Stenting of the right ventricular outflow compared to modified Blalock-Taussig shunt palliation: Mortality, Morbidity and Re-intervention rate

Quandt, D., Ramchandani B., Penford G., Stickley J., Bhole V., Metha C., Dhillon R., Barron DJ., Stumper O.
Birmingham Children’s Hospital, The Heart Unit, Birmingham UK

Introduction: Stenting of the RVOT is an alternative to surgical creation of a modified Blalock-Taussig shunt (BTS) in selected patients with Fallot type lesions to augment pulmonary blood flow.

Objectives: To compare mortality, procedure related morbidity and re-intervention rate after stenting of RVOT versus BTS for palliation prior to corrective surgery in patients with pulmonary atresia, VSD and confluent pulmonary arteries (PAVSD) or Tetralogy of Fallot-type lesions.

Methods: Retrospective case review study to evaluate 133 patients (86 male) with PAVSD or Fallot-type lesions who underwent palliation with either a BTS (n=73) or RVOT stent (n=60) to augment pulmonary blood flow over a 10 year period. Overall mortality until corrective surgery, 30-day mortality, procedure related morbidity (defined as admission rate to PICU, complications during palliation period, ward length of stay) and re-intervention rates were assessed and compared.

Results: There were more patients with non-cardiac co-morbidities (prematurity, IUGR, gut malformations, cerebral abnormalities) in the RVOT stent group (p=0.362). Median days of palliation was shortest in the RVOT stent group 224 (110 - 323) days (p<0.001) based on clinical practice and good PA growth. Despite a lower 30-day mortality in the RVOT stent group 1/60 (1.7%) compared to 5/73 (6.8%) in the BTS group (p = 0.221) the overall mortality was similar in both groups with 8.9% in the RVOT stent group and 8.2% in the BTS group (p=0.564). There were 2 non-cardiac deaths in the RVOT stent group. Procedure related admission rate to PICU was lower in the RVOT stent group (22% versus 100%, p<0.001). There were 8 NEC in the BTS group versus 2 NEC in the RVOT stent group (p = 0.113). There were a total of 9 BTS thrombosis (12.3%) versus no complete occlusion of RVOT stents (p<0.001). Ward length of stay was shorter for the RVOT stent group (p<0.001). There was a higher catheter re-intervention rate in the RVOT stent group.

Conclusion: RVOT stenting in Fallot type lesions promotes low 30-day mortality (1.7%), lower admission rate to PICU post procedure and shorter ward length of stay compared to BTS palliation to augment pulmonary blood flow.