

Valve-in-Valve-in-Valve TAVR With Bilateral UNICORN Modification

*A High-Risk Solution for Coronary Obstruction Prevention in
Severe Aortic Insufficiency*

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Disclosure of Relevant Financial Relationships

- I, Billal Mohmand, DO NOT have any financial relationships to disclose
- Marvin Eng, 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
 - Clinical Proctor – Edwards Lifesciences, Medtronic

Case Presentation

65-Year-Old Male with **Severe Prosthetic Aortic Insufficiency** presenting
with **Acute Decompensated Heart Failure**



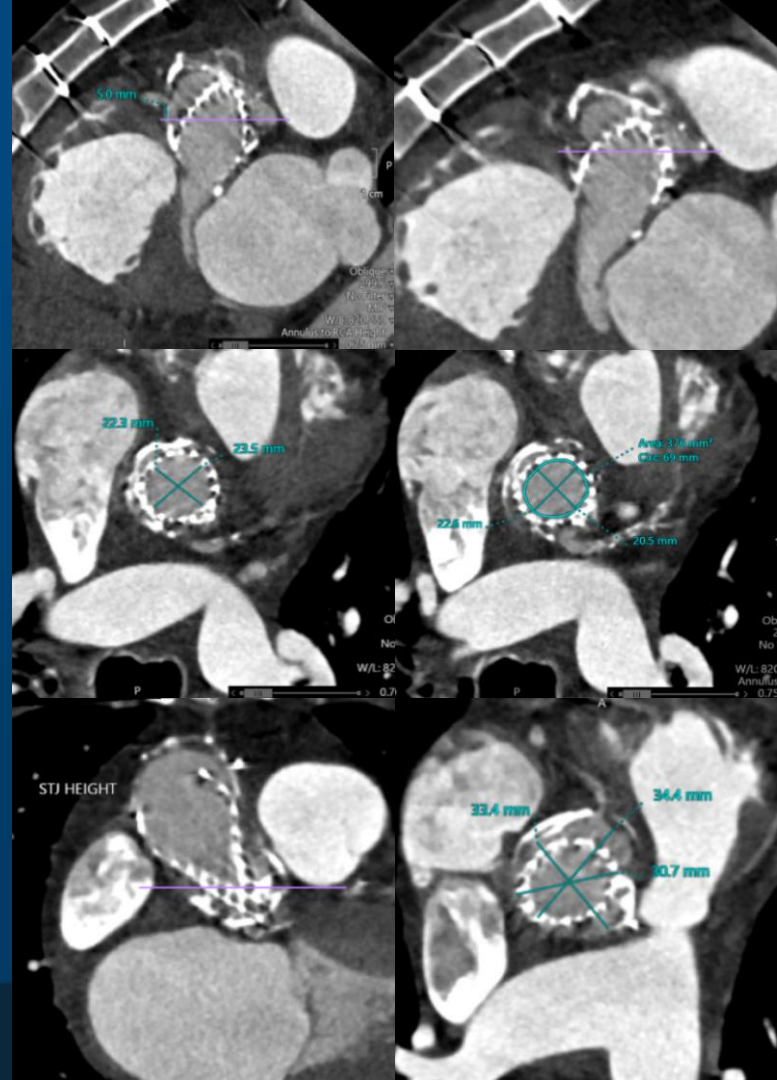
