



Simultaneous TAVI and endovascular aortic aneurysm repair (EVAR): Technical challenges

A 78 year old patient:

Past History:

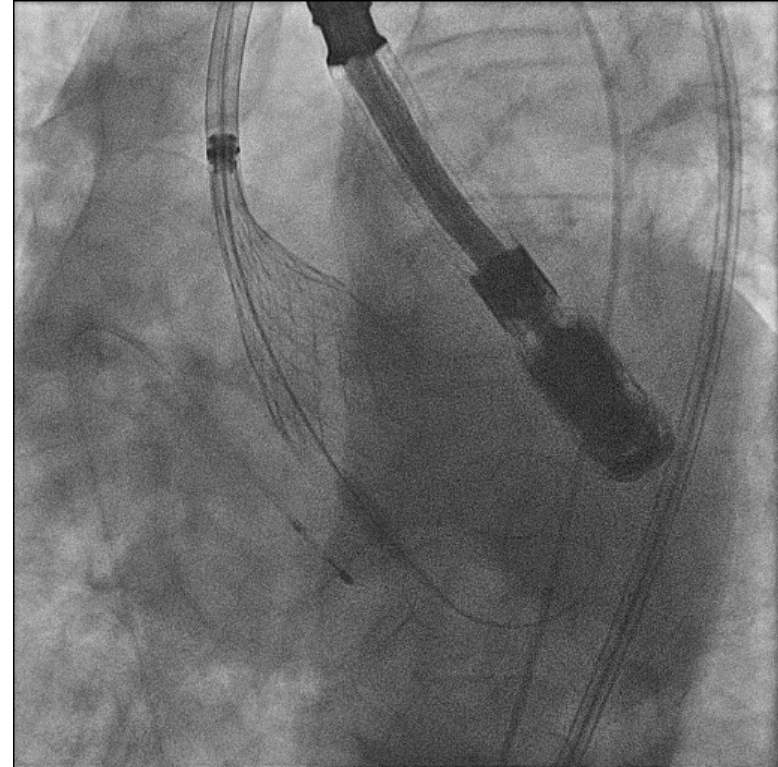
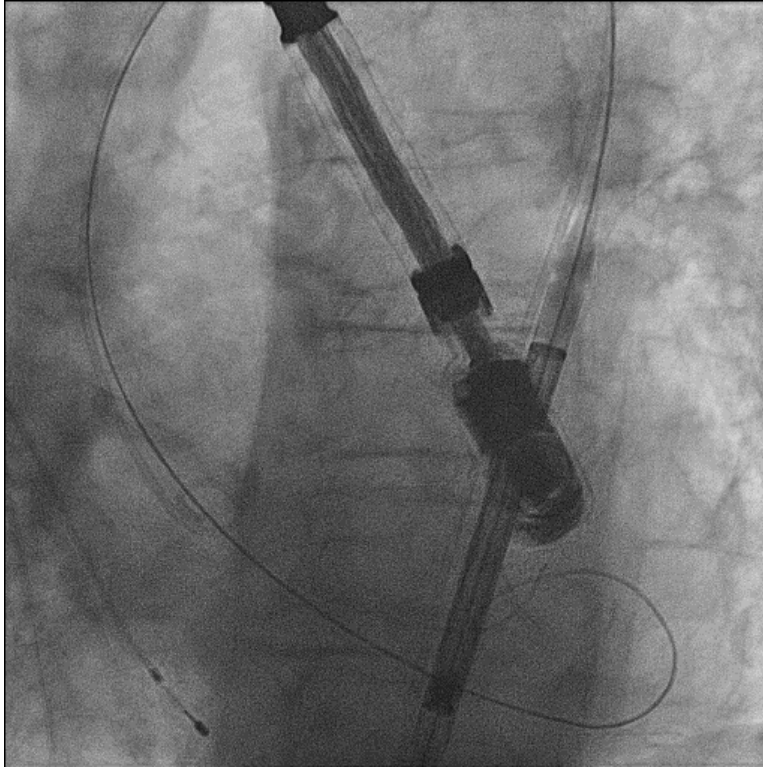
- 2006: Posterior STEMI -> LCX occlusion-> thromboaspiration + DES
- 2015: Transient ischemic attack with full recovery
- Cardiovascular risk factors: high blood pressure, diabetes mellitus, smoking, obesity

