

remains a challenging clinical problem. In neonates and infants, PAH is most often reversible, but in older patients the resolution of PAH is variable depending on the reversibility of pulmonary vascular resistance. The current study was done to assess the safety and efficacy of percutaneous device closure of large post-tricuspid shunts in pediatric patients with severe PAH at short term and midterm follow up.

Methods: A total of 42 pediatric patients underwent transcatheter closure of large post-tricuspid shunts with severe PAH. All subjects underwent clinical examination, electrocardiography, chest X-rays and echocardiography before discharge and at 1, -6 and -12 months and yearly thereafter for 5 years.

Results: Type of defect was ventricular septal defect in 8 patients (19%), patent ductus arteriosus in 27 patients (64%), aorto pulmonary window in 5 patients (12%) and coronary cameral fistula in 2 patients (5%). Cardi-O-Fix VSD Occluder was the most commonly used device (45%) followed by Cardi-O-Fix PDA occluder (21%) and Amplatzer duct occluder-ADO (17%). Pre procedural Pulmonary artery systolic pressure decreased significantly from mean 81.12 mmHg to mean 43.17 mmHg post procedure over a mean follow up 18.15 months. No residual shunt was found in 38 patients (90.47%). Only two major complications viz; severe aortic obstruction and symptomatic complete heart block were noticed.

Conclusion: Our study showed that the transcatheter closure of large post-tricuspid shunts in pediatric patients with severe PAH was safe, feasible and efficacious alternative to surgery.

Changes in cardiac form and function before and after transcatheter closure of secundum atrial septal defects

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Objectives: To study the effect of transcatheter closure of atrial septal defect (ASD) on right ventricular (RV) and left ventricular (LV) function, as well as left atrial (LA) volumes and the influence of preload alterations on systolic right ventricular (RV) velocities and deformation indices in patients with atrial septal defect (ASD).

Methods: During a 12 month period from July 2013 through June 2014, 25 patients scheduled for percutaneous closure of an ASD were prospectively enrolled in the study. Pre and post-ASD device closure at 1wk echocardiograms of 25 consecutive patients were done. Measurements of RV and LV MPI and LA volumes were taken. Longitudinal peak systolic velocities, peak systolic strain rate (SR), and endsystolic strain (ϵ) were calculated in the mid-segment of the RV free wall and the septum.

Results: 25 patients with an average age of 32.5 ± 16.3 years underwent transcatheter closure of ASD. There was statistically significant improvement in RV MPI (0.33 to 0.29, p 0.003), LV MPI (0.35 to 0.30, p 0.03), and LA volume index (27.1 to 22.3 ml/m², p 0.001) after closure of ASD.

After ASD closure Indexed measurements of RV long-axis dimension was significantly reduced (69.8 ± 18.6 to 67.3 ± 3 , p 0.0005) and of RV inlet (45.9 ± 15.3 to 42.5 ± 13.5 , NS), tricuspid valve annulus (29.9 ± 8.3 to 27.9 ± 8.1 , NS) and RV short axis (30.1 ± 6.9 to 28.2 ± 8.3 , NS) are insignificantly decreased.

Peak systolic velocities recorded from the RV free wall returned to normal physiologic values which are initially higher (9.9 ± 2.3 to 7.4 ± 3.8 , p <0.001) and at the interventricular septum, they tended

to be higher in patients with ASD compared with control subjects showed a significant decline to subnormal values (4.1 ± 1.2 to 3.2 ± 1.3 , p 0.002) after closure of the defect

Peak systolic SR (RV mid. -3.6 ± 1 to -3.4 ± 1.7 and septal -2.1 ± 0.6 to -1.7 ± 0.6) and endsystolic ϵ (RV mid. -48.3 ± 14.2 to -45.13 ± 11.6 and septal -31.2 ± 14.1 to 27.3 ± 8.3) which are slightly higher compared with normal physiological values, showed a diminishing tendency after closure of ASD, however, the difference was not significant.

Conclusions: In congenital ASD, RV adaptation to a longstanding volume overload causes slightly increased (not significantly) systolic longitudinal deformation suggests an adequate structural and physiologic adaptation of the RV to chronic volume overload. After relief of volume overload, RV longitudinal systolic deformation indices tended to decrease, but not significantly, in contrast, peak systolic velocities decreased significantly suggesting that myocardial velocities are clearly load dependent whereas deformation indices are relatively preload stable measures of ventricular contractility.

Assessment of right ventricle remodelling with conventional and newer echocardiographic indices of RV function before and after ASD closure surgery

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Background: To study the impact of surgical closure of Atrial septal defect (ASD) on right ventricular (RV) remodeling using conventional and newer echocardiographic indices and to study the additional utility of the later over the former.

Methods: A prospective observational study of 100 consecutive patients who underwent ASD closure surgery between 2012 and 2014. Conventional parameters studied were right ventricular end diastolic diameter (RVEDd), right ventricular systolic pressure (RVSP) and fractional area change (FAC). Newer parameters studied were Tricuspid annular plane systolic excursion (TAPSE), Myocardial performance index by pulse wave and tissue Doppler (MPI) and Systolic tissue Doppler signal of the tricuspid annulus(s').

Results: Post ASD surgery there was decrease in RV size, shown by progressive decrease in mean RVEDd. Improvement in RV systolic function shown by an increase in FAC, alongwith decrease in RVSP indicating functional, symptomatic and hemodynamic improvement. Patients less than 25 years had better RV function as shown by improvement in RVMPI. 3 months post surgery 4% had persistent RV dysfunction. Patients aged more than 25 years had higher chances of persistent RV dysfunction ($p=0.053$). RVMPI by TDI and RVSP has better accuracy for prediction of RV dysfunction at 7 days and 3 months post surgery while s' has better accuracy at 3 months after surgery.

Conclusion: Surgical closure of ASD leads to significant improvement in RV remodeling. Patient's age and degree of RV dilatation at the time of surgery were predictors of RV remodeling. Improvements in the cardiac function and hemodynamics corresponded to the associated functional improvement and symptomatic benefits gained in surgical closure of ASD. Conventional and novel echo parameters have shown improvement in RV function after ASD closure surgery. RVMPI by TDI and s' have better accuracy for prediction of RV dysfunction after surgery.