

# Setting a New Iliac Bifurcation in Unilateral Common Iliac Artery Occlusion: Case Report

## Tek Taraflı Ana İliak Arter Okluzyonunda Yeni İliak Bifurkasyon Oluşturulması

Cemal KEMALOĞLU,<sup>a</sup>  
Derya ACAR KERMAN,<sup>b</sup>  
Vahit ÖZENER<sup>c</sup>

Clinics of

<sup>a</sup>Cardiovascular Surgery

<sup>b</sup>Anesthesiology and Reanimation,  
Turgutlu State Hospital, Manisa

<sup>c</sup>Department of Radiology,  
Barış Medical Imaging Center, İzmir

Geliş Tarihi/Received: 24.06.2013

Kabul Tarihi/Accepted: 14.02.2014

Yazışma Adresi/Correspondence:

Cemal KEMALOĞLU

Turgutlu State Hospital,

Clinic of Cardiovascular Surgery,  
Manisa,

TÜRKİYE/TURKEY

cemalkemaloglu@hotmail.com

**ABSTRACT** This is a case report of a patient with serious peripheral arterial occlusive disease. We believe that, setting a new iliac bifurcation by making an opposite common iliac artery bypass, is a good way to treat unilateral iliac artery occlusion especially in patients with intensive atherosclerotic disease in distal abdominal aorta.

**Key Words:** Iliac artery; peripheral arterial disease

**ÖZET** İleri derecede aterosklerotik abdominal aortali hastalarda, tek taraflı iliofemoral arter tıkanıklıklarında, bifurkasyona simetrik olacak şekilde yapılan anastomoz ile, anatomik bütünlüğün mümkün olduğunca korunduğu, yeni iliac bifurkasyon oluşturunun tedavide alternatif bir yol olabileceği kanaatindeyiz.

**Anahtar Kelimeler:** İliak arter; periferik arteriyel hastalık

**Damar Cer Derg 2014;23(3):198-201**

Patients with long unilateral aortoiliofemoral occlusive disease can be treated using some types of prosthetic bypasses like aorto-unifemoral, iliofemoral or extra-anatomic bypasses. All of these bypasses provide satisfactory early results, but some may not be sufficient for the ones with a long life expectancy and who need a long term patency. Studies designed to compare the short and long term graft patencies of these bypass types indicate that more anatomically the graft is positioned, the longer it is patent.<sup>1</sup>

### CASE REPORT

A 61-year-old man was evaluated for left and right calf claudication that had been present for 2 years. His symptoms progressed through these 2 years, and he began to experience left calf and thigh pain when he walked less than 100 meters. The patient had hypertension, smoking and hyperlipidemia (LDL: 207 mg/dl) as risk factors. Limb-threatening ischemia and non-healing foot ulcers were not present. On physical examination, his blood pressure was 170/85 mmHg. His ankle-arm index (AAI) was 0.40 on

doi: 10.9739/uvcd.2013-36609

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the left and 0.60 on the right side. Multislice, 3-dimensional computerized tomography (CT) angiography was planned.

On CT, distal-infrarenal abdominal aorta was extensively atherosclerotic. Intimal thickening was seen. Left common iliac artery (CIA) was occluded at the bifurcation. Left common femoral artery (CFA) was opacified circumferentially. Bilateral superficial femoral arteries (SFA) were occluded distal to femoral bifurcation. Popliteal and crural arteries were normal on both sides (Figure 1).

Aorto-uni-femoropopliteal bypass was considered first for the left side. Angioplasty was planned for EIA stenosis and femoro-popliteal bypass was planned for right SFA occlusion afterwards. The



**FIGURE 1:** Preoperative 3 dimensional computerized tomographic angiography showing occluded left common iliac artery and extensively atherosclerotic distal infrarenal abdominal aorta.

patient weighed 92 kg, and was 1.75 m tall. The operation was performed on February 22, 2013.

Distal abdominal aorta and iliac bifurcation were explored through a median laparotomy and retroperitoneal approach. Left common femoral and left popliteal arteries were explored classically. After retroperitoneal tunneling, 8 mm-80 cm, "PET knit polyester textile coated ePTFE" graft was carried through the tunnel from retroperitoneum - to CFA, neighboring the native external iliac artery. Later, the graft was carried out from the femoral artery to popliteal artery, inside the Hunter's canal-from its anatomical position. The plan was to make the proximal-aortic anastomosis first, but the infrarenal abdominal aorta was extensively atherosclerotic and calcified, therefore side or cross clamping was not feasible. Right common iliac artery was suitable for anastomosis just after the bifurcation. Right common iliac side-to-end anastomosis was made with continuous 6/0 polypropylene sutures following systemic heparinization. Popliteal anastomosis was then made by the same end-to-side technique. Finally, CFA and graft were anastomosed side-to-side. The operation time was 2 hours and 57 minutes and the amount of total bleeding was 150 ml. The patient was taken into the intensive care unit (ICU), extubated 3 hours later, and left the ICU in the next morning. Enoxsarin 2 mg/kg/day was started 4 hours after surgery. The patient had a palpable left posterior tibial pulse, and an AAI of 1.00. The right side was unchanged. Postoperative CT angiography showed an open graft at the right anatomical position, and collateralization seemed decreased (Figure 2). The patient was discharged 4 days after surgery. Warfarin 5 mg/day and clopidogrel 75 mg/day were prescribed at discharge. The patient was referred to a cardiologist for right EIA stenting, and finally right femoropopliteal bypass was performed (Figure 3).

## DISCUSSION

It has been accepted that the patency rates of anatomical by-passes are higher than extra-anatomical ones. Primary patency rates of femoral-femoral bypasses are estimated to be at 65-70% at 5 years.<sup>2-4</sup> Axillofemoral is also one of the options for



**FIGURE 2:** Postoperative (10 days after surgery) computerized tomographic angiography showing a patent graft at the right anatomical position and decreased collateralization.

managing patients presenting with aortoiliac arterial occlusions. Axillofemoral bypass patency rates are estimated to be as low as 40-75% at 5 years.<sup>5-8</sup> Despite that, aortofemoral grafts are reported to be patent 84% at 5 years. However, most of these grafts were easily revised and remained patent for long periods, giving a secondary patency rate of 93% at 10 years.<sup>8</sup>

Aortofemoral bypass procedures seem to be the golden standard for intensive aortoiliac occlusions. However, it is not feasible in some cases. We also know that anatomical bypass procedures should be chosen more for aortoiliac occlusive disease, especially in patients presenting occlusion on one aortoiliac side, and stenosis on the other side. We wanted to share the story of this patient, to make this alternative way of an anatomical bypass

procedure come into mind in appropriate cases. This is an anatomical bypass from right CIA to left popliteal artery.

## CONCLUSION

Setting a new iliac bifurcation with a long segment bypass grafting at the original position can be an alternative way for the patients with an intensively atherosclerotic abdominal aorta, total occlusion at one CIA and severe stenosis on other iliac side.

## Conflict of Interest

Authors declared no conflict of interest or financial support.



**FIGURE 3:** The final computerized tomographic angiography showing the right common iliac artery stent and right femoropopliteal bypass graft. Both grafts are patent (approximately one year after the first operation).

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