

Short term experience with surgical Melody valve implantation in mitral position in children

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Introduction

The options for mitral valve replacement in children with irreparable native valves have been limited to stented mechanical and bio-prosthetic valves. For very small infants, because of the small size of the annulus, even these options are not easily practicable. Additionally, these prostheses do not allow for expansion with somatic growth, necessitating frequent reoperations for valve replacement. We present our single center experience with a modified externally stented bovine jugular vein graft (Melody® Valve) for mitral valve replacement in children.

Methods

We retrospectively reviewed medical records of patients who have undergone surgical Melody® Valve implantation in left atrioventricular valve (LAVV) position from 2013 to 2016 at our center.

Results

Four patients have undergone Melody® valve implantation in LAVV position from December 2013 to March 2016 at our center. Indication for valve replacement was mitral stenosis or insufficiency in the course of complete atrioventricular defect (n=2), congenital mitral valve dysplasia (n=1) and combined mitral valve disease with aortic valve stenosis in a child with borderline left ventricle (n=1). Median age of the patients at implant was 17.5 months (range 1-30). There was one early death in the cohort due to ventricular rupture. One child died 13 months after valve implantation due to an unrelated malignancy. Histopathological workup demonstrated good biocompatibility of the Melody valve with well-preserved valve function, complete endothelialization, and only little neointima formation. The remaining two valves are functioning well at 7 and 18 months follow-up.

Conclusion:

LAVV replacement with the Melody® valve in small children with irreparable mitral valve disease shows acceptable short term results and allows trans-catheteral trans-septal dilatation to accommodate for somatic growth of the child. The demonstrated short-term performance of the Melody® valve, which was primary designed for the RVOT, in high pressure environment is encouraging with good valve function and biocompatibility. Special care must be taken in children with small mitral annulus and short ventricle to avoid LVOT obstruction, obstruction of the pulmonary vein, AV-block or compression of the circumflex artery.