EVAR – preliminary results from a single-center experience of a Mediterranean city: case report

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Abdominal aortic aneurysm prevalence is estimated between 4 and 8% in screening programs, predominantly in males. The risk of rupture is directly proportionate to the size of the aneurysm; thus, prophylactic repair is justifiable. The three chief randomized trials comparing Endovascular Aneurysm Repair (EVAR) with conventional repair of abdominal aortic aneurysm have all shown a benefit of EVAR with respect to 30-day operative mortality and these results have been reinforced by data from large registries. Therefore, endovascular repair is now a common treatment option that offers a less-invasive alternative to standard surgical repair with the likely reduced hospitalization, morbidity, and mortality. In this work, we report the short-term results of six cases treated by Thoracic Endovascular Aneurysm Repair (TEVAR)/EVAR at Alexandria Vascular Center.

Keywords:
abdominal aortic aneurysm, EVAR, thoraco-abdominal aneurysm

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Introduction

Abdominal aortic aneurysm (AAA) prevalence is estimated between 4 and 8% in screening programs, predominantly in males [1,2]. The risk of rupture is directly proportionate to the size of the aneurysm; thus, prophylactic repair is justifiable [3]. The three chief randomized trials comparing Endovascular Aneurysm Repair (EVAR) with open repair have all shown a benefit of EVAR with respect to 30-day operative mortality [4–6].

In this work, we report the short-term (1 year) results of six cases treated by Thoracic Endovascular Aneurysm Repair (TEVAR)/EVAR at Alexandria Vascular Center in a 3-year period. The objective of the study is to evaluate the outcome of a nowadays-well-established procedure performed at a low-volume center to propose recommendations that will aid in delivering better service for Egyptian patients with AAA.

Case report

Case 1

A 62-year-old male patient who was hypertensive, smoker, diabetic, and had Coronary Artery Bypass Graft (CABG) procedure before. He had a 6.5-cm infrarenal AAA without iliac involvement. He had a straight tubular Zenith Flex Cook device (COOK Medical, Bloomington, Indiana, USA) implanted. Upon extraction of the sheath, the common femoral artery ruptured, this was managed successfully by interposition-vein bypass. His follow-up Multislice Computed Tomography Angiography (MCTA) showed type-II endoleak that persisted in the 6-month MCTA, however, after 1 year, it spontaneously disappeared.

