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Percutaneous closure of atrial septal defect with Biodegradable atrial septal occluder in children

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Background: The Biostar septal occluder is a new transcatheter atrial septal defect occlusion device. This study analysis the data to determine the most significant factors is successful use of the device.
Methods: From October 2009 to January 2011, 34 patients (18 male) were catheterized to close an atrial septal defects with the Biostar in children. The age of the patients ranged from 2.5 to 13 (mean 6.7±3.4) years, the body weight ranged from 11-55 (mean 22.5±10.9) kg. Transesophageal echocardiography was performed simultaneously in 6 patients
Results: The device was successfully implanted in 93.7% (32/34) of patients, but had to be abandoned in 2 patients, because of deficient aortic rim. In one patient, two Biostar devices were used to occlude two separate atrial septal defects. The mean stretched diameter of the ASD was 13.1±3 mm, the mean device diameter was 29.8±3.2 mm. The devices were implanted in 24 patients with one hole secundum ASD, in 4 patients with 2-hole, in 3 patients 3-hole and in 3 patients with fenestrated ASD. The procedure was unsuccessful in one patient and the device had to be removed. There was one severe complication, because of the device embolization, the patient underwent semiurgent surgical intervention for device removal and ASD closure. The occlusion rates were with the Biostar 77.4% (24/31) after 24 hours, 96.8% (30/31) after 6 month.
Conclusion: The Biostar septal occluder is best suited for small to moderate atrial septal defects. Biostar is absorbed and replaced with healthy native tissue; future access to the left atrium may be achieved. Percutaneous closure of ASD ostium secundum type defects with the Biostar is safe and effective with high success rate and excellent mid-term outcome.