Functional outcomes after the Ross procedure

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Introduction: Compared to mechanical and biological aortic valve replacement, Ross patients do not require anticoagulation and the pulmonary autograft has potential for growth in the aortic position. Despite these advantages, the Ross procedure remains controversial mainly due the potential risk of inducing bivalvar disease. Little is known about functional outcome in children and adults after Ross procedure.

Methods: Between January 1999 and December 2010, our single-center results for the Ross procedure with analysis of morbidity, mortality, health-related quality of life and actual exercise capacity at midterm follow-up were performed.

Results: Thirty-five patients (70% male) underwent the Ross procedure at a mean age of 13.5 years (0.1-49.2 years, 70% of patients were under 18 years). Indication for surgery was combined aortic stenosis and regurgitation in 53% of patients. Three patients died during follow-up and 5 patients required re-operation during the midterm follow-up of 6.0 ± 3.2 years. Objective exercise capacity measured by peak oxygen uptake (VO2 max) was reduced to 32.7 ± 8.3 (z = -1.3 ± 1.1) in patients operated during childhood and adolescence, and to 28.6 ± 8ml/kg/min (z = -2.4 ± 0.8) in patients operated in adulthood. Quality of life in children measured by KINDL-R questionnaire was equal compared to healthy standard population (total score: 76.8 ± 13 vs 76.3 ± 10.1; p=0.90). In adults patients after ROSS procedure health-related quality of life measured by SF-36 was equal or even better than in healthy standard population (physical health score 54.7 ± 4.1 vs 48.4 ± 9.4; p=0.005, mental health score 48.4 ± 15.1 vs 50.9 ± 8.8; ns).

Conclusion: Despite reduced exercise capacity at mid-term after a Ross operation, quality of life remains good when the procedure is performed in child- or young adulthood.