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Branch Pulmonary Artery Stent Angioplasty in Children Less Than 10kg



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Introduction: Branch pulmonary artery (PA) stenting is an established strategy for PA stenosis in older children/adults. Its use in infants is less well established. We describe our experience of branch PA stenting in infants <10 kg.

Methods: Retrospective chart review of infants <10kg who underwent PA stenting at The Children's Hospital, Westmead, between 2010 and 2020. Pre- and post-procedural angiograms were reviewed to determine PA size.

Results: Forty-one children (age 7.6 months, IQR 2.4-9.8 months, weight 5.9±2.2kg) had 43 primary PA stent implantations (10/43 intraoperative vs 33/43 transcatheter; LPA 25/43, RPA 8/43 and bilateral 10/43). Diagnoses were tetralogy of Fallot (27%), HLHS (24%), truncus arteriosus (12%), TGA (7%), single ventricle (10%) and other (20%). 40/41 (98%) had a cardiac intervention in the preceding 31 days (IQR 1-181), with 17/41 having had a prior branch PA intervention. 27/41 patients had elective stenting vs 14/41 urgent. There were 2 minor and 1 major (vascular perforation with tamponade) complications with no procedural mortality. LPA (LPA_{pre} 2.3±1.0×2.2±1.2mm vs LPA_{post} 5.2±1.3×5.0±1.7mm, p<0.01) and RPA (RPA_{pre} 2.5±0.8×1.9±0.8 mm vs RPA_{post} 4.9±1.0×4.1±1.0 mm, p<0.01) calibre increased post stenting. 20/41 required branch PA reintervention (time to reintervention 13.6 months [IQR 8.2-29.3];19/20 planned, 1/20 unplanned;15/20 balloon dilatation,3/20 surgical PA augmentation and 2/20 restenting).7/20 required a second PA reintervention.

Conclusions: Branch PA stenting is safe in infants <10kg with good relief of PA stenosis with, as expected, high rates of reintervention. Urgent PA stenting provides effective relief from early post-operative haemodynamic compromise.

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Functional Tricuspid Regurgitation and its Relationship to Right Ventricular Volume



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Objectives: Significant right ventricular (RV) dilatation has long been considered integral to the pathogenesis of functional tricuspid regurgitation (FTR). We studied RV dilatation and FTR in adults with 'pure' RV volume overload.

Methods: Patients (>17yrs) with RV dilatation due to tricuspid shunts (atrial septal defect [ASD] and/or partial anomalous pulmonary venous drainage [PAPVD]) were identified. Those with pulmonary hypertension, primum ASD or left-heart disease were excluded. RV, right atrial and TV parameters were measured using cardiac MRI.

Results: Of 52 consecutively eligible patients (42±15yrs, 25 males), 25 had ASDs, 13 had PAPVD and 14 had both. All were in sinus rhythm, and none had pulmonary regurgitation. Left and right ventricular ejection fractions were normal (LVEF 63±8%, RVEF 56±8%). Indexed RV end-diastolic volumes (RVEDVi) were moderately increased (M 148±33mL/m², F 141±42mL/m², range 95-267mL/m²). Despite substantial RV volume overload, no patients had severe tricuspid regurgitation (TR). Only two had >mild TR. There was a weak correlation between tricuspid annular diameter and degree of RV dilatation (r=0.37; p=0.01) and degree of TR (r=0.38; p=0.006). There was also poor correlation between indexed RA volume and TR (r=0.34; p=0.02) or TV annulus diameter (r=0.2, p=0.06).

Conclusion: When RV dilatation is due to isolated RV volume overload, significant TR is extremely rare. This gives an important and novel insight—that RV dilatation *per se* does not commonly result in significant FTR.

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Improved Clinic Attendance Rates With Introduction of Telehealth in a Tertiary Adult Congenital Heart Disease Clinic



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Background: The COVID-19 pandemic has paved the way for the introduction of telehealth clinic consultations.

Objectives: To examine the impact of the introduction of telehealth/telephone consultation in the COVID-19 era on clinic attendance rates in an adult congenital heart disease (ACHD) clinic.

