

25-year experience in percutaneous treatment of patent ductus arteriosus with different types of devices

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Introduction

Transcatheter closure has become a method of choice in treatment of patent ductus arteriosus (PDA). Different types of occluders have recently evolved. We present our own experience in this field.

Methods

Retrospective review included procedural data and one-year follow-up of all 974 patients (pts, 64.9% females) in whom transcatheter PDA closure was attempted between September 1993 and September 2018 at a tertiary referral centre. Median age and weight were 4.2 years (0.3-84.5) and 17.5 kg (3.9-136). We applied Rashkind device in 25 pts (R; 2.6%), detachable coil in 464 pts (C; 47.6%, multiple in 10 pts), Amplatzer duct occluder: type I or type I-like in 287 pts (ADO I; 29.5%), type II in 26 pts (ADO II; 2.7%) and type II additional sizes in 156 pts (ADO II AS; 16%). Other devices were used in special cases (16 pts; 1.6%).

Results

In PDA type A mainly ADO I were used and in types D and E coils, which were replaced with ADO II AS after introduction in 2014. Success rates were 88% for R, 96.8% for C, 96% for ADO I, 100% for ADO II and 99.4% for ADO II AS. There were 1 embolization in R group (4%), 7 in C (1.5%) and 1 case of iatrogenic coarctation of aorta with ADO II. Complete occlusion rate at 24 hours and a year after were, respectively, 77.3 and 86.4% for R, 83.3 and 91.8% for C, 96.5 and 100% for ADO I, 90.5 and 100% for ADO II and 98.1 and 100% for ADO II AS. 3 pts with R (13.6%) and 15 pts with C (3.3%) with residual shunt needed reintervention with coils. Amplatzer/Starflex septal occluders in PDA type B (n=7), muscular ventricular occluders in pts with pulmonary hypertension (n=6) and vascular plugs in PDA type D (n=3) were used with good clinical outcome. Fluoroscopy time was significantly shorter in ADO II AS (p=.000).

Conclusions

During last 25 years percutaneous treatment of PDA has significantly improved due to devices' development and diversity. Nowadays they are safe and efficient with high complete occlusion rate in all PDA types.