One hundred cases of arterial duct stenting in a single centre: a mid term follow up.

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INTRODUCTION AND AIM. Arterial duct (AD) stenting is nowadays considered as a valuable alternative to surgical shunt in patients with congenital heart disease and duct-dependent pulmonary circulation (CHD-DDPC). The aim of this study was to review clinical, procedural and follow-up data of a large single-centre series of patients submitted to AD stenting as palliation of CHD-DDPC.

METHODS. Between April 2003 and April 2012, AD stenting was attempted in 100 neonates with CHD-DDPC (n=14 pulmonary atresia intact ventricular septum, n=13 critical pulmonary stenosis, n=73 complex congenital heart disease). Mean age and weight of these patients were 25±50 days (range 3-255 days) and 3.4±1.1 Kg (range 1.2-8 kg), respectively. AD morphology was conical in 30 pts, tubular in 38 pts and tortuous in 32 pts.

RESULTS. Overall feasibility of the procedure was 93%. The procedure was not completed in 7 patient due to extreme ductal tortuosity. Mean procedural and fluoroscopy time were 128.8±59 min and 26.5±27 min, respectively. Ductal stenting was always performed with high-flexibility chromium-cobalt coronary stents. AD size increased from 1.6±1.3 to 3.3±1.3 mm (p<0.0001) and percutaneous O2 saturation from 74.6%±1.1 to 90.4±7.2% (p<0.0001). None intra-operative death was recorded. Overall in-hospital mortality was 3.2%, significantly associated to low-weight (<2.5 kg) at procedure. Complication rate was 4.3% (2 pts partial stent dislodgement after deployment, 1 pt mild right pulmonary artery stenosis, 1 pt femoral artery thrombosis). Over a mid-term follow up (31±15 months), 12 pts (12.9%) needed early surgical shunt due to persistent cyanosis, 17 pts (18%) underwent late duct re-stenting before surgical repair, 18 pts (19.4%) were considered cured despite complete AD closure. Control angiography was performed in 37 pts destined to surgical repair, showing significant growth of the pulmonary arteries (Nakata index increased from 183±151 to 293±103 mm2/m2 p<0.0001).

CONCLUSIONS. AD stenting is a reliable palliation of CHD-DDPC, supporting spontaneous clinical improvement or in view of later, lower-risk corrective surgery. Procedural feasibility depends on ductal morphology while procedural risks mainly depend on patients’ demographic and clinical characteristics. Mid-term fate of the stented AD is spontaneous closure, although allowing significant pulmonary artery growth in view of corrective surgery.