

Transcatheter Closure of Multiple Ventricular Septal Defects

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Introduction. The feasibility of transcatheter closure for single muscular ventricular septal defect (VSD) is well-demonstrated through several studies. Although several cases with multiple VSDs in the same patient are often included in those studies, specific report on multiple VSDs closure is lacking. Our goal was to compare feasibility, effectiveness and safety between cases with single and multiple congenital VSDs.

Method. From January 2007 to January 2012, transcatheter congenital VSD closure was performed in 30 patients, including 21 with a single muscular VSD and 9 with multiple VSDs. The mean age and weight was 2,4 (11 months to 7) years and 12 (7,3 to 28) Kg, respectively. All procedures were performed under general anesthesia and transesophageal echocardiography guidance.

Results. Forty-three Amplatzer devices were implanted during 34 procedures, including 22 (1 to 6) for patients with multiple VSDs. Thirty Muscular VSD Occluder, 3 ADO II, 8 Amplatzer Septal Occluder and 2 Amplatzer Cribriform (35 mm) were used. In 3 patients with multiple VSDs, complete or partial closure of the defect with mild residual shunt was accomplished with a single device (Amplatzer Septal Occluder in 2 and Muscular VSD Occluder in one). There were 3 complications with single VSD closure and 4 in multiple VSD closure (p NS). One patient with single apical VSD experienced cardiac arrest during the procedure, necessitating circulatory support. He recovered but suffered from neurological sequel and his VSD was successfully closed periventricularly during subsequent surgical repair. Satisfactory device implantation was achieved in all the other patients. Other complications included in patients with multiple VSDs closure a tricuspid valve lesion with moderate regurgitation that was repaired at the time of subsequent surgery (pulmonary artery banding removal), a cerebral ischemic stroke with favorable outcome and the need for blood transfusion in 2 cases. In patients with single VSD closure, blood transfusion was necessary in 2 cases. There was no mortality.

Conclusion. Transcatheter closure of multiple congenital VSDs is feasible and effective, without significant additional morbidity as compared to single VSD closure. Various devices other than Muscular VSD Occluder may be used appropriately to close multiple defects.