Transapical Endovascular stent-graft and plug embolization for suture line ascending aorta pseudoaneurysm repair: Do we reach the moon from the front door?

TAMER KHAFAGY MD
PROFESSOR OF VASCULAR SURGERY.
MANSOURA UNIVERSITY. EGYPT.
Disclosure

Speaker name: Tamer Khafagy

I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

I do not have any potential conflict of interest
Open repair is the “gold standard” treatment for ascending aortic diseases, but TEVAR might be advocated as an option for managing high-risk patients.

TEVAR is a recent option for ascending aortic diseases, but its application is limited by anatomic landmarks, lack of devices designed to treat these pathologic processes, and impact of hemodynamic forces that are not yet completely elucidated.
A major indication for ascending aortic stent-grafts is a pseudoaneurysm after ascending aortic replacement, if the entry tear is located at sufficient distance to the coronary and the brachiocephalic arteries allowing adequate “landing zones” for the grafts.

TEVAR has demonstrated better results than open repair in several aortic clinical scenarios. Nevertheless, in ascending aorta, concerns still remain in the long-term follow-up, for which results are limited.
Complications such as type I endoleaks, strokes, aortic valve incompetence, SG migration, and overstenting of the head vessels have called into question the safety and efficacy of the procedure in this area.

Systematic reviews and meta-analyses showed that TEVAR offered a potential early advantage to patients at prohibitive risk for conventional open repair.

Case Report

• A 60 years old male with history of Aortic root replacement for acute type A aortic dissection and postoperative infection that was managed through conservative measures.
• 10 months later presented with chest pain and compression manifestations.
• CT angiography showed pseudoaneurysm reaching the posterior aspect of sternum.
• Due to the patient’s advanced age, friability and clinical condition combined with the position of the AAPA behind the sternum (the risk of rupture leading to uncontrolled hemorrhage) make Surgery carry an unacceptably high risk.
• The distal suture line pseudoaneurysm with 5.5 cm diameter and neck 7 mm with 5.7 cm landing zone above coronaries and 2.6 cm landing zone from the innominate artery.

• These anatomical circumstances offered a possibility of endovascular approach.
Procedure:

General anesthesia with transesophageal echocardiography, available heat lung machine and two invasive lines with exposure of both femoral artery and vein in case we need to convert the procedure to open surgery.

Cannulation of the pseudoaneurysm through transfemoral approach: as a preparatory step for embolization of the pseudoaneurysm neck.
Cannulation of the right atrium through transfemoral vein with insertion of Cauda balloon: to occlude the cardiac input and drop the blood pressure during deployment of the stent-graft at ascending aorta.

Minimal lateral thoracotomy: to exposure the apex of the heart to be used as an access for the main stent-graft.
The stent introduced inside the ascending aorta then

Deployment of the Vascular plug size 14 mm (Lifetech) within the neck of pseudoaneurysm without removal of its cable and long sheath in place.
Transapical deployment of the stent-graft Aortic Extender cuff (32 mm x 58 mm) from Cook at the ascending aorta: compressing the plug in the pseudoaneurysm osteum then removal of the cable of the plug.
- Cauda ballooning for the stent-graft.
- Final angiography: demonstrates technical success with no endoleak and fixation of the pseudoaneurysm.
Post-operative CTA after 1 month:
Value of the case:

The first case in Egypt and at the Middle East as regard the use of TEVAR stent-graft at the ascending aorta and the use of transapical approach.
Conclusion

• TEVAR in the ascending aorta shows satisfactory outcomes at short-term follow-up.

• TEVAR-related complications were not observed.

• Large number of cases and longer follow-up data needed to confirm durability of these results.
THANK YOU FOR YOUR ATTENTION!
ANY QUESTIONS?
NO? GREAT!
BYE.
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