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Transcatheter Occlusion of PDA in Extremely Premature Infants Weighting Less Than 1800 g: A Single-Center Experience

Chan K-C., Ruzmetov M., Jadotte M.M., Scholl F.G., Latson L.

The Pediatric Heart Institute, Joe DiMaggio Children's Hospital, Hollywood, FL, USA

Introduction: Patent ductus arteriosus (PDA) in premature infants continues to be a significant clinical problem contributing importantly to both morbidity and mortality. Surgical ligation and medical therapy both have their drawbacks. The aim of our study is to describe a single center experience with a new endovascular occlusion device Medtronic Micro Vascular Plug (MVP) used for transcatheter PDA closure in extremely preterm infants.

Methods: Between January 2018 and November 2018, 54 percutaneous PDA closures were done in our Center. Sixteen infants (30%) who weighed less than 1800 g were included in this retrospective study. Procedural details, complications, and short-term outcomes were recorded.

Results: Sixteen premature infants underwent attempted transcatheter PDA closure using the Medtronic MVP. The gestational age and birth weight were 25.0 ± 1.4 (range 24-29) weeks and 768 ± 251 g (range 440-1580), respectively. The mean weight and age at the time of the procedure were 1.32 ± 0.27 kg (range 920-1800) and 46.8 ± 14.3 days (range 24-68), respectively. The mean PDA diameter was 3.2 ± 0.9 mm. All ducts were tubular in nature. All devices were deployed via a 4F Glide catheter in prograde fashion without arterial access. Fluoroscopy and echocardiography were utilized for the procedure guiding placement of the PDA device. Mean fluoroscopy time and radiation dose were 7.5 ± 3.9 min and 15 ± 8.6 mGy, respectively. Initially heparin was given in 3 patients due to decreased pulse; currently heparin is given for all patients (10 units/kg/h for 24 hours) prophylactically. Complete closure was achieved in all infants with no procedural complications (including vocal cord dysfunction), pulmonary artery or aortic obstruction or death. There were no additional complications related to the procedure or noted during short-term follow-up (mean, 130 ± 96 days).

Conclusions: This preliminary study demonstrates that transcatheter PDA closure can be successfully performed in extremely preterm infants weighting less than 1800 g using the Medtronic MVP with a high success rate and a low incidence of complications. Transcatheter PDA closure may be an excellent alternative to surgery.