4 TOWARDS FAST TRACKING FOLLOWING PAEDIATRIC CARDIAC SURGERY: STRATEGY AND INITIAL EXPERIENCE WITH EARLY EXTUBATION

G Pelella, N Tiwari, S Cuddihy, N Raj, A Lotto, R Dhannapuneni, R Guerrero. *Department of Congenital Cardiac Surgery, Alder Hey Children's Hospital, Liverpool, UK*

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Objective The aim of this study is to report our initial experience with early extubation (<6 hours) following congenital cardiac surgery, assessing its efficacy and safety and the potential for fast tracking through Paediatric Intensive Care Unit (PICU).

Methods Early extubation was defined as intraoperative or within 6 hours from arrival to PICU. Between January 2014 to March 2016, 846 patients underwent congenital cardiac surgery at Alder Hey Children's Hospital with a 30 days mortality rate of 0.9%.The clinical records of 608 patients older than 90 days of age were reviewed. The mean age and weight was 13.1 month (5.6–57) and 8.9 kg (5.8–16.325) respectively. Re-do sternotomies accounted for 181 cases (29.7%). The management strategy involved a specific anaesthetic technique, warm cardiopulmonary bypass, and intraoperative echocardiogram for evaluation of surgical repair.

Results Out of 608 patients, early extubation was accomplished in 480 patients (78.9%) of which 337 pts (55%) were extubated in theatre. There was no mortality or other adverse event related to early extubation. Reintubation was required in 9 patients (1.4%). Patients extubated earlier had shorter PICU stay (1[1–2] vs 3.5 [2–7]days) and shorter hospital stays (5 [4–8] vs 12 [7–20] days). It was noted that PICU stay was artificially longer due to bottle-neck effect along the patient flow.

Conclusion Early extubation can be accomplished safely following cardiac operations in an age-selected paediatric population. It is associated with low morbidity, mortality with reduced PICU and Hospital length of stay. This preliminary study demonstrates that a fast-tracking model is feasible.

5 USE OF PROPRANOLOL FOR INFANTILE HAEMANGIOMAS: MULTI-CENTRE EXPERIENCE OF 70 CASES

[1]Rainer Fortner, [1]Marcia Scheller, [2]Alexander Wilson, [2]Poonamallee Govindaraj, [3]Sandeep Ashtekar, [1]Dirk Wilson. *[1]Noah's Ark Children's Hospital, Cardiff, UK; [2]Royal Glamorgan Hospital, Pontyclun, UK; [3]Royal Gwent Hospital, Newport, UK*

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Background Propranolol has been used to treat infantile haemangiomas since 2008. Treatment is recommended in lesions complicated by bleeding, ulceration, infection and where breathing, feeding or vision is compromised. We assessed our experience with reference to the proposed Great Ormond Street protocol (2014) which rationalises pretreatment management/investigations.

Methods Retrospective review of electronic records of all children who receiving propranolol for infantile haemangiomas in 3 hospitals in South Wales between 2009 and 2014.

Results 70 children were treated with propranolol. Median age [range] at start of treatment was 4 months [0-24]. Indications for treatment included ocular impairment (40%), cosmesis (29%), ulceration (21%), airway impairment (6%) and miscellaneous (4%). Median length of treatment was 10 months [1–16]. 88.6% of children improved on treatment and only 5 (7%) experienced regrowth on cessation. 12 patients (17.1)% experienced side effects and 7 (10%) had their treatment discontinued or adjusted. Recorded side effects included sleep disturbance (7%), GI upset (3%) and wheeze (3%). All children were examined by a Paediatrician, Neonatologist or Paediatric Cardiologist prior to treatment initiation. 10 (7%) children were noted to have a murmur. ECG and echocardiography were normal in all but one child who was later found to have an arteriovenous malformation rather than haemangioma, requiring embolisation.

Conclusion None of the investigations including echocardiography and blood tests revealed abnormalities contraindicating the administration of propranolol. The selective use of pretreatment investigations is therefore supported by our data. This review confirms that propranolol is a safe and effective treatment for infantile haemangiomas.

6 INITIAL PALLIATION OF TETRALOGY OF FALLOT: COMPARISON BETWEEN BT SHUNT AND RVOT STENT

G Penford*, D Quandt, B Ramchandani, J Stickley, C Mehta, V Bhole, O Stumper. Birmingham Children's Hospital, UK.

