

**Long-term effects of residual right ventricular (RV) outflow tract obstruction on RV dimension and function in patients after repair of tetralogy of Fallot**

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**Objectives:** Preservation of the pulmonary valve, even at the expense of a mild residual stenosis, is the current surgical policy in the management of patients with tetralogy of Fallot (TOF). The purpose of this study was to assess the long-term effect of a residual right ventricular outflow tract obstruction (RVOTO) on RV dimension and function.

**Methods:** From April 2007 to December 2011, fifty-three children (mean age  $13.4 \pm 6.4$  years) after repair of TOF (mean age at surgery  $1.3 \pm 1.3$  years) were prospectively assessed by cardiovascular magnetic resonance imaging (3-T MR scanner, Siemens, Erlangen, Germany). Residual RVOTO on echocardiography was defined as a peak systolic RVOT gradient  $\geq 25$  mmHg.

**Results:** Patients with RVOTO ( $n = 29$ ; mean gradient  $39.5 \pm 11.9$  mmHg) had significant less pulmonary regurgitation (PR) ( $25.2 \pm 10.6$  % vs.  $30.8 \pm 9.3$  %;  $p < 0.05$ ) compared to patients without RVOTO ( $n = 24$ ; mean gradient  $15.4 \pm 7.0$  mmHg). Children with RVOTO had significant smaller RV enddiastolic ( $94.0 \pm 2.6$  ml/m<sup>2</sup> vs.  $104.0 \pm 20.7$  ml/m<sup>2</sup>;  $p < 0.05$ ) and endsystolic ( $42.9 \pm 20.0$  ml/m<sup>2</sup> vs.  $48.9 \pm 13.2$  ml/m<sup>2</sup>;  $p < 0.05$ ) volumes compared to patients without RVOTO, while RV ejection fraction did not differ between the two groups (EF  $55.5 \pm 8.4$  % vs.  $54.0 \pm 6.6$  %;  $p = \text{n.s.}$ ). Restrictive physiology, assessed by late diastolic forward flow in the main pulmonary artery, was equally distributed within both groups (31% vs. 25%;  $p = \text{n.s.}$ ).

**Conclusions:** According to our data, residual RVOTO after repair of TOF does not affect RV function, while RV dimensions and the degree of PR are more favourable in the long-term follow-up of those patients. These results confirm the beneficial effects of the current strategy in repair of TOF.