Interventional Requirements In Cardiovascular Surgery With A Case Report: Coil Embolization

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ABSTRACT

Endovascular aneurysm repair (EVAR) for abdominal aortic aneurismal disease has gained increasingly widespread application. Aneurysm extends into at least one of the iliac arteries in approximately 20% to 30% of patients. The presence of internal iliac artery aneurysm is one of the most important issues which may dictate a modified approach in EVAR. Herein, we aim to emphasize the interventional skills that surgeons should have in daily practice in a patient who had abdominal aortic aneurysm concomitantly internal iliac artery aneurysm was performed coil embolization due to the internal iliac artery aneurysm.

Keywords: Abdominal aortic aneurysm; Endovascular Procedures; Iliac Aneurysm; Peripheral Vascular Diseases; coil embolization

Bir Vaka Sunumu ile Kardiyovasküler Cerrahide Girişimsel Gereklilikler: Coil Embolizasyon

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ÖZET

Abdominal aort anevrizmasının endovasküler onarımı (EVAR) giderek artan oranlarda kullanılmaktadır. Anevrizma, hastaların %20 ila %30'unda iliyak arterlerin en az birini etkilemektedir. İnternal iliyak arter anevrizması, EVAR'da modifikasyona ihtiyaç gösteren en önemli konulardan biridir. Abdominal aort anevrizması ile birlikte internal iliyak arter anevrizması da bulunan ve bu sebepten ötürü internal iliyak artere coil embolizasyonu yapılan bu vaka sunumunda cerrahların günlük pratiklerinde ihtiyaç duyabilecekleri girişimsel ihtiyaçların vurgulanmasını hedefledik.

Anahtar Kelimeler: Abdominal aort anevrizması; Endovasküler prosedürler; İliyak anevrizma; Periferik vasküler hastalıklar; Coil embolizasyon

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INTRODUCTION

Endovascular aneurysm repair (EVAR) for abdominal aortic aneurismal disease (AAA) has gained increasingly widespread application. It has been demonstrated to be a safe and effective intervention compared with open aortic repair and feasible alternative in patients with prohibitive surgical risks. However, increasing variety of cases with common use of EVAR has created new challenges and requirements. EVAR is applied to a large variety of aortic aneurysm configurations. Unilateral common iliac artery (CIA) aneurysms are present in 43%, and bilateral CIA aneurysms in 11% of patients with intact AAA [1]. The presence of internal iliac artery (IIA) aneurysm is one of the most important issues which may dictate a modified approach in EVAR. Herein, we aim to emphasize the interventional skills that surgeons should have in daily practice.

CASE

Sixty-three years-old male patient was admitted our clinic with diagnosis of AAA, right IIA and bilateral common femoral artery (CFA) aneurysm which was diagnosed incidentally (Figure 1; A,B,C). He had a lung nodule and he was scheduled for a diagnostic work-up in another hospital for differential diagnosis of lung cancer. He was scheduled for EVAR. Under local anesthesia and sedation, bilateral CFA were cannulated surgically (6F-sheath) and right brachial artery was cannulated percutaneously (5F-sheath). A 0.035-hydrophilic Teflon guidewire and multipurpose-catheter were sent via right brachial artery and the catheter was advanced to the orifice of right IIA and coil embolization was performed in order to occlude the terminal branches (4 pieces of 5F,2D-Helical-35 ve 2 pieces of 4F,2D-Helical-35 (Boston Scientific)). EVAR procedure was performed with Gore Dry-Seal graft (26x16x16). The endograft (14x10, Gore) was extended into the external iliac artery and the orifice of right IIA was covered. The proximal segment of EVAR graft and iliac extension site was stabilized with balloon dilatation (Consellation,46mm). No endoleak was observed after completion angiography. Bilateral CFA aneurysms were plicated with Teflon felts. The patient was discharged at postoperative third day uneventfully.

Computed tomography angiography was performed two months later and there was no type of endoleak (Figure 1;D,E,F). The right IIA was found to be completely occluded (Figure 1 E). The patient was asymptomatic. He is still alive after 6 months of treatment and continues to receive chemotherapy for lung problems.

DISCUSSION

EVAR is widely used to treat patients with AAAs. However, patients with aortoiliac aneurysms represent a particular therapeutic challenge. The optimal endovascular management of the IIA in aortoiliac aneurysms remains debatable. Although pelvic circulation possesses the rich collateral network, the risk of pelvic ischemia which may cause the buttock claudication, spinal cord ischemia, sexual dysfunction, ischemic colitis and gluteal necrosis associated with IIA occlusion is higher in endovascular series than in open surgical series [2]. Pelvic ischemia is especially encountered in patients with bilateral IIA embolization [3].

Selective coil embolization of IIA unilaterally can usually be accomplished safely during EVAR [4]. The patency of collateral circulation is quite important for a safe procedure. Yano et.al identified two unique preoperative angiographic findings that predicted pelvic ischemia: (a) >70% stenosis of the origin of the contralateral IIA or non-opacification of three or more named IIA branches, and (b) diseased or absent ascending deep femoral branches ipsilateral to the side of the IIA occlusion [5]. In our patient, collateral IIA was patent (Figure 1C) and the follow-up was uneventful.

