The preservation of the pulmonary valve during early repair of Tetralogy of Fallot: anatomical substrates on surgical correction


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Background: despite the excellent survival for tetralogy of Fallot (TOF) repair, long-term pulmonary regurgitation and subsequent morbidities remain a challenges for these patients. We investigated the feasibility and the impact of the preservation of the PV during early repair of TOF, focusing our attention on the anatomical substrates of patients with TOF.

Methods: All patients with TOF who were scheduled for PV’s preservation between January 2008 and January 2013 were enrolled. Surgical correction involved the combination of early transatrial repair (TAP) and intraoperative balloon dilation of the PV annulus (IBPV). Outcome of this study was the evaluation of PV competence at follow-up outcome. To support this new developed technique a series of 101 specimens were analyzed focusing of the PV and the right ventricular infundibulum.

Results: Twenty-eight of 32 patients (87.5%) patients underwent a successful preservation of the PV. In the remaining 4 patients (12.5%) the procedure was converted to a classic TAP. Median age at surgery was 100.5 days (range 36 – 521 days). No procedure-related complications were reported. Median follow-up time for the IBPV patients was 610 days (207–1763 days). Twenty-four patients showed none-mild PV regurgitation (PVR)(85%), 4 had a moderate PVR (15%). Median RV function was 55% (range 45%-65%). Based on our autoptical series, the PV was predominantly bicuspid (65%), followed by tricuspid (23%) and more rarely unicuspid (12%). In 54 patients (53%) PV cusps were normal while in the remaining patients was dysplastic. PV dysplasia was found in almost 50% of all cases in unicuspid/bicuspid valves.

Conclusions: The integrity of the PV annulus and PV function can be preserved in selected patients during early repair of TOF by intraoperative PV balloon dilation. The PV preservation seems to preserve right ventricle function in the mid-term. The majority of specimens presented a normally conformed PV which represent a positive basis for the utilization of this novel technique.