



OLGU SUNUMU

CASE REPORT

CBU-SBED, 2022, 9(2): 346-348

Endovascular Treatment for an Adult Isthmic Aortic Coarctation with Complicated Anatomy

Komplike Anatomili Erişkin İstmik Aort Koarktasyonu için Endovasküler Tedavi

Funda Yıldırım^{1*}, Dilşad Amanvermez Şenarslan¹, Ömer Tetik¹

1 Manisa Celal Bayar University, Department of Cardiovascular Surgery, Manisa, Türkiye.

e-mail: fundanizamoglu@yahoo.com, damanvermez@yahoo.com,

ORCID: 0000 0002 1577 0281

ORCID: 0000 0002 3316 6707

ORCID: 0000 0003 4471 2686

*Sorumlu Yazar / Corresponding Author: Funda Yıldırım

Gönderim Tarihi / Received: 14.03.2022

Kabul Tarihi / Accepted: 28.04.2022

DOI: 10.34087/cbusbed.1087379

Öz

Intraluminal stent-graft yerleştirilmesi erişkin aort koarktasyonu olan hastalarda yaşam süresini uzatmanın yanı sıra semptomların hafifletilmesi için tercih edilir. Burada kompleks istmus anatomisi olan 44 yaşında bir aort koarktasyonu hastasının girişimsel tedavi uygulamasını sunduk. Sol subklavyen arter ostiumundan önce başlayan uzun segment darlığı, proksimal sol subklavyen arter anevrizması, desendan aorta multilobüle anevrizma, poststenotik dilatasyon ve kollateral oluşumu mevcuttu. Hastaya endovasküler stent-graft implantasyonu başarıyla uygulandı. Konjenital aort koarktasyonlarının endovasküler girişimleri, hastaların uzun süreli tedavileri için cerrahiye tamamlayıcı ve alternatif tedavi seçeneğidir.

Anahtar Kelimeler: Aort koarktasyonu, Endovasküler, Erişkin.

Abstract

The intraluminal stent-graft placement is preferred for alleviation of symptoms as well as prolonging life span of adult aortic coarctation.

We presented here the interventional treatment option of a 44 years-old aortic coarctation patient with complex isthmus anatomy, long segment stenosis beginning before the left subclavian artery ostia, proximal left subclavian artery aneurysm, multilobulated aneurysm of descending aorta, poststenotic dilatation and collateral formation. The patient was treated with endovascular stent-graft implantation successfully.

The endovascular interventions of congenital aortic coarctations are complementary and alternative treatment option to surgery for the long-term management of the patients.

Key Words: Adult, Coarctation of the Aorta, Endovascular.

1. Introduction

Aortic coarctation confirms 6-8% of all congenital heart diseases [1]. The standard treatment is surgery and the mean life expectancy is 35 years [2]. But the development of surgical techniques and medical therapy in recent years have increased the life expectancy of these patients. Aneurysm, pseudoaneurysm, recurrent coarctation, aortic and cardiac dysfunction were encountered as long-term complications in some of the patients who had been treated surgically at young ages. The development of such complications leads to the search for alternative

treatment modalities. With the advent of balloon angioplasty and endovascular interventions, new treatment options could be used successfully.

2. Case Report

In this case report, we presented a 44 years-old male patient with aortic coarctation who is treated by an endovascular intervention. The patient was admitted to the out-patient clinic with the complaint of arterial blood pressure difference between right and left upper extremity. He was hypertensive without any other complaint. The laboratory tests were normal. The computed tomography angiography (CTA)

demonstrated the stenosis at the beginning of left subclavian artery, coarcted segment with 4-5 mm opening at the distal of the left subclavian artery, multilobulated aneurysms and saccular aneurysm formation at the proximal of the left subclavian artery. Also poststenotic dilatation and increased collateral formation were observed. The patient was evaluated as suitable for interventional therapy according to the preoperative evaluation. The interval between the left common carotid and the left subclavian artery was appropriate for a secured gap for the deployment of the stent-graft. We performed the endovascular therapy with optimal conditions at the angiography laboratory.

Under general anesthesia, 6F sheath was introduced to the right brachial artery and the conventional angiography (arteriography) of the aorta was performed. The coarcted segment of the descending aorta was shown in Figure 1.