The decision of coverage technique without concomitant coil embolization during EVAR in selected patients was described before [6]. It was based on the presence of adequate graft oversizing in the most distal 5 mm of the common iliac artery and the most proximal 15 mm of the external iliac artery. The patients with inadequate graft oversizing in the common iliac artery had IIA coil embolization. No endoleak, graft migration, or aneurysm enlargement were encountered in either group [6]. Apart from oversizing, we performed balloon dilatation to the covering stent after deployment.

Potential of endoleak after stent graft coverage of the IIA with or without coil embolization is controversial. Frahmand et.al remarked that coil embolization may not reduce the rate of type 2 endoleak [7], but adversely, Wyers et.al reported no endoleak after coil embolization [6]. Moreover concomitant coil embolization during EVAR may increase the operative time and volume of intravenous contrast given in one setting which may lead contrast-induced nephropathy. In our patient we did not encountered the increasing creatinine level, any type of endoleak or pelvic ischemia.

In conclusion; cardiovascular surgery is evolving to interventional procedure rapidly all around the world as our country. Today, cardiovascular surgeon should improve himself in imaging and interventional procedures sufficiently and gain a certain excellence. Lastly, in cardiovascular surgery training, the related curriculum should be completed.

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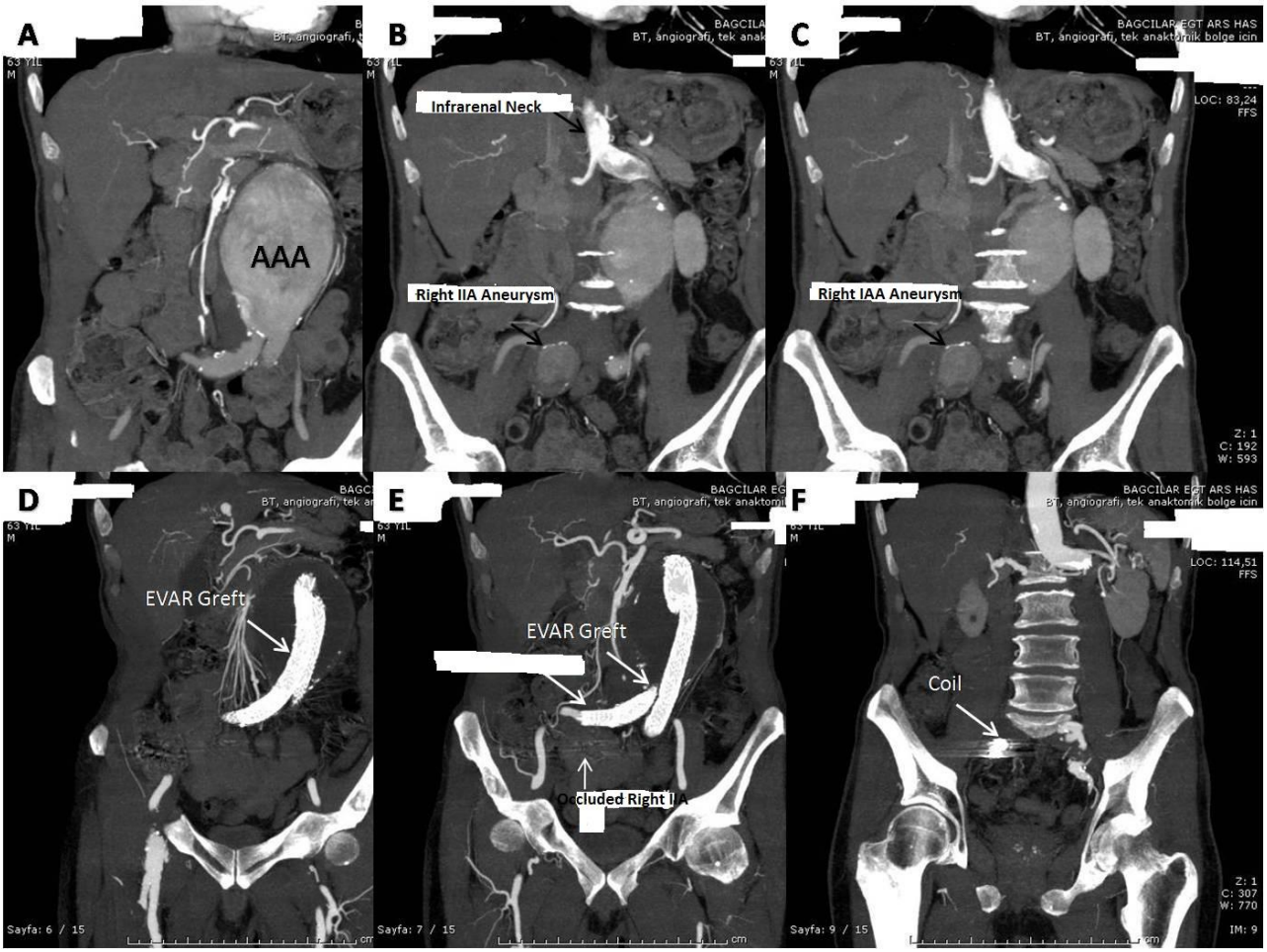
FIGURES

Figure 1.



1 A. B. C. CT Angiography shows the abdominal aortic and right internal iliac artery aneurysm

1 D. After two months the procedure the EVAR greft is viewed by CT Angiography and there was not any type of endoleak

1E. F. CT Angiography shows the completely occluded right internal iliac artey and coil