

*Research Article***Drawbacks after Interventional Aortic Surgery need for less Invasive management.**

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Abstract

Background: Abdominal aortic aneurysm (AAA) is a condition in which the aorta becomes dilated in the segment below the diaphragm .our study is observational study for early EVAR complications. **Purpose:** To assess the efficacy of endovascular aneurysm repair (EVAR) and early complications. **Patients and methods:** We plan to perform EVAR on 15 patients with Abdominal Aortic Aneurysm. The study will be set up to test the safety, efficacy and early complications of endovascular repair in patients with abdominal aortic aneurysm. **Results:** EVAR has some benefits, such as, lower hospital stay, ICU stay, blood loss, rates of hospital mortality, rates of complications and reintervention, but EVAR requires training programs still unavailable in many vascular surgery centers. **Conclusion:** With proper patient selection, EVAR can effectively reach AAA repair goals. Training and improvement of the medical staff influence outcomes following EVAR.

Key Words: Abdominal Aortic Aneurysm- Endovascular

Introduction

Repair of Abdominal Aortic Aneurysm is widely used for treating infrarenal aneurysms larger than 5.5cm. When compared with open surgical repair, EVAR reduces the 30-day mortality risk from 4.7% to 1.7% .

Patients and Method

This was a prospective study conducted over the period starting at September 2013 till June 2015 at military hospitals in Cairo, we assigned 30 patients with large abdominal aortic aneurysms (≥ 5.5 cm in diameter) to undergo either endovascular or open repair; 15 patients were assigned to each group. Patients were followed for type of anesthesia, operative time, blood loss, hospital stay, morbidity, mortality and complications.

Inclusion criteria:

AAA measured at least 5.5 cm, Fit for open surgery and Suitable anatomically.

Exclusion criteria:

AAA measured less than 5.5 cm, Unfit for open surgery, Rupture and Dissection.

Consent and patient advice, proper history taking and clinical examination with emphasis on hemodynamic status, procedure time, blood loss & blood transfusion, ICU & hospital stay days, morbidity and mortality.

Technique:

All patients scheduled for open surgical repair had general anesthesia .patients undergoing EVAR were examined for suitability through an analysis of the vascular Morphology as represented by CT produces axial slice images, Length measurements of the aorta and iliac arteries made along the cranio-caudal axis tend to underestimate the distance to be followed by the endograft. EVAR were performed inside an operating room

prepared with C-arm or in an endovascular suite with facilities suitable

for surgical cut-down approach under general, regional, or local anesthesia.



Fig. (1): Early phase angiogram showing AAA with a favorable 3.5 cm length infrarenal neck (arrows). (Ashton et al, 2002)

The common femoral arteries are exposed, a pre procedure aortogram with a calibrated pigtail introduced from the contralateral side of the device deployment, the positions of the renal arteries, aortic bifurcation, and iliac bifurcation are noted. The trunk and ipsilateral limb of the bifurcated prosthesis are deployed under radiographic control, after cannulation of the contralateral stump, the contralateral limb graft is deployed, post procedure digital subtraction aortogram is performed for the presence of endoleak, to confirm graft position and that an adequate segment of iliac artery has been covered to provide secure distal fixation.

The outcome was clinically evaluated for all cases immediately post-operative.

Follow up was done at 1, 6 and 12 months later by clinical examination plain X-ray and C.T scan.

Results

In our study we enrolled 15 patients underwent EVAR and 15 patients underwent open surgical repair. The patients of both groups have age above sixty except two patients in open repair group, the patients of both groups are males except two patients in EVAR group and most of both groups are smokers.

Four patients had acute ischemia due to graft thrombosis, two patients in each group, Fogarty thrombectomy was successful in three patients while fem-fem bypass was needed in one patient of the EVAR group due to excessive tortuosity.

