

Percutaneous treatment of coarctation of the aorta after Norwood procedure with Valeo Vascular Stent in patients before 2nd stage of univentricular palliation.

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Introduction: Postoperative coarctation of the aorta is one of the most common complications of the Norwood procedure with the prevalence reaching 40%. Successful treatment with balloon angioplasty was reported in numerous papers. Implantation of stents was advocated in cases with unfavourable anatomy or unsuccessful angioplasty attempts. Valeo stent is a pre-mounted low-profile, balloon expandable stent with open-cell design and possibility of dilatation up to 13-20 mm, what makes it an interesting option for infants with post-Norwood aortic coarctation (pNCoA).

Methods: A group of 11 patients in whom the Valeo vascular stents were implanted for pNCoA between years 2012 and 2015 was analysed retrospectively. Indications for stenting, anatomic and haemodynamic data, complications, as well as immediate and midterm effects were considered

Results: Seventy-four Norwood procedures were performed at our institution between 2012 and 2015. In this period 24 patients (aged 1-8 months, median 4.5 month) were treated for pNCoA before Glenn procedure. Balloon angioplasty was successful in 13 cases, in 8 cases it was followed by implantation of Valeo stent, 3 patients received Valeo stent as a primary treatment (because of complex anatomy of the lesion and high risk of stenosis recurrence). Pre-implantation peak systolic pressure gradients across the pNCoA ranged from 12 to 50 mmHg (avg. 29 mmHg). Stents were implanted using anterograde route (8/11) or retrograde route (4/11). Stent nominal diameter was 6 mm (5/11), 8 mm (4/11) and 10 mm in 2/11 cases. After the procedure, the peak systolic pressure gradient dropped to avg. 6 mmHg (0-18 mmHg). The only immediate complication (1 case) was dislodgement of stent from the balloon, followed by successful implantation of another stent. No complications were observed in the short- and midterm follow-up. In 3 patients with post-implantation peak systolic pressure gradients of 10 mmHg (2) and 18 mmHg (1) the stents were electively re-dilated with full pressure gradient relief.

Conclusions: Implantation of Valeo vascular stents is the acceptable treatment strategy in patients with post-Norwood aortic coarctation in patients resistant to balloon angioplasty or at high risk of coarctation recurrence. It appears to be safe and effective in short- and midterm follow-up.