

**Percutaneous arterial duct stabilization in low-weight newborns (<2.5 kgs) with congenital heart disease and duct-dependent pulmonary circulation.**

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**INTRODUCTION.** Arterial duct (AD) stenting is nowadays considered as an effective alternative to surgical systemic-to-pulmonary artery shunt in neonates with congenital heart disease and duct-dependent pulmonary circulation (CHD-DDPC). This option might be even more advisable in low-weight neonates who are at higher risk for surgical shunt and in whom repeat stent dilatations might adapt the shunt magnitude to the patient's growth.

**METHODS.** Between April 2003 and December 2011, 88 neonates underwent AD stenting as palliation of CHD-DDPC at our Institution. Among them, 20 patients were at high-risk for surgical shunt because of low-weight (2.1±0.3 kgs, range 1.4-2.5, median 2.2)(Group I). Procedural success and complication rate of AD stenting in this subgroup were compared to the normal weight neonates (Group II).

**RESULTS.** The procedure was successfully completed in all patients. Procedural and fluoroscopy times did not significantly differ with respect to normal weight neonates (103±34 vs 114±50 min and 28.1±14.9 vs 21±20 min, respectively, p=NS for both comparisons). Complication rate and need for emergency surgical shunt were 15.7% and 9.3%, respectively (p=NS vs Group II, for both comparisons). In-hospital mortality was 10% (2 patients)(p=NS vs Group II), unrelated to the stenting procedure. After stenting, the duct size increased from 2.3±1.2 to 3.7±1.4 mm (p<0.01) and percutaneous O<sub>2</sub> saturation increased from 80.5±11.3 to 91.8±5.5% (p<0.0001), respectively. Over a mid-term follow-up, 3 patients underwent stent re-dilatation and 5 were submitted to successful corrective surgery. At pre-surgical cardiac catheterization, the Nakata index significantly increased from 120±61 to 295±121 mm<sup>2</sup>/mm<sup>2</sup> (p<0.05), without any difference with respect to the Group II.

**CONCLUSIONS.** As already reported in normal weight newborns, AD stenting is a feasible and cost-effective palliation also in low-weight newborns with CHD-DDPC, supporting the spontaneous clinical improvement process or promoting significant pulmonary artery growth in view of corrective surgery at lower risk.