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Long term follow-up of repaired tetralogy of Fallot: impact of shunt palliation.

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Background: Palliation of Tetralogy of Fallot (TOF) with systemic-to-pulmonary shunts has been the standard for symptomatic neonates for decades. Currently many centers promote all neonates and infants for primary total correction; however such strategy remains controversial.

Aim: To evaluate the impact of previous palliation in operated-TOF on adverse clinical events, functional capacity, biventricular volume and function, pulmonary regurgitation (PRF) and pulmonary anatomy (PA) and flow pattern.

Method: From Sept. 2003 to Dec. 2011, 280 operated-TOF have been evaluated. After excluding patients < 15 years and/or already re-operated, the study population was constituted by 148 patients (mean 28±11 yrs, range 15-67); 59% of them had a transannular patch, 36% an infundibular patch and 5% a RV-PA conduit/homograft. Median age at correction was 2.8 yrs, range 0.2-33 and mean follow-up at the last MR study was 23,5±8 yrs. Sixty-six patients (44%) had at least one previous shunt palliation before surgery (Shunt Group, mean age 28.5±10.5 yrs vs. No-Shunt Group mean age 27±11 yrs). In both groups bi-ventricular volumes, EF, pulmonary regurgitation fraction (PRF), RVOT and PA anatomy and flow, functional capacity and adverse outcome were evaluated.

Results: Patients with previous shunt underwent intra-cardiac correction later (3,9 years, range: 0,2-25 vs. 2 years, range: 0,3-33 P=0,008) and present more pulmonary branches stenosis (39% vs. 13%, p=0,004). Comparing the two groups, functional capacity, LV End-systolic, End-diastolic, EF and adverse clinical events were not significantly different. RV End-Diastolic Volume (RVEDV) was slightly higher in No-shunt Group (147± 49ml/m² vs. 138±44 ml/m²) but without reaching significance. However if we take into account only pts operated by means transannular patch (87 pts), RVEDV and PRF were significantly different between the No-shunt and shunt group (respectively 167 ± 44 ml/m² vs. 149±38 ml/m² p= 0.04; 43,3±11% vs. 35±12%, p=0,001).

Conclusion: our data confirmed that previous shunt in TOF leads to a significant incidence of pulmonary branches distortion but is not associated to adverse clinical events or impaired functional capacity. Moreover in patients operated by means transannular patch, previous shunt leads to a less PRF and less RV dilatation.