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**Hybrid-implantation of a pulmonary valve avoiding cardiopulmonary bypass**

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**Objectives:** Percutaneous pulmonary valve replacement with the Melody valve is well established in patients with a weight of > 25 kg. In children < 20 kg implantation becomes difficult due to small vessel size. In selected cases problems of access and cardiac anatomy can be solved by a hybrid approach.

**Case report:** We report a patient who was referred at the age of 4 years with dextrocardia, double discordance, l-transposition of the great arteries, VSD, subvalvular and valvular pulmonary stenosis. She underwent VSD-patch closure and implantation of a valveless 14 mm Gore-Tex LV-PA conduit. Postoperatively she suffered from chronic effusions as well as renal and hepatic failure. Since percutaneous interventional implantation of a pulmonary valve was impossible due to the complex ventricular anatomy and small size of the patient (18.1 kg), we opted for a hybrid procedure. The chest was reopened via a median sternotomy. To avoid extracorporeal circulation the distal LV-PA conduit was incised and anastomosed to a 6 mm Gore-Tex tube. An 18Fr sheath was introduced into this tube and advanced into the conduit via a 0.035" wire. The 18 mm Melody valve was crimped on a 14mm BIB-balloon and introduced into the 18 Fr sheath, following removal of its check-flow valve. The balloon was advanced into the LV-PA conduit and the position was controlled under TEE guidance. After confirmation of the correct position just distal to the ventricular end of the conduit the valve was expanded with the balloon. The balloon and sheath were removed and the 6 mm Gore-Tex tube was oversewn at its entry into the LV-PA conduit. The patient made an uneventful recovery with disappearance of the effusions. 12 months later the valve is well functioning within the conduit with a systolic peak velocity of 3m/sec.

**Conclusion:** In order to avoid the use of cardiopulmonary bypass the hybrid approach may offer interesting solutions for pulmonary valve replacement in children with inadequate size of venous vessels and/or complex anatomy. In the presence of a nonvalved PTFE-conduit hybrid placement of the Melody valve is facilitated by introduction via a temporary distal graft connecting to this conduit.