How to Address Paravalvular Leak 6 Ways to Sunday

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Objective

- Recognize the indications and benefits of using multiple vascular occlusive devices percutaneously in treating paravalvular leak (PVL).

Case

HPI: A 76 year-old male with severe bioprosthetic mitral valve stenosis and PVL presented with shortness of breath. In 2006 he had a mitral valve replacement with a 27 mm Perimount valve for endocarditis. In 2020 he developed NYHA Class IV heart failure and presented to our institution.

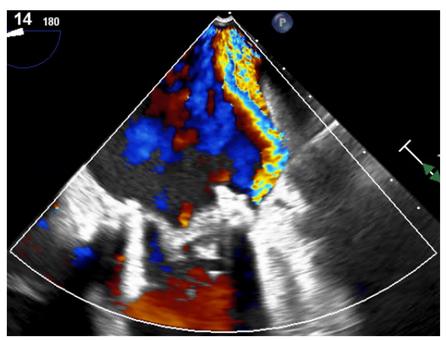
Exam: General: No distress – Neck: no JVD – Heart: 2/6 crescendo systolic murmur heard at the apex – Lungs: Bibasilar crackles – Extremities: 2+ pitting edema

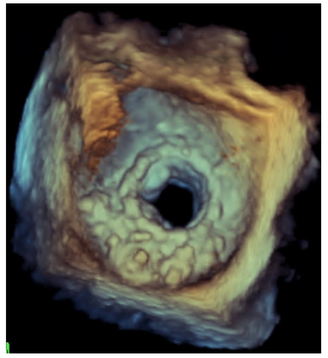
Labs: WBC: 7.6 thou/mm^3, Hg: 9.4 g/dL, Platelets: 230 thou/mm^3 Na: 145 mmol/L, K: 4.0 mmol/L, Cl: 110 mmol/L, BUN: 33 mmol/L, Cr: 1.37 mg/dL, T. Bili: 1.6 mg/dL, D. Bili: 0.4 mg/dL, T. Protein: 7.0 g/dL, Albumin: 4.2 g/dL

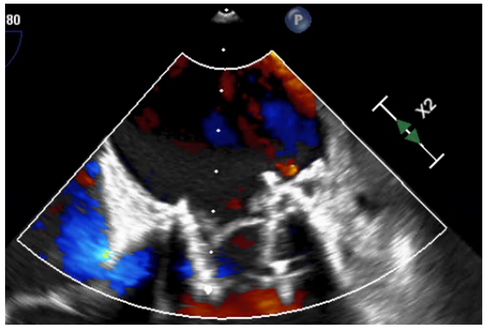
ECG: Right bundle branch block

Initial TEE: immobile prosthetic leaflet with PVL

Results







- Via the right femoral vein and right atrium, a transseptal puncture was performed using a Brockenbrough needle under transesophageal echocardiographic (TEE) and fluoroscopic guidance.
- Catheter was exchanged in the left atrium to an Agilis steerable catheter (Abbott, Abbott Park, IL), which was used to position a guidewire (Terumo Interventional Systems, Somerset, NJ) across the PVL.
- A 5 FR delivery sheath was advanced with an Amplatz Duct Occluder II (Abbott, Abbott Park, IL) along with a separate 0.018 guide buddy wire, which was used to re-cross the PVL and deliver additional Occluder II devices in a sequential manner under TEE guidance.
- Due to the crescent shape of the patient's PVL along P1 to P3, a total of n=6 Occluder II devices (two 4x6mm, two 5x6mm, two 6x6mm) were required to achieve the desired results.

Conclusion:

- After closure of the patient's PVL, the patient's functional status improved.
- This particularly complex transcatheter intervention highlights the importance of a multidisciplinary approach, multi-modality techniques and the technical skills required to address prosthetic valve failure and PVL in high-risk patients.