Tibioperoneal Artery and Vein Reconstruction with Small Saphenous Vein Graft After Gunshot Injury: Original Image

Ateşli Silah Yaralanması Sonrası Tibioperoneal Arter ve Venin Küçük Safen Ven Grefti ile Rekonstrüksiyonu

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Popliteal vascular injuries are uncommon but associate with high rates of limb loss and potential comorbidities.[1] Limb ischemia after a penetrating gunshot wound is often due to localized trauma to the artery. This is the point in which the local trauma diverts from the atherosclerotic vascular ischemia. Arterial injuries, therefore, are subject to local reconstruction rather than bypassing the entire atherosclerotic segment.[2] As the vascular surgery methods have been advanced over the time, the amputation rates in popliteal artery injuries have shown apparent improvement.[3] It should be remembered that, during the World war-2, the popliteal artery injuries were treated with ligation and the amputation rate was 73%.[4] We presented a surgical intervention of a young male who was shot from both knees but having injury only in his right popliteal vasculature. The importance of small saphenous vein (SSV) graft usage was underlined and emphasized in this otherwise usual operation.

A 24-year-old male arrived at the emergency department with a gunshot wound to his both legs. He was conscious with a blood pressure of 105/60 mmHg and heart rate of 92 bpm. He had wounds in her right and left popliteal region. Upon the examination of the wounds, a medial bullet entry at the level of popliteal fossa without an exit lesion was inspected on his left leg. Symmetrically, there was a lateral bullet entry at the level of popliteal fossa with an exit lesion medially on his right knee. Palpation of the peripheral pulses revealed a pulse deficit on his right side over the posterior tibial artery (PTA) and anterior tibial artery. Left sided pulses were normal. The Mangled Extremity Severity Score (MESS) was 5. The Computerized Tomography (CT) Angiography demonstrated the lack of distal arterial perfusion and the presence of extravasation of the contrast material consistent with a vascular injury at the right popliteal region. On the left side, a trapped bullet was viewed medial to the knee with a fortunate intact distal vascular perfusion (Figure 1).

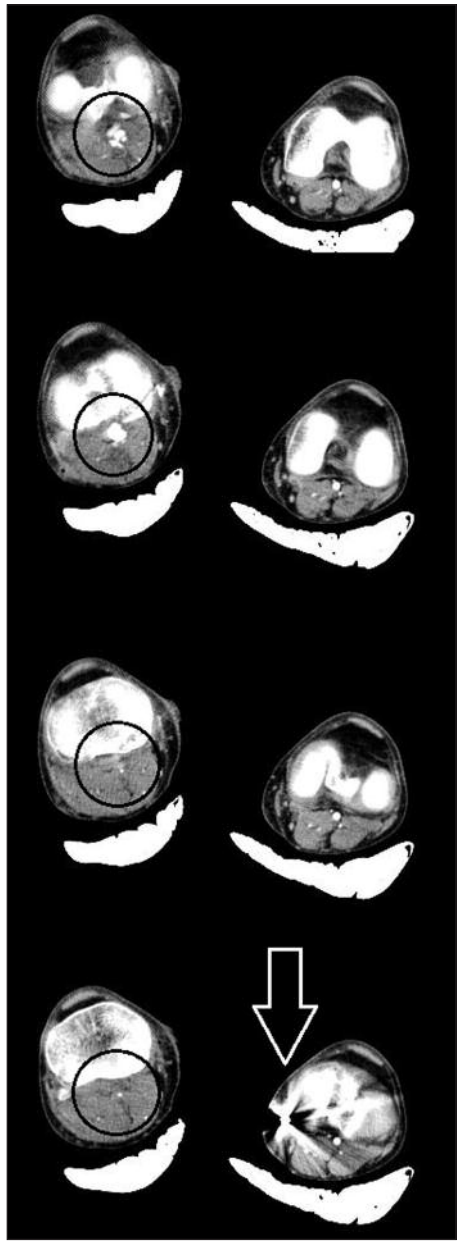

FIGURE 1: Computerized Tomography Angiography views are showing the extravasation of the contrast material and the cut of the artery (encircled) on the right leg. The arrow is showing the bullet inside the left knee.

The patient was taken to the operating room after the decision of surgery to the injured right popliteal region. He was positioned in prone position under general anesthesia. Right popliteal fossa was explored with an S-shaped longitudinal posterior incision. Before advancing the exploration deeper, a 10 cm segment of the SSV was harvested for potential use as the graft. Inside the thoroughly and deeply explored popliteal region, a total cut of the tibioperoneal trunk with the accompanying partial laceration of the tibioperoneal vein were observed. Cut edge of the tibioperoneal trunk was clamped. The patient was administered 5000 IU unfractionated heparin intravenously.[3] Tibioperoneal artery was repaired with a 6 cm segment of the previously prepared reversed SSV graft interposition. Tibioperoneal vein was also repaired with a patch-plasty derived from the remaining portion of the same SSV graft (Figure 2). Diameters of the SSV graft and the tibioperoneal artery were perfectly fitted to each other. Intraoperative color Doppler ultrasound examination revealed a triphasic circulation in PTA at the level of medial malleolus soon after declamping (Figure 3).

Preliminary SSV graft harvesting should always be considered in popliteal vascular traumas for artery and vein reconstruction as it can be used as either a interposed graft or a vascular patch. The avoidance of the sural nerve damage can be achieved by careful dissection and keeping above the mid-calf level.[5]

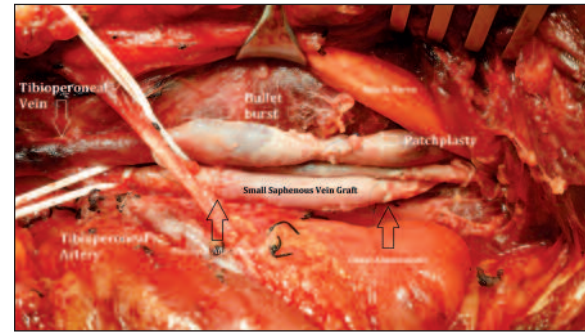

FIGURE 2: The intraoperative image is demonstrating the anatomic vascular structures and the reconstructions in detail.

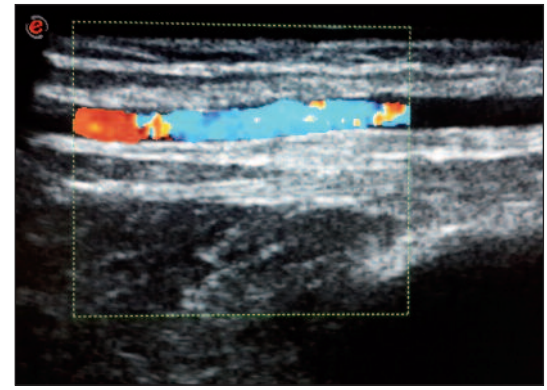

FIGURE 3: Intraoperative color Doppler ultrasound image is showing the resumed posterior tibial circulation soon after the revascularization.

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