Percutaneous duct occlusion in very low weight children: a safe and feasible alternative to surgical approach. Follow-up in 12 cases.

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Background
Pre-terms neonates and newborns with severe co-morbidities are nowadays a great challenge in neonatal ICU. From a cardiovascular point of view, patent ductus arteriosus (PDA) represents the most frequent cause of heart failure. Treatment options includes: medical therapy and/or surgical intervention. Surgery is safe but, involving a thoracotomy, carries morbidity and mortality. The risk rises considerably in those neonates with additional comorbidities. Catheter closure option can potentially overcomes several of these limitations.

Thanks to new materials with smaller profile, the great limit of vascular access caliber is overcome. We present our experience and follow-up in weight babies (≤ 3 Kg).

Materials and method:
From March 2012 to November 2014 we treated 12 newborns, weight ≤3Kg (mean 2.56 Kg) with percutaneous approach. All babies presented with relevant PDA and important co-morbidities: 8/12 preterms; 4/12 with severe broncodyplasia; 1/12 was previously operated of aneurysm of Galeno vein; 1/12 with congenital Rubella; 1/12 with diaphragmatic hernia; 3/12 had other congenital cardiac defects associated (ASD and VSD); 1/12 Trisomy 18 and another one affected by a plurimalfomation syndrome. In 8/12 patients medical therapy with indometacine was attempted: in four there was evidence of NSAID therapy complication, one of them had retinal hemorrhage.
All patients but one received furosemide, three were in ACE-I therapy and two children received sildenafil for broncodiesplasia and pulmonary hypertension.

Results:
We register no mortalities nor morbidity due to catheterization.
We used Amplatz Duct Occluder II Additional Size in 9/12. In three cases we used ADO II.
Mean fluoroscopy time was 15 minutes and mean contrast volume was 15 ml.
No residual shunt at the ultrasound was found.
Along follow-up there were 0 death. The heart failure therapy was stopped in all patients after procedure.

Conclusions: Thanks to materials improvement percutaneous occlusion of PDA in very low weight children is now feasible and safe alternative to the surgical gold standard.