

Transcatheter closure of ventricular septal defects with the off-label occlusion devices

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Background

Transcatheter closure of ventricular septal defects (VSDs) is increasing by the time. The most frustrating problem with closure of VSD is the complete heart block. So searching for different devices is ongoing and unfortunately there were no optimum device for this procedure yet. We present to evaluate the safety and efficacy of the off-label devices for the transcatheter closure of VSDs.

Method: Patients who underwent transcatheter VSD closure with off-label devices between 2014 and 2018 were reviewed retrospectively.

Results

VSD was closed in 30/31(96%) of the patients. Seventeen of the patients were boys and 13 were girls. The median age and weights of the patients were 4.8 years(1.4-23.6 years) and 17 kg (9-70kg) respectively. The localization of the VSD was perimembranous in 27 and muscular in 3 and 25/27 patient has ventricular septal aneurism. VSDs were closed with Amplatzer Duct Occluder (ADO)-I (n=15), Amplatzer Vascular Plug (AVP)-II (n=14), ADO-II (n=1). The median age was 3.1 years in the ADO patients, and 6.7 years in the AVP-II patients. The narrowest median VSD diameter on the angiogram was 5 mm (3-10.2mm). The median fluoroscopy time was 14.6 min (5.5-35.6 min). Patent ductus arteriosus (PDA) was also present in two patients was closed during the same session. Also the left ventricular-right atrial shunt decreased or disappeared in five patients after the procedure. In one patient procedure was unsuccessful due to the ventricular tachycardia when the arteriovenous loop was performed. No patient had complete atrioventricular block during the 20 months (1-55 months) follow-up period. Two patients had left bundle branch block and they are still under follow-up. Three patients were followed due to the mild residual shunt across the device, and 1 to 10 months after the procedure all the residual leak was disappeared.

Conclusion

Some devices can be used off-label for transcatheter VSD closure in selected patients. ADO-1, ADO-2 and AVP-2 seems an effective and safe treatment option in selected patients. Because of the fact that these devices are more flexible and softer than the other devices and also no disks on the right ventricle side may lead to less rhythm problems.