Evaluation for Valve-in-Valve-in-Valve

CT TAVR

High-Risk Findings for Coronary Obstruction

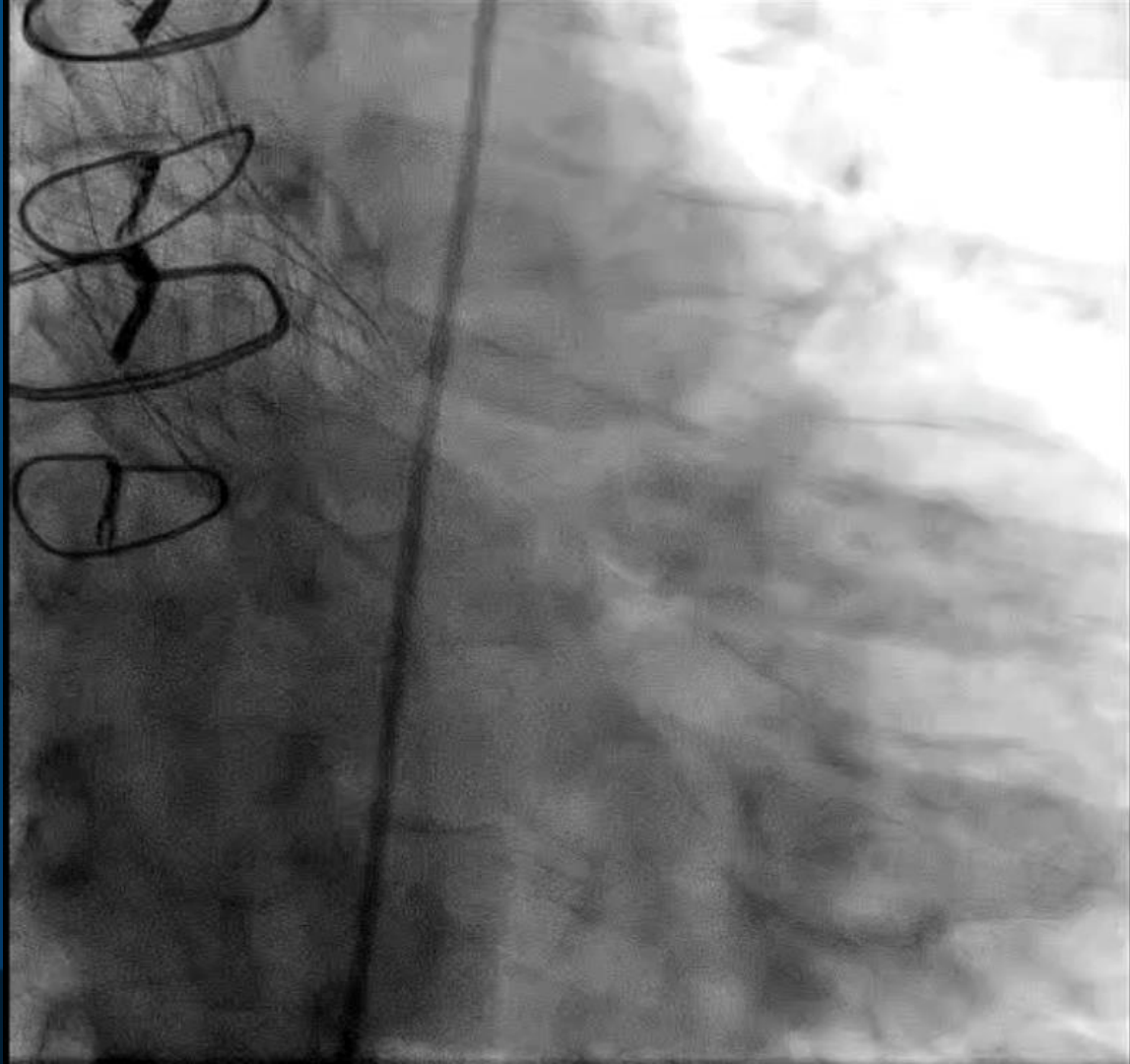
- Aortic annulus to **Left Main: 5.0 mm**
 - High risk: Ostial height <10 mm
- Aortic annulus to **RCA: 5.0 mm**
 - High risk: Ostial height <10 mm
- Annulus to Sino-tubular Junction: **1.0 mm**
 - High Risk: Very narrow
 - Risk of Leaflet Displacement and Coronary Obstruction
- Sino-tubular Junction Diameter: **28.1 x 28.5 mm**
 - High risk: Narrow, Increased Risk of Obstruction
- Sinus of Valsalva Diameter: **33.4 x 34.4 x 30.0 mm**
 - Borderline/High risk

