

Unpredictable ducts – experience in transcatheter closure of Patent Ductus Arteriosus in children born prematurely.

Zubrzycka M., Brzezińska-Rajszyś G., Rewers B., Koleśnik A., Daszkowska-York J., Turska-Kmieć A., Ziółkowska L., Kawalec W.

The Children's Memorial Health Institute, Warsaw, Poland

Background

Transcatheter closure of large tubular Patent Ductus Arteriosus (PDA) is technically demanding procedure, with significant risk of device embolization, and possibility of ductal spasm occurrence.

Material and methods

Retrospective analysis of 971 transcatheter PDA closures performed in single Institution was done to select patients with large, tortuous tubular ducts. This type of duct was found in five children born prematurely (28-30 hbd). Age at the procedure was 18-52 mths (med. 37), body weight was 12-18 kg (med. 16). Diameters of the ducts ranged from 2.5 to 7.4 mm (med. 6.4) at the pulmonary end, and from 4 to 9 mm (med. 8.4) at the aortic end, length of the ducts ranged from 12 to 16mm (med. 14.5). Procedures were performed from the femoral artery approach. Amplatzer Duct Occluder II (ADOII, 9-PDA2-04-06, AGAMedical, Plymouth, MN, USA) was used in 4 children, detachable coil (MReye Flipper Detchable Embolization Coil, IMWCE-5-PDA5, CookMedical) in one.

Results

In two children spasm of the duct occurred during the procedure. In one of them initial aortography revealed no shunt, and it was not possible to cross the duct with the wire. Due to significant flow through the duct in control echo next day after the procedure, child was readmitted for PDA closure three months later. Twelve mm long, 2.5-4 mm wide duct was closed during second procedure with Flipper coil (IMWCE-5-PDA5, CookMedical). In second child aortography showed PDA type A (diameter at the pulmonary end 0.5 mm, diameter of ductal ampulla 3.5 mm). Flipper coil (IMWCE-3PDA4, CookMedical) was chosen. Due to unexpected change of duct morphology coil could not be positioned properly. Control aortography revealed 15 mm long, 9 mm wide duct, which was closed successfully with ADOII. In reminder three children duct was uneventfully closed with ADOII. Complete occlusion was achieved in all cases.

Conclusions

1. Large tortuous tubular duct in children born prematurely is associated with high incidence of ductal spasm during the procedure (two of five cases).
2. Spasm of the duct may result in procedural failure, or improper occluder selection.
3. ADOII is an useful device for closure of large tubular ducts.