Transcatheter mitral valve implantation – a single centre experience

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Mitral valve surgery is the recommended first-line treatment option for the majority of patients with severe mitral valve regurgitation or stenosis. Despite the major progress achieved in surgical techniques and prosthesis characteristics over the past two decades, reoperation is needed in 20% to 35% of patients after mitral valve replacement or repair during 10-year follow-up. Redo mitral valve surgery is associated with high early mortality, especially in elderly patients with multiple comorbidities. Transcatheter mitral valve implantation has emerged as a valuable and promising alternative for redo surgery in symptomatic patients with degenerated mitral bioprosthesis (transcatheter mitral valve-in-valve implantation, TMVI-VIV) or failed mitral annuloplasty rings (transcatheter mitral valve-in-ring implantation, TMVI-VIR) who are judged by a Heart Team to be at high or greater surgical risk. Transcatheter mitral valve implantation has also been performed in patients with native mitral valve dysfunction due to extensive mitral annular calcification (TMVI-MAC). The most commonly implanted devices are Edwards SAPIEN balloon-expandable valves (SAPIEN 3, SAPIEN XT) through the transfemoral or transapical approach. Recent data from registries show favorable outcomes, including technical, device, procedure and patient success in VIV and VIR groups.[1] Patients with extensive mitral annular calcification are the most challenging group with the lowest device success and the highest in-hospital and 30-day mortality as compared to VIV or VIR procedures. We present our centre experience with transcatheter mitral valve implantation.

From May 2021 to June 2022 four patients at high surgical risk underwent TMVI at our site. Two procedures were performed as TMVI-VIV in failed mitral valve bioprosthesis and two procedures as TMVI-MAC. The predominant type of mitral valve dysfunction in all patients was severe stenosis. All procedures were performed in general anesthesia, using transfemoral approach. An Edwards SAPIEN 3 valve was implanted in all patients under 3D-TOE and fluoroscopic guidance. TMVI was technical successful in three patients. Conversion to surgery and valve embolization was observed in one patient with extensive MAC. Three patients with technical successful TMVI had good hemodynamic parameters without left ventricular outflow obstruction detected. Clinical success with functional improvement was achieved in two patients. One patient was hospitalized for worsening heart failure six weeks after the procedure. One patient died three weeks after hospital discharge due to sepsis.

TMVI is a promising but still challenging method of treatment for patients with either failing mitral bioprosthesis, failing annuloplasty rings or in patients with native mitral valve dysfunction due to extensive MAC. Careful planning and Heart Team approach is required to improve both patient selection and procedural technique, especially in TMVI-MAC group.

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