

at the time of surgery were entirely consistent with the information given by all of the various imaging modalities, allowing confidence in the planning process.

Conclusion These cases demonstrate the value of using a variety of imaging modalities for complex DORV cases, ensuring that important details are not missed.

21 DECISION-MAKING USING MULTIMODALITY IMAGING IN COMPLEX MUSCULAR VENTRICULAR SEPTAL DEFECTS POST PULMONARY ARTERY BANDING

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10.1136/heartjnl-2017-311499.21

Large muscular ventricular septal defects below the moderator band are an interesting entity as these lesions can be surgical challenging. The conventional approach is to do pulmonary artery banding to control heart failure and allow child to grow with view to close later using interventional approach if the lesion remains significant. Hybrid approach with pulmonary artery debanding and per-ventricular VSD closure has been attempted in few centres.

Current advances in multimodality imaging helps us to understand the anatomy better and help us to plan the interventional and surgical procedure well.

We present 3 cases of muscular ventricular septal defects post pulmonary artery banding. The VSDs in these patients had multiple exits in right ventricle aspect extending above and below the moderator band. Assessment of ventricular septal defect using transthoracic echocardiography, 3D echocardiography, conventional angiogram and CT angiogram added more information. However along with 3D modelling and printing in these selected cases helped to preempt challenges and plan according to avoid complications. We demonstrate the use of multimodality imaging and 3D modelling in these case series.

22 SINGLE CENTRE EXPERIENCE OF INCORPORATING KNOWLEDGE-BASED RECONSTRUCTION FOR RIGHT VENTRICULAR VOLUMETRY INTO CLINICAL PRACTICE

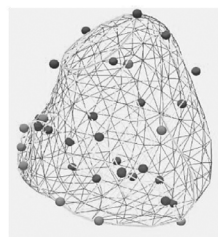
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10.1136/heartjnl-2017-311499.22

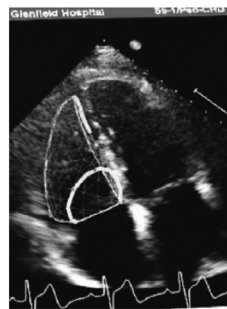
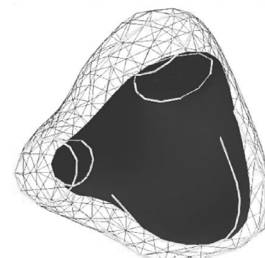
Knowledge-based reconstruction (KBR) is a new technique for calculating the volume of cardiac chambers accurately. The technique can be applied to 3D datasets (eg, MRI scans), but can also be used with conventional 2D echocardiography by tracking the probe position and orientation in 3D space. It is particularly useful for assessing the volume of the right ventricle without having to undergo an MRI scan.

We acquired a KBR system in March 2015, and have been putting it into practice. We have performed 69 studies in 45 patients over an 18 month period, ages between 5 and 70 years average 18.9 years, 28 patients (62%) were between 5–12 years and 37 patients (82%) were below 18 years of age. Indications mainly for post surgical Tetralogy of Fallot variants

A. Dots into RV 3D model

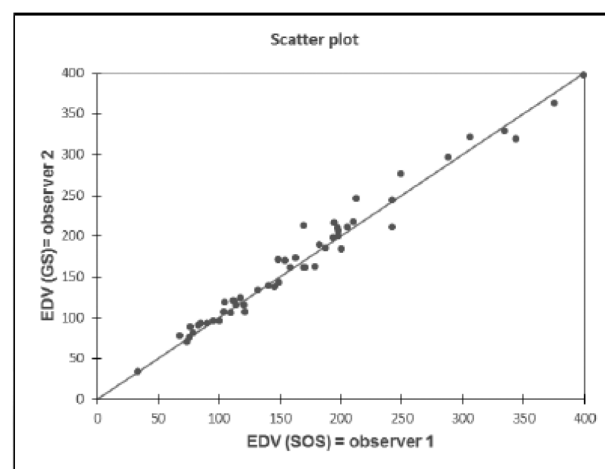


B. Combined RV diastolic and systolic models



C. Superimposed 3D model on 2D image

Abstract 22 Figure 1 A,B,C



Abstract 22 Figure 2 Our institute inter-observational variability

or post pulmonary valve dilation resulting in free pulmonary regurgitation or mixed valve disease with resulting significant right ventricular volume loading. In a subset we have performed analysis on 13 patients who underwent pulmonary valve replacement, giving pre- and post-surgical RV volume and function analysis, all 13 patients had Cardiac MRI pre surgery, that was comparable to the pre-surgical KBR analysis. **Conclusion** Knowledge based reconstruction of right and left ventricle volumetric data can be performed with good reliability and good alternative to MRI.

23 RIGHT VENTRICULAR OUTFLOW TRACT ELAN CONDUIT: THE FIVE YEAR SCOTLAND EXPERIENCE

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10.1136/heartjnl-2017-311499.23

Background The management of the right ventricular outflow tract (RVOT) is a common feature in congenital cardiac surgery. A number of valved conduits are available. We reviewed the outcomes of the Vascutek RVOT Elan Conduit in patients from a specialist congenital surgical centre.

