

**Mitral valve replacement in children: long-term results and risk factors influencing outcome**

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Introduction: The aim of the study was to analyse the results of mitral valve replacement (MVR) in children less than 18 years of age.

Methods: Between 1991 and 2011, 71 consecutive patients underwent MVR at a median age of 1.5 (IQR 0.5 – 4.5) years. A retrospective analysis of echocardiographic, surgical and follow-up records was performed.

Results: Following diagnoses were the reason of the MVR: AV septal defect (n=27), congenital mitral insufficiency (n = 18), Shone syndrome (n=14) and other (n=12). Forty eight patients required 1 to 3 previous operations (MV plasty in 33). In another 4 patients MVR was performed after an unsuccessful MV plasty during the same procedure. Eighteen (25%) patients died 0 days to 13.8 years (median 29 days) after the first MVR with an actuarial survival at 5/10 years of 77/77%. Univariate risk factors for early (<30 days) death were the absolute MV annulus size (median 13 vs 22 mm, P=0.019) and the mechanical prosthesis vs MV annulus diameter ratio (1.33 vs 0.95, P=0.003). Seventy one patients underwent a total of 103 MV replacements (102 mechanical/1 biological), from whom 20 (28%) required one re-MVR, 4 (6%) patients 2 and 1 (1%) patient four re-MVRs. Freedom from re-MVR was 76/49 % at 5/10 yrs. No risk factors for re-MVR could be identified in the total group. However, early freedom from re-MVR (<6 years) was significantly better in patients >10 kg of weight (89 vs 65 %, P=0.028). Re-MVR did not influence late mortality (P=0.491). From the 53 survivors with a follow-up of median 8.86 (IQR 4.8 – 13.0) years from the first MVR, 26 (49%) patients are in NYHA class I, 24 (45%) in class II, 1 (2%) patient in class III and 2 patients were not classified. Pacemakers have been implanted in 17 (24%) of patients (surgical AV block due to MVR in 13).

Conclusions: MVR has a significant mortality and low freedom from re-MVR. Low MV annulus size and prosthesis/annulus mismatch is a risk factor for early death. Patients <10 kg require earlier re-MVR. Most survivors have a good quality of life.