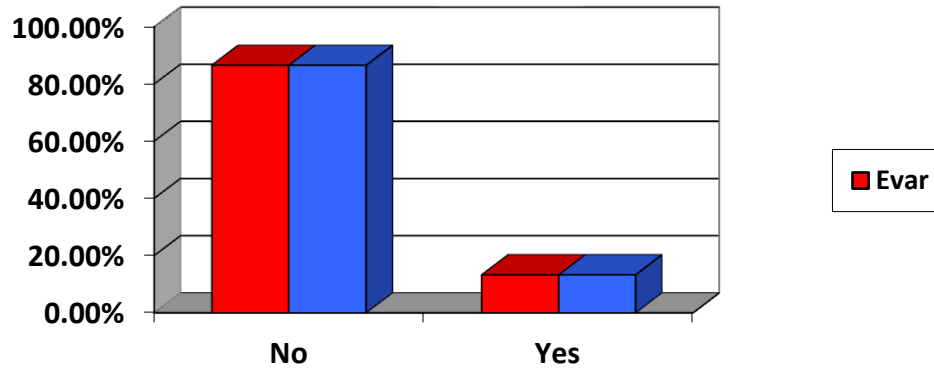


Fig. (2): Arterial complication

Re-intervention was needed in one case among EVAR group due to thrombosis of a highly tortuous limb 12 hours latter which is treated by fem fem crossover.

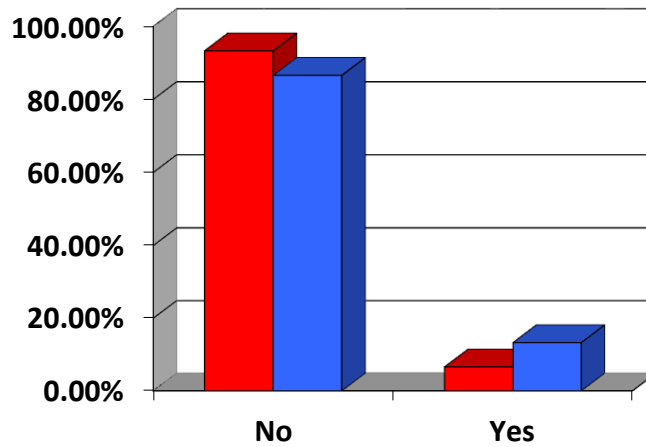


Fig 3: Re-intervention

For EVAR group one patient had systemic complication compared to 5 patients had systemic complication in open repair group

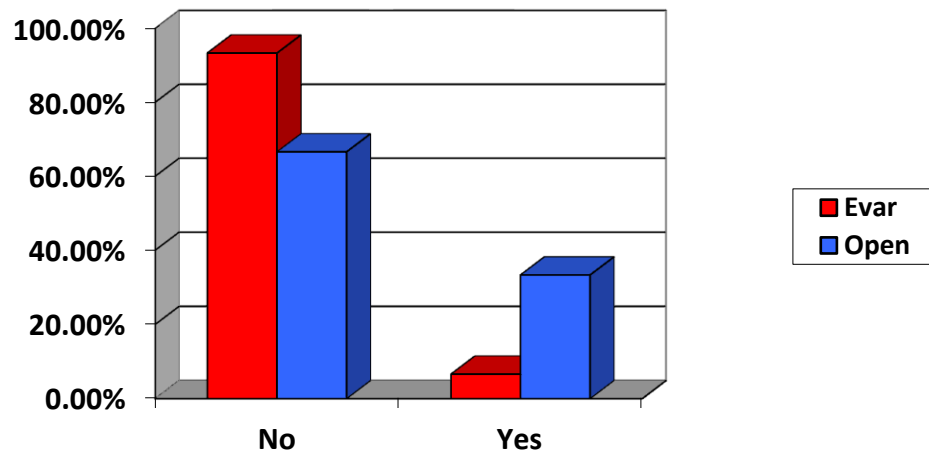


Fig. (4): Systemic complication

Mild haemorrhage occurred in EVAR group during introduction and deployment of the device compared to moderate hge in 2

patients, severe hge in 2 patients and mild hge in 11 patients of open repair group

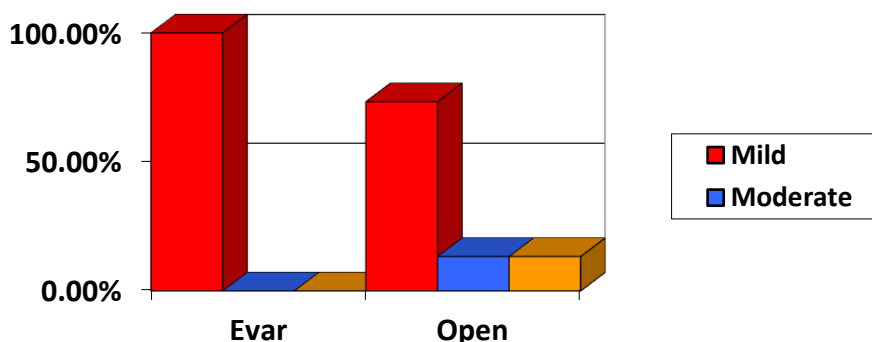


Fig. (5): Haemorrhage

The survival among EVAR group was better compared to open repair group. In open repair group 2 patients died, one of them one week after the operation due to

myocardial infarction and the other patient died 1.5 week after the operation due to haemorrhage, DIC and multi-system organ failure (table 3).