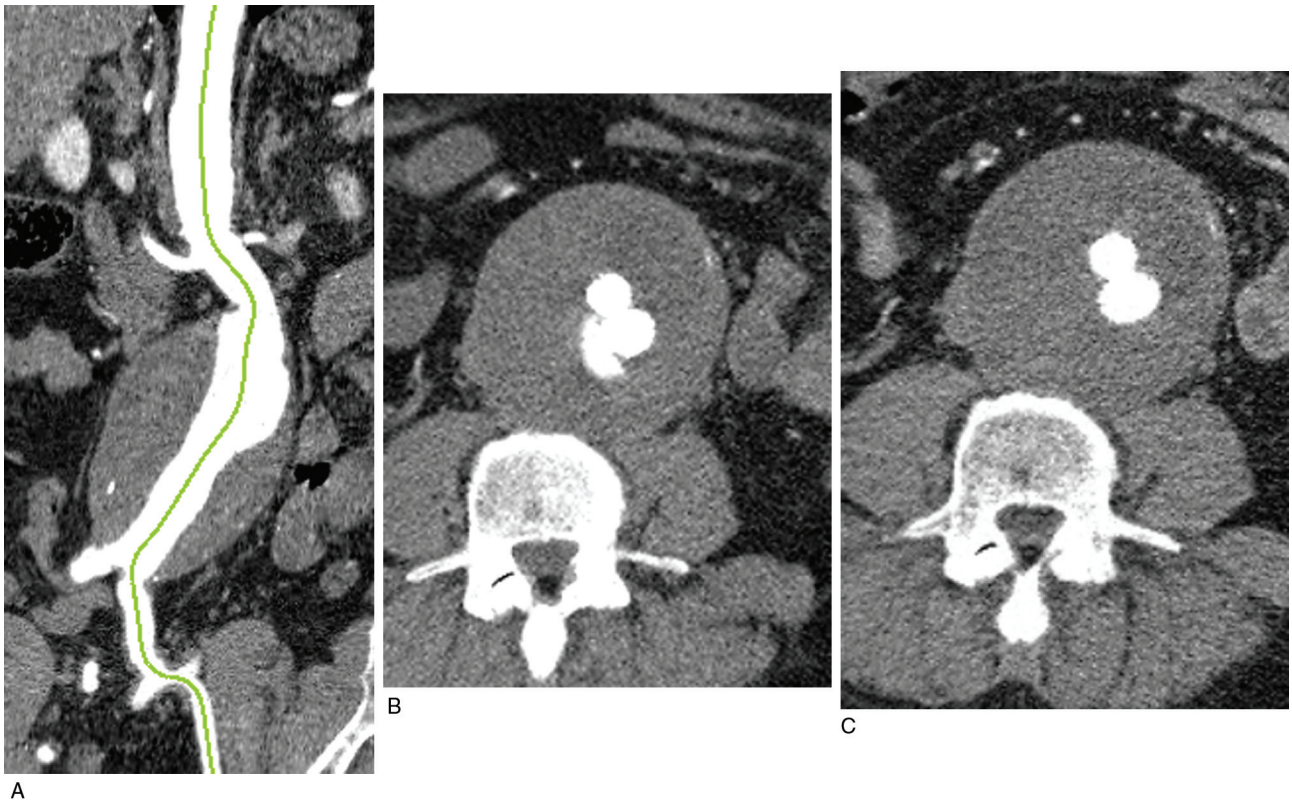
Case 2

A 78-year-old male patient who was a smoker and suffered from bronchial asthma and ischemic heart disease. He had an 8.3-cm infrarenal aorto-bi-iliac AAA. He had a conical angulated–tortuous neck (55°), splayed left Common Iliac Artery (CIA), and Pelvic Artery Index of 1.6 [7]. A Gore C3 Excluder stent graft (W.L. Gore and Associates, Flagstaff, Arizona, USA) was used, through a ballerina technique. First, MCTA 1 month postoperatively showed mild type-II endoleak, this has spontaneously resolved 1 year later. Figure 1a–c shows case 2.

Case 3

A 66-year-old male patient who was diabetic, smoker, and suffered from ischemic heart disease. He had a straight tubular Zenith Flex Cook device graft implanted for his 7.8-cm infrarenal AAA (without iliac involvement). He had acute common femoral artery thrombosis toward the end of the procedure, this was treated immediately by successful

Figure 1



(A) Case 2: 8.3 cm infrarenal aorto-bi-iliac AAA with a conical angulated neck. (B) MCTA 1 month postoperatively: mild type-II endoleak. (C) MCTA 12 months postoperatively: type-II endoleak spontaneously resolved.

thrombectomy. MCTA at 6 and 12 months showed no endoleaks.

Case 4

A 78-year-old male patient with a history of peptic ulcer and smoking. He presented with a 7.2-cm thoracic aneurysm with a concomitant 5.9-cm infrarenal AAA. TEVAR using Cook TX2 endograft device (COOK Medical) was used for his thoracic part and aorto-bi-iliac Zenith Flex for the abdominal extension. Notably, this was the longest procedure done (225 min) with a total radiation-exposure time of 110 min and 480 ml of contrast was used. His follow-up MCTA 1 month later was fine, however, a year later, it showed an asymptomatic type-I endoleak from the distal end of the TEVAR. He was 79 years old at that time and was not keen on any further intervention, thus, he was advised to repeat the MCTA in 6-month time. Figure 2a–e shows case 4.

Case 5

A 69-year-old male patient, who is known to be a smoker and hypertensive. He had a 7.4-cm infrarenal AAA treated by Medtronic Endurant II device (Medtronic Cardiovascular, Santa Rosa, California, USA). The graft used was an aorto-bi-iliac stent with bilateral iliac extensions. His follow-up MCTA after 1 year showed no complications. Figure 3 a–c shows case 5.

