Various Repair Techniques to Correct Tricuspid Valve Incompetence in Ebstein’s Anomaly and Their Impact on Long-Term Ventricular Function and Functional Outcome

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Objectives: We describe repair techniques used in Ebstein’s anomaly to correct tricuspid valve incompetence and report long-term outcome.

Methods: Sixty-eight patients (mean age 26.9 ± 7.3 years) with Ebstein’s anomaly (types A = 18, A-B = 3, B = 21, B-C = 2, C = 15, D = 9) underwent correction of TV incompetence. In all, the atrialized right ventricle (RV) was incorporated into the contractile RV by partial closure of the natural annulus using the most mobile leaflet for valve competence. Posterior annulorrhaphy was performed for types A, B and C with transection of fibrous bands of anterior leaflet and ventricular wall. A Sebening stitch was applied in combination with posterior annulorrhaphy in all types. The double-orifice valve technique was employed mostly in type D. In three patients with type C, additional bidirectional Glenn anastomosis was performed.

Results: Mean follow-up was 21.6 ± 1.5 years. Mean NYHA class improved from 3.4 to 1.3 (P < 0.001). Maximal oxygen uptake also improved significantly (P < 0.02). The severity of TV incompetence was reduced from 3.2 to 1.3 (P < 0.001). Mean basal, middle and apical ventricular strain as evaluated with displacement tissue Doppler imaging improved to 25.7% (P < 0.011), 23.7% (P < 0.001) and 19.36% (P < 0.05), respectively. Freedom from reoperation was 100% at 1 year and 92.9% at 20 years. Early and late mortality was 5.8% and 2.9%, respectively. Overall survival rate was 91.26% at 20 years.

Conclusions: The various repair techniques, which preserve the atrialized chamber and are employed according to morphology, provide satisfactory long-term ventricular function and functional outcome even in severe types of Ebstein’s anomaly.