

The impact of pulmonary valve-sparing techniques on early postoperative results in tetralogy of Fallot repair

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Introduction: Patients undergoing repair of Fallot tetralogy (TOF) with a transannular patch (TAP), may require pulmonary valve replacement long after the initial operation. However impact of pulmonary valve-sparing (PVS) procedures on early postoperative results is controversial. In this study, we reviewed the impact of pulmonary valve-sparing techniques on early postoperative results in tetralogy of Fallot repair.

Methods: A total of 64 patients with a diagnosis of TOF, operated by the same surgeon from 2010 to 2015 were included in this retrospective study. Mean age of the patients was 19.96 ± 14.23 months. Forty patients (62.5%) were male. Thirty two of the patients (50 %) were under 1 year of age. PVS techniques could be performed in 29 patients (46%), while the remaining 35 patients (54 %) had TAP. In 15 of them, pericardial monocusp valve was created. PVS techniques were transatrial repair in 9 patients; transatrial-transpulmonary in 8, infundibular patch in 8 and infundibular-pulmonary patch in 4 patients.

Results: There was no early postoperative mortality in the PVS group. Five patients (14.2%) died early after operation in the TAP group ($p=0,058$). Of these patients, 2 had pulmonary monocusp insertion ($p=NS$). The causes of mortality were sudden cardiac arrest ($n=2$), multiorgan failure ($n=1$), low cardiac output ($n=1$) and neurological complications ($n=1$). ECMO support was needed for 5 patients in TAP group ($p=0,058$). Three of them could be weaned from ECMO and 2 of them were discharged uneventfully. Reoperation was required in 1 patient due to residual VSD in TAP group. Permanent pacemaker implantation was done in 3 patients (2 in PVS and 1 in TAP group). Total postoperative morbidity rate was significantly higher in TAP group (Table 1). Morbidity rate was lower in patients with pulmonary monocusp than those with no monocusp ($p=0,0176$).

Conclusions: Early postoperative mortality and morbidity rates are significantly higher in TAP group. Pericardial monocusp insertion might decrease postoperative morbidity. PVS techniques should be used whenever possible during total correction of TOF.

Table 1: Postoperative morbidity

Postoperative morbidity	TAP group (n=35) (with monocusp n=15)	%	PVS group (n=29)	%	p value
Low cardiac output	4 (1)	11,4 (6,6)	0	0	0,12
Prolonged mechanical ventilatory support	6 (2)	17,1 (13,3)	1	3,4	0,12
Peritoneal dialysis	4 (1)	11,4 (6,6)	1	3,4	0,36
Prolonged pleural effusion	4 (0)	11,4 (0)	0	0	0,12
Total	18 (4)	51,4 (26,6)	2	6,8	0,0001