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Sometimes When Two Or More Valves Are Needed – TAVE

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1. Abstract

1.1. Background

Transcatheter aortic valve embolization (TAVE) is a rare but potentially life-threatening complication of Transcatheter Aortic Valve Implantation (TAVI), characterized by unintended displacement of the valve either into the aorta (aortic direction) or left ventricle (ventricular direction) after deployment.

It may occur immediately during deployment or shortly thereafter due to inadequate anchoring, deployment error, or hemodynamic instability.

1.2. Incidence

• Occurs in approximately 0.3–1.0 % of TAVI procedures.

• Incidence is similar across balloon-expandable and self-expandable valves, though mechanisms differ slightly.

1.3. Mechanisms and Contributing Factors

1. Insufficient anchoring – undersized valve, low calcium burden, asymmetric annulus.

2. Loss of pacing control – failure of rapid pacing during balloon-expandable valve release causes sudden ventricular ejection and upward migration.

3. Improper positioning – deployment too high (aortic embolization) or too deep (ventricular embolization).

4. Interaction with pre-existing prosthetic or mitral valve – interference alters stability.

5. Delivery system manipulation or excessive post-dilatation.

2. Case Presentation

She is a 82 years old female with multiple cardiovascular risk factors: previous metalic mitral prothesis with normal gradients, hypertension, dyslipidemie with no ECG changes, normal coronary angiogram. Echocardiography: normal LV function, metalic mitral prothesis with normal gradients, sever calcified aortic stenosis with mild regurgitation, dilated right atrium and ventricle with sever tricupid regurgitation. CT angiogram for planning TAVI – 23mm valve

Prognosis

• Mortality directly due to embolization is relatively low (< 10 %) with prompt management.

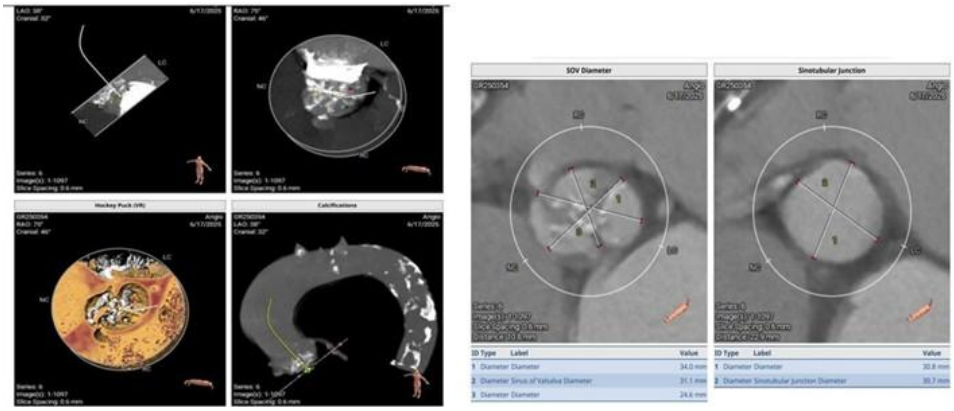
• Long-term follow-up shows good functional recovery in most patients treated with endovascular repositioning and secondary valve implantation.

• Stabilized embolized valves left in the descending aorta rarely migrate or cause late complications if monitored.

3. Conclusions

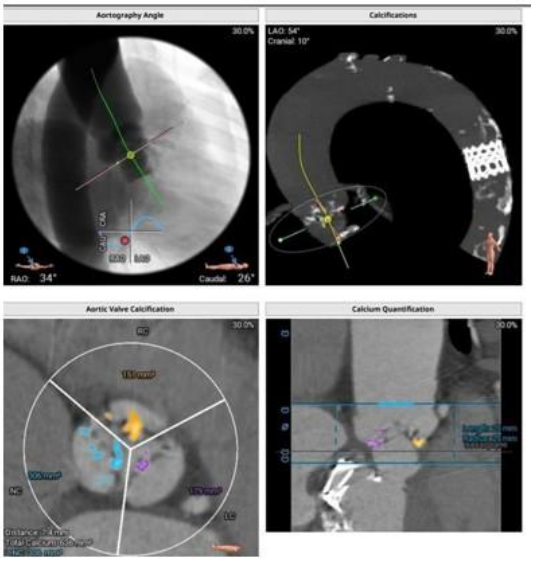
TAVE remains a rare but critical complication of TAVI. Prompt recognition, preservation of wire access, and rapid decision-making between snaring, valve-in-valve implantation, or surgery are vital to patient survival. Preventive strategies through meticulous imaging and procedural control remain the cornerstone of risk reduction.

We suggest for similar situation to implant a self-expanding valve in order to avoid balloon inflation to express a reactive force against the solid prosthetic valve ring which is likely to displace the transcatheter valve during expansion.



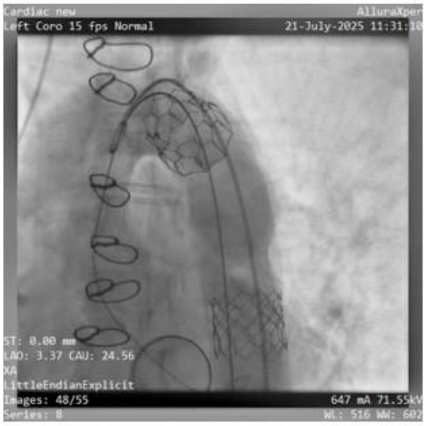
The first attempt for implantation was very difficult due to unstable pacemaker lead and difficult positioning, so the valve migrated to the descending aorta where it was fixed there.

The second attempt, it was used another valve platform (Size 21.5mm), active pacemaker lead introduced from the Right Jugular vein to the RV apex.



Another CT planning for another valve platform.

Careful implantation with no success, as the valve migrated.



The third attempt was a successful one.

3 Months later.