Introduction: Retrospective study to evaluate postoperative results in children after the Ross operation with special respect to the pulmonary autograft and left ventricular (LV) dimensions.

Methods: 31 children <20 years-old (22 male) after Ross operation (1994-2008) were included in the study. The first postoperative and last follow-up echocardiograms were used to measure: endsystolic dimension of left ventricle (LVESD), enddiastolic dimension of left ventricle (LVEDD), thickness of interventricular septum in diastole (IVS) and of LV posterior wall (HW) (M-mode) and aortic valve ring, aortic root, sinusual junction in diastole in the parasternal-long axis.

In order to evaluate our results, Z-scores were compared to normal values of patients and children in regression models of Daubeney et al. (1999) and Petterson et al. (2008). t-tests were used to determine significant differences between Ross patients' and normal values.

Results: Mean age at Ross operation was 11.1 years (0.5 - 20 years), mean follow-up time 5.6 years, range 10 – 168 months. Indication for operation was aortic stenosis in 4, aortic insufficiency only in 4, and both in 23 patients. Operative technique was modified root inclusion. One patient died early postoperatively, one was lost to follow-up. At last follow-up, 28 patients had normal (n=13) or mild valve dysfunction of the autograft (n=15), one patient was re-operated at the autograft while primary indication for reoperation was homograft replacement.

The z-scores of the aortic root and STJ did not show a significant change at last follow-up. Z-scores of the aortic root decreased, meaning approaching normal values - according to both reference models. No change of z-scores occurred for LVESD, IVS and PW, while a significant decrease was noted for the LVEDD.

Conclusions: The autograft demonstrates potential for somatic growth parallel to values of normal patient population, the feared dilation of the aortic root does not occur, even normalization of aortic root dimension was observed with this technique.

Parameters of the LV also did not show an increase of z-scores and LVEDD approached normal values in mid-to long-term follow-up.