

## Advanced Techniques in Robotic Mitral Valve Repair

**Authors :** Abraham J. Rizkalla, Tristan D. Yan

**Abstract :** Purpose: Durable mitral valve repair is preferred to a replacement, avoiding the need for anticoagulation or re-intervention, with a reduced risk of endocarditis. Robotic mitral repair has been gaining favour globally as a safe, effective, and reproducible method of minimally invasive valve repair. In this work, we showcase the use of the Davinci© Xi robotic platform to perform several advanced techniques, working synergistically to achieve successful mitral repair in advanced mitral disease. Techniques: We present the case of a Barlow type mitral valve disease with a tall and redundant posterior leaflet resulting in severe mitral regurgitation and systolic anterior motion. Firstly, quadrangular resection of P2 is performed to remove the excess and redundant leaflet. Secondly, a sliding leaflet plasty of P1 and P3 is used to reconstruct the posterior leaflet. To anchor the newly formed posterior leaflet to the papillary muscle, CV-4 Goretex neochordae are fashioned using the innovative string, ruler, and bulldog technique. Finally, mitral valve annuloplasty and closure of a patent foramen ovale complete the repair. Results: There was no significant residual mitral regurgitation and complete resolution of the systolic anterior motion of the mitral valve on post operative transoesophageal echocardiography. Conclusion: This work highlights the robotic approach to complex repair techniques for advanced mitral valve disease. Familiarity with resection and sliding plasty, neochord implantation, and annuloplasty allows the modern cardiac surgeon to achieve a minimally-invasive and durable mitral valve repair when faced with complex mitral valve pathology.

**Keywords :** robotic mitral valve repair, Barlow's valve, sliding plasty, neochord, annuloplasty, quadrangular resection

**Conference Title :** ICRS 2023 : International Conference on Robotic Surgery

**Conference Location :** Sydney, Australia

**Conference Dates :** March 27-28, 2023