

EDITORIAL COMMENT

The Specialty of Mitral Valve Repair*



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Degenerative mitral valve disease (i.e., mitral valve prolapse) is the most common indication for surgical referral to treat mitral regurgitation (MR). On the basis of decades of study, we recognize several facts concerning the management of patients with degenerative MR (1):

1. Valve repair confers superior outcomes than does valve replacement. These demonstrated advantages of mitral valve repair include better short-term and long-term survival, improved quality of life, better preservation of left ventricular function, and greater freedom from endocarditis and anticoagulant agent-related hemorrhage.
2. Valve repair is possible in >90% of patients with degenerative mitral valve disease.
3. Valve repair can be achieved with an operative mortality risk of <1%, and, in some centers, with a risk of 0.1%.

We also know this: only one-half to two-thirds of patients with degenerative mitral valve disease receive mitral valve repair. The remaining patients undergo mitral valve replacement, an inferior treatment option. In this issue of the *Journal*, Chikwe et al. (2) address the causes of this gap in care and, through their data, suggest a means to improve care.

IT COMES DOWN TO THE SURGEON

Analyzing a mandatory New York State database, Chikwe et al. (2) evaluated the impact of surgeon case

volume on degenerative mitral valve repair rates and surgical outcomes. Their findings come as no surprise; surgeons who perform more mitral valve operations have higher repair rates, and their patients face reduced risks of death and mitral valve reoperation. Practice does not make perfect, but, for most surgeons, practice certainly makes better.

SEE PAGE 2397

The investigators augment this important message by answering the question, “What is the minimum surgical volume needed to achieve excellent results in the management of degenerative mitral valve disease?” The answer is that good results were obtained with an annual surgeon volume of 25 mitral valve operations, and superior results attended surgeons who performed more than 50 mitral valve cases/year. However, most surgeons do not attain these numbers; the median number of mitral valve cases per New York surgeon was 10. Surgeon volume matters.

These results should inform us as we consider the treatment of patients with degenerative mitral valve disease. They alert us to variance in quality and to important, surgeon-related factors associated with enhanced outcomes. With this information in hand, we can provide firm answers to 3 controversial questions that are of paramount importance to patients, cardiologists, and surgeons.

IS MITRAL VALVE REPAIR A SPECIALTY?

The answer is, “Yes.”

Although heart surgeons have traditionally prided themselves on their ability to treat patients with virtually all forms of structural heart disease, optimal results in managing the broad array of cardiovascular lesions and the application of increasingly complex technologies require dedicated focus. The “jack of all trades” cardiac surgeon represents an outmoded, unattainable ideal. The achievement of average results across the spectrum of surgical lesions

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does not represent surgeons' best work. Excellence requires specialization.

Today, trainees often choose to focus on particular areas within cardiac surgery: these include thoracic aortic disease, heart failure, congenital heart surgery, and transcatheter aortic valve replacement. Practicing surgeons should do the same. In addition, we must acknowledge that mitral valve repair should be added to this list of specialties. Recognizing this, several centers teach mitral valve repair techniques through both workshops for practicing surgeons and formal, year-long fellowships for those in training.

Many will chafe at this recommendation and will contend that any surgeon can repair a "simple" P2 mitral valve prolapse. We must remember, however, that data from The Society of Thoracic Surgeons database suggest that U.S. surgeons, on average, perform only 5 mitral valve operations/year (3). Consequently, as in New York State, most surgeons perform less than a single mitral valve operation/month. In addition, returning to the example, P2 prolapse is not always so simple. It may be accompanied by mitral annular calcium or limited tissue for reconstruction after leaflet resection. After attempted repair, results can be jeopardized by systolic anterior motion of the mitral valve and residual MR at indentations in the leaflets. Each of these situations requires expertise borne of experience to achieve the optimum result—a successful repair.

Like the work of Chikwe *et al.* (2), other studies demonstrate that repair rates vary widely among different surgeons (4). In fact, no examination of this topic has ever found the converse—that surgeons' volume or experience fails to influence repair rates and results. The weight of these data strongly supports the notion that valve repair for degenerative disease is a specialty.

WHICH SURGEONS SHOULD OPERATE ON PATIENTS WITH DEGENERATIVE MITRAL VALVE DISEASE?

This question is politically charged. The surgeons who contend that specialists should perform mitral valve surgery tend to be those very specialists. Thus such a recommendation appears self-serving. However, the motivation behind this concept is improved patient care, rather than surgeon exclusivity. There is no barrier to the surgeon who wishes to develop expertise in mitral valve repair. Around the country and across the world, both recently trained and established surgeons find opportunities to study with expert mitral valve surgeons, to develop the skills required to offer reliable mitral valve repair to their patients with degenerative disease.

Once a surgeon has acquired the skill set, a certain number of operations is necessary to maintain and further develop expertise. Although some lower-volume surgeons achieve excellent results and high repair rates, multiple studies support a common target for standardization: a minimum average volume of 25 mitral operations/year (averaged over a 3-year period) represents a good threshold. For the surgeon just beginning his or her practice, this recommendation affords time to develop a referral base.

DOES THE HOSPITAL MATTER?

The answer to this question is, "Yes."

Excellent results for management of degenerative mitral valve repair require the right infrastructure and setting. In addition to a focused surgeon, the hospital must have cardiologists interested in mitral valve disease and state-of-the-art intraoperative 2- and 3-dimensional transesophageal echocardiography. The most challenging intraoperative situation occurs when, after an initial attempt at mitral valve repair, there is residual MR. At this point, detailed and accurate intraoperative assessment is essential to guide the surgeon to a good repair.

Surgeons with an interest in mitral valve surgery should seek a hospital that has both the necessary infrastructure and 1 or more high-volume mitral surgeons. The data of Chikwe *et al.* (2) support this strategy, with their finding that lower-volume surgeons who operate in the same institution as higher-volume surgeons benefit from this situation and achieve higher repair rates than do surgeons operating in other institutions.

Within a hospital's cardiac surgery department, team-based specialization provides a "safe" environment and training ground for the lower-volume surgeon with an interest in mitral valve repair and simultaneously facilitates the concentration of cases necessary to achieve excellent results. With such a structure, team-based surgical volumes, rather than individual surgeon volumes, will become more important in the achievement of optimal outcomes.

DEGENERATIVE MITRAL VALVE DISEASE: WHO AND WHERE?

With this important study, Chikwe *et al.* (2) address the who and where in the treatment of degenerative mitral valve disease. Surgeons (ideally, teams of surgeons) with a special focus, who have developed expertise through training and operative volume, should operate on patients with degenerative mitral valve disease in hospitals with appropriate infrastructure. This tenet should apply even to the

“simple” P2 prolapse. We recognize that this statement will generate controversy because it challenges the status quo. Accept or reject this data-driven recommendation by answering this question: “Whom do you want to fix your mitral valve?”

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