

Two-centre experience with the Valeo stent in the treatment of pulmonary artery stenosis.

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Introduction

In infants and small children stent implantation for pulmonary artery (PA) stenosis may be challenging and require re-interventions to match the patient's growth. Until recently, the lack of stents, dilatable to adult sizes, has limited the more widespread application of this therapy in the youngest patients. We evaluated the implantation and mid-term performance of the Valeo stent, which can be dilated up to 20 mm, for the treatment of PA stenosis.

Methods

A retrospective analysis of Valeo stents implanted for PA stenosis at two large volume paediatric centres was performed. Patient profile, pre- and post-implant catheterization data, follow-up imaging and re-interventions were reviewed.

Results

Between 11/2012 and 12/2015, 51 patients received 56 Valeo stents. The median age was 4.9 years (7 months - 16 years) and median weight was 14.7kg (5.7-53kg). There were 31 patients (61%) with single ventricle physiology and 20 patients (39%) with biventricular circulation. Twenty seven patients (53%) weighed less than 15kg, including 12 patients (23%) weighing less than 10kg. Nine patients (18%) had the stent implanted within 30 days post-surgery. In 10 patients (20%) the Valeo stent was implanted in a previously placed stent. Improvement in PA diameters and hemodynamic values was achieved across all patient subgroups. Complications occurred in 4 patients (8%); including stent embolization (2), stent dislodgment from the balloon during delivery (1) and hemodynamic instability (1). In the median follow-up of 17 months (2-42) one patient died and one was lost from follow-up. Of the remaining 49 patients, 7 (14%) underwent catheter re-intervention after a median of 15.9 months (1 day - 20.7 months) due to significant neointimal proliferation (6) and early stent deformation (1). In 25 patients (51%) the stent was visualized either on chest X-ray (23) and/or in fluoroscopy (8). Stent distortion was noted in 8 patients (32%).

Conclusions

Based on our results the Valeo stent provided effective relief of PA stenosis in various clinical settings including low body weight, early post-operative course or stenosis within a previously placed stent. Although stent deformation was commonly observed on follow-up imaging, pronounced neointimal proliferation was the most common indication for re-intervention.