Totally Endoscopic, Robotic-Assisted Redo Mitral Valve Re–Repair

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Disclosures Statement

Dr. Amabile receives consulting fees from JOMDD/Sanamedi. Michael LaLonde receives consulting fees from Edwards Lifesciences and Intuitive Surgical. Dr. Geirsson receives consulting fees for being a member of the Medtronic Strategic Surgical Advisory Board and from Edwards Lifesciences. Dr Krane is a physician proctor and a member of the medical advisory board for JOMDD/Sanamedi, physician proctor for Peter Duschek, consultant for EVOTEC and Moderna, and receives speakers’ honoraria from Medtronic and Terumo.

Funding Statement

None.

Central Picture Legend

Intraoperative view of the failed prior mitral valve repair.

Central Message

This case video highlights technical details of totally endoscopic, robotic-assisted redo mitral valve re-repair.

Case Video Word Count: 324/350
Case Video

Long-term freedom from recurrent mitral regurgitation following mitral valve repair exceeds 90% in experienced hands. (1, 2) However, mitral re-repair is successfully achieved only in a small proportion of these patients. (3-6) Furthermore, prior cardiothoracic surgery is often considered a relative contraindication to offering a minimally invasive approach for redo mitral valve surgery. We have previously reported that the utilization of the surgical robotic platform allows for an effective adhesiolysis, owing enhanced dexterity as well as magnified visualization. (7) We report the case of a 66-year-old female with history of paroxysmal atrial fibrillation and degenerative mitral regurgitation who underwent totally endoscopic, robotic-assisted mitral valve repair (P2 neochordoplasty and annuloplasty with a 36-mm Simulus band) (IRB #2000032417, 3/4/2023; informed written consent for publication of study data was obtained).

Approximately one year later, the patient developed dyspnea on exertion and increased fatigue, and transesophageal echocardiogram revealed severe mitral regurgitation. We offered a totally endoscopic, robotic-assisted approach for redo mitral valve repair. After induction of general anesthesia, femoral percutaneous cannulation was performed (8) and robotic ports were placed in our standard fashion. (9) After careful intrathoracic adhesiolysis (7), aortic endoclamping was achieved using the IntraClude intra-aortic occlusion device (Edwards Lifesciences, Irvine, CA), and the Waterston’s groove was accessed. As shown in Video 1, the posterior leaflet was prolapsing in area of previously placed CV-4 Goretex neochords. We opted to re-repair the valve by performing quadrangular resection of P2 (interrupted figure-of-eight sutures) with sliding plasty, P1/P2 and P2/P3 clefts closure, P3/A3 commissural plication, and release of secondary chordae to A1. The repair was then completed with an annuloplasty using a 32-mm Physioflex band. The patient was extubated shortly after the procedure and had an
unremarkable postoperative course, with trace mitral regurgitation and mitral gradient of 370 mmHg at discharge.

In experienced hands, a totally endoscopic, robotic-assisted mitral valve re-repair is achievable with favorable outcomes in patients with recurrent mitral regurgitation in the setting of prior robotic mitral valve repair.
References


Figure 1. Intraoperative view of the mitral valve, pre (top) and post (bottom) re-repair. Elongated chordae are marked with arrows.

Video 1. Narrated case video.