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Early and long-term results of biventricular repair of Tetralogy of Fallot with or without pulmonary atresia

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Objective: We sought to determine the results of biventricular repair of patients with Tetralogy of Fallot without pulmonary atresia (TOF) and Tetralogy of Fallot with pulmonary atresia (TOF-PA) to clarify variables affecting reintervention and mortality.
Methods: We performed a retrospective study on patients with a diagnostic of TOF and TOF-PA who underwent a biventricular surgical strategy between 1995 and 2016, in our center.
Result: We reviewed 1091 patients, divided into three anatomical groups: TOF (n=857, 79%), and patients with a TOF-PA where separated into those who had a pulmonary trunk (T+) or not (T-): TOF-PA/T+(n=81, 7%), and TOF-PA/T- (n=153, 14%). Overall patient mortality was 30 (2.7%), six of them occured before discharge (0.5%). The survival at 10 years after the biventricular repair was 98.8% for TOF and 92% for TOF-PA (p<0.001). In multivariate analysis, the absence of pulmonary trunk (HR 11.5 IC95%[2.8-47.5], p<0.001) and presence of MAPCAs (HR 8.5 IC95%[2.1-34.2], p=0.002) were associated with a higher mortality. The median follow-up was 8.9 years after the biventricular repair. 227 patients underwent reintervention after biventricular repair (20.8%), but it was not associated with additional mortality (p=0.40). The freedom from reintervention at 10 years after the biventricular repair was 89.5%, 69%, and 47.8% for TOF, TOF-PA/T+, and TOF-PA/T- respectively (p<0.001). In multivariate analysis, a post-natal diagnosis (HR 1.3 IC95%[1.03-1.8], p<0.028), the absence of pulmonary trunk (HR 2.5 IC95%[1.6-3.7], p<0.001), pulmonary artery branches stenosis (HR 2.5 IC95%[1.6-3.7], p=0.011), and prior palliative surgery (HR 1.7 IC95%[1.2-2.5], p=0.008) were reintervention risk factors.

Conclusion: The absence of the main pulmonary artery seems to be a major prognostic factor in ToF. The surgical options aiming to reduce the rate of reoperation on right ventricular outflow tract is the main source of progress in this defect.