Transcatheter atrial septal defect and patent foramen ovale closure experiences in children, evaluation of short, intermediate and long term outcomes

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Objectives: In this study, we aimed to evaluate transcatheter atrial septal defect (ASD) and patent foramen ovale (PFO) closure experiences, short, intermediate and long term results and investigate the effects of different methods on procedural success and complications.

Methods: After the reviewing of archive records for transcatheter ASD or PFO closure procedures between 2000-2013, 506 cases included for study, of 90 cases files that containing data about follow-up and diagnosis before the procedure could not be reached. Patients and procedural characteristics, post-procedural follow up datas were evaluated.

Results: Male:female ratio was 1:1.3, mean age and weight was 8.6±5.8 years and 28.9±16.4 kg respectively during procedure, mean follow-up period was 6.05±3.7 years (1 month – 13.5 years). Mean procedure and fluoroscopy duration was 61.5±23.5 and 7.8±6.7 minutes respectively. The procedures were performed under transthoracic echo (TTE) guidance in 90 (17.8%) cases, balloon sizing used in 214 (42%) cases. Pulmonary hypertension was observed in 67 (16%) cases. Within closure attempted 416 cases, the procedure was successful in 401 (96.3%). Procedure-fluoroscopy durations were shorter, defect and device sizes were smaller in successful group than unsuccessful group (p<0.05). The presence of deficient rim and use of “balloon sizing” were not influential on procedural success. In balloon sizing group, longer procedure-fluoroscopy duration and lower total septum/device ratio were observed (p<0.05). In selected cases, it was found that TTE guidance shorten the procedure-fluoroscopy duration (p<0.05). Residual shunt was seen in 32.4% and 0.9% of patients immediately after procedure and at the end of the follow-up respectively. Major (rescue surgery, thrombus, erosion) and minor (most frequently rhythm disorders) complications rate were %1.4 and %1.8 respectively. No embolisation and mortality were observed. Benign holter abnormalities were observed in 7.7% of patients.

Conclusions: Transcatheter ASD and PFO closure is a safe and effective method. Reducing the fluoroscopy time and not requiring general anesthesia are the additional advantages of the defect closure with TTE guidance in the presence of sufficient rim and centrally localized defect.