

TAVI Through the Curve: *Managing Graft Kinking and Arch Tortuosity*

A wide-angle photograph of a large conference hall. In the foreground, the dark silhouettes of many audience members are visible, facing towards the stage. On the stage, several people are seated at a long table under a blue cloth, likely a panel discussion or Q&A session. Behind them are three large screens displaying the logos for CRF, TCT, and TCT FUTURE. The ceiling is high and features a complex network of stage lighting equipment.

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Disclosure of Relevant Financial Relationships

Within the prior 24 months, I have had a financial relationship with a company producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients:

<u>Nature of Financial Relationship</u>	<u>Ineligible Company</u>
Grant/Research Support	Abbott
Grant/Research Support	Edwards Lifesciences
Grant/Research Support	Boston Scientific
Consultant Fees/Honoraria	Jenscare Scientific

Clinical History

85y, male, dyspnea, NYHA IV

Past History

- Aortic stenosis, AVA=0.5 cm², Gradient=35mmHg, LVEF=67%
- Type-A aortic dissection, **aortic ascending + hemi-arch replacement**, 2013
- Atrial fibrillation, 2024
- Pacemaker implantation, 2018
- **COPD**, GOLD stage 2-3
- Pulmonary segment embolization

Medication

Bilol, 2.5 mg, 1-0-1-0

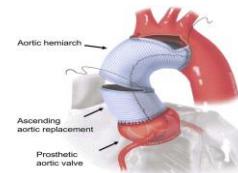
Eliquis, 2.5 mg, 1-0-1-0

Magnesiocard, 5 mmol, 1-0-0-0

Torasemid, 20 mg, 1-1/2-0-0

2013

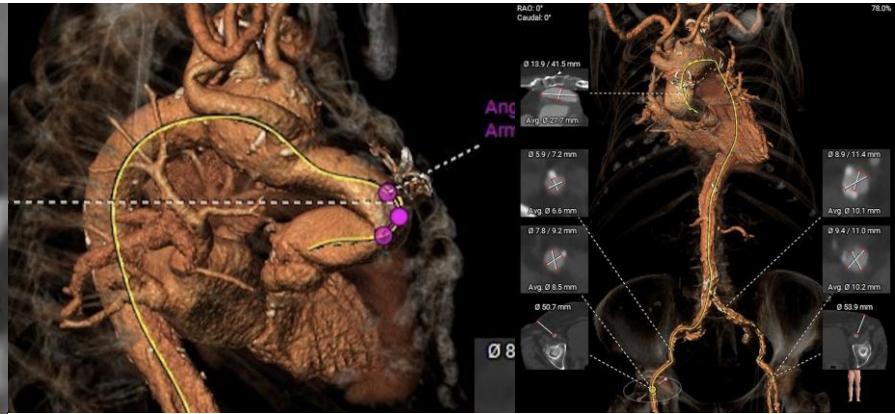
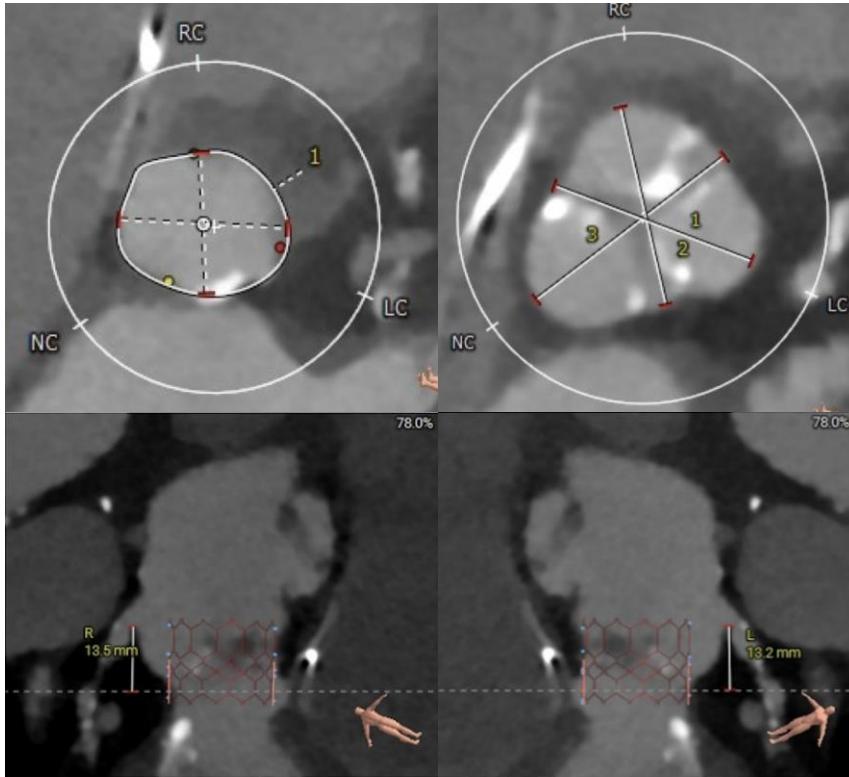
2025



