

Aortic Valve Repair in Pediatric Patients: Is there any development in the material for Aortic Cusp Extension Valvuloplasty?

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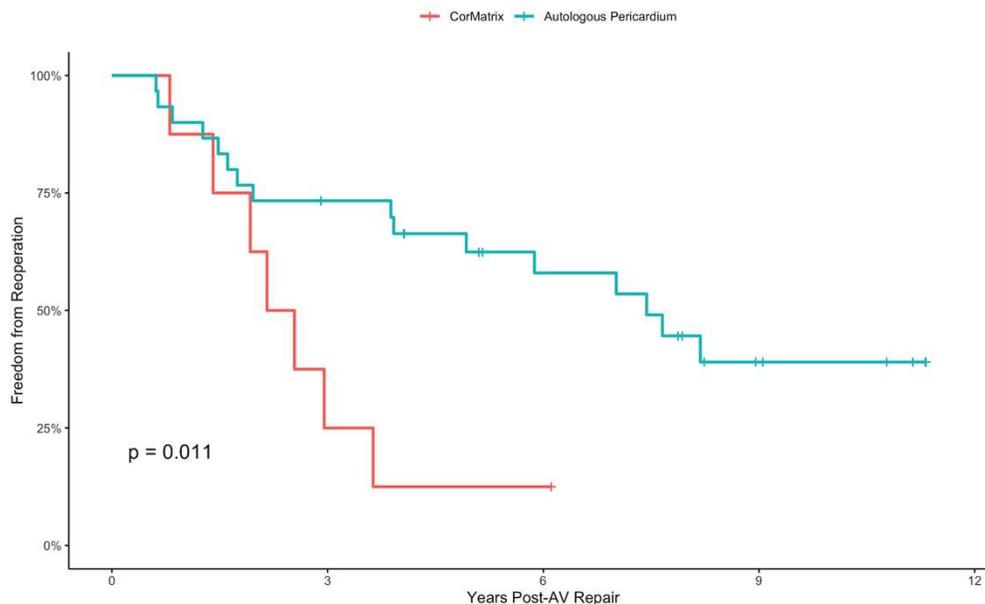
Background

Aortic cusp extension is a technique for the aortic valve repairs in pediatric patients, subsequently, the choice of material used in this procedure may influence the time before re-operation is required.

Purpose

We aimed to assess post-operative and long-term outcomes of patients receiving either pericardial or synthetic repairs.

Figure 1. Freedom from Reoperation by Material Received at Index Surgery



Methods

We conducted a single center, retrospective study of pediatric patients undergoing aortic cusp extension valvuloplasty (N=38) with either autologous pericardium (n=30) or biomaterial (CorMatrix) (n=8) between April 2009 and July 2016. Short and long-term postoperative outcomes were compared between the two groups. Freedom from re-operation was compared using Kaplan Meier analysis. Degree of aortic stenosis (AS) and aortic regurgitation (AR) were recorded at baseline, post-operatively, and at outpatient follow-up.

Results

Baseline demographics, degree of AS and AR, and length of hospital stay were comparable between groups. At five years after repair, freedom from re-operation was significantly lower in the biomaterial group (12.5%) compared to the autologous pericardium group (62.5%) (P=0.01). For the entire cohort, there was a statistically significant decrease in the peak transvalvular gradient between pre- and post-operative assessments with no significant change at outpatient follow-up. In the pericardium group, 28 (93%) had moderate to severe AR at baseline which improved to 11 (37%) post-operatively and increased to 21 (70%) at time of follow-up. In the biomaterial group, 8 (100%) had moderate to severe AR which improved to 3 (38%) post-operatively and increased to 7 (88%) at time of follow-up.

Conclusion

In terms of durability, the traditional autologous pericardium may outperform the new material (CorMatrix) for aortic valve repair using the cusp extension method.