The EDWARDS VALEO LIFESTENT® for treatment of cardio-vascular lesions in children

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Background: The EDWARDS VALEO LIFESTENT® is a stainless steel, pre-mounted, open cell stent. Easy dilation to large diameters and low profile are advantages in growing children. Radial force is poor.

Methods and results: Between 4-2011 and 12-2012, 37 VALEO® stents were placed during 31 procedures, including 28 trans-catheter (group 1) and 3 per-operative procedures (group 2). Data were retrospectively analyzed. Median age at implantation was 2.8 years (5 days-23 years), weight 10 kg (2-53). Indications were: pulmonary artery stenosis in 18, pulmonary vein stenosis in 1, sub-hepatic vein thrombosis in 1, ductus arteriosus stenting (hybrid approach) for hypoplastic left heart in 6 and for interrupted aortic arch in 2 patients.

In group 1, access was femoral in all except 5 (4 jugular, 1 transhepatic). Stent placement was achieved in all but 1. Predilation was performed in 12, postdilation in 4. Immediate results were satisfactory in all but 1 requiring covered stent placement for stent fracture and vessel tear. Acute complications were hemoptysis in 2, reperfusion edema in 1 and stent dislodgement from balloon in 2 (1 stent advanced without long sheath). Median follow-up reached 2.4 months (1 day -16 months).

Eight patients were recatheterized, a median of 2 months after initial procedure. All stents remained fully patent, except 1 ductal stent obstructed due to neointimal proliferation. Surgery performed in 4 patients (interval 1.9 to 3.4 months), showed completely endothelialized and patent stents.

In group 2, stents were secured with a single proximal stitch and flared at the proximal end. All 3 had early post-op recatheterization (median 6 months), with balloon redilation to achieve better wall apposition.

No obstructive stent fractures were seen on chest X-Ray, CT scan or fluoroscopy performed in 50% of the patients during follow-up.

Conclusion: the VALEO® stent is a useful stent in growing children. Low radial force is counterbalanced by high flexibility, allowing implantation in distal and tortuous lesions. Early fractures may occur. Caution should be taken when advanced without a long sheath as dislodgement is possible. When used per-operatively, early re-catheterization is warranted to improve wall apposition. Longer-term follow-up is needed.