Leaflet Modification Necessary



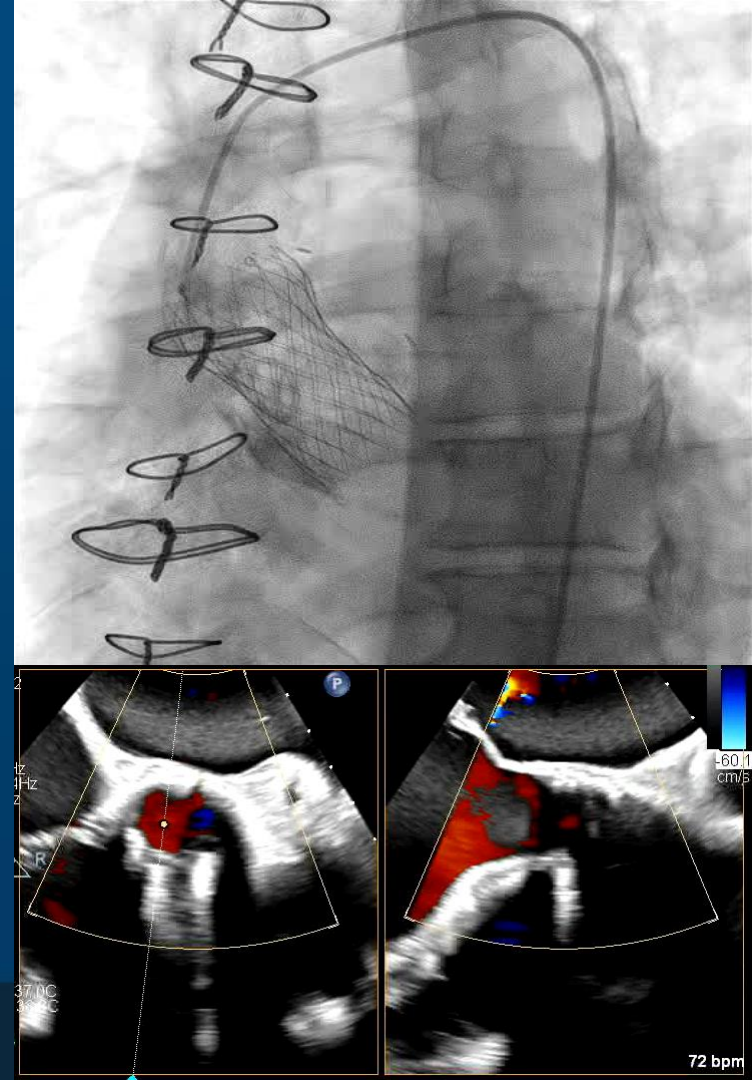
Diagnostic Evaluation

- **Left Main Coronary Artery**
 - Patent, Anomalous origin reimplanted prior surgery
- **Left Anterior Descending Artery**
 - Patent, No high-grade lesions
- **Left Circumflex Artery**
 - Patent, No high-grade lesions
- **Right Coronary Artery**
 - Patent, Dominant
 - Reimplanted
 - No high-grade lesions
- **Patent Abdominal Aorta, Common Iliac, External iliac, Common Femoral arteries**



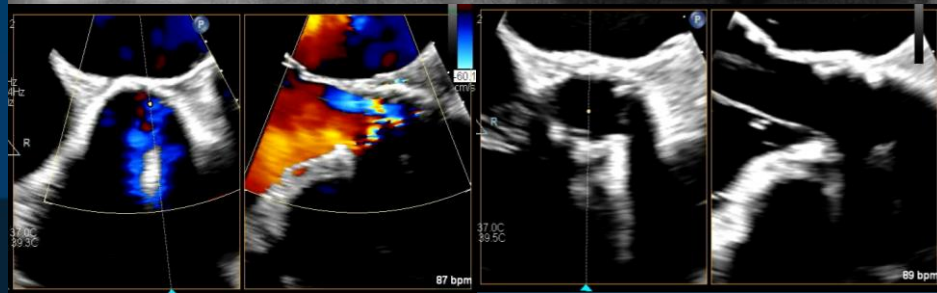
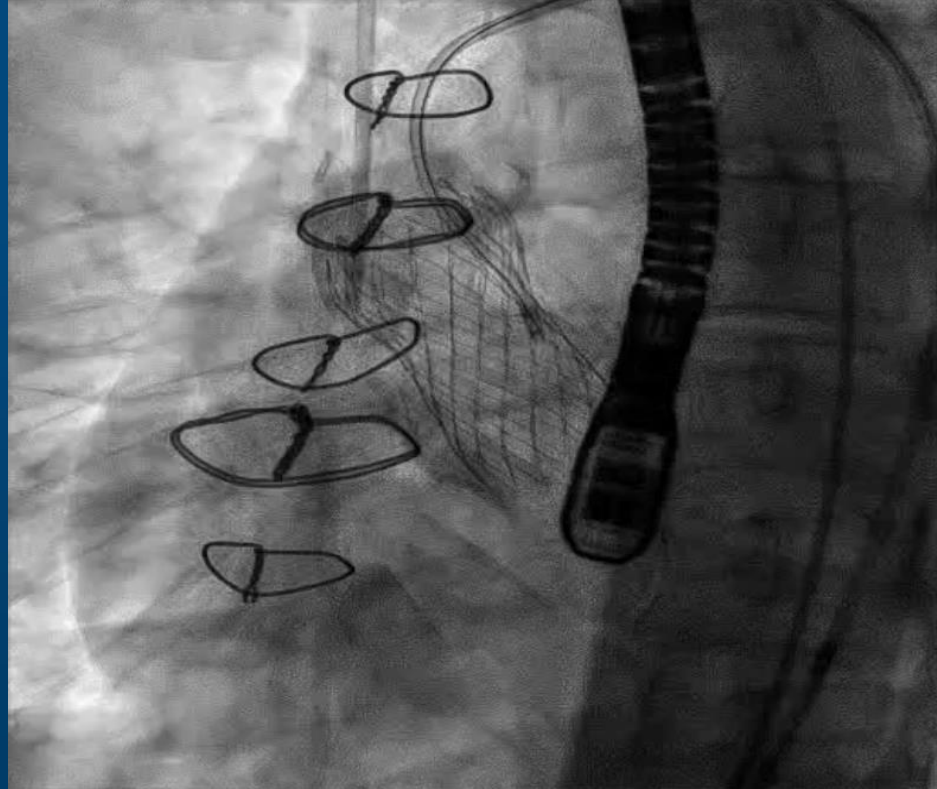
Diagnostic Evaluation

