

Two Pumps, One Heartbeat: When TAVR Goes South, Impellas Go In

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Disclosure of Relevant Financial Relationships

I, Majed Kheyrbek, DO NOT have any financial relationships to disclose.

History of Present Illness

- 84 y.o. male with a PMH significant for HTN, HLD, T2DM, PAD, CAD CTO of the mid LAD s/p PCI to mid LAD, who presents for elective TAVR. He reports NYHA class II-III symptoms.
- He had been hospitalized multiple times over the past year for decompensated heart failure and was diagnosed with severe aortic stenosis.
- He was evaluated by the valve clinic and was deemed a suitable candidate for TAVR.
- Home meds: Plavix 75 mg, Lasix 40 mg, Hydralazine 100 mg TID, Toprol 100 mg, Repatha, Xarelto 2.5 mg BID

- Access was obtained in right femoral artery and vein.
- A TVP was placed in the right ventricle.
- Sentinel embolic protection system was placed through right radial artery.
- After Safari wire placed in the LV, patient became acutely hypotensive.
- The LV appeared dilated and non-contractile on TEE.
- CPR started immediately.



- A 26 Edwards valve was advanced over the Safari wire into the descending thoracic aorta and was deployed under rapid ventricular pacing.
- Following this, the ventricle continued to look poor and the RV started to dilate.
- Decision was made to place an Impella across the aortic valve and this was performed through the right femoral sheath.
- LHC demonstrated patency of coronary systems.



- The patient continued to be unstable, and the RV continued to dilate further.
- It was decided to place a right-sided Impella through the new femoral access on the right.
- Following this, the patient stabilized and was transferred to the CCU.
- TTE showed LVEF 25%, normally functioning bioprosthetic aortic valve, and severely reduced RV function.



CCU Course

- Patient continued to do well and was able to be weaned off pressors.
- MCS support was discontinued.
- Follow up TTE showed improvement in EF 40%, well seated and normally functioning AV, and normal RV systolic functions.
- Patient was discharge a week later and continues to do well on outpatient follow up.

Discussion

- The patient had baseline pulmonary hypertension as well as some degree of AI and MR.
- It was possible that with the stiff wire across the aortic valve, it held the valve open, it also possibly pinned the mitral valve papillary muscle.
- The patient had wide-open AI leading to the left ventricular failure and then severe MR causing secondary right ventricular failure.
- Immediate MCS support was necessary for LV and RV unloading which resulted in stabilization of the patient.

Conclusion

- Although TAVR has become widely used for severe aortic stenosis and many operators have more experience with it, serious complications can still occur especially with high-risk patients. Mechanical circulatory support may be essential to achieve recovery and procedural success.