The right femoral artery was explored. The 22F, 24X152 mm sized Medtronic Valiant Thoracic stent-graft was passed. The stenotic segment of the coarcted descending aorta was passed by stent-graft

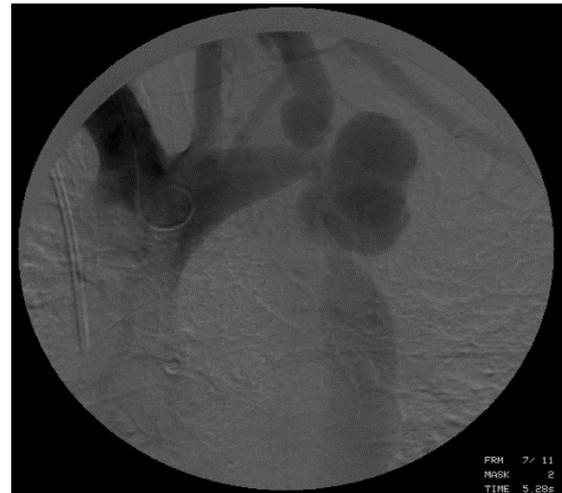


Figure 1. The angiographic view of the complex aneurysms and coarctation of the aorta

diligently. The system was deployed close to the left subclavian artery entrance with partial occlusion. It was dilated two times with the Medtronic Reliant balloon (AB 46 cm³, 12 F) (Figure 2).

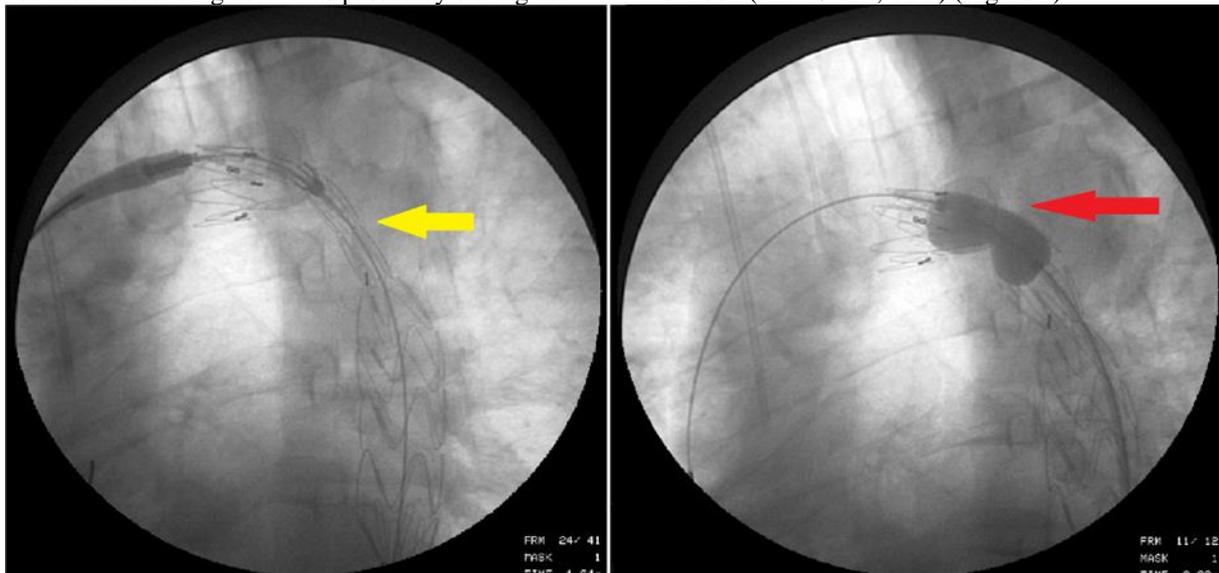


Figure 2: The fluoroscopy of the deployed stent-graft and the balloon angioplasty. Coarcted segment was demonstrated by arrow.

No residual stenosis was observed at the control angiography. Before the intervention, the right radial artery blood pressure was 179/96 mmHg; the left radial artery blood pressure was 140/85 mmHg. After the intervention they were 159/87 mmHg on the right; 112/83 mmHg on the left upper extremity showed us not any effect of the left subclavian artery circulation. The patient was discharged without any problem at the third postoperative day. The third month control 3D-CT angiographic view did not reveal any recoarctation or endoleak problem. (Figure3).