Present Illness:

- Symptomatic severe aortic stenosis EAO : 0,76 cm²
- Aneurysm of the infra-renal abdominal aorta (AAA) 60 mm and of both common iliac artery. No other stenotic or aneurysmal aortic lesion.
- Permanent atrial fibrillation



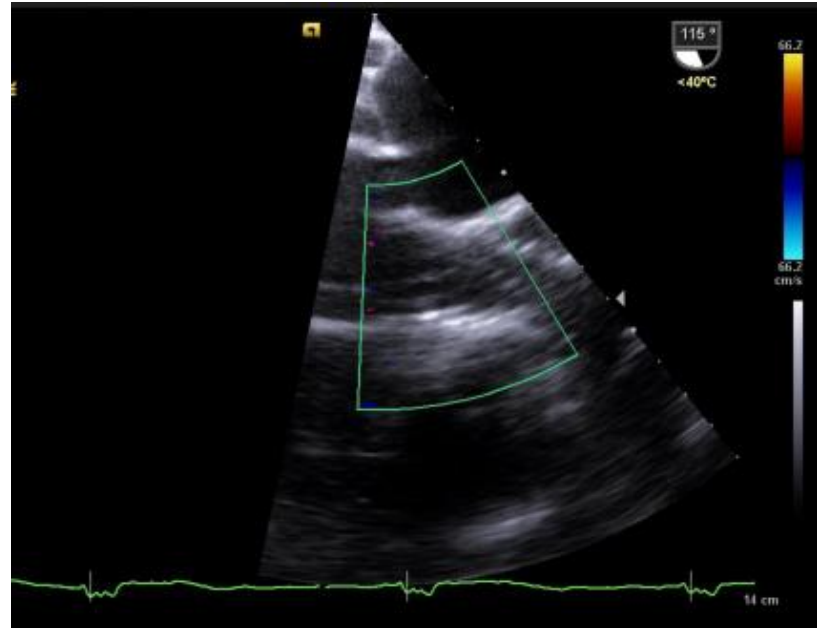
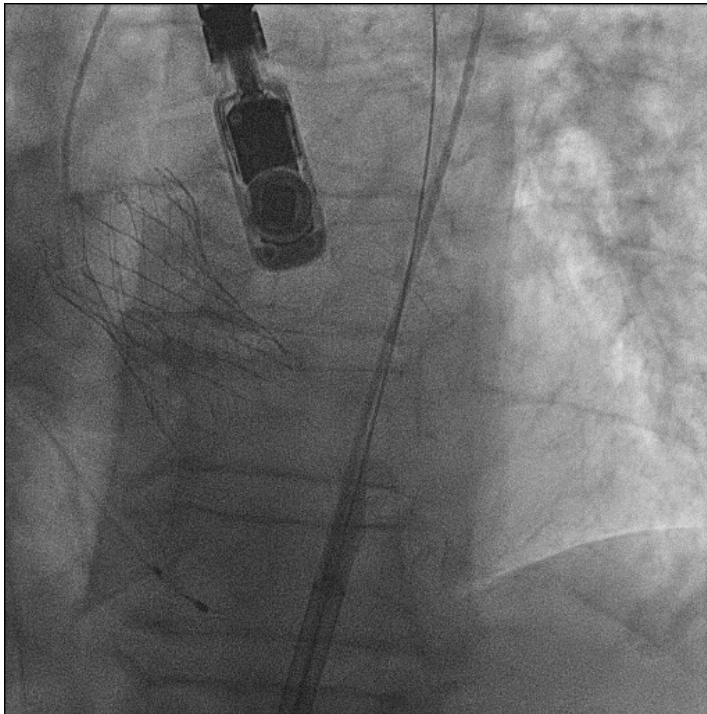
HEART TEAM : Indication TAVI + EVAR



Surgical approach of the 2 common femoral arteries
18 French sheath in the right femoral artery

A 29-mm self-expandable valve was successfully deployed across the aortic annulus

