Midterm Outcomes of Transcatheter Closure of Atrial Septal Defect Using the Amplatzer Septal Occluder in Children

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Abstract

**Purpose:** This study reports the clinical experience and midterm outcomes of transcatheter closure of secundum atrial septal defect with the Amplatzer septal occluder in children. **Methods:** From April 1998 to June 2002, 41 children (male = 14) with a median age of 11.0 years (range = 3.2-18.9 years) and median weight of 31.5 kg (range = 13.5-65 kg) underwent transcatheter closure of secundum atrial septal defect using the Amplatzer Septal Occluder after a detailed pre-implantation evaluation. The procedures were performed under general anaesthesia with fluoroscopic guidance and transesophageal echocardiographic monitoring. The size of the device deployed was determined by the balloon-stretched diameter of the defect. Patients were followed for any residual shunts and possible complications. **Results:** The mean diameter of atrial septal defect measured by transesophageal echocardiography was 14.3±4.1 mm and 19.2±4.7 mm by balloon-stretched diameter. The mean device diameter was 19.2±4.7 mm (range = 11-30 mm). The mean fluoroscopy time was 17.3 minutes (range = 7.4 to 30 minutes) and the mean procedure time was 100 minutes (range = 35-190 minutes). All devices were successfully deployed. Two patients developed transient atrioventricular dissociation with spontaneous recovery. Complete closure rate at 24 hours, one week, one, 6 and 12 months were 83% [90% confidence limit (CL): 73-91%], 93% (90% CL: 84-97%), 95% (90% CL: 81-96%) and 97% (90% CL: 91-99%), respectively. The mean follow-up period was 46.5±18.6 months (range = 10.7-86.6 months). All devices were in stable position with no late complications. **Conclusions:** Transcatheter closure of atrial septal defect using the Amplatzer Septal Occluder is safe and effective in children. The midterm results are excellent. However, long-term follow-up is needed to ascertain the absence of possible late complications.

Key words

Amplatzer septal occluder; Children; Secundum atrial septal defect; Transcatheter closure

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Introduction

Surgical repair of secundum atrial septal defect (ASD) has long been proven to be a safe procedure with low mortality. However, morbidity related to cardiopulmonary bypass, post-pericardiotomy syndrome, arrhythmias, long duration of hospitalisation and permanent sternotomy scar can occur. Furthermore, cardiopulmonary bypass that is required in surgical closure may lead to adverse neurodevelopmental consequences in young children. Therefore, transcatheter closure of ASD has become a viable and attractive alternative to surgery.