19 TRICUSPID VALVE IN VALVE IMPLANTS IN CONGENITAL HEART DISEASE PATIENTS

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Patients with congenital tricuspid valve problems or post surgical complications often need biological vale implants quite early on in child hood with risk of size/growth mismatch, valve degeneration and severe stenosis or mixed disease, which expose them to the high risk of multiple redo surgeries.

We report 3 cases of transcatheter tricuspid valve in valve implants in the last 18 months, additionally one of them had a percutaneous pulmonary valve implantation (PPVI) at the same procedure after ensuring a widely patent tricuspid valve. Patient ages 19, 11, 26 yrs.

The failing valves in all 3 were a perimount valves, sizes 23 to 31mm.

The inserted valves were Sapien Edwards valves 20 to 29 mm, we used the ViV surgically oriented app which guides the best size, the wire park in the on of the branch pulmonary artery over which the valve mounted onto a balloon within the IVC then manipulated into position within the old valve. Rapid LV pacing would reduce the cardiac output to ensure minimal valve movements during implantation. The valve is deployed with fluoroscopy and TOE guidance, excellent final result with Drop of the mean PG across the valve from 9 to 1 mmHg with no valvar or paravalvar leak,

Conclusion Percutaneous Tricuspid valve implant is a save procedure in patients with failed surgical biological tricuspid valves, and seems to be the logical way forward to avoid redo surgical procedures and more scarring of the right atrium and right ventricle, heart block and arrhythmias.

20 MULTIMODALITY 4D IMAGING AND MODELLING FOR COMPLEX DOUBLE OUTLET RIGHT VENTRICLES

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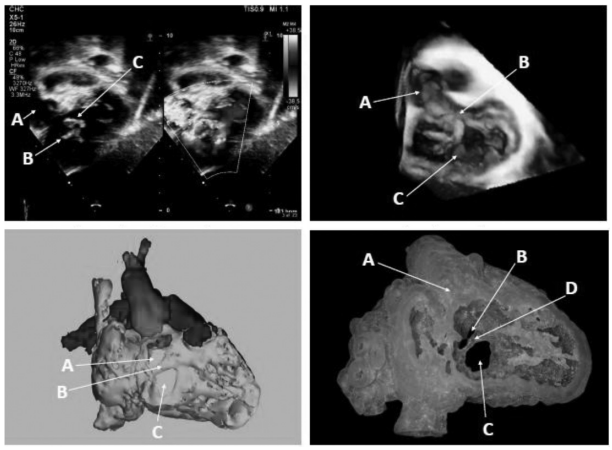
Double outlet right ventricle can have multilevel complexity some with normal situs, levocardia and non-committed ventricular septal defect (DORV-NCVSD), and some with Dextrocardia, or abnormal situs, borderline right or left ventricles and juxtaposed atrial appendages.

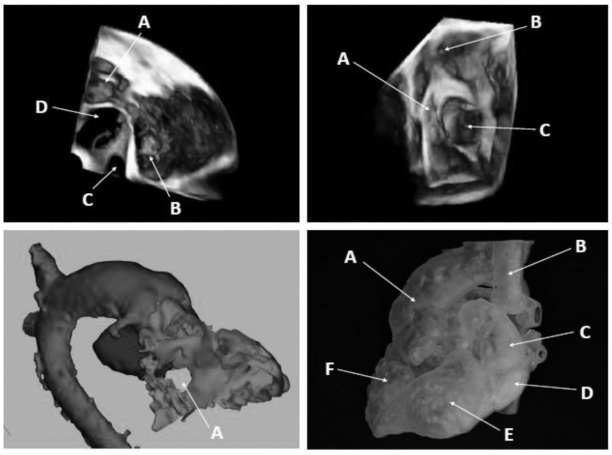
Decision-making can be extremely difficult due to the complex 3-dimensional spatial relationships of the atrial communication, the ventricular septal defect (VSD), the semilunar valves and the atrioventricular valves; along with the size of the ventricular cavities. Understanding of these relationships can determine whether the patient is suitable for a biventricular repair or not.

Recently, advances in 3D printing have been made allowing models to be made from cross-sectional imaging (usually CT or MRI images). These can be very useful; however, they are still subject to the limitations of the chosen imaging modality.

We present a case series of 4 cases of complex DORVs; 2 with NCVSD, and 2 with Dextrocardia borderline ventricles and Juxtaposed atrial appendages where we used a combination of 4D echocardiographic, CT and angiographic



Abstract 20 Figure 1 (A) Subcostal TTE image showing short axis view across the ventricles. VSD is divided by a band of tissue close to the tricuspid value. A – Aorta; B – Tricuspid valve; C – Dividing band, (B) 3D TTE showing similar view as Fig la. This allows better appreciation of the small size of the superior VSD and its relationship to the aorta, A – Aorta; B – Superior VSD; C – inferior VSD. (C) Segmented 3D model from CT scan showing the VSD and its relationship to the outflows. Beige – Atria and ventricles; Red – Aorta; Blue–PAs;A – Superior VSD; B – Dividing band;C – Inferior VSD. (D) 3D printed model from segmented CT scan. View of the RV aspect of the interventricular septum (RV free wall removed) demonstrating the divided VSD. A – Aorta; B – Superior VSD; C – Inferior VSD; D – Dividing band.



Abstract 20 Figure 2 (A) 3D TTE view from posterior aspect (posterior RV and RA walls removed) demonstrating complex atrial anatomy. A – Aorta; B – Tricuspid value; C – Ostium of left atrial appendage; D – Ostium of right atrial appendage; Red arrows – blood flow through ASD and TV. (B) Further view of atrial anatomy, seen for base of heart (posterior atrial wall removed). A – Tip of left atrial appendage; B – tip of right atrial appendage; C – ASD. (C) Segmented 3D model from 3D whole heart navigator sequence MRI scan, showing relationship of the VSD to the outflows. Posterior view with posterior wall of RV removed. Orange – ventricles; Red – Aorta; Blue PAs; A – VSD. (D) 3D printed model from 3D whole heart navigator sequence MRI scan, viewed from anterior aspect to demonstrate gross anatomy. A – Aorta; B – Left SVC / Glenn shunt; C –Right atrial appendage; D – left atrial appendage; E – LV; F – RV.

information fed into the materialise software to create as detailed as possible picture of all the anatomic features. This enabled detailed surgical plans to be made. Anatomical details