Early experience with Valeo Balloon Expandable Vascular Stents in treatment of aortic recoarctation in small children

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Background: The Valeo stent as a low profile, open cell balloon expandable stent that can be postdilated to 20 mm diameter seems to be an alternative for treatment of growing children with different vascular narrowings, but its low radial force can limit its use to compliant lesions.

Objectives: To describe the single center experience and outcome from Valeo Vascular Stents (Bard) implantation in small children with postoperative coarctation of the aorta (rCoA).

Methods: Retrospective data collection was analyzed. Primary endpoints were peak systolic catheter gradient reduction, stented segment diameter increase. Early follow-up results were recorded.

Material: Between 2013 and 2014, 12 pts with rCoA (rCoA/dAo diameter 0.43 +/- 0.17, including 6 pts after Norwood- Sano operation for HLHS underwent Valeo stent implantation following the unsatisfactory result of balloon angioplasty due to elastic recoil. Median patients age was 5.5 mths (2-120). Arterial (6 pts) or venous (6 pts) approach using short 6-7F sheath were performed. The stent diameter was equal to diameter of aorta on the level of diaphragm and length dependent on the morphology of stenosis. In one patient immediate stent redilation to 12 mm was performed to opposite the stent to the wall of the aorta.

Results: All implantations were successful with no complications. There was significant improvement (p<0.001) in pre versus post stenting aortic diameters (3.5 +/- 1 mm (1-4.6, med.3.35) vs (7.3 +/- 1.9 mm (6-12, med.6.6) and systolic gradient (31.83 +/- 13 mmHg (12-50, med.25) vs. 3.3 +/- 4.9 mmHg (0-10, med.0). Successful reduction in the post stenting gradient was achieved in 100% of primary procedures. During follow-up period 9.6 +/- 6.9 mths (3-18, med.6) all stents were patent with no signs of restenosis (noninvasive pressure measurements and echo-doppler), no stents fractures (chest x-ray).

Conclusions: 1. Valeo Balloon Expandable Vascular Stents is useful in treatment of compliant recoarctation of the aorta in small children with good acute and early results. 2. Longer follow up is needed.