

An alternative catheterization technique in endovascular repair of a giant aortic aneurysm

Dev aort anevrizmasının endovasküler tamirinde alternatif kateterizasyon tekniği

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In the endovascular treatment of abdominal aortic aneurysm, failure of advancing the catheter into the contralateral leg leads to change the operative strategy. In this article, we report a 77-year-old male case with contralateral leg catheterization at the suprarenal region with collapsing the main body of the graft in a giant aneurysm.

Keywords: Abdominal aortic aneurysm; endovascular procedure; stent graft.

Endovascular aneurysm repair (EVAR) is preferable technique for abdominal aortic aneurysm (AAA) treatment in high surgical risk patients, particularly. The catheterization of contralateral leg following the main body implantation is the most important step of the EVAR to complete the procedure.^[1] The catheterization of contralateral leg is possible by an experienced surgeon in most stent grafts; however, facilitative methods such as hook system or magnet system are present. Despite all these facilitative techniques, contralateral leg catheterization is more challenging in giant aortic aneurysms. In this article, we present a case of AAA who was treated with the contralateral leg catheterization.

CASE REPORT

A 77-year-old male patient was admitted to our hospital with complaint of abdominal pain. Physical examination revealed a pulsatile mass, while computed tomography (CT) showed an 8.7 cm infrarenal AAA. We decided to perform EVAR using the magnet system to facilitate contralateral leg catheterization in

Abdominal aort anevrizmasının endovasküler tamirinde kateterin kontralateral bacağı ilerletilememesi, ameliyat stratejisinin değiştirilmesi ile sonuçlanır. Bu makalede, dev abdominal aort anevrizmasında ana gövdeyi toplayıp suprarenal bölgeye taşıyarak kontralateral bacak kateterizasyonu uyguladığımız 77 yaşında bir erkek olgu sunuldu.

Anahtar sözcükler: Abdominal aort anevrizması; endovasküler işlem; stent greft.

a giant aneurysm. Under general anesthesia bilateral femoral arteries were explored. Then, a 25.5 mm main body of the stent graft (Anaconda, Vascutek-Terumo, Inchinnan, Scotland) was deployed below the renal arteries through the right common femoral artery. Following repeated angiography, a magnet wire was advanced into the aortic aneurysm through the left common femoral artery. This magnet was tried to be attached with intrinsic magnet wire of the main body at the bifurcation level (Figure 1). The magnets could not be attached at the same plane despite all attempts for 20 minutes. Thus, the main body was collapsed and re-positioned in a normal sized suprarenal aorta (Figure 2). The magnets were easily attached in the suprarenal region with a diameter of 22 mm within five minutes, then both magnet wires carefully were advanced, until the magnets visualized superior main body. The main body was re-positioned below the renal arteries and re-deployed. After repeated angiography, 13x140 mm stent graft implantation on the contralateral and ipsilateral leg was performed, respectively. Based on the detection of a 1B-type endoleaks in the right iliac extension, the procedure was ended by implanting



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a 13x80 mm stent graft on the right iliac artery. The postoperative period was uneventful and the patient was discharged in the second postoperative day.

DISCUSSION

Endovascular aneurysm repair is one of the treatment alternatives for AAA. Endovascular techniques often decrease postoperative mortality and morbidity in high risk patients, particularly. The success rate of EVAR is 97.6% and not being able to catheterization of the contralateral is one of the reasons of the failure.^[2] In EVAR, the most time-consuming step is catheterization of the contralateral leg. This period prolongs the procedural time and increases the amount of radiation exposure for both the patient and health staff. Also, more manipulation increases the risk of atheroembolism.^[1] The magnet and hook systems, which are known as facilitative systems, make it easy to catheterize the contralateral leg. However, in these methods, it is difficult to attach the magnets or the hooks in a giant aneurysm.