- **Aortogram**
 - Severe Prosthetic Aortic Insufficiency
- **Hemodynamics**
 - Normal aortic opening/closing pressures
 - Wide pulse pressure
 - Consistent with Severe AI
- **Echocardiogram**
 - Prosthetic Aortic Valve well seated
 - Leaflets thick
 - Peak Velocity 2.5 m/s, Mean PG 15 mmHg
 - Severe Prosthetic Valve Regurgitation



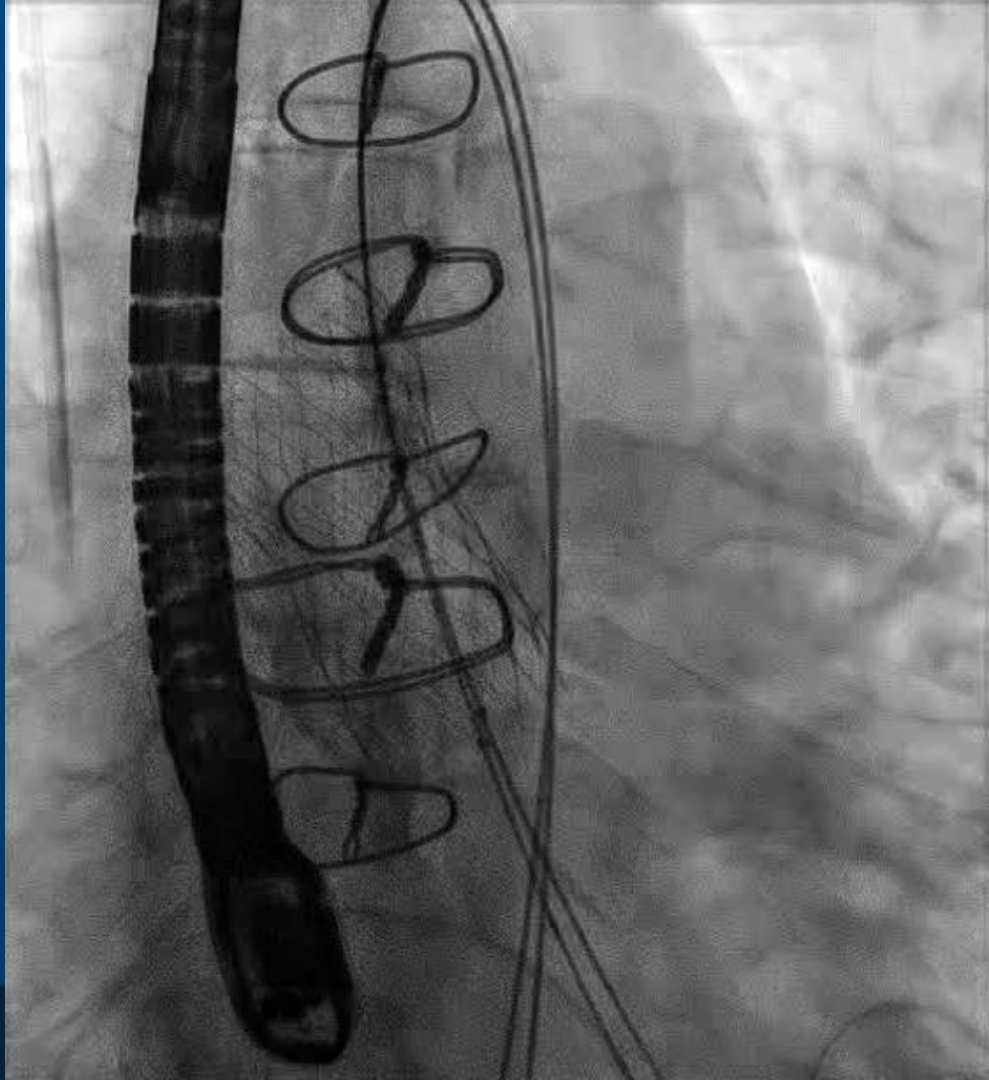
Leaflet Modification – UNICORN

- **Left Coronary Cusp**
 - AL2 guide, Astato wire connected to electrocautery (50W)
 - Perforation and aortotomy of LCC
 - Balloon angioplasty
 - 2.5 x 12 mm balloon
- **Right Coronary Cusp**
 - Multipurpose guide, Astato wire, electrocautery (50W)
 - Perforation and aortotomy of right coronary cusp
 - Balloon angioplasty
 - 2.5 x 12 mm and 4 x 20 mm balloons