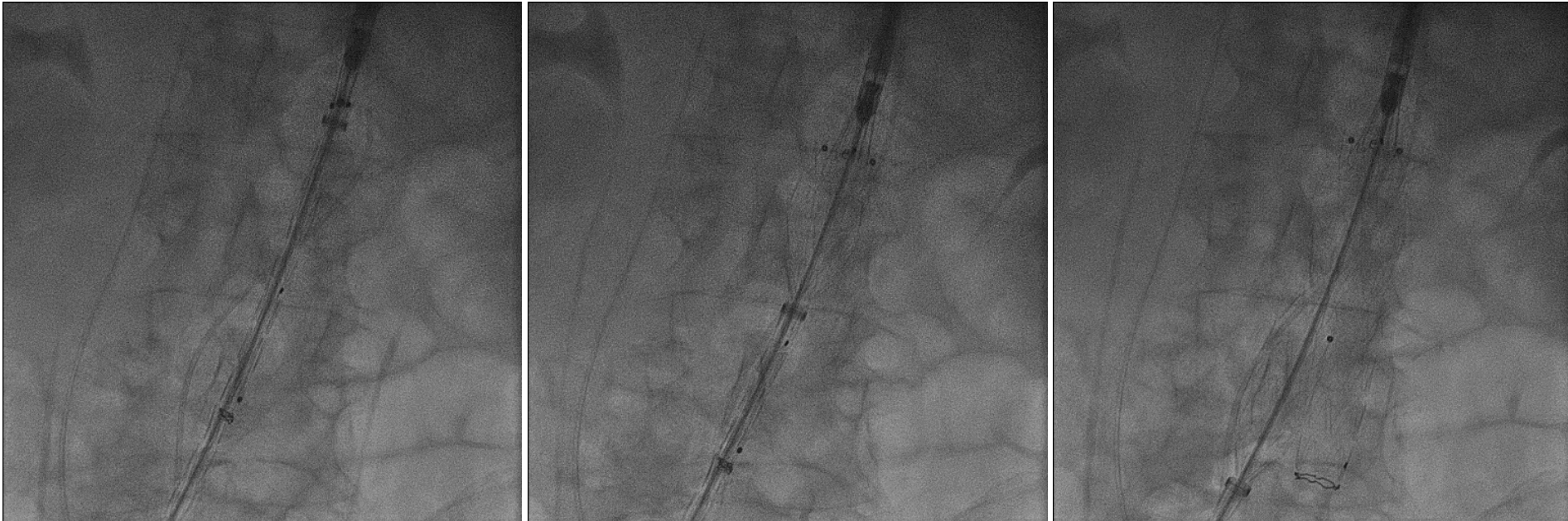
Simultaneous TAVI and EVAR Case presentation



Excellent seating and function of TAVI valve, no complications.

