

Pre and post operative characteristics of tetralogy of Fallot patients undergoing primary repair versus initial RVOT stent palliation

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Background: Repair of tetralogy of Fallot (TOF) after 3 months of age is associated with good post-operative outcomes. Right ventricular outflow tract (RVOT) stenting of the symptomatic or duct-dependent infant offers an alternative option to early repair or palliative shunt.

Objective: To describe pre-operative characteristics and compare post-operative outcomes in patients after repair of TOF undergoing three different management pathways: palliative RVOT stent implantation, primary (early) repair at ≤ 3 months of age and patients undergoing primary (conventional) repair ≥ 3 months of age.

Methods: This is a retrospective, single institution review between January 2000 and December 2013. Comparative groups were: TOF with pulmonary valve stenosis (TOF-PS-stent, group 1A), pulmonary atresia (TOF-PA-stent, group 1B) that underwent RVOT stenting; TOF-PS (group 2A) and TOF-PA (group 2B) that underwent early repair; conventional repair (group 3). Indications for stent implantation included infants with prostaglandin dependency or cyanotic spells deemed to be at higher risk for primary repair based on low weight, significant non-cardiac comorbidity and pulmonary artery hypoplasia.

Results: Thirty five patients underwent RVOT stenting with 58 stents being placed during 50 procedures. Patient characteristics at time of surgery, length of postoperative cardiac intensive care unit (CICU) and total hospital stay are outlined in the table (mean values and 95% CI are shown). There was no operative or procedural mortality in any of the groups. In group 1A one patient died 10 days after surgery due to persistent biventricular failure, and two patients died from non-cardiac related causes after prolonged hospital stay. In group 2B two patients died on postoperative day 54 and 55 due to persistent cardiac failure. Acute complications in the early post-operative period were present in 53% in group 1A and 1B, 50% in group 2A, 63% in group 2B, and 35% in group 3. Rate of catheter re-interventions in the first 18 months after surgery was 23% in groups 1A and 1B, 26% in group 2A, 30% in group 2B and 2.5% in group 3.

Conclusion: Postoperative morbidity, mortality and follow up interventions are similar in pre-operatively RVOT stent placement patients and those with early primary repair.

	Group 1A	Group 1B	Group 2A	Group 2B	Group 3
Number of patients	23	9	38	44	40
Age at surgery (days)	195 (160, 233)	188 (136, 241)	50 (41, 59)	22 (16, 28)	182 (170, 196)
Weight at surgery (kg)	6.4 (5.7, 7.1)	6.8 (5.5, 8.2)	4.1 (3.7, 4.5)	3.0 (2.8, 3.1)	6.8 (6.5, 7.2.)
Nakata Index (mean)	158 (137, 181)	144 (113, 177)	145 (128, 163)	148 (134, 164)	189 (165, 219)
Length of CICU stay (after surgery, days)	6.9 (3.3, 11.3)	7.7 (4.8, 10.4)	7.3 (5.7, 9.1)	14.0 (8.3, 23.3)	2.7 (2.2, 3.4)
Length of hospital stay (after surgery, days)	14.5 (8.7, 22.9)	19.8 (12.3, 30.1)	16.9 (12.2, 23.3)	23.5 (16.5, 35.6)	8.3 (7.0, 9.8)