Patent ductus arteriosus closure (PDA) by Amplatzer Duct Occluder II additional size (ADOIIAS) in premature infants less than 1500 grams.

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Objective : Treatment of PDA in micropremies less than 28 wks GA is a dilemma when medical treatment fails or is contraindicated. Conservative therapy and surgical ligation are other alternatives. Considering the complications of these treatments and the advent of ADOIIAS, we developed a program of PDA closure by interventional catheterism to close Hemodynamic Significant (HSPDA) in very preterm infants.

Methods : HSPDA was defined by high pulmonary blood flow and low organ blood flows and a tubular duct diameter>1.5mm/kg. Procedures were done in cath lab and babies anesthetized (ketamine-sufentanil-midazolam). A 4F sheath was inserted via the femoral vein and the Torqvue catheter positioned into the descending thoracic aorta. The ADOIIAS occluder was delivered under lateral X ray and ultrasound (US) guidance, without contrast injection. It was first used on four babies > 2kg. Results : fifteen infants were included. The mean birth weight was 788±162g (550-1400) mean gest age 26.55±1.55wks. In this series three infants presented pulmonary hemorrhage, nine renal failure, six were under mechanical ventilation and three pulmonary hypertension+nitric oxide. Mean weight at catheterization was 984±186g (680-1400). Mean age at procedure was 19±6days(10-44). Mean Procedure duration was 25±6min(15-40) and mean X ray exposure 11±5min(7-18). Mean DA diameter was 3.27±0.53mm (2.3-4.2) and length 4.66±0.93 (3-6). Fourteen ADOIISA were released 4x2(4), 4x4(3), 5x2(6), 5x4(1) mean waist diameter 4.5±0.5mm. Two were repositioned and two switched to a larger size due to instability and periprothetic shunt (DA diameter 3.5mm and waist diameter 4 to 5mm). Two transitional intraprothetic shunts were closed in the following days. Post procedure events : higher oxygen requirements, oligury (4) and diuretics, Pulmonary Hypertension (3 Nitric Oxide), one post closure syndrome, blood transfusion (3) Three infants died. One due to an hemopericardium which was drained (680g); One infant who was previously anuric, died ten days after the closure. One death, one month after the procedure, was due to a fulminant enterocolitis.

Conclusion : Interventional catheterism can be considered as an alternative to other treatments to close HSPDA with the ADOIIAS in very premature infants when combining X-ray and US.