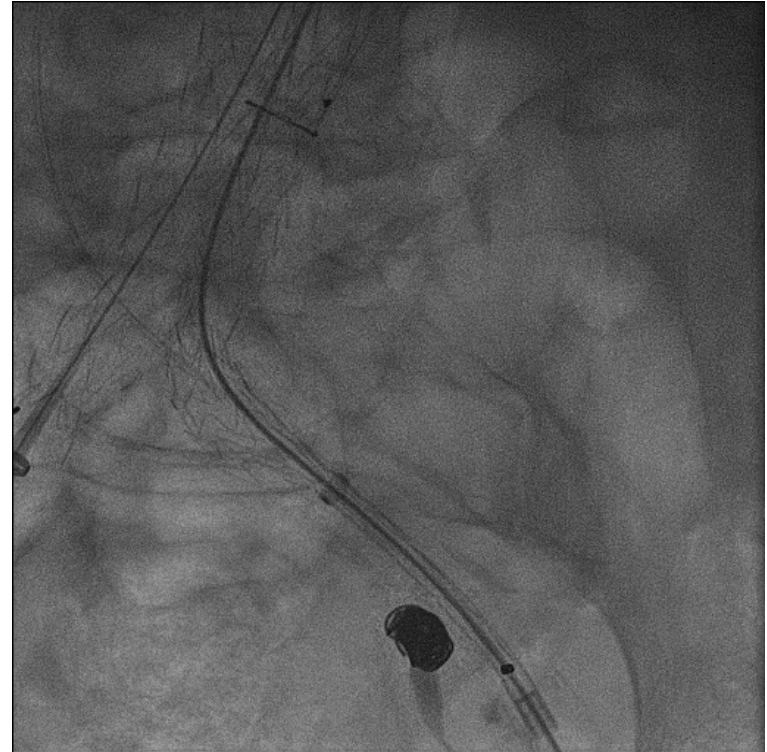
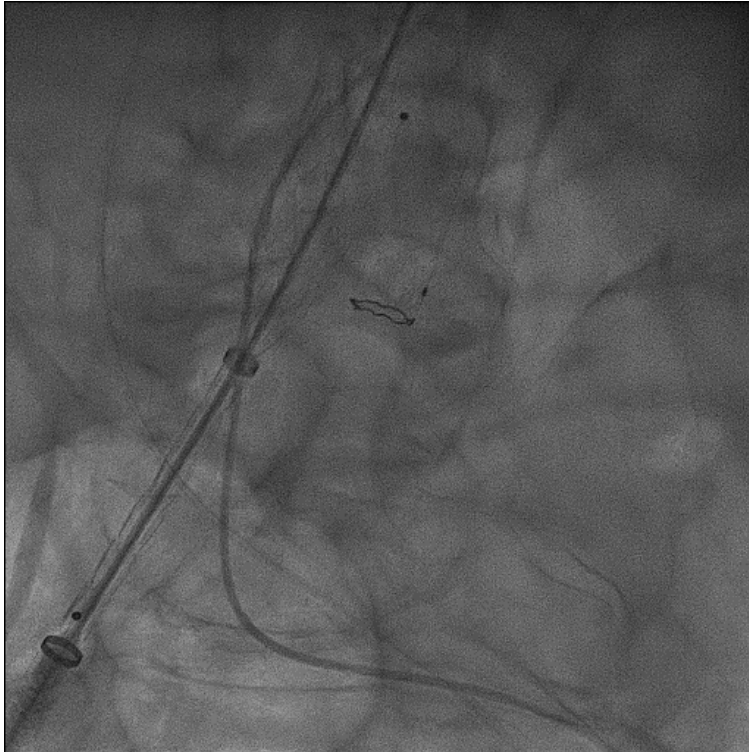