Methods Between 2010 and 2011, 25 patients (13 male, mean age: 25.5 years) received an Elan conduit in the RVOT position. 24 reported previous open cardiac surgery. Most common diagnosis was Tetralogy of Fallot (n=19 (76%)).

Results The mean follow up period was 4.96 years.

24 (96%) patients were alive at the time of censorship. 16 adverse events were noted and defined as haemodynamically significant conduit and/or valve stenosis (n=12), death (n=1) and bacterial endocarditis (n=3).

12 (48%) patients required re-intervention (10 transcatheter pulmonary valve replacements [8 Medtronic Melody and 2 Edwards Sapien] and 2 surgical pulmonary homografts). Mean time to re-intervention 1.7 years (range 0.25 – 4.36 years)

Conclusion This review of RVOT Elan conduits demonstrates that in a significant proportion of patients there is short interval to re-intervention due to haemodynamically significant conduit and/or valve stenosis. (Figures 1 and 2) The conduit was technically attractive for transcatheter intervention.

Other centres have published favourable results in the first 12 months after surgery. There are no other reported outcomes after this period. Our review suggests that ongoing frequent clinical assessment is required and should continue beyond the first 12 months.

The Elan conduit is no longer in production and the search for the ideal valved RVOT conduit continues at a time when homograft availability is becoming an increasing challenge.

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ACCURACY OF COMPUTED TOMOGRAPHY FOR DETECTING GREAT VESSEL STENOSIS OR HYPOPLASIA IN COMPLEX CONGENITAL HEART DISEASE PRIOR TO SUPERIOR BIDIRECTIONAL CAVOPULMONARY CONNECTION: COMPARISON WITH CARDIAC CATHETERIZATION AND SURGICAL FINDINGS

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10.1136/heartjnl-2017-311499.24

Aim This study sought to investigate diagnostic accuracy and safety of computed tomography (CT) in assessing great vessel stenosis/hypoplasia prior to superior bidirectional cavopulmonary connection (BCPC) compared with cardiac catheterisation and surgical findings.

Method and results Twenty-seven patients (37% after Norwood operation) who were assessed by CT prior to BCPC between January 2010 and June 2016, at median age of 229 days (range 96 days–3.2 years), were included. Median weight at the time of BCPC was 8.3kg (4.0–13.4kg), median time from previous surgery 222days (97–885 days). Sixteen of the patients also underwent cardiac catheterisation.

Patients received significantly higher radiation dose at cardiac catheterisation than at CT (median 2.6, IQR 1.6,3.5 mSv versus 1.2, IQR 1.0, 1.9 mSv; respectively;p=0.040).

Four patients (25%) suffered minor complications from cardiac catheterisation. There were no complications from CT scan. All cardiac catheterisations were performed under general anaesthesia. No sedation was required for any of the patients for CT.

Based on surgical findings, the accuracy of CT for detecting stenosis/hypoplasia of either pulmonary artery was 99.7%. Nine right and 11 left pulmonary artery branches were enlarged at the time of surgery. CT did not miss any stenosis/hypoplasia of branch pulmonary arteries and reported 2 cases of branch pulmonary artery hypoplasia which were considered at the time of BCPC surgery to be normal.

Conclusion CT may replace cardiac catheterisation for identification of great vessel stenosis or hypoplasia in patients before BCPC. This requires less radiation, carries less morbidity and can be performed without sedation in this fragile group of patients.

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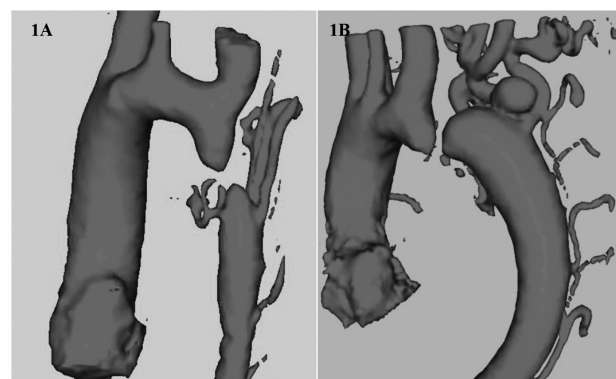
TRANS-CATHETER RECONSTRUCTION OF NATIVE INTERRUPTED AORTIC ARCH IN ADULTS

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10.1136/heartjnl-2017-311499.25

Transcatheter stenting is widely accepted treatment for coarctation of aorta in adolescents and adults, but stenting of interrupted aortic arch (IAA) is very challenging. We report 2 cases of adults, who had successful percutaneous reconstruction of IAA in our institute.

Case 1 (33 year old) and case 2 (52 year old) presented with resistant systemic hypertension and subsequently diagnosed as having IAA in MRI scan. Right radial and right



Abstract 25 Figure 1 Showing the 3 dimensional magnetic resonance angiogram images of the aorta of the 2 cases of IAA. (A) Case 1, 33 year old man with IAA with proximal and distal stumps facing end to end. (B) Case 2, 52 year old with IAA with proximal and distal stumps facing side to side.