

## Outcomes and 3D Echocardiographic Predictors of Mitral Valve Reconstruction for Congenital Mitral Valve Disease

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### BACKGROUND

Congenital mitral valve disease (CMVD) is a significant challenge for medical and surgical management. Recent improvements in imaging, including three-dimensional echocardiography (3DE), and enhanced surgery seem to have improved outcomes. The aim of this study was to evaluate recent results of reconstructive surgery for CMVD, and to determine 3DE predictors of freedom from reintervention

### METHODS AND RESULTS

106 patients with CMVD that underwent surgery from 2001 to 2011 were included. Median age and weight at operation was 16.8 months (0.1–216) and 8.6 kg (2.4–74), respectively. 41 patients (48%) had mitral stenosis (MS), 25 (29%) had mitral regurgitation (MR), and 20 (23%) had mixed disease (MD). Median follow-up was 38 months (0.5 months-12 years). For all patients, survival was 94.3±2.5% at 1 year and 91.6±3.6% at 5 years (see also Figure 1). Freedom from reoperation was 85.4±5.5% at 1 year and 77.8±7.2% at 5 years. Freedom from valve replacement was 93.0±2.8% at 1 year and 89.4±3.7% at 5 years. MS, MR and MD patients did not differ with respect to survival, freedom from reoperation or valve replacement. 36 patients had 2 and 3DE data sets. 3DE effective orifice area (EOA), vena contracta regurgitant area (VCRA) and mean gradients (MG) were determined preoperatively and before discharge. EOA for MS and MD patients increased from 0.56 to 0.78 cm<sup>2</sup> (p=0.025); VCRA for MR and MD patients decreased from 1.08 to 0.44 cm<sup>2</sup> (p=0.007). An increase of the EOA>30% (p=0.006) and a decrease of the VCRA>100% (p=0.011) was associated with improved freedom of reoperation, in contrast to any changes in MG.

### CONCLUSIONS

Reconstructive surgery for CMVD can be performed with favorable survival, and good 5 year freedom from reoperation and valve replacement. 3DE parameters, including increase in EOA for stenotic and decrease in VCRA for regurgitant valves in contrast to changes in MG are associated with improved freedom from reoperation. We postulate that MG did not change significantly due to high left ventricular filling pressures, emphasizing the importance of analysis of the EOA to determine outcomes. These parameters will help to guide medical and surgical management.

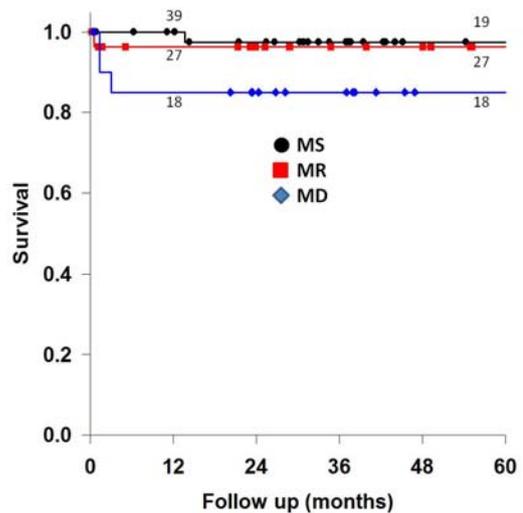


Figure 1. Survival of the three different patient groups.