

**Ross Procedure: Prevalence and predictors of aortic autograft dysfunction and aortic dilatation in 97 patients during mid-term follow-up**

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**BACKGROUND.** As the ideal prosthesis for aortic valve replacement is controversial, the Ross procedure (RPR) using pulmonary autograft implantation remains a good alternative. However, there are concerning reports on autograft dysfunction and aneurysmal dilatation of the neo-aortic root and ascending aorta. Data on incidence and predictors of these complications are scarce.

**METHODS.** Between 1993 and 2011, RPR was performed in 100 patients (pts; mean age  $17 \pm 12$  years; 41 pts < 14 years old), 97 of the 99 survivors (98%) had a clinical and echocardiographic follow-up after  $5.6 \pm 3.8$  years. In 89 pts, measurement of the aortic root including Z scores were available. Z score of  $>4.0$  defined aortic root dilatation.

**RESULTS.** In 78 of the 97pts, congenital aortic valve disease was present: bicuspid (63pts), monocuspid (12pts), quadricuspid (3pts), tricuspid valves (10 pts), indeterminate morphology in 9 pts. Associated congenital heart disease included subaortic stenosis/complex left ventricular outflow tract obstruction (12pts), aortic coarctation (9pts). Previous surgery included aortic valve surgery in 26 and/or balloon valvuloplasty in 24 pts. Preoperative aortic dilatation was described in 28 pts (29%). In the 97 pts RPR included concomitant reduction plasty of the ascending aorta (19 pts) and subvalvular resection of membrane (9 pts). At mid-term follow-up, moderate or severe aortic regurgitation was present in 7 pts (7%), moderate or severe aortic stenosis in 3 pts (%), and any aortic dilatation (root and/or ascending aorta) in 32 pts (33%). Median Z-score of the aortic root was  $2.4 \pm 1.7$ , of the ascending aorta  $2.7 \pm 1.9$ . In 23 of 89 pt. (26%), at least one Z score of  $>4.0$  was observed. Predictors of aortic dilatation were previous coarctation surgery ( $p=0.02$ ) and complex left ventricular outflow tract obstruction ( $p=0.04$ ). Reoperation on the autograft was necessary in 7 pts (7%) including autograft replacement in 5pts.

**CONCLUSION.** Although aortic dilatation during mid-term follow-up after RPR is very frequent (at least 26%), reoperation due to autograft dysfunction is more rare (7%). Besides assessment of the right ventricular outflow tract, careful examination of the aortic root after RPR is important, especially in patients with complex LVOT and prior cardiac surgery.