Aortic ascending + hemi-arch replacement



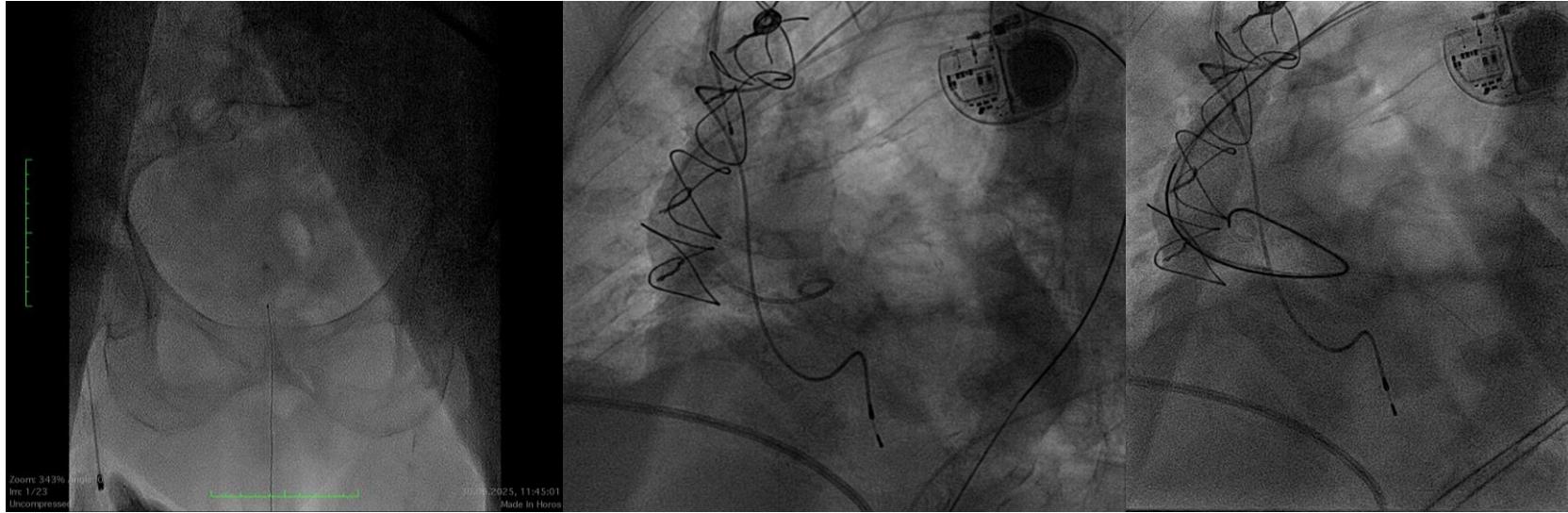
Pre-Procedural Imaging Analysis



Annulus area = 436 mm²
Annulus diameter = 23.6 mm

SAPIEN 23 mm
Transfemoral vs. Transapical?