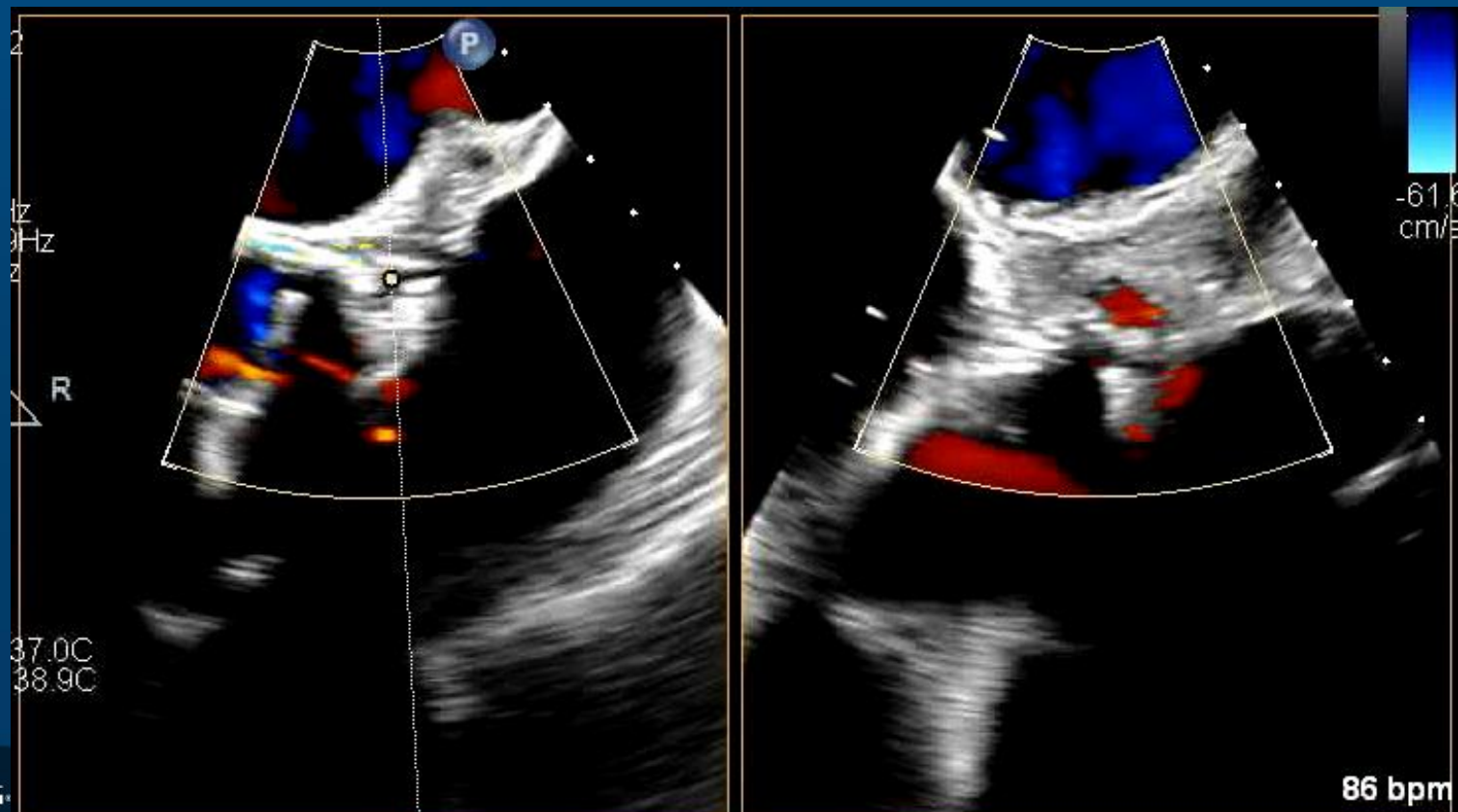


Simultaneous Double UNICORN Balloon Angioplasty

- 12 x 40 mm Armada balloon across *Left Coronary Cusp aortotomy*
- 14 x 40 mm Armada balloon across *Right Coronary Cusp aortotomy*
- **Simultaneous Inflation to ensure Complete Leaflet Modification**
- Hemodynamic stability maintained throughout procedure
 - Anesthesia and CTS Support
 - ECMO Standby