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Background Neonatal repair of symptomatic infants with Fallot-type(ToF) lesions remains the exception in the UK. Initial palliation can be achieved by creation of a BT shunt, or RVOT stenting.

Aims To compare the outcome of BTS and RVOT stent in the palliation of TOF.

Methods 10 year retrospective review of the outcome of 101 ToF patients who required initial palliation (RVOT stent n=60; BTS n=41) prior to complete repair. Detailed assessment of PA growth in patients with comparable underlying anatomy.

Results In the RVOT stent group vs the BT shunt group, there was a lower PICU admission rate (22% vs 100%) (p<0.001], a lower early mortality (1.7% vs 4.9%) [ns], a shorter initial hospital stay (7 vs 14 days) (p<0.004), and a shorter time to surgical repair (232 vs 428 days) (p<0.001). In terms of PA growth after palliation, the benefit of RVOT stenting versus mBTS was 0.599 z-score for the LPA and 0.749 z-score for the RPA. Rise in oxygen saturations was greater with RVOT stenting (p=0.012). There were 3 non-cardiac deaths in the RVOT stent group and none in the BTS group. There were no deaths after correction, and comparable bypass times and rate of transannular patching/conduit use. Overall mortality was comparable (8.4% vs 4.9%) (p=0.69).

Conclusions RVOT stenting is a safe and effective palliation in the initial treatment of infants with symptomatic Fallot-type lesions and promotes pulmonary artery growth.

7 EVALUATING THE LONG TERM EFFECTS OF THE FONTAN PROCEDURE ON THE HEPATIC SYSTEM

Zenib Sardar*, Petra Jenkins. *Manchester Heart Centre, UK*

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A palliative procedure performed in univentricle patients the Fontan is associated with impaired pulmonary function and

liver fibrosis. Currently these patients are monitored using liver function tests (LFTs) and liver ultrasound (US) scans, however these tests are targeted for viral mediated fibrosis. Acoustic radiation force impulse (ARFI) imaging measures tissue elasticity and may have an important role in assessing liver stiffness. We aimed to assess the efficacy of LFTs, liver US and ARFI imaging in diagnosing liver fibrosis in Fontan patients. We also aimed to assess any relation between cardiopulmonary exercise test (CPET) variables and ARFI scores.

Data was collected retrospectively from the Manchester ACHD Centre. We identified 12 patients. The sensitivity of LFTs and liver US was found to be 6.6% and 86% respectively. ARFI identified liver fibrosis in all patients with 33% at F2, 33% at F3% and 33% at F4. There was found to be a slight reduction in% peak VO2 (62.6 vs 46, p=0.2) and% predicted O2 (101.1 vs 88.9, p=0.6) in F3 patients, with a higher VE/VO2 (32.5 and 42.0, p=0.2).

Conclusion LFTs alone are not a suitable screening test for Fontan associated liver fibrosis and liver US does not accurately quantify the degree of fibrosis. ARFI requires further research in larger study samples to determine a role in routine hepatic monitoring of Fontan patients. Although we found a weak relationship between impaired CPET variables and greater ARFI scores, this requires further investigation as a potential diagnostic test for liver fibrosis.

8 POSTOPERATIVE INTERVENTRICULAR SEPTAL HAEMATOMA FOLLOWING TETRALOGY OF FALLOT REPAIR AND PERIMEMBRANOUS VENTRICULAR SEPTAL DEFECT REPAIR

[1]Fiona J Bailey, [1]Salim GM Jivanji, [1,2]Martin Kostolny. [1]*Cardiac Unit, Great Ormond Street Hospital for Children NHS Foundation Trust, London, UK*; [2]*Cardiac Unit, The Harley Street Clinic, Congenital Heart Centre, London, UK*