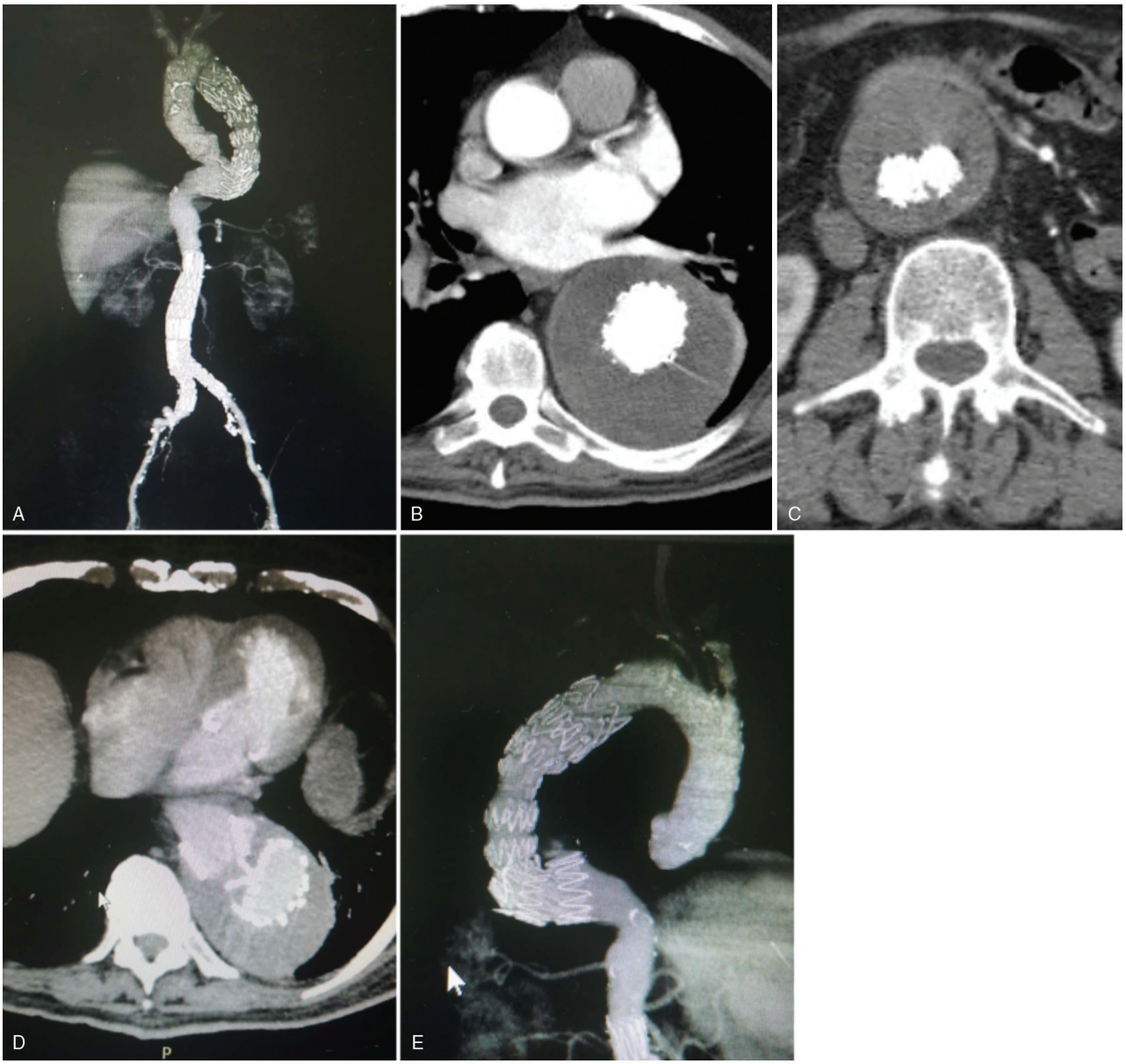
Case 6

A 58-year-old gentleman who had hypertension, migraine, and a history of renal stones. He presented with an 8.9-cm infrarenal AAA. He had an aorto-bi-iliac Cook device used. Postoperatively, he had groin lymphorrhea and fever of unknown origin. His MCTA after 1 month showed type-II endoleak that was not evident on further studies.

Discussion

This series included six men who were treated by TEVAR/EVAR. None of the cases had suprarenal extension apart from case 4 who had an associated thoracic aneurysm. None of the cases needed conversion to open surgery, and there were no mortalities related to the aneurysm management. Primary technical success was achieved in all cases. Two cases needed adjunctive surgical maneuvers to accomplish clinical success. No clinical failure was experienced in any of the cases.