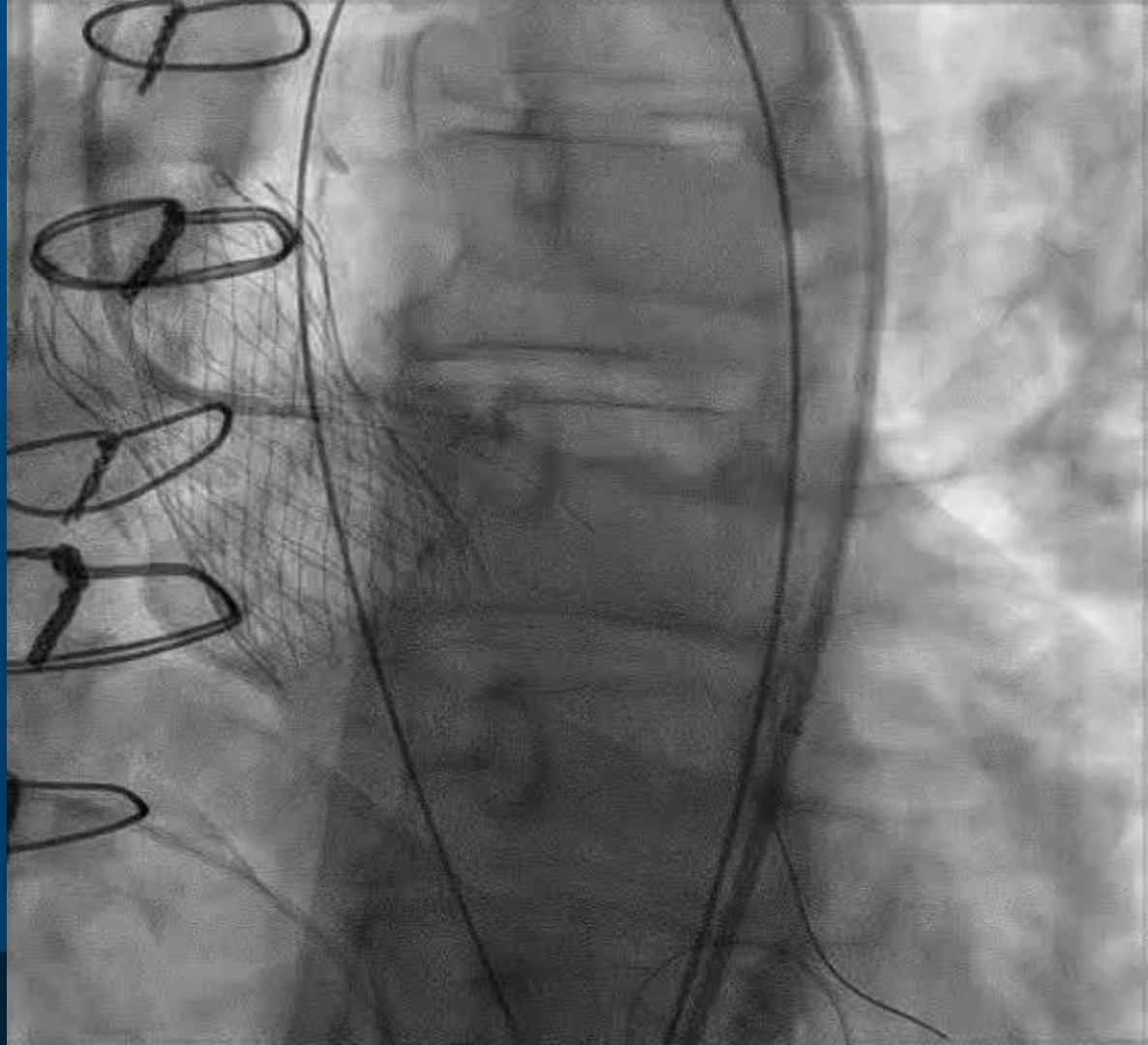


Simultaneous Double UNICORN Balloon Angioplasty



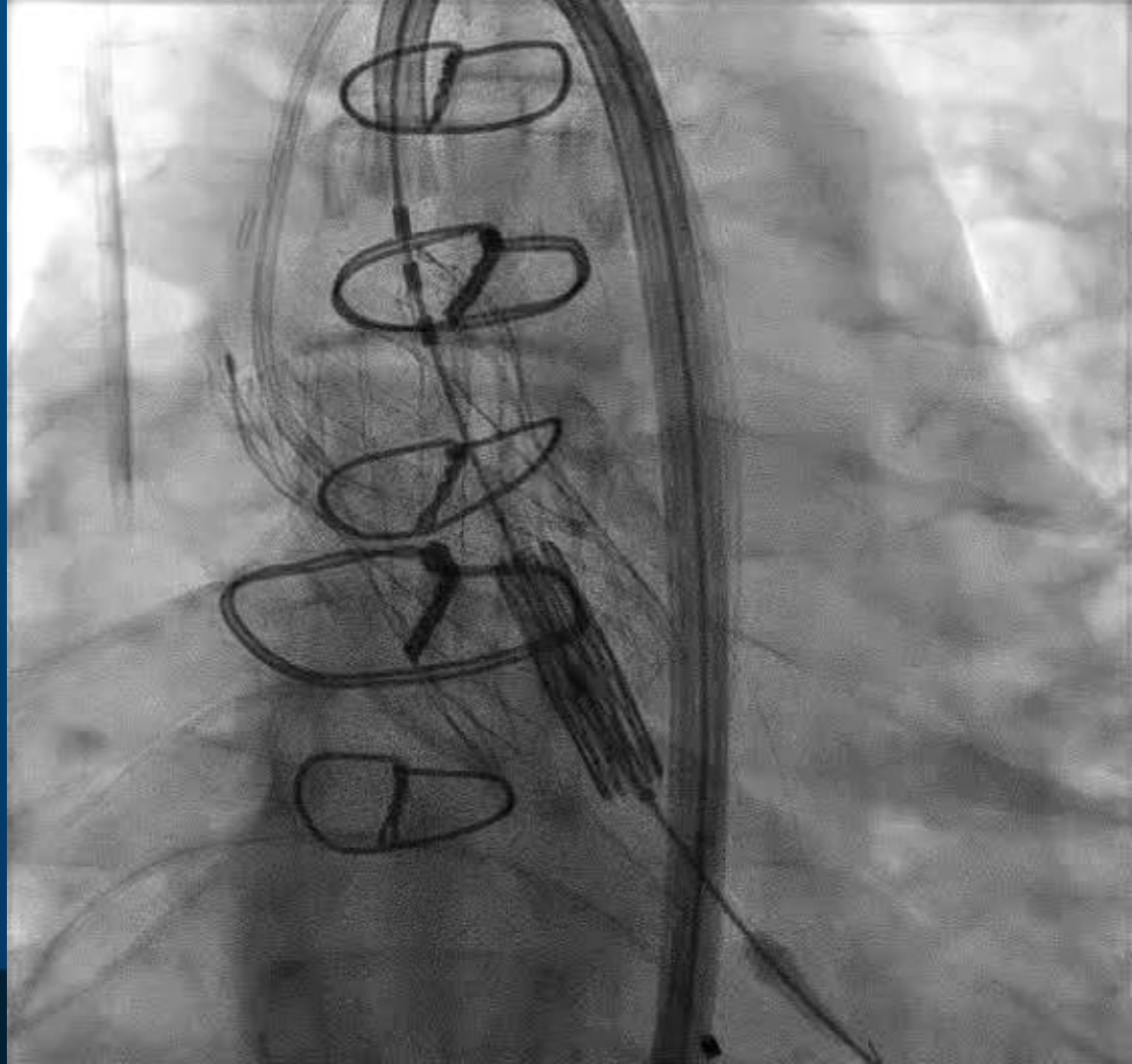
Coronary Protection *Snorkel Technique*

- JL4 guide advanced to ascending aorta and LM
- Runthrough wire into LCX
- 3 x 15 mm Trek balloon positioned across CoreValve struts into LM