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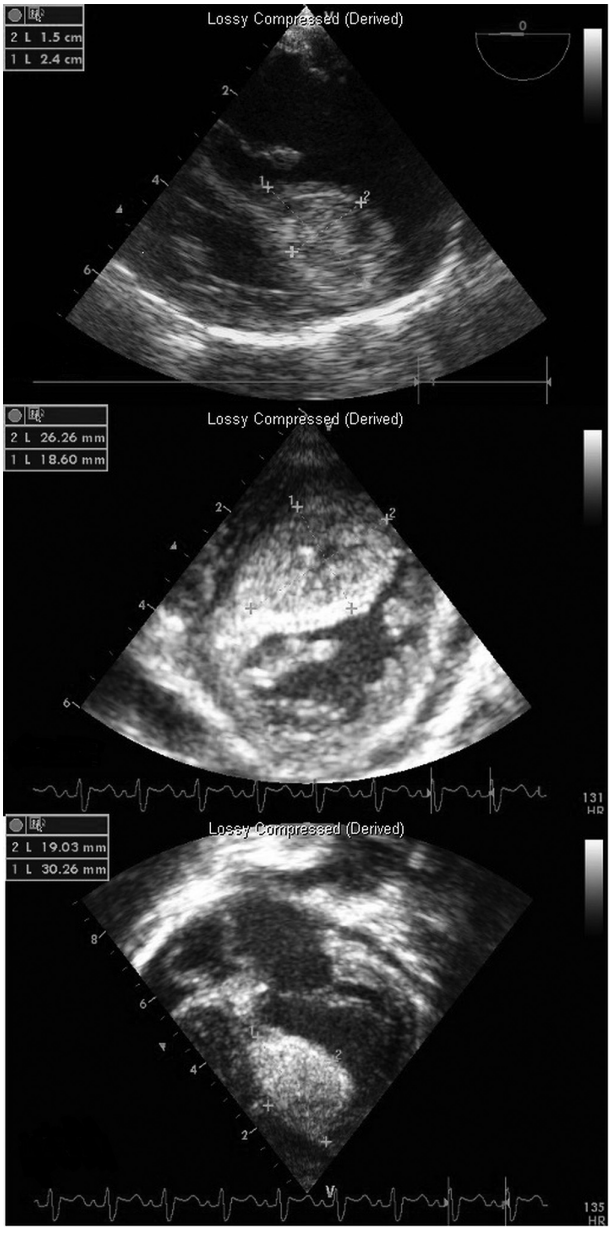
Interventricular septal haematoma is a rare postoperative complication in congenital heart surgery. We present one case of a 6-month-old after tetralogy of Fallot repair and 1 case of a 10-month-old after ventricular septal defect repair. Both were noted to have interventricular septal haematoma on intraoperative transoesophageal and postoperative echocardiogram. Although multiple previous reports, mainly in adults, have suggested aggressive intervention, both these cases were managed conservatively, highlighting the management and evolution of a rare postoperative complication in the paediatric population.

Case one Following antenatal diagnosis of tetralogy of Fallot (ToF), an infant with absent cerebellar vermis underwent elective repair at 6 months of age. Physical examination revealed a harsh pulmonary ejection systolic murmur, mild respiratory distress with oxygen saturations 93% and no hepatomegaly.

The repair was performed via a transatrial approach. The ventricular septal defect (VSD) was a large anteriorly malaligned perimembranous outlet type, closed with a bovine pericardial patch using 6/0 running prolene suture, reinforced with pledgeted 6/0 sutures. The Patent Foramen Ovale was closed directly and the hypoplastic pulmonary valve annulus was dilated using a 10 mm Hegar dilator. Transoesophageal echocardiogram (TOE) showed no residual VSD, no right ventricular outflow tract obstruction but a significant haematoma (Figure 1A) in the septum. Despite its size, a decision was made for a conservative approach in view of excellent surgical result and haemodynamic stability.

Transthoracic echocardiogram (TTE) that evening showed the interventricular septal (IVS) haematoma to be essentially unchanged in size with no inflow or outflow tract obstruction. Serial TTEs measured the haematoma to be at its largest 26×18 mm in short-axis view (Figure 1B) and 30×19 mm in 4-chamber view (Figure 1C). ECG demonstrated first-degree heart block. MDT discussion concluded that no intervention was needed as the infant remained haemodynamically stable



Abstract 8 Figure 1

The postoperative course was uneventful, and serial TTEs confirmed reduction in size of the septal haematoma. The patient was discharged on Day 8 in sinus rhythm with right bundle branch block.

At follow-up 1 month later, there was no clinical concern and TTE demonstrated improved biventricular systolic function with a small residual VSD at the superior margin of the