Transcatheter Occlusion of Patent Ductus Arteriosus (PDA) in Low-Weight Pre-term Neonates (< 2 kg) with Amplatzer Occluder II Additional Size (ADO-II-AS)

Gregorio Marañon General University Hospital, Madrid, Spain

Background: Transcatheter treatment of PDA in very small infants is technically challenging and therefore often not considered as an alternative to surgery when medical treatment fails. However thoracotomy may cause pulmonary contusion and long-term sequelae as scoliosis.

Objective: To describe our institutional experience with transcatheter PDA closure with ADO-II-AS in symptomatic low birth weight pre-term infants.

Methods: Retrospective review of all low birth weight pre-term infants who underwent device closure of PDA from January 2011-December 2012 with ADO-II-AS. Cases were selected based on the hemodynamic and respiratory repercussion of PDA, medical treatment failure (> 2 cycles of intravenous Ibuprofen), and weight > 1000g. The procedure was done under anesthesia and tracheal intubation. Femoral vein access in all cases (4-F sheath in 8 patients, 5-F in 1 patient), arterial access was obtained in 5 patients inserting a microcatheter (2.7-F) into the femoral artery without sheath for aortic angiography. Immediate results were assessed by echocardiography before the device release.

Results: Nine infants. Median follow up was 3 months (range 1-17 months) Gestational age ranged from 24-32 weeks (27+/2.34). The median weight at the time of procedure was 1536g (range 1000-1900g). Six patients were receiving mechanical ventilation before intervention. Type-A duct morphology was presented in seven patients and Type-C in two. The narrowest PDA angiographic diameter range was 1.23-2.94 mm (correlation coefficient with previous echo measurements of 0.95), descendant aorta size range was 2.65-3.60 mm., and PDA length range was 3.5-10.6 mm. The occluded device waist was 4 mm in all cases. Complete occlusion of the duct was instantly achieved in 7 patients, 2 patients had a small residual flow for 24 hours. Fluoroscopy time range; 5.6-27 min. One major procedure complication arose, device embolization in the left pulmonary artery, successfully removed. Two patients had moderate left pulmonary stenosis post-implantation, resolved during follow-up. Of the six patients who required mechanical ventilation, three were extubated in less than 10 days post-procedure.

Conclusions: The transcatheter closure of PDA with ADO-II-AS in carefully selected preterm infants is a safe and reliable alternative to surgical ligation.