

Successful Use Of Impella 5.5 In A Patient With Post-cardiotomy Cardiogenic Shock After Minimally Invasive Multiple Valve Surgery

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Objective

- The Impella 5.5 has been successfully used in patients who are unable to be weaned from cardiopulmonary bypass after open heart surgeries due to left ventricular failure. It has the advantages of early extubation and mobilization of the patients as it is inserted in the upper body without the requirement of sedation. However, its use in minimally invasive surgeries has not been reported. This case report details the successful use of Impella 5.5 in a patient after minimally invasive multi valve surgery.

Case Summary

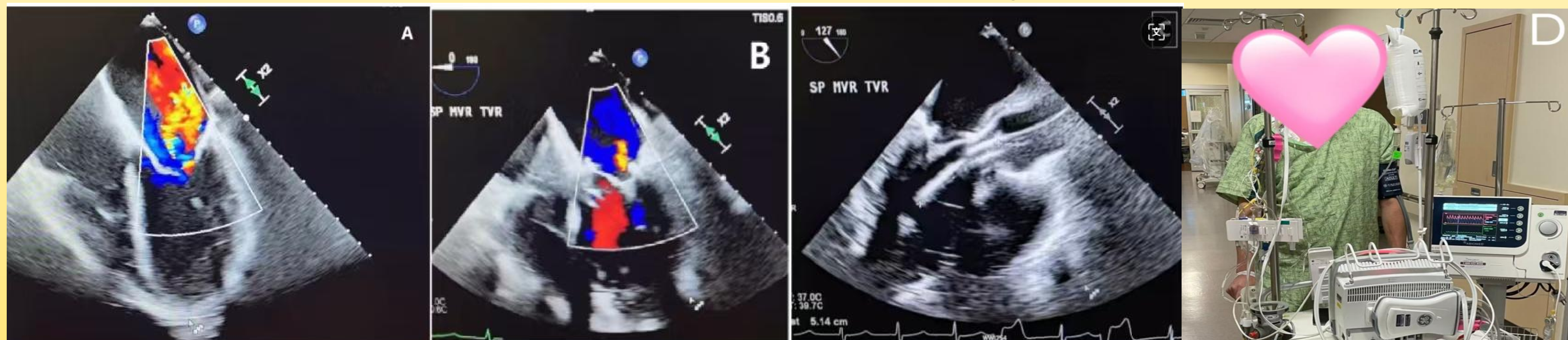
- A 54-year-old male with history of frequent use of Cocaine developed severe non-ischemic cardiomyopathy, severe mitral and tricuspid valve regurgitation with persistent atrial fibrillation. Intraoperative transesophageal echocardiography (TEE) revealed significant reduction in left ventricular ejection fraction (LVEF) of 20% before surgery and moderate-to-severe right ventricular dysfunction. The patient underwent mitral and tricuspid annuloplasty with bi-atrial cryo Maze procedure through a small (6cm) right thoracotomy approach. Post-op TEE show trivial mitral and tricuspid valve regurgitation. Despite the administration of multiple vasopressors, the patient was unable to be weaned from cardiopulmonary bypass. Consequently, an Impella 5.5 was inserted under the guidance of TEE and fluoroscopy through the right axillary artery using a 10 mm graft. He was then successfully weaned off cardiopulmonary bypass.

Results

The patient was extubated with reduced vasoactive support by Day 2. Echocardiogram showed an improved LVEF of 30-35% at Day 5 and He started ambulation in the ICU with minimal assistance. The Impella device was successfully removed on post op day 8. He maintained sinus rhythm throughout the hospital stay and was discharged home on post-op day 10.

Conclusion

- Impella 5.5 is an effective adjunctive therapy in the management of patients with post cardiotomy cardiogenic shock during minimally invasive valve surgeries. It allows patients for early extubation and ambulation as it is inserted in the upper body without the need of sedation.



Echocardiographic images of mitral regurgitation before (A) and after (B) repair. Echocardiographic image of Impella 5.5 implanted through aortic valve and LVOT. (C) The patient started ambulation in the ICU with minimal assistance. (D)