

# It's a Team Sport



Chris Cook, MD, Mohammed Alreshidan, MD, Muhammad Salman, MD, Lawrence M. Wei, MD, Harold G. Roberts, MD, J. Scott Rankin, MD, and Vinay Badhwar, MD

In this issue of *Seminars*, Jimenez et al<sup>1</sup> present their outcomes and repair rates for mitral valve (MV) operations following implementation of a dedicated multidisciplinary heart valve team at a low mitral volume Veterans Administration (VA) hospital. In this retrospective review of 103 consecutive mitral operations performed upon initiation of their heart valve team in 2009, through to 2016, MV repair rates increased to 67% compared to 21% from the previous 8-year period. In this recent era, repair rates for degenerative disease were 86.5% (64/74) with mild or less residual mitral regurgitation (MR) in longitudinal follow-up and no mitral reoperations. Furthermore, their operative mortality for isolated MV operations was 0.97%. In a similar report from a VA quality initiative in mitral surgery, multi-institutional co-authors found an overall 10-year MV repair rate of 63%, and 65% for degenerative disease.<sup>2</sup> Jimenez et al<sup>1</sup> illustrate that even in a low volume single institution, mitral repair success is feasible and a program has the potential to be better than the average in other VA hospitals when heart team collaboration is applied. Though a repair rate for degenerative disease of 86% falls short of national goals of over 90%, these results are certainly within reach. The authors are to be congratulated for their concerted efforts to improve their repair rates and overall outcomes of mitral valve surgery.

The current study's reported rate of successful repair of 92% with sternotomy vs the 71% with minimally invasive right thoracotomy is not surprising and deserves comment.<sup>1</sup> The most important aspect in mitral surgery for primary MR is, and will always be, achieving a successful repair, regardless of approach. When mitral repair expertise reaches near 100% at varying levels of pathoanatomic complexity, minimally invasive approaches are most often equally successful.<sup>3</sup> Most commonly, minimally invasive and robotic mitral repair is performed in high-volume programs where there is not only surgical expertise, but expertise in preoperative and intraoperative imaging. This is the tip of the spear of the mitral heart



WVU Division of Cardiac Surgery.

### Central Message

Heart team collaboration can assist in the pre-operative pathoanatomic planning and case triage to optimize success in mitral valve repair, even in low-volume programs.

team. Generally speaking, it is not reasonable to expect that a low-volume program doing between 8 and 12 total cases per year to have the same repair results and successes with minimally invasive or robotic approaches as high-volume mitral programs.<sup>4–6</sup> Surgeons who perform the majority of MV surgery at our own institution began performing MV repairs via right thoracotomy only after many years of experience with complex MV repairs via sternotomy. After much experience was gained with minimally invasive video-assisted MV repair demonstrating excellent reproducible results (>200 cases), a successful transition to a robotic platform was made and this has become standardized to achieve consistent outcomes with repair despite anatomic complexity.<sup>3,4</sup> This form of stepwise approach has been used by many programs, including integrating innovation mitral technologies to help bolster the mitral heart team and referrals to the team.<sup>7</sup> Similar to what has been initiated by Jimenez et al,<sup>1</sup> utilizing a multidisciplinary approach to evaluate complex pathoanatomy and devise pathoanatomic approaches to MR not only helps surgeons with planning repair, but also helps the team with the application of alternative solutions in complex patients.<sup>3</sup>

Given that the overwhelming majority of cases in the current study were performed by a single surgeon, it is difficult to delineate whether the improved repair rates are the result of a programmatic shift with heart team implementation vs that of growing surgical expertise in MV repair techniques and purposeful focus on that surgeon's improved outcomes.<sup>1</sup>

Department of Cardiovascular and Thoracic Surgery, West Virginia University, Morgantown, West Virginia

Disclosures: None of the authors have any financial disclosures pertaining to this work.

Address reprint requests to Vinay Badhwar, MD, Department of Cardiovascular and Thoracic Surgery, West Virginia University, WVU Heart and Vascular Institute, 1 Medical Center Drive, Box 8059, Morgantown, WV 26506. E-mail: [vinay.badhwar@wvumedicine.org](mailto:vinay.badhwar@wvumedicine.org)  
DOI of original article: <http://dx.doi.org/10.1053/j.semtcvs.2019.02.028>.

Regardless, the goal and outcome are aligned. Most successful mitral programs have a single lead surgeon spearheading innovation and consistency and several larger centers have a dedicated small group of surgeons performing the majority of MV cases in a multisurgeon practice. As Jimenez et al<sup>1</sup> have illustrated, these principles of multidisciplinary interaction and image-guided decision-making can successfully be applied to lower volume programs, proving that optimal success is achieved when mitral surgery is considered a team sport.

## REFERENCES

1. Jimenez E, Wu D, Omer S, et al: Mitral valve repair rate at a veterans affairs hospital utilizing a multidisciplinary heart team. *Semin Thorac Cardiovasc Surg* 31:434–441, 2019
2. Bakaeen FG, Shroyer AL, Zenati MA, et al: Mitral valve surgery in the US veterans administration health system: 10-year outcomes and trends. *J Thorac Cardiovasc Surg* 155:105–117.e5, 2018
3. Alreshidan M, Herron RD, Wei LM, et al: Surgical techniques for mitral valve repair: A pathoanatomic grading system. *Semin Cardiothorac Vasc Anesth* 23:20–25, 2019
4. Coyan G, Wei LM, Althouse A, et al: Robotic mitral valve operations by experienced surgeons are cost-neutral and durable at 1 year. *J Thorac Cardiovasc Surg* 156:1040–1047, 2018
5. Gillinov AM, Mihaljevic T, Javadikasgari H, et al: Early results of robotically assisted mitral valve surgery: Analysis of the first 1000 cases. *J Thorac Cardiovasc Surg* 155:82–91.e2, 2018
6. Roberts HG, Wei LM, Badhwar V: Developing a robotic mitral program: What's past is prologue. *Thorac Cardiovasc Surg* 155:1459–1460, 2018
7. Downs E, Lim S, Ragosta M, et al: The influence of a percutaneous mitral repair program on surgical mitral valve volume. *J Thorac Cardiovasc Surg* 150:1093–1097, 2015