Procedure

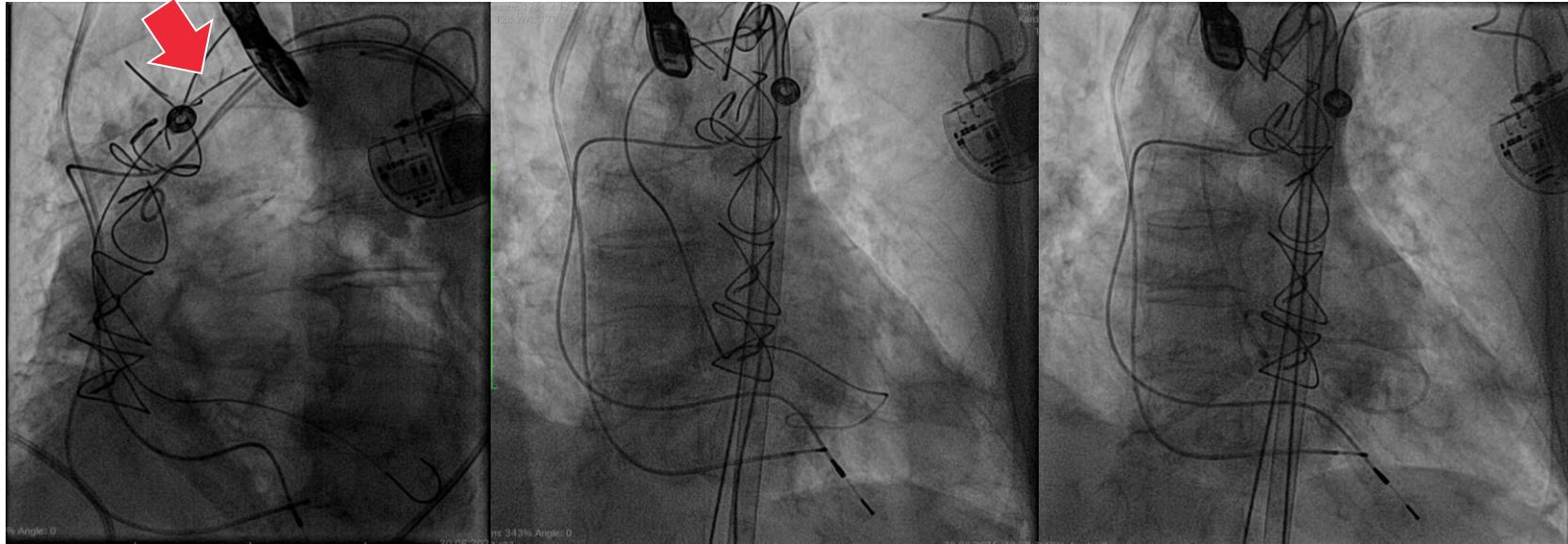


High puncture to save every centimeter

Aortic angiography showed extreme kinking & dilated arch

Double-Stiff-Wire Technique was employed to straighten the aorta

Procedure

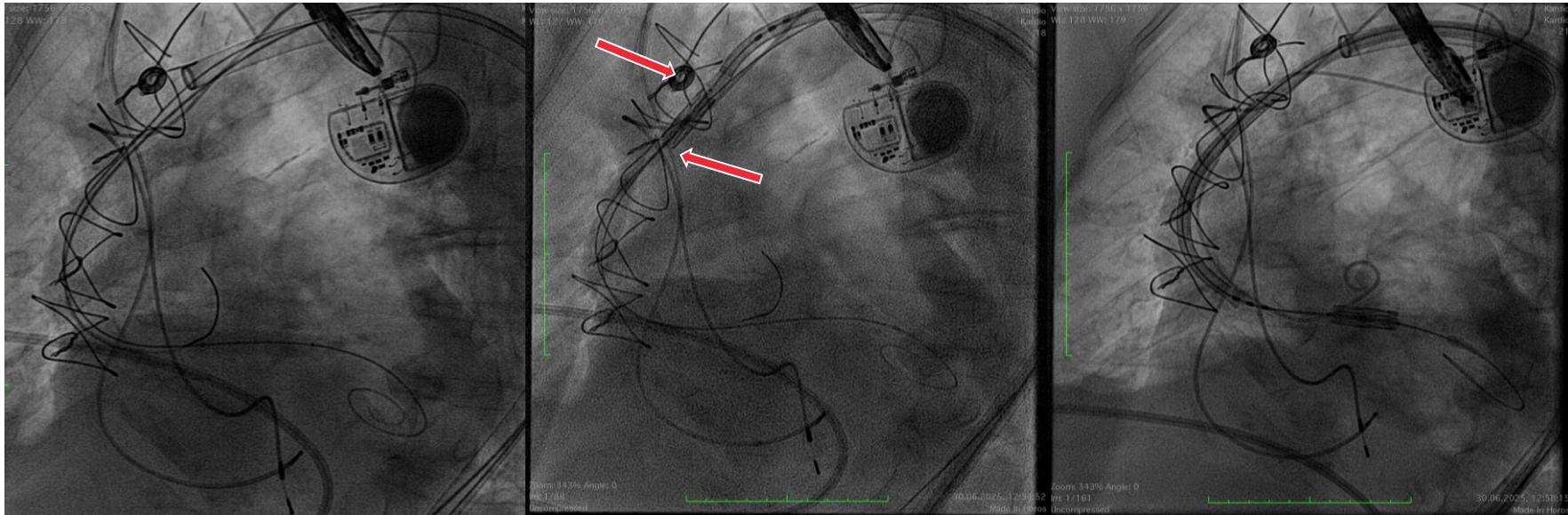


Buddy balloon became **stuck** in the proximal aortic arch

A **Gore 22-Fr 65-cm long sheath** was introduced. **RAO projection** revealed the second aortic curvature.

Stiff wire placement in the LV **straightened the second curve**, enabling sheath advancement to the ascending aorta and **confirming transfemoral feasibility**.

Procedure

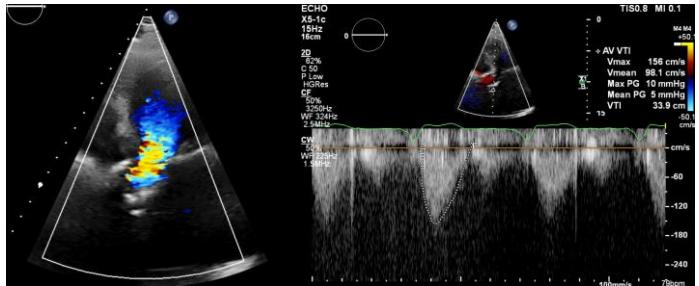


Pre-dilatation with 8-mm balloon

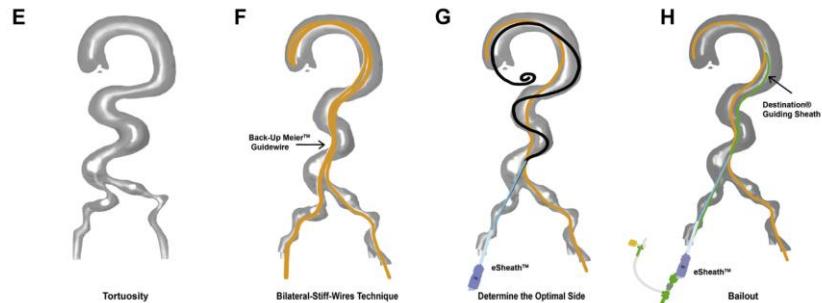
The Commander delivery system became **stuck** again; advancement was achieved by pushing the long sheath and delivery system together.

23-mm SAPIEN was deployed with good frame expansion

Take-home Message



Minimal paravalvular leak
Gradient = 5 mmHg



- In tortuous arteries, **straightening the vessel and minimizing access distance** is key to delivering large systems with reduced friction and facilitating all maneuvers, including retrograde aortic valve crossing.
- The **Double-Stiff-Wire Technique** with a 22-Fr, **65-cm Gore sheath** is essential for navigating a tortuous ascending aorta and dilated arch.
- RAO projection**, rather than LAO, helps identify the **second steepest curve** of the aorta and guides anterior vs. posterior manipulation for successful advancement.