

P-298

Interventional closure of perimembranous ventricular septal defects: Experience using the Amplatzer Duct Occluder II.

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Introduction: Interventional closure of perimembranous ventricular septal defects (pmVSDs) which are partially closed by an aneurysm remains controversial concerning AV-block. We report our experience using the soft Amplatzer Duct Occluder (ADO) II for pmVSD closure.

Methods: In five patients a pmVSD was closed between 4/2010 and 12/2011; age: 6 months – 8.6 years, pmVSD size 4-10 mm, formation of an aneurysm left an effective opening of 2.4 – 5.5 mm. Distance of pmVSD to aortic valve 3-5 mm. No patient had aortic insufficiency.

Results: Hemodynamic measurements: left to right shunt Qp/Qs 1.4-1.6/1; normal pulmonary artery pressures. Technical procedure of VSD closure was done via the classically described way forming a loop from the left ventricular side to the right side. Final closure was performed from the right ventricular side. The following devices were placed:

ADO II 4-4 mm in 1 patient, 5-6 mm in 2 patients, 6-6 mm in 1 patient and ADO II AS 5-4 mm in 1 patient.

24 hours post closure we visualised no residual shunts in all patients. None of the patients had aortic insufficiency or a remarkable AV valve insufficiency. No AV-block occurred. In 1 patient the right disk was deployed at the right atrial side. No tricuspid valve dysfunction occurred, device was left in place. One patient who was known with an intermittent AV block I pre catheter presented with a transient AV dissociation post VSD closure and a left anterior hemiblock and right bundle branch block 1 month after closure without any clinical symptoms. Total FU time was 1 – 20 months.

Conclusion: In our experience of 5 patients, pmVSDs with aneurysm formation can be closed with a good result using the Amplatzer Duct occluder II. A total closure rate of the pmVSDs could be reached. To avoid interference of the device with the tricuspid valve or a position of the right disc towards the right atrium, we recommend choosing the minimal device length needed. We might speculate that the ADO II device seems softer and less traumatic to the His bundle. Long term follow-up has to verify patency of AV-conduction.