Use of transcatheter pulmonary valve (Melody valve) for surgical mitral valve replacement in infants and children: the Italian experience.


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*Introduction:* Infants and children with irreparable mitral valve (MV) disease have limited options for prosthetic valve replacement. Based on a decade-long experience with the externally stented bovine jugular vein graft (Melody valve) in the right ventricular outflow tract (shown to restore pulmonary valve competence and relieve obstruction) we tested the use of the Melody valve as a surgical implant in the mitral position in patients with severe mitral disease, where other prostheses were neither small enough to be implanted nor expandable as the child grows.

*Methods:* The medical records of patients who had undergone Melody valve implantation in the mitral position between March and November 2014 in our Institution were reviewed

*Results:* Six patients had undergone surgical Melody valve implantation in the mitral position. Selected patients were between 11 months and 6 year-old, and had an average body weight of 12 kg (range 6.1-25). All patients underwent at least one previous surgical attempt to repair the valve, and still had severe stenosis and/or regurgitation. Surgically, the native MV was approached via right atriotomy and removed. Once sutured to the mitral annulus, the Melody valve was expanded through a balloon catheter to achieve the best diameter according to the age and the patient's BSA. The balloon size used for Melody valve expansion during surgery was minimum 12, maximum 20 mm. One patient needed ECMO assistance after surgical MV repair and a Melody valve was successfully implanted few days later as possible bailout. However she did not recover from multiorgan failure and died in spite of the well-functioning Melody prosthesis. At discharge all survivals had good valvular function. At 10-month follow-up one patient had undergone catheter-based balloon expansion of the valve, while the other 4 patients were in good hemodynamic condition with mild or less mitral stenosis and/or regurgitation

*Conclusions:* The short-term results of this innovative procedure are very encouraging. The paradigm of expandable MV prosthesis opens up the opportunity to carry out MV replacement in more children and at an earlier time point, and has potential to revolutionize care for infants and children with complex MV disease.