Authors have nothing to disclose with regard to commercial support.

MITRAL VALVE ENDOCARDITIS— UNREALIZED EXPECTATIONS FOR REPAIR OF MITRAL VALVE

To the Editor:

In the *Journal*, Lee and colleagues¹ reported their experience of 1999 patients who underwent mitral valve (MV) surgery for infective endocarditis (IE). In this experience, 1575 (78.8%) underwent MV replacement (MVR), whereas the remaining 424 (21.2%) underwent MV repair. The findings of this report exemplify the unrealized expectations of MV repair in the course of IE, as we recently reported in the *Journal*.² Lee and colleagues¹ noted that MV repair is globally less used than MVR with biologic or mechanical valves, although patients with MV repair had fewer perioperative complications, lower in-hospital mortality (6.3% vs 10.8%), and lower risk of late mortality. We believe that some of the interesting points raised deserve further consideration.

First, MV repair has been considered an ideal alternative for MV surgery in patients with IE when the process is limited to a localized area of the valve leaflets. When only a single leaflet or scallop is involved, conservative surgery is possible (see algorithms Figures 2, 3, and 4 in our article²). In these cases, a repair strategy would provide superior left ventricular hemodynamics because of preservation of subvalvular apparatus, resistance to infection in view of the use of autologous tissue to reconstruct damaged valve segments, avoidance of anticoagulation, and long-term durability of the repair procedure.^{1,2} We recently reported an algorithm (see Figure 3 in our article²) describing the different surgical approaches to MV endocarditis according to the extent of the infection. These range from simple repair techniques to the use of partial or total

FIGURE 1. Mitral homograft valve repair is a valid alternative to the use of conventional prostheses. Partial mitral homograft was used for reconstruction of infected anterior mitral leaflet.

mitral homograft as an alternative to the use of conventional prostheses in case of more destructive infections (Figure 1).

The practical realization of the theorized advantages of MV repair, however, encounters difficulties in the everyday life of the surgical management of emergency cases of IE. In addition, the surgical inspection of the infected valve often reveals a much more hostile environment, with extensive involvement of the MV component, thus limiting the choice of mitral valve repair (see Figures 2, 3, and 4 in our article²). Furthermore, when a large portion of valvular tissue is destroyed by infection, the less technically demanding procedure of MVR with xenograft or mechanical prosthesis appears the most sensible alternative in many centers, also considering the risk of reoperation.^{1,3,4} This tendency is reflected in the current report of Lee and colleagues¹ by the subgroup analysis, which shows lower repair rates and less optimal outcomes in low-volume centers, indicating that surgical experience remains the main drive of both the strategy adopted for IE and its outcomes.

Second, in terms of microbiology, 80% of cases mitral IE are attributable to streptococci and staphylococci, although the proportions can vary with the type of valve (native valve vs conventional stented xenograft or mechanical; see Figure 1 in our article²). Endocarditis sustained by colonization of *Staphylococcus aureus* was associated with significantly higher mortality compared with other pathogens² (see Figure 2 in our article²).⁵ These patients have extensive lesions of the MV, usually with involvement of heart skeleton and significantly higher in-hospital mortality (15% vs 8.4%), 6-month mortality (23% vs 15%), and 1-year mortality (28% vs 18% see Figure 1 in our article²).⁶ Interestingly, Lee and colleagues² reported a relatively low prevalence of colonization with this pathogen in their series (MV repair, 30%; MVR, 40%). On the other hand, the number of patients

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undergoing surgical treatment for streptococcal infection was higher (MV repair, 60%; MVR, 48%), although no description of the responsible streptococcal strains was reported. The low rate of repair might be related to the higher aggressiveness of *Staphylococcus aureus* infection. Nevertheless, from this large Asian experience, it appears that the repair practice for mitral IE is still very heterogeneous across the world and remains in the hands of experienced centers. Is it time for a subspecialty within the subspecialty?

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MINIMIZING THE GAP BETWEEN EXPECTATIONS AND REALITY OF MITRAL VALVE REPAIR IN

INFECTIVE ENDOCARDITIS

Reply to the Editor:

We thank Nappi and colleagues for their letter in response to our report, which used a nationwide population-based database to demonstrate the superior outcomes achieved through mitral valve (MV) repair compared with MV replacement in patients with infective endocarditis (IE), even after correction of confounders including basic

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demographics, comorbidities, and level of hospital.¹ Shortly before the publication of our study, Toyoda and colleagues² used the New York State database and reported similar findings in the *Journal*. In our study, the proportion of MV repair was 21.2% and varied widely between hospitals, ranging from 45.3% in centers in the highest quartile of MV repair volume to 3.3% in the lowest volume quartile.¹ Despite the known benefits of MV repair relative to MV replacement and guideline recommendations,³ the overall repair rate in the real world has not been ideal; as Nappi indicated, “The expectation for MV repair in IE has not been realized,” especially with respect to procedures performed in hospitals or by surgeons with less experience in MV repair.

IE surgery is one of the few procedures in which cardiac surgeons have the privilege of performing effective treatment without the challenge of endovascular intervention. As cardiac surgeons, we are responsible for providing patients with the best surgical results. To bridge the gap between expectations and reality, several steps can be taken. First, publicizing current evidence and the latest information is crucial, because it makes an increasing number of cardiac surgeons and cardiologists aware of the benefits of MV repair in patients with IE and that the repair rate can potentially reach 50% or more in the hands of experienced surgeons.⁴ Second, adopting a coordinated multidisciplinary approach in which various professionals are brought together to comprise a Heart Team for decision making of early referral to surgery is also crucial to improving the repair rate. Third, implementing a reasonable algorithm that describes various repair techniques according to the extent of MV destruction should be helpful.⁵ In the future, more convincing evidence concerning this issue will be required.

Finally, the concept of “subspecialty within subspecialty” deserves considerable emphasis. Toyoda and colleagues² analyzed the number of MV operations for isolated active IE in New York State between 1998 and 2010, with a median of 2 cases for each surgeon. In other words, approximately half of the surgeons performed 2 or fewer MV operations for IE during a period of 12 years. It thus appears difficult to accumulate the adequate experience that would translate to an increased MV repair rate. Furthermore, operations performed in low-volume hospitals or by low-volume surgeons were associated with fewer optimal outcomes. We therefore believe that early referral of patients with MV endocarditis to centers experienced in MV repair can increase the MV repair rate and improve patient outcomes.

Indeed, it is time for a subspecialty within a subspecialty. And it is time to realize the full potential of a subspecialty