Trans Catheter Closure of Perimembranous VSD with a Duct Occluder Device

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Case History

- 17 year old lady with history of CHD
- On evaluation found to have pan systolic murmur
- Echo showed 7mm Peri-membraneous VSD with left to right shunt
- The defect was 4mm away from the aortic valve, but there was no AR
- No significant PAH
Catheterization

• LV angiogram confirmed the location of VSD, size measured was 6.5mm on LV side
• The calculated Qp/Qs was 1.5:1
• There was no AR
LV angiogram
Intervention

- The defect was crossed with Terumo 0.035 inch wire with 5F Amplatz Left 2 curve.
- The wire was snared initially in SVC, creating AV loop and a & 7 F sheath was advanced in to aorta from the venous side across the defect.
- The sheath had kinks and the device could not be advanced.
AV loop by snaring in SVC
Problem - severe kink in the sheath
Solution

• Possibility of trapping in Tricuspid chordae was thought of and the whole procedure was repeated after snaring in the pulmonary artery avoiding the chordae.

• The snare catheter was advanced through a multipurpose catheter after entering the PA.
Technique

• The sheath was advanced into the aorta without any kink

• **A 8/10 Duct occluder(Cocoon) device** was advanced and the retention disc was delivered in the ascending aorta, the whole assembly was withdrawn so as to engage the defect.

• Trans thoracic echo showed closure of the shunt, but the retention disc was striking the right aortic cusp and causing AR

• **The device waist was slightly pushed and the delivery system was pushed and rotated to give the retention disc an inferior tilt**
Device positioning
Inferior tilt given to the device
• With the inferior tilt, the disc moved away from the aortic valve, with disappearance of AR
• The remaining portion of the waist was deployed on the RV side
• The closure of shunt confirmed both by echo and angiography
• After confirming stability, the device was deployed.
LV angio after device position
Aortic Angio to look for AR
Device after delivery
Echo post device
Challenges

• Proximity of the defect to aortic valve
• **Importance of recognizing traverse though tricuspid chordae and changing the snaring location**
• The choice of duct occluder for closure
• We thought the tapering waist and smaller disc (by 2mm) of the duct occluder compared with VSD occluder of the same size would be better in this case.
• The cost was another reason as duct occluder would be cheaper which would be an important consideration without health Insurance
• **The importance of giving an inferior tilt which directs the device away from the aortic valve.**