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Transcatheter closure of perimembranous ventricular septal defects using the second-generation Amplatzer™ vascular occlude device

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Objectives

Ventricular septal defect (VSD) is the most common congenital heart defect. Non-surgical closure of VSDs has become increasingly accepted. Several occluding devices are now available and some of them are being used off-label. The aim of this study was to review our institutional experience with VSD closure using the Amplatzer™ Duct Occluder II (ADO II) device.

Methods

Retrospective review of all patients who underwent percutaneous closure of perimembranous VSD using ADO-II device between Sep 2010 and Jul 2016 in our institution. VSD size and VSD-Aortic valve distance was measured by transesophageal echocardiography (TEE) and ventriculography. VSD size was measured at the largest diastolic phase in all patients. Appropriate device size was chosen to be between 0.5 to 1 mm larger than the VSD size. The procedure was performed with fluoroscopy and TEE guidance. Transthoracic echocardiography and ECG were performed at discharge and during follow-up. Data is presented as median [IQR].

Results

The procedure was successfully done in 11 consecutive patients with median age of 63 months (47-185) and weight of 17.9kg (13.7-30.3). VSD diameter was 4.5mm (4-5) with a VSD-aortic valve distance of 5.5mm (4.4-8.3). All patients were discharged within the first 24 hours. No major complications were observed. A trivial residual shunt was present in 5/11 (45 %) patients at discharge. During follow-up [31 months (15-61)], only 3/11 (27%) remained with trivial residual shunt and 1/11 (9%) developed mild aortic valve regurgitation.

Conclusions

In our experience, transcatheter perimembranous VSDs closure with ADO II device can be safely and effectively done in children despite its proximity to the aortic valve. Larger series, encompassing more centers and longer follow-ups, are needed to assess whether this technique should be more broadly available as an alternative to the surgical repair.