

Outcome of the Ross procedure in 100 Children and Adults : Low mortality, excellent survival but frequent reinterventions during mid-term follow-up

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Background. Ross procedure (RPR) offers excellent hemodynamic and clinical outcome but questionable long-term durability. There are little data on long-term outcome and predictors of reintervention after this procedure.

Methods. Between 1993 and January 2011 (89 interventions after Jan 1, 2000), 100 children and adults (76 males; mean age 17 ± 12 years) underwent a RPR consisting in a root replacement at our center. In all patients (pts), pre- and postoperative clinical and echocardiographic data were analyzed as well as surgery reports, and mid-term follow-up (survival, NYHA class, frequency of reinterventions or endocarditis).

Results. Aortic valve (AV) pathology leading to RPR were congenital heart disease (including 64 bicuspid AV, 12 monocuspid AV, 12 tricuspid, 3 quadricuspid, 9 indeterminate); a history of prior endocarditis (6 pts) and rheumatic heart disease (2pts). 52 pts had previous cardiac interventions, including coarctation surgery (5 pts).

RVOT replacement was made with a pulmonary homograft (66 pts) or a Contegra graft (31 pts) in most. Procedures included reduction surgery of the ascending aorta (19 pts), and resection of subaortic stenosis/myectomy (9 pts).

Perioperative mortality was 1%: one 8 year old pt with postoperative stroke died 3 weeks postoperatively of ventricular fibrillation.

Mid-term follow-up was available in 97 pts (98%) after 5.6 ± 3.8 years. 94 of 95 pt were in NYHA class I or II. Any dilatation of the aortic root or ascending aorta (Z score > 4) was observed in 32 of 94 pts (34%). Postoperative endocarditis occurred in 2 pts (1x Contegra graft, 1x autograft). Reinterventions were necessary in 23 pts (24%): most frequently valvuloplasty of the RVOT (7 pts), percutaneous pulmonary valve replacement (6), aortic root procedures (3) and homograft replacement (3 pts). Death occurred in 2pts (heart failure in both). 5 year freedom from reintervention was $83.8\pm 4.5\%$.

Conclusion. Ross procedure in pts with predominantly congenital aortic valve disease has low morbidity and mortality. Mid-term follow-up shows an excellent functional class, however, besides aortic dilatation (34%) also reinterventions are frequent (24%) especially in the RVOT.

This necessitates regular postoperative surveillance after RPR.