Table 3: mortality

Mortality	EVAR N=15	Open N=15	P value
No	15 (100%)	13(86.6%)	0.14
Yes	0	2 (13.3%)	

The results over a median follow-up period of 2 years confirm our previously published findings that operative mortality associated with endovascular repair of abdominal aortic aneurysm was only a third of that associated with the open-repair procedure and that aneurysm related mortality was reduced during the early years after endovascular-repair.

Discussion

In our study, we enrolled 30 patients to compare initial and short term results of Endovascular Aortic Aneurysm Repair (EVAR) and open surgical repair in patients with Abdominal Aortic Aneurysm. As our study was initial experience for EVAR we did our comparison with basic differentiation between new EVAR technique and the classical open surgical technique regarding

anesthesia technique, procedure time, blood loss, ICU stay, hospital stay, re-exploration, arterial complications mortality and morbidity.

Regarding the type of anesthesia technique; 20% of the EVAR group was done under regional anesthesia compared to 100% of the open repair which was done under general anesthesia which is lower percentage in comparison to other studies which was 40% in Eurostar done under regional anesthesia.¹¹

As regards the duration of procedure; EVAR was shorter in duration than open repair consuming 93min compared to 220min in open repair, which is in fact one of the major advantage which has to be considered in vascular patients as duration of the procedure has major role in the outcome of the patient.

Regarding blood loss and blood transfusion, only 13.3% of the EVAR group needed blood transfusion compared to 100% of the open surgical repair group, which shows that in the EVAR technique minimal amount of blood is lost during introduction and deployment of the device, which is Well-documented benefit of EVAR compared to conventional open surgical repair in all studies.¹²

Regarding the ICU stay; in this study it was found that EVAR group was shorter than the open surgical repair group in ICU stay, with ICU stay of 1-2 days versus 3-6 to open repair group which is also similar to other studies which showed that ICU stay is shorter than open repair as EVAR trial and Eurostar.^{9,11}

Also EVAR group showed less hospital stay duration than open surgical repair group with stay of 1-2 days of the EVAR group versus 4-11 days to open repair which is also similar to other studies that shows EVAR needs less hospital stay than open repair.¹³

As regards re-intervention in the EVAR group there was thrombosis of one limb 12 hours later which was very tortuous treated by fem fem crossover, endoleak in one case, it was of type I endoleak and required aortic cuff in the same session and endoleak in 2 cases but it was of type II Endoleak and didn't require any intervention just for follow up. compared to 2 cases with retro-peritoneal haematoma manifested by marked hypotension and approved by ultrasound treated by surgical re-exploration so surgical evacuation was done and stitches were taken at the aortic anastomosis. Type II endoleaks occur frequently after EVAR, in up to 25-30% of patients. Type II endoleaks tend to be benign in nature carrying little potential for aneurysm enlargement and rupture. As such, most patients require follow up and observation only.¹⁴

Regarding arterial complications were equal, 2 cases in EVAR group and 2 cases in open repair group developed lower limb thrombosis on one side managed by fogarty thrombectomy.

Other studies show that the systemic complication is more with open surgical repair, a lower incidence of pulmonary complications with EVAR (2.9% versus 10.9%), hemorrhage (1.8% versus 3.4%), graft infection (0.6% versus 1.1%), and colonic ischemia (0.6% versus 1.1%).¹⁵

Regarding mortality; we had no mortality after EVAR, and we had 2 cases died after open surgical repair, one of them one week after the operation due to myocardial infarction and the other patient died 1.5 week after the operation due to haemorrhage, DIC and multi-system organ failure. All other studies show that the mortality is much less in EVAR group than the open surgical repair group.⁹

Conclusion

EVAR has some benefits, such as, lower hospital stay, ICU stay, blood loss, rates of hospital mortality, rates of complications & re-intervention, but EVAR requires training programs still unavailable in many vascular surgery centers. With proper patient selection, EVAR can effectively reach AAA repair goals. Training and improvement of the medical staff influence outcomes following EVAR.

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