Contralateral leg catheterization is easier in small-sized aortic aneurysms, but it gets more difficult in giant aneurysms due to increased potential space. When tortuosity and angulation is added to the giant aneurysms, catheterization procedure gets more complicated. The contralateral leg can be catheterized with the snare sending from brachial artery or ipsilateral femoral artery in failure, however, attaching the catheter and

snare on the same plane may be more difficult in giant aneurysms.^[1] Aortouniiliac stent grafts are alternative to aortobifemoral stent grafts in the emergency setting which does not require contralateral leg cannulation. However, the procedure necessitates femorofemoral bypass followed by the deployment of iliac occluder to the contralateral iliac artery.^[1] We prefer aortouniiliac stent grafts in the acute rupture of the aortic aneurysms to prevent the complications of extra-anatomic bypass.

Aneurysm diameter was 87 mm in our case and the aneurysmal segment area was 59.4 cm². Firstly, we placed the catheter to the contralateral leg which occupied an area of 1.13 cm², corresponding to 1.9% of this area. Then, we tried to attach two magnets on the ends of 0.035 wire in an area of 59.4 cm². The magnets could not be attached and we collapsed the main body and replaced it with a suprarenal aortic region of 22 mm in diameter. We completed the stent graft implantation by attaching the magnets in an area (3.8 cm²), which is now downsized by 64%, compared to the previous situation.

Contralateral leg catheterization at the normal-sized suprarenal aortic level may be applied in patients with manipulation difficulty due to aortic lumen tortuosity or thrombosis as well as giant aneurysms. The only obstacle for the applicability of this technique is that the main body is not being able to be collapsed after it is opened. In addition, each stent does not have a such feature which allows collapsing. Contralateral leg catheterization in suprarenal aorta should be

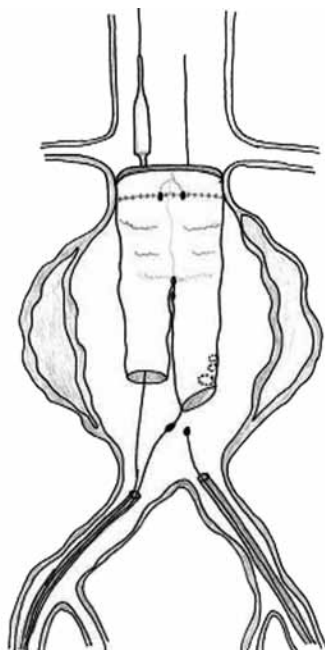


Figure 1. Unsuccessful attempt to attach two magnets in a giant aortic aneurysm.

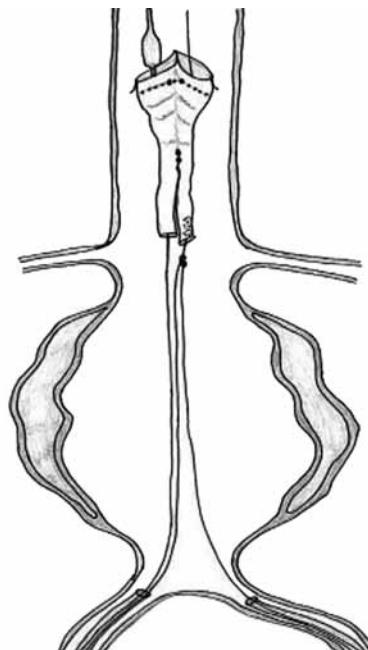


Figure 2. Two attached magnets in the suprarenal aorta.

considered as an alternative technique in patients with manipulation difficulty, in particular.

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REFERENCES

1. Trellopoulos G, Georgiadis GS, Nikolopoulos ES, Lazarides MK. Current tips for ensuring successful transfemoral short limb cannulation in modular aortic endografts: a new method for incorporation in practice. *Perspect Vasc Surg Endovasc Ther* 2009;21:232-6.
2. Drury D, Michaels JA, Jones L, Ayiku L. Systematic review of recent evidence for the safety and efficacy of elective endovascular repair in the management of infrarenal abdominal aortic aneurysm. *Br J Surg* 2005;92:937-46.