

**Fate of pulmonary artery branches after hybrid palliation for hypoplastic left heart syndrome: univentricular palliation versus biventricular repair**

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**Objectives.** To revise midterm outcome of PA in patients who underwent neonatal hybrid stage I palliation and either subsequent comprehensive Norwood stage I-II (UVP) or biventricular repair (BVR). We focused on the overall freedom from re-intervention and on the potentially different impact of hybrid on PA branches development between UVP and BVR.

**Methods.** Since October 2011, 44 consecutive patients underwent hybrid stage I in our Institution. Twenty-two patients (50%) had surgical stage II and have been regularly followed-up for at least 8 months. Eleven patients had UVP while the remaining 11 had BVR. Patients' and surgical characteristics were homogeneous. Of note, in the biventricular group 5 patients had borderline left ventricle and would have not been eligible for biventricular repair at birth.

**Results.** Mean follow-up was 33.6 months (18-43) and 22.1 months (12-31) for UVP and BVR group, respectively. Freedom from re-intervention was 9.6 months (2 days – 28) and 7.5 months (3 – 13) in UVP and BVR group, respectively.

All 11 patients who survived UVP required re-intervention on PA branches. PA surgical enlargement only was adopted in 2 patients while interventional catheterization was performed in 9 patients.

Eighteen interventional procedures were performed, consisting in balloon dilatation (12 cases) and PA stenting (6 cases). Left pulmonary artery was more hypoplastic and 6 out of 7 stents were implanted on left PA.

In the BVR group 4/11 patients (36%) needed re-intervention. Balloon dilatation was performed in all patients, one requiring also left PA stenting. In one case surgical enlargement was performed for concomitant occurrence of left ventricular outflow tract obstruction.

**Conclusions.** Hybrid palliation clearly demonstrated to be a reliable bridge to both UVP or BVR in neonates. However, this approach is associated with a high incidence of PA branches morbidity. According to the literature, need of re-intervention is particularly significant in patients with UVP, apparently due to the bulk of the aorto-pulmonary anastomosis. Conversely, in the biventricular group PA branches morbidity has a lower impact on outcome and, particularly in case of borderline left ventricle, PA disease is clearly less significant compared to the benefit of a delayed biventricular repair.