

MP2-10

Transcatheter Closure of Perimembranous Ventricular Septal Defects with Amplatzer Ductal Occluders

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Introduction: This study reports on our experience with transcatheter closure of perimembranous ventricular septal defects (pm-VSDs) with Amplatzer duct occluder I (ADO I) and Amplatzer duct occluder II (ADO II)

Methods: Transcatheter device implantation with ADO I and ADO II was attempted in 17 patients with pm-VSD between August 2014 to December 2015. We usually decided the appropriate type and size of device according to the measurements by left ventricular angiograms. We choose 1-2 mm larger device than the defect size in our first cases. Recently we preferred 2-4 mm larger device due to prevent the residual leakage or device embolism.

Results: Patient mean age was 10.59 ± 3.55 years and mean weight was 37.12 ± 16.36 . The mean defect size was 5.17 ± 1.66 mm, mean Qp/Qs was 1.88 ± 0.5 , mean PVR/SVR ratio was 0.042 ± 0.028 and mean fluoroscopy time was 25.11 ± 7.97 minutes. ADO I was used in 13 cases and ADO II used in remaining 4 patients. The Amplatzer duct occluders were successfully implanted in 16 of 17 patients. In one patient, ADO I suddenly embolised into the left pulmonary artery soon after its release. This device was retrieved and the patient underwent surgical closure of the ventricular septal defect successfully. One of 4 patients underwent pmVSD closure with ADO-II had residual leakage and one of them had transient left bundle branch block after the procedure. In addition one of patient had residual leakage after ADO I deployment. No atrioventricular block (AVB) was determined during follow-up.

Conclusions: We prefer the Amplatzer duct occluders in percutaneous closing to pm-VSD among several devices. Amplatzer duct occluder I has an advantage due to does not have a proximal disc and thus does not squeeze the AV bundles. Although ADO II has a two disc, its low-profile and flexibility provides some advantages compared to other devices. Residual leakage and one case of device embolism were seen in our first cases. Therefore we started to choose 2-4 mm larger device if adequate defect rims were present and no residual leakage, embolism or AVB were detected. Duct occluders provide an effective and safe treatment option in selected patients with pm-VSD