3. Discussion

Unrepaired coarctation may cause to congestive heart failure, aortic rupture, cerebral aneurysm and infective endocarditis [2]. For this reason, surgical or interventional therapy should be performed to eliminate these symptoms and to prolong the survival of the patients [3]. The endovascular therapy is an easy, safe and reliable intervention for the strict descending aortic coarctation of the appropriate patient. We preferred to use the balloon expandable stent-graft implantation to prevent elastic recoil of the coarcted segment of the descending aorta. This system also prevents the new

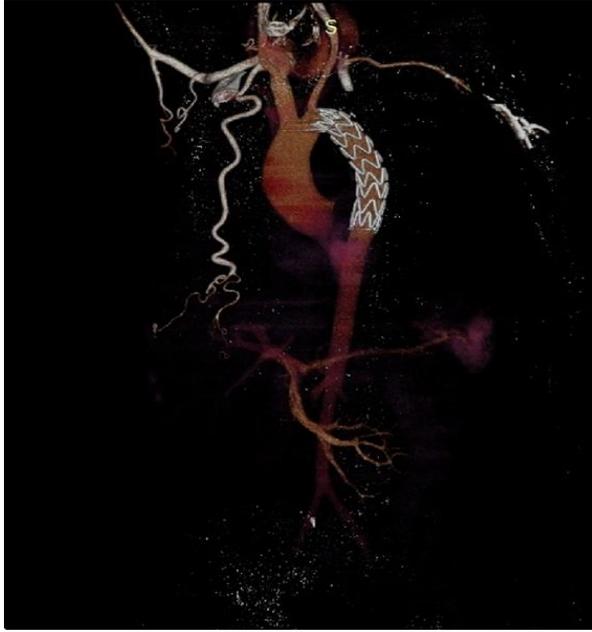


Figure 3. The 3D computerized tomography of the 3rd month control of the patient

aneurysm development and enlargement of the already existing aneurysm.

We performed the endovascular intervention without any trouble in this patient. This enabled us to perform the more easily actualized therapeutic option when compared to more difficult standard surgery. The endovascular interventions of the congenital adult aortic coarctations are now complementary alternative to surgery for the long-term management of patients with a good success rate and safety profile. It should be noted that the best result could be obtained in properly selected patient with appropriate anatomy. We prefer general anesthesia for coarctation patients for controlling blood pressure. During the deployment and staged dilatation of the endograft, the arterial blood pressure of the patient could easily be managed. The endovascular intervention for the complex coarctation anatomy provides better hemodynamic results and larger diameter gain which is almost equal to the native size of the descending aorta. The complications that could be seen during classic surgery such as laryngeal nerve injury, hemorrhage, thoracic duct damage and anastomotic problems are not observed.

This case report indicates that endovascular intervention is an alternative treatment modality for aortic coarctation which is managed practically without any complication. However, much information is still needed regarding to the long term course in stent-graft implanted patients with aortic coarctation [4]. We thought the importance of follow-up of these patients to determine the complications of endoluminal intervention.

In conclusion, the authors believed that for properly selected patients with adult coarctation of the aorta endovascular intervention should be used as an initial therapy.

References

1. Kim, Y.Y, Andrade, L, Cook, SC, Aortic coarctation, *Cardiology Clinics*, 2020, 38, 3, 337-351.
2. Choudhary, P, Canniffe, C, Jackson D.J, Tanous, D, Walsh, K, Celermajer, D.S. Late outcomes in adults with coarctation of the aorta, *Heart*, 2015,101(5),1190-5.
3. Usman, M.H.U, Rengifo-Moreno, P, Janzer, S.F, Inglessis-Azuaje, I, Coarctation of the aorta: Management, Indications for Intervention, and Advances in Care, *Current Treatment Options Medicine*, 2014,16,341.
4. Hornung, T.S, Benson, L.N, McLaughlin, P.R, Interventions for aortic coarctation, *Cardiology Review*, 2002, 10(3), 139-48.

<http://edergi.cbu.edu.tr/ojs/index.php/cbusbed> isimli yazarın CBU-SBED başlıklı eseri bu Creative Commons Atıf-Gayriticari4.0 Uluslararası Lisansı ile lisanslanmıştır.

