Single center early experience with Valeo Balloon Expandable Vascular Stents in treatment of pulmonary arteries stenosis in small children

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Objective: To describe single center experience with a low profile, open cell, balloon expandable Valeo Vascular Stents (Bard) implantation in small children with pulmonary arteries stenosis.

Methods: Retrospective data collection was analyzed. Primary endpoint was stented segment diameter increase (due to diverse group of univentricular and biventricular defects plus additional RVOTO in several patients, pressure gradient reduction was not chosen as an adequate endpoint). Early follow-up data based on echo-doppler were recorded.

Material: Between 2013 and 2014, 21 pts with pulmonary arteries stenosis (8 pts after Glenn/Fontan operation, 7 pts after Tetralogy of Fallot correction with pulmonary regurgitation, 2 pts after univentricular to biventricular conversion, 4 pts with complex congenital heart defects after various surgical procedures) after unsuccessful balloon angioplasty due to elastic recoil or with tubular stenosis had 23 Valeo stents implanted through 6-7 F short sheath. The femoral vein approach or jugular approach in post Glenn patients were performed. The stent diameter was equal to the diameter of normal segment of the pulmonary artery and length 18 or 26 mm dependent on the length of stenosis. Median patients age was 5 yrs (0,6-16).

Results: All stents were implanted with no major complication. There was significant improvement (p<0.001) in pre versus post stent pulmonary artery diameter (3,95 +/- 1,32 mm (2-6, med.3,7) vs (7,5 +/- 1,5 mm (4-10, med.7,4). Successful dilatation was achieved in 100% of primary procedures. Acute minor complication with stent dislocation stabilized with the 12 mm diameter Tyshak valvuloplasty catheter which occurred in one patient. During follow-up period 9,5 +/- 5,8 mths (2-28, med.6) all stents are patent with no signs of restenosis – judgment on the base of echo-doppler examination, with no signs of stent fractures or collapse in chest x-ray.

Conclusions: 1. Valeo Balloon Expandable Vascular Stents are useful in treatment of compliant pulmonary arteries stenosis in young children, with good acute and early results. 2. Longer follow up is needed to evaluate their role in the final treatment of pulmonary arteries stenosis.