Figure 2

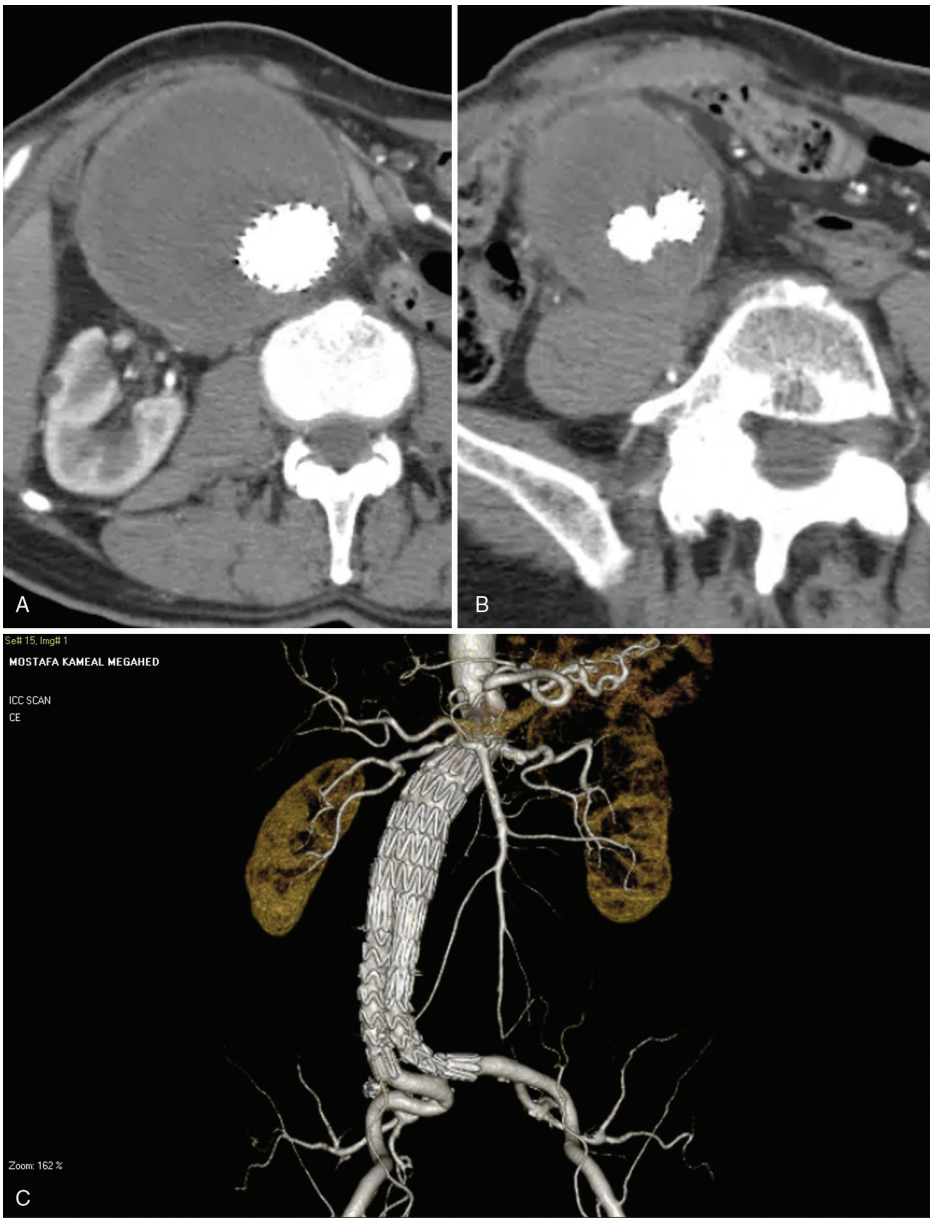


Case 4: 7.2 cm thoracic aneurysm with a concomitant 5.9 cm. (A) TEVAR using Cook (TX2 endograft) and EVAR (Zenith FLEX). (B) Thoracic part. (C) Abdominal part. (D) 1 year later, showing type-I endoleak from the distal end of the TEVAR. (E) Endoleak evident in reconstruction.

Two of our early cases with AAA without iliac involvement had straight tubular grafts used. Although their MCTA after 1 year did not show type-I endoleak, we believe that this short period of follow-up is not sufficient to justify deployment of endografts in such a manner for the reason that future dilatation of the distal neck is expected to occur, hence the development of type-I endoleak. Three of the cases had type-II endoleak upon completion of the procedure and were left for follow-up. None of them needed repair, and by 1 year, all of them had spontaneously resolved. In practice, type-II endoleak is the most common type encountered and is responsible for most reinterventions [8]. However, researchers have recently been suggesting a low threshold for interventions for it. Walker *et al*. [9] studied 474 cases having type-II endoleaks. They found no aneurysm ruptures related to any of the type-II endoleaks. Furthermore, there was no difference in all-cause mortality or aneurysm-related mortality in cases that had a type-II endoleak-related sac growth who had reintervention and those in whom the type-II endoleak was not treated.

Unfortunately, there is no screening-program detection for AAA in Egypt. The result is that most AAAs operated on are large in size presenting in older ages. Adding to the complexity of the matter is that AAA intervention is considered a prophylactic procedure to guard against rupture, that is, most

Figure 3



Case 5: 7.4-cm infrarenal AAA treated by Medtronic Endurant II. (A) MCTA after 1 year, main body. (B) MCTA after 1 year, 2 limbs. (C) Aorto-bi-iliac stent with bilateral iliac extensions.

patients are often asymptomatic. Thus, patients' counseling is often challenging when explaining the urgency, cost, and risk of the procedure.

In conclusion, this small series sheds the light on how infrequent EVAR is carried out at our unit. Thus, we recommend vascular units in Egypt looking forward to manage patients with AAA to adopt patients' and internists' awareness campaigns to increase the referral rate. Also, simulator training for vascular trainees is essential to improve their learning curves. Moreover, centralization of the EVAR service is mandatory, otherwise resources and knowledge will be dispersed. Furthermore, multidisciplinary team meetings are important to be carried out routinely to discuss management plans for every case. Last, endovascular instruments to treat endoleaks and ruptures should be made available on-shelf in every vascular cath-lab.

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Conflicts of interest
There are no conflicts of interest.

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