Abdominal aorta and the 2 common
iliac arteries aneurysm

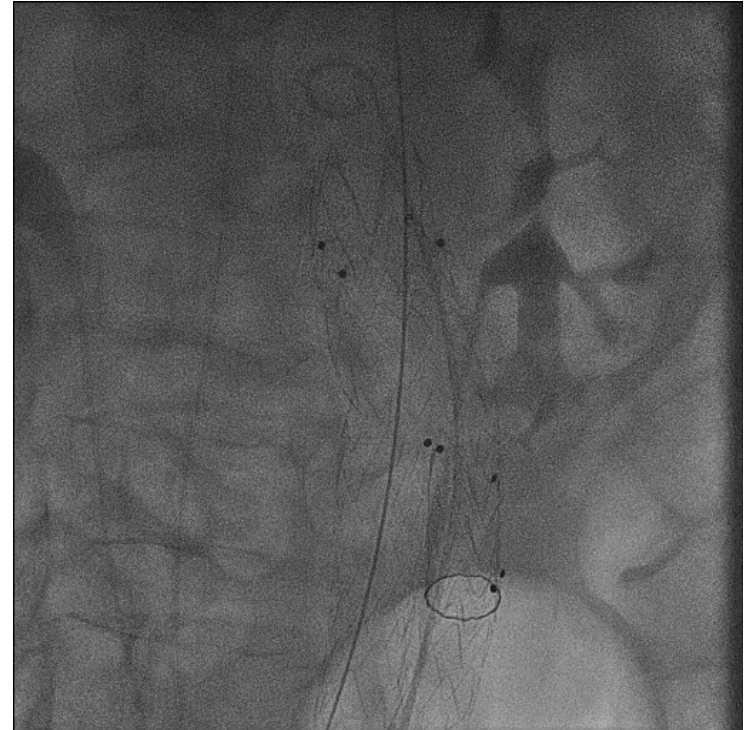
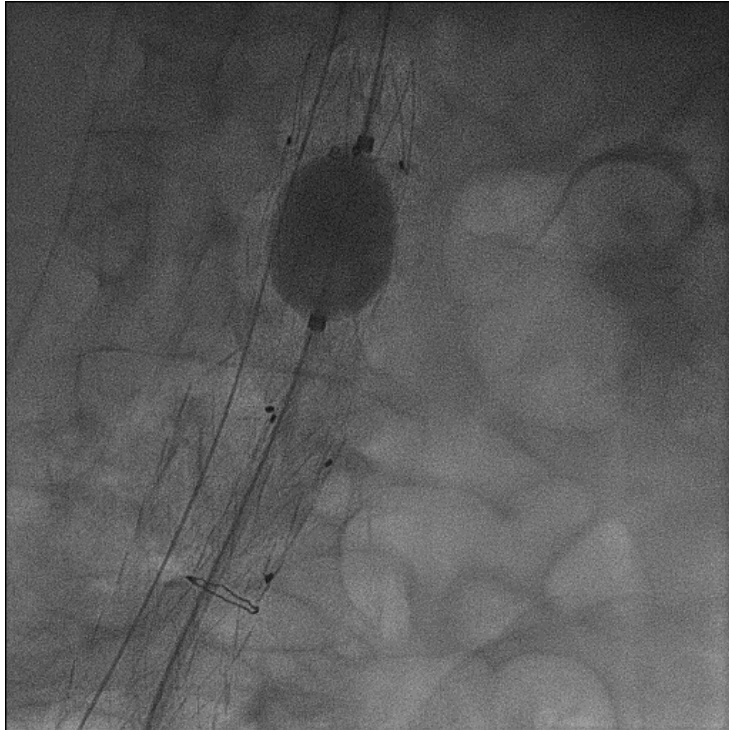


Through the same access site, the main body of a bifurcated stent graft was deployed into the abdominal aorta aneurysm.

An additional contralateral prosthesis was implanted in the left common iliac artery.



Placement of 2 aorto-iliac prosthesis with creation of a neo-carina in a higher position.



Subsequent post-dilatation with aortic balloon
No complications, excellent final angiographic image.

The total amount of contrast: 400mL
The fluoroscopy time : 36mn.

- **Complication:**
 - No major complication
 - The control angio-CT and TTE were very reassuring
- **FOLLOW UP**
 - TTE 3 months: Mean gradient 7 mmHg, EAO 2 cm²
 - no adverse cardiovascular events reported

Case report	Patient age	AAA size (mm)	Complications
Koutsias et al., Vasc Endovascular Surg. 2020	78 and 88 years	62 and 58	None
Mauri et al., Ann Vasc Surg. 2019	83 and 72 years	62	None
Sato et al., J Cardiol Cases. 2018	83 years	57	None
Koudoumas et al., J Cardiothorac Surg. 2015	74 years	50	None
Aluko et al., Cardiovasc Revasc Med. 2015	75 years	51	None
Marchi et al., J Heart Valve Dis. 2015	78 years	55	None

The combination of aortic disease and aortic stenosis in high-risk patients remains challenging and data are sparse.

To date, 8 case reports of similar simultaneous EVAR and TAVI were described in the literature.

- ➡ The combined TAVI and EVAR procedure has the following advantages/drawbacks over performing the procedure sequentially

AVANTAGES	DRAWBACKS
Same time / common access site No need for a second general anaesthesia. Reduce the risk of AAA rupture Shortening of the length of hospitalization	Increased operative time and higher (combined) contrast and radiation dose Risk of dislodging the AAA graft during the TAVI procedure if EVAR is performed first

- ➡ There is no consensus on which procedure should be performed first.

Conclusion

The prevalence of combined severe aortic stenosis and abdominal aortic aneurysm is high in the aging population.

Simultaneous TAVI and EVAR is feasible and safe.

Although there is no consensus on which procedure should be performed first, we believe performing TAVI first should be preferable.