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Commentary: Enhanced open transcatheter mitral valve replacement: The ultimate hybrid approach

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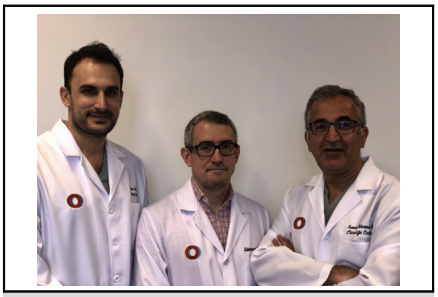

From left: Jean Porterie, MD, Dimitri Kalavrouziotis, MD, FRCSC, and Siamak Mohammadi, MD, FRCSC

CENTRAL MESSAGE

Hybrid mitral valve replacement performed by surgical teams with expertise in both open and transcatheter approaches should improve the management of technically complex disease.

In symptomatic mitral valve disease with severe mitral annular calcification (MAC), mitral valve replacement is challenging, and decalcification carries a risk of serious injury to the atrioventricular groove, especially in elderly patients. In such situations, an open-heart deployment of a balloon-expandable aortic prosthesis was proposed as a safer alternative to avoid a potentially hazardous decalcification. However, this technique may have several disadvantages, including the risk of periprosthetic leakage or obstruction of the left ventricular outflow tract (LVOT).

Consideration of surgical techniques to overcome these limitations is essential. Codecasa and colleagues[1] report their elegant management of a 74-year-old woman with rheumatic mitral valve disease, with severe MAC on preoperative chest computed tomography scan. They performed an open mitral implantation of a balloon-expandable aortic prosthesis, preoperatively sized to allow for slight oversizing and minimal stress to the atrioventricular groove. The anterior mitral valve leaflet was resected, and a bovine pericardial skirt was sutured to the base of the prosthesis and to the mitral annulus to prevent periprosthetic leaks. A septal myectomy was also performed to prevent obstruction of the LVOT. Apart from temporary atrioventricular block requiring external pacing, the postoperative course was uneventful and the patient was discharged 9 days after the operation.

Although conventional mitral valve surgery with MAC can be performed with good results in acceptable-risk patients, severe circumferential MAC frequently presents in elderly patients and is associated with increased operative risk.[2] Transcatheter techniques involving the deployment of an aortic balloon-expandable prosthesis for native mitral valve disease have drawbacks such as LVOT obstruction or periprosthetic regurgitation and have led to disappointing results in patients with MAC.[3] Initially described in case reports as either a planned procedure or an intraoperative bailout maneuver, the alternative hybrid approach has been demonstrated to be a feasible and hemodynamically effective solution for severe MAC. The open hybrid approach allows for resection of the anterior mitral valve leaflet and septal myectomy, which theoretically should maximize the postoperative neo-LVOT diameter.[4] Nevertheless, further studies are mandatory to determine whether the long-term outcome for this technique is as promising as its short-term results. The report by Codecasa and colleagues[1] illustrates the pivotal role of a multidisciplinary management of such patients, including heart team discussion, multimodality imaging (echocardiography and computed tomography scan), and rigorous preoperative planning (eg, prosthetic valve sizing and software for neo-LVOT determination). There is little doubt as to the beneficial influence of surgeons with expertise in both surgical and transcatheter approaches for these complex patients.

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