A Concern About 2-Minute Glutaraldehyde-Treated Autologous Pericardium for Mitral Valve Repair

To the Editor:

We read with great interest the mid-term outcomes following mitral valve plasty (MVP) for active infective endocarditis (AIE). They treated patients using 5 repair techniques, including valve resection, patch repair, neo-achordal reconstruction, edge-to-edge repair and ring annuloplasty. The success rate of MVP was 85.7%, and neither recurrence of AIE nor late reoperation was observed at a mean follow-up of just under 5 years.

We have a concern about 2-min glutaraldehyde treatment for autologous pericardium to repair the mitral valve. The authors commented that 0.625% glutaraldehyde treatment for 2 min was enough for cross-linking the protein and resulted in better handling based on their clinical experience. The treated autologous pericardium was utilized in 7 patients with good follow-up outcomes.

Shomura et al reported late outcomes of MVP with glutaraldehyde-treated autologous pericardium in 139 patients. The autologous pericardium was immersed in 0.625% glutaraldehyde for 15 min and rinsed with saline for 6 min. This was based on the fact that glutaraldehyde treatment of autologous pericardium for less than 15 min could not preserve basic tissue stability and strength and longer than 60 min resulted in excessive calcification on the pericardium. Kanemitsu et al reported long-term outcomes (mean follow-up: 7.4 years) of MVP for AIE using 15-min glutaraldehyde-treated autologous pericardium. A patch repair technique was applied in 31 patients, in which no reoperation related to patch failure was observed. Treatment for 15 min appears to be the standard to fix the autologous pericardium based on the evidence from basic research.

With regard to antimicrobial activity in glutaraldehyde, treatment for 2 min is appropriate based on a reference. However, when using autologous pericardium for MVP, its durability following MVP would be a great concern. The mean follow-up was 4.3 years, which might be shorter to assess its durability compared with previous studies. Freedom from reoperation following MVP using glutaraldehyde-treated autologous pericardium, especially when using a leaflet augmentation technique, gets worse 5 years after MVP for various mitral diseases (96.9±2.2% vs. 93.4±3.2% at 5 years and 89.7±4.5% vs. 68.8±13.7% at 10 years; log-rank, P=0.008). Severe calcification of glutaraldehyde-treated autologous pericardium 5 years after MVP for AIE is also reported. This pericardium was treated by glutaraldehyde for 15 min. Further follow-up is necessary to confirm the durability of 2-min glutaraldehyde-treated autologous pericardium for MVP. In addition, we need evidence to support the basic stability and strength of 2-min glutaraldehyde-treated autologous pericardium.

Disclosures

There was no conflict of interest in this study.

References


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