was sufficient for the patient into hypovolemic shock. In this presentation, we aimed to emphasize the importance of early intervention in such cases, because if there was a delayed intervention, perhaps the patient would be lost.

Due to the increase in this type of injuries, emergency vascular interventions and operations will be life-saving in the centers that will intervention. In this article, we aimed to emphasize the importance of early intervention in this type of emergency vascular injuries and the importance of coordination between the Emergency ambulance service, the hospital emergency department and the cardiovascular surgery department.

As a result, early bleeding control, rapid transport, experienced emergency and surgical team, appropriate anticoagulation and antibiotic use will significantly reduce mortality and morbidity rates.

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