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Goldstein, Steve AN
Perry, Stanton B
Keane, John F
et al.

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Methods to Treat Congenital Heart Disease

TRANSCATHETER CLOSURE OF CONGENITAL VENTRICULAR SEPTAL DEFECTS

Steve A. H. Goldstein M.D., Ph.D., Stanton B. Perry M.D., John F. Keane M.D., Jonathan Reme M.D., and James E. Lock M.D., F.A.C.C. The Children's Hospital, Boston, MA.

Between 3/1987 and 8/1989, 18 Pts were catheterized 20 times with intent to percutaneously close native or postoperative congenital ventricular septal defects (VSD). Indications were multiple episodes of endocarditis (n=7), shock (n=2), residual defects despite surgery (n=7), and planned surgery for congenital heart disease (CHD) requiring systemic ventriculotomy to close the VSD (n=9). The Rashkind double umbrella (12, 17mm) or Lock Clamshell occluder (17, 22, 26, 33mm) was used, versus were crossed via the LV to guide a venous catheter, long sheath and ultimately a device across the VSD from the right side.

In 4/18 Pts closure was not attempted: the VSD was <2mm (n=2), close to the Ao valve (n=1) or too large (n=1). VSDs in 14 Pts (0.7-44yr, 2-89kg) were 4-14mm in diameter and multiple muscular (n=1), single muscular (n=4), perimembranous (n=1) or patch margin (n=5). The device was placed "accurately" in all cases. One device was mal-positioned (6/8 arms on LV side of septum) and retrieved without intra-cardiac release; catheter VSD closure the next day was successful. All 15 released devices remained in stable position and abolished (n=13/15) or significantly reduced shunt through the VSD. Complications were femoral vein thrombosis (n=1), asymptomatic hemoptysis (n=1), and umbrella impingement on septal leaflet of tricuspid valve (n=1, corrected by moving a device arm at surgery for CHD). Two Pts required general anesthesia; 1 developed post-extubation stridor. Follow-up (0.5-2yr) has revealed no other problems. Transcatheter VSD closure can be accomplished with limited morbidity and significant success as primary therapy or an adjunct to surgery.