

Use of a Telescopic System for Transcatheter Radiofrequency Perforation and Balloon Valvotomy in Infants with Pulmonary Atresia and Intact Ventricular Septum.

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Objectives: to evaluate the impact of a new technique for transcatheter radiofrequency (RF) perforation and valvotomy on required fluoroscopy time, early morbidity and mortality in newborns with pulmonary atresia and intact ventricular septum (PA-IVS). PA-IVS is a complex congenital heart disease with great morphological variability. Approximately two thirds of affected infants may be suitable for transcatheter pulmonary valvotomy. However this procedure remains technically demanding even in experience hands. We reviewed our experience with the telescopic system and we compared early results of two different percutaneous approaches. \par

Methods

: during the last 10 years 28 infants with PA-IVS underwent RF perforation of the pulmonary valve (PV) and subsequent balloon dilation at our Institute. In all cases cardiac catheterization was carried out under general anaesthesia, the femoral vein was percutaneously cannulated using a 5Fr sheath and right and left ventricle angiographies were performed. In the first 14 infants we used a 5 Fr Judkins right coronary catheter which was manoeuvred directly underneath the atretic PV (Group A). Lately a telescopic system consisting of Northstar Lumax Flex and White Lumax Guiding Catheters (Cook) was adopted to obtain the proper position under the atretic PV (Group B). After successful RF perforation of the PV a 0.014 inch super floppy guide wire was advanced into the descending aorta and progressive balloon dilations were performed.\par

Results: there were no significant differences in patient characteristics (age and weight) and pre-interventional echocardiographic findings (tricuspid Z value, right ventricle morphology) of the two groups. The procedure was successful in all but one patient. Procedural morbidity and required fluoroscopy time were significantly lower in Group B (3 vs 0 and 44±17 min vs 24±18 min, respectively) ($p<0.01$). Two premature infants of Group A died early; 8 patients of Group A and two of Group B required a mBT shunt.

Conclusions: neonatal percutaneous RF perforation of the PV could be effective with a low risk of mortality and morbidity in almost all infants with PA-IVS and patent infundibulum. The use of a telescopic catheter can significantly decrease the incidence of procedure related complications and the fluoroscopy time needed for this intervention.