- Balloon inflation during TAVR deployment for LM protection



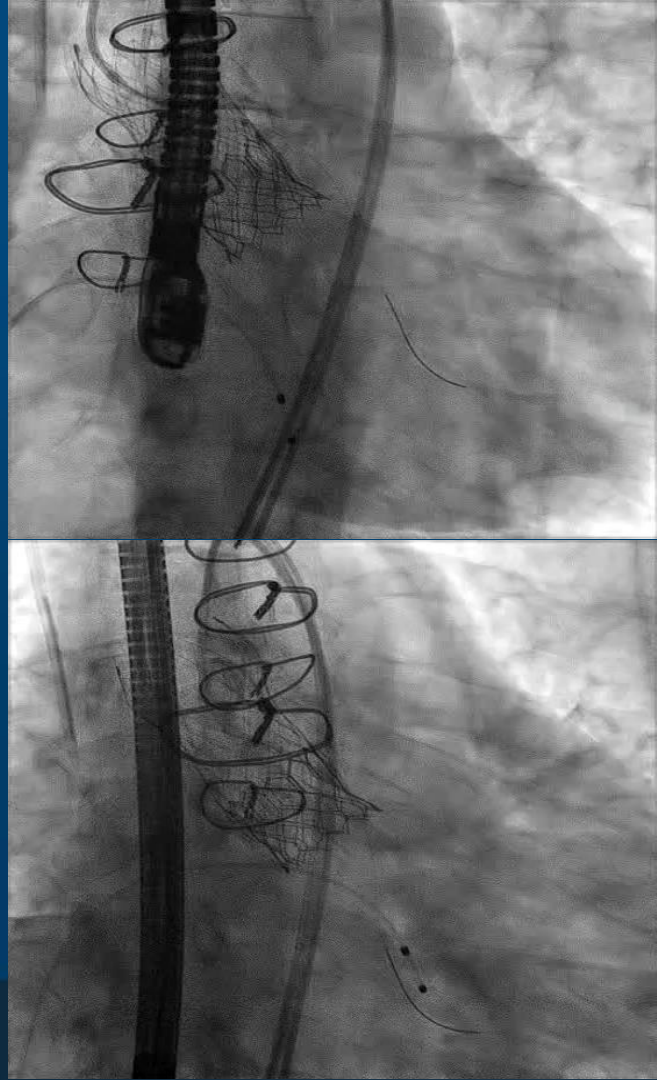
TAVR Deployment

- **Edwards Sapien S3 26 mm Ultra-Resilient Valve**
 - Advanced over Safari wire
- **Rapid pacing at 180–200 bpm for 21 seconds**
- **Valve deployed Successfully**
 - Slightly low but stable position