Methods: Single centre audit study to compare clinic attendance rates in a large tertiary ACHD clinic over a 12-month period immediately pre-telehealth/telephone (3/5/19-17/3/20) and post-telehealth/telephone (24/3/20-2/3/21). The overall fail to attend rate for the pre-telehealth/telephone and post-telehealth/telephone periods were compared using a chi-squared test. The ACHD clinic is held once a week except for one week per month. Patients receive lifelong follow-up and are reviewed on an annual basis, on average.

Results: In the pre-telehealth/telephone period, there were 409 failures to attend for 1937 clinic bookings resulting in a 21.1% (409/1937) failure rate. In the post-telehealth/telephone period, there were 215 failures to attend for 1594 clinic bookings resulting in a 13.5% (215/1594) failure rate. There was a significant reduction in the fail to attend rate in the

post-telehealth/telephone period compared with the pre-telehealth/telephone period ($p < 0.00001$). Further research is currently underway to characterise (including geographical demographics) the patients now engaged due to telehealth/telephone consultation and those who still fail to attend.

Conclusions: Clinic attendance rates in a tertiary adult congenital heart disease clinic significantly improved after introduction of telehealth/telephone consultation in the COVID-19 era. Further qualitative research is required to determine patient and clinician preferences for the use of telehealth in the ACHD clinic setting.

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Investigating the Scope and Costs of Dental Treatment Provided Under General Anaesthesia Among Children With Congenital Heart Disease

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Background: Previous data indicates that children with congenital heart disease (CHD) have poorer oral health compared to unaffected children. Apart from adverse health outcomes, poor oral health results in substantial financial costs as children with CHD often require dental management under general anaesthesia (GA). Our aim was to identify the types of dental treatment provided under GA for children with CHD and quantify the costs within a publicly funded tertiary paediatric hospital setting.

Methods: A four-year (July 2015 to June 2019) retrospective analysis of dental records was conducted for children with CHD who had undergone a dental GA (DGA) at The Children's Hospital at Westmead. Patient and treatment related information and a costings analysis was performed on 89 DGAs.

Results: Mean age at DGA was 8.15 (SD 3.69) years. Dental extractions were performed in 85.4% of DGAs with a mean of 2.96 teeth/patient. The mean cost of DGA was \$4,395.14 (SD \$1,457.80) and the mean number of days spent in hospital was 1.43. Days spent in hospital showed a strong significant correlation to the cost of DGAs ($r=0.97$, $p < 0.01$). A significant effect ($p=0.009$) of the reason for referral or attendance to the dental clinic was found on the cost of DGAs.

Conclusions: Most children with CHD underwent extractions during DGA and over one third required overnight hospitalisation during the dental admission. The mean cost of providing dental treatment was higher for children with

CHD than the general population of children who had a DGA.

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Involvement of Specialist Paediatric Palliative Care (SPPC) in Children With Severe Congenital Heart Disease (CHD) at an Australian Tertiary Paediatric Hospital: An 11-year Retrospective Study



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Background: Mortality in children with CHD has reduced significantly in recent decades but morbidity in severe CHD remains high. Patients are at risk of neurodevelopmental delay, heart failure, and arrhythmias whilst parents may experience psychological distress related to repeated hospital admissions during which invasive interventions and admissions into intensive care units may ensue. SPPC involvement in other subspecialties results in reduced length of hospital stay and number of invasive investigations and shorter duration of intensive care unit stay. Furthermore, integration of SPPC enhances communication between the primary medical care team and family regarding advanced care planning, goals of care, and provides optimal symptom management. The indications for SPPC referral in tertiary cardiac centres in Australia remain unclear.

Aim and Methods: This retrospective single-centre medical record review aims to describe the indications for, and utilisation of, SPPC in children with severe CHD in an Australian tertiary paediatric hospital between 2010 and 2020.

Results: More than 70% of the 48 identified cases were referred from 2015 onwards, with the three dominant diagnoses being: 1) Cardiac lesion with a genetic disorder (20%), 2) Single ventricle physiology (18.7%), and 3) Cardiomyopathy (14.5%). "Supportive Care" was the most common indication for SPPC consultation, followed by "End of Life Care" and "Symptom Management". Antenatal referrals made up of <1% of all referrals.

Conclusions: SPPC involvement in this cohort focuses on "Supportive Care" and "End of Life Care". Well-timed integration of expert SPPC skills like "Advanced Care Planning" and "Goals of Care" may contribute to positive clinical outcomes for patients and families.

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