Aortic valve repair for active infective endocarditis

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Aortic valve replacement is the standard treatment when surgery is needed for active infective endocarditis of the aortic valve. Although there have been a few isolated case reports on aortic valve repair for the treatment of active infective endocarditis [1–2], the largest series ever published is in this issue of the Journal [3]. Mayer et al. [3] have an article titled 'Repair versus replacement of the aortic valve in active infective endocarditis’ where the authors compared the outcomes of aortic valve repair in 33 patients with those of aortic valve replacement in 67 patients. The title suggests that aortic valve repair is an alternative to valve replacement to treat active infective endocarditis when in reality it is not; it is only possible in selected patients as the authors defined in their manuscript and the reader may redefine based on the results. Be as it may, the fact that they repaired the aortic valve in 33% of the cases with active infective endocarditis, including one in four with aortic root abscess, is a formidable task, and I congratulate them for trying to expand the indications of aortic valve repair to this very sick group of patients. This would be possible only in the hands of the senior surgeon of the University Cardiac Unit of Homburg, Germany, who probably has performed more aortic valve repairs than anyone in the world.

In this series of aortic valve repairs for active infective endocarditis, 30 patients required partial resection of one or more cusps and reconstruction with glutaraldehyde fixed autologous pericardium whereas 3 patients had only debridement of the...
aortic cusps [3]. The hospital mortality was high at 22% (12% for repair and 27% for replacement with EuroSCOREs of 12 and 26%, respectively). There were no late deaths in the repair group and five deaths in replacement for an estimated overall survival at 4 years of 72% (88% for repair and 65% for replacement, \( P = 0.047 \)). I believe the outcomes in this series were probably more dependent on the patients’ clinical status at the time of surgery, extensiveness of the infection and comorbidities, than the type of procedure performed in the aortic valve. Actually, the survival rates were similar to those reported by others when aortic valve homograft and prosthetic heart valves were used for the treatment of aortic valve endocarditis [4–5]. Thus, this study falls short of proving that aortic valve repair improves survival in the treatment of active infective endocarditis. It is worth mentioning that a recently published comparative study between mitral valve repair and replacement for infective endocarditis of the mitral valve failed to show a survival benefit after mitral valve repair [6].

In Mayer’s series of aortic valve repair there were 29 operative survivors, and after a mean follow-up of only 2.7 years, 7 patients required reoperation on the aortic valve: 2 for persisting endocarditis and 5 for aortic insufficiency [3]. The freedom from reoperation in the aortic valve after repair was only 65% at 5 years [3]. In spite of a very small sample size the authors performed an extensive analysis on the surgical outcomes. They found the results to be better after repair of tricuspid than bicuspid aortic valves and with small patches as all failures occurred in patients who needed patches larger than 1 cm. As the authors correctly stated in their manuscript, the heterogeneity of their patients and the small sample size precluded them from proving that repair was better than replacement, but they maintain that repair confers a survival benefit and justifies the high reoperation rate.

I have to admit that I have no personal experience with aortic valve repair in the setting of active infective endocarditis, despite having operated on several hundred patients with this disease [5], but I have only worked in a tertiary/quaternary cardiac unit where patients are often referred late in the course of the endocarditis and only after failed medical therapy. However, I believe that, just as I have repaired a number of aortic valves in patients with papillary fibroelastomas by excising 1–2 mm of normal cusp tissue around the stalk and patching the defect with fresh autologous pericardium (always < 1 cm²), the same thing can be done in patients with relatively normal cusps with one or two isolated vegetations due to active infective endocarditis. The patching of aortic cusps with glutaraldehyde fixed autologous or heterologous pericardium during aortic valve repair for aortic insufficiency has been used for many decades but the late results have been suboptimal [7–8]. Actually, in a recent publication by Aicher et al. [9] from Homburg on clinical outcomes of aortic valve repair for bicuspid aortic valve disease, pericardial patching of the cusps was found to be an independent predictor of reoperation (hazard ratio 5.1, 95% confidence interval of 2.1–12.7, \( P = 0.000 \)), and by the fifth postoperative year one-half of the patients had required reoperation. Thus, glutaraldehyde-fixed autologous or heterologous pericardium limits the durability of aortic valve repair. For this reason alone aortic valve repair for active infective endocarditis will remain a highly palliative procedure and associated with a high reoperation rate.

We recently began to use extracellular matrix (CorMatrix, CorMatrix Cardiovascular, Inc, Atlanta, GA, USA) to patch heart valves and the initial results have been excellent but the long-term fate of this material remains unknown. Patches of extracellular matrix may regenerate the valve cusp and improve the durability of valve repair when cusp enhancement is necessary.

Aortic valve repair has been shown to be a valuable alternative to aortic valve replacement in selected patients with aortic insufficiency including those with bicuspid aortic valve [9–10]. The study by Mayer et al. [3] indicated that it can also be done in highly selected patients with active infective endocarditis. Their experience suggested that the best results were obtained when the infected valve was tricuspid, the free margin of the cusps was free of infection, and the defect after resection could be corrected with a patch of < 1 cm.

REFERENCES