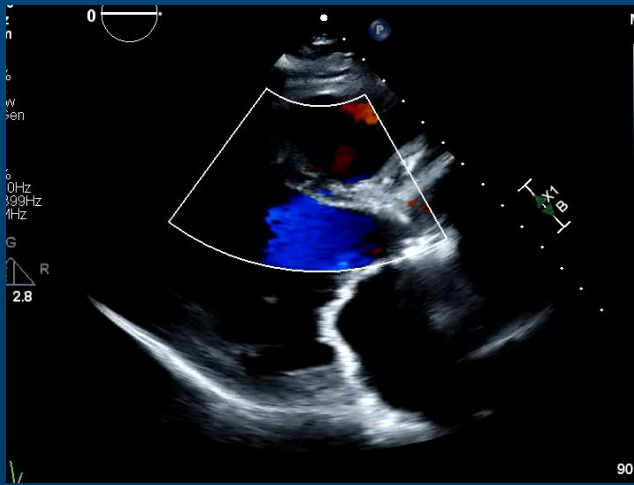


Post Deployment Assessment

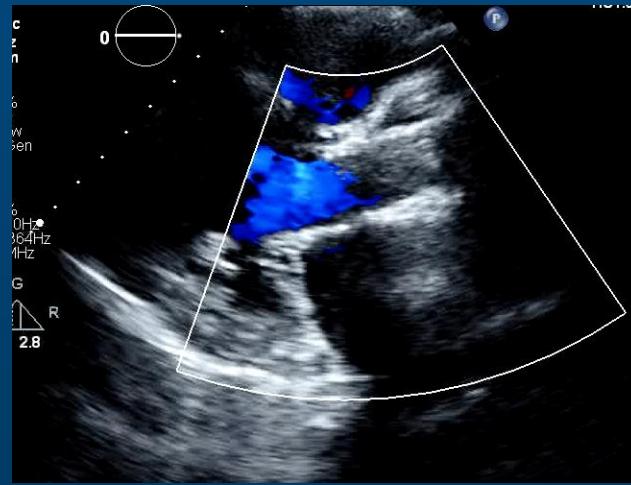
- **No immediate complications**
 - TIMI III flow in coronaries
 - No dissection, perforation, or embolization
 - No conduction abnormalities
 - No vascular or neurologic events
- **No significant PVL or AI on TEE and Aortogram**
- **Hemostasis achieved with Perclose devices**



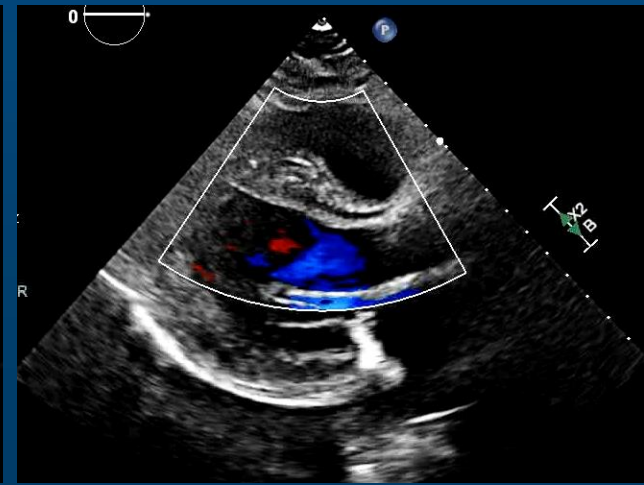
Post Deployment Assessment



Pre TAVR



**S/P TAVR
Day 1**



**S/P TAVR
1 Month**

Double Unicorn Leaflet Modification

- **Successful Double UNICORN leaflet modification and ViViV TAVR**
 - Effective Left Main protection with Snorkel technique
- **Take-Home Points**
 - Double UNICORN leaflet modification is *feasible and effective* for high-risk ViViV TAVR
 - Simultaneous bilateral leaflet modification can *prevent coronary obstruction in challenging anatomy*
 - Snorkel technique provides *additional LM protection*
 - Careful pre-procedural planning, multimodal imaging and multidisciplinary and approach are critical for success