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Transcatheter Closure of Atrial Septal Defects and Patent Ductus Arteriosus using Cocoon Devices - single pediatric center experience

Mahmoud H. (1,2), Nicolescu A. (1), Filip C. (1), Bogdan A. (1), Nicolae G. (1), Duica G. (1), Cinteza E. (1,3)
"Marie Curie" Emergency Children's Hospital, Bucharest, Romania (1);
University of Damascus, Damascus, Syria (2);
"Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania (3)

Introduction:
Starting a new paediatric interventional cardiology program is not an easy task to accomplish. The tremendous need for treating children in order to reduce the morbidity and mortality in pediatric population with congenital heart disease was the main purpose for this project.
Methods:
Between June 2015 and October 2017, more than 150 cases of congenital heart diseases were diagnosed and treated in our department after initiating this new activity. For more than half of the cases we used Cocoon devices.
Results:
A total number of 83 patients were included in the studied group, 27 for atrial septal defect (ASD) closure and 56 cases for patent ductus arteriosus (PDA) closure. The median age for the ASD was 8.5 years (range 3-25 years) and median weight was 25 kg (range 11.5 – 63 kg). The mean follow-up was 15.4 ± 6.7 months (range 1-24 months). The mean ASD diameter by transesophageal echocardiography was 15.2 ± 4.1 mm (range 8-26 mm), and by balloon sizing 20.5 ± 5.2 mm (range 13.5-32 mm). The mean device diameter was 17.3 ± 5.6 mm (range 8-32 mm). The median age for the PDA was 36 months (range 4-192 months) and median weight was 14 kg (range 5-58 kg). The mean follow-up was 13 ± 8 months (range 1-26 months). The mean PDA minimum diameter was 2.5 ± 0.8 mm (range 1-5 mm). 12.6% were performed in cases associated with pulmonary hypertension. The success implantation rate was 98.9%. The complication rate was 2.3% (including two ASD device embolization in patients with less than 5 mm deficient posterior and inferior rim). The closure rate for ASD was 96.3% in the first 24 hours and 100% at 1-month follow-up. For PDA, the closure rate in the first 24 hours was 98.2% and 100% at 1-month follow-up. On short and intermediate follow-up (1-26 months) no device-related complications were noted.
Conclusions:
After this series of cases, the early and intermediate results are very encouraging. The Cocoon devices are safe for transcatheter closure of both ASD and PDA, also as initial experience in our developing centre.