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Transcatheter closure of atrial septal defects in paediatric patients with the Nit-Occlud ASD-R device

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Objective. To describe our experience with the Nit-Occlud ASD-R (NOASD-R) device for percutaneous closure of ostium secundum atrial septal defects (OS ASD) in a paediatric population.
Methods. Retrospective observational study.
Results. From Feb 2014 to Nov 2018 sixty-six patients underwent attempted transcatheter OS ASD closure with the NOASD-R device. Implantation was successful in 65 patients (98.5%). In one of the patients a 20 mm device was deployed across the defect but the left disc did not expand adequately so it was not delivered. 41 patients were female with a median age of 5 years [ICR:3.7-9] and a median weight of 19.7 Kg [ICR:15.5-28.5]. The mean ASD diameter by TOE was 11.5±3.7 mm. Eight (12.1%) patients had multiple defects and the aortic rim was deficient in 19 (28.8%). The mean 2D diameter/weight ratio was 0.59±0.3 (median 0.53, ICR:0.35-0.82). The median fluoroscopic time was 7 min [ICR:5-11.7]. The median size of the devices was 14 mm [ICR:10-16]. The mean device size/2D diameter ratio was 1,19±0.18. Additional intervention was required in 4 (6.1%) patients. There were no major complications during the procedure. Minor complications happened in 4 (6%) patients; one had a supraventricular tachycardia, which resolved after mechanical stimulation of the atrium, 2 patients developed first and second-degree heart block which resolved spontaneously within a week and another patient had a femoral arteriovenous fistula. Twenty (30.3%) patients had low velocity residual flow through the device at the 24 h TTE. Two patients experienced small pericardial effusion after the procedure with complete resolution within a month. At a mean follow-up interval of 27.3±15.7 months complete occlusion was achieved in 64 (97%) patients and there have been no episodes of late embolization, erosion, endocarditis, neurologic events or death.
Conclusions. Closure of OS ASD with the NOASD-R device is safe and effective in the paediatric population. Most patients had short-term intra-device residual flow but the definitive closure rate is high. Implantation success is high with no major complications in the short and medium-term.