

Fate of Duct-dependent, Discontinuous Pulmonary Arteries After Arterial Duct Stenting

Santoro G., Capozzi G., Gaio G., Palladino M.T., Giordano M., Fratta F., Mahmoud H.T., Di Nardo G., Carrozza M., Morelli C., Ricci C., Russo M.G.
Paediatric Cardiology, A.O.R.N. "Ospedali dei Colli", 2nd University of Naples, Naples, ITALY

BACKGROUND. Significant and balanced PA growth following AD stenting has already been consistently reported in literature. However, no data are so far available about the role of this approach as palliation of congenital heart disease (CHD) with duct-dependent dPA. Aim of this study was to evaluate the fate of discontinuous pulmonary artery (dPA) following trans-catheter arterial duct (AD) stabilization.

METHODS. Angiographic PA evaluation was performed in 7 patients submitted to neonatal AD stenting as palliative recruitment of dPA. Five patients showed discontinuity of one PA, while 2 patients had both PAs served by bilateral ducts. PA growth was evaluated as Nakata index, McGoon ratio as well as dPA (n=9) vs. heart-dependent PA (hPA)(n=5) size and z-score changes.

RESULTS. AD stabilization was performed using coronary stents dilated to 3.2 ± 0.3 mm (median 3.4), with significant increase of O₂ saturation (from 83 ± 11 to $95\pm 5\%$, $p<0.02$). Control angiography was performed 5.1 ± 2.8 months (median 6) after duct stenting, showing significant growth of dPA (from 3.7 ± 1.0 to 7.6 ± 2.7 mm, $p<0.001$; z-score from -0.7 ± 1.4 to 1.7 ± 2.2 , $p<0.01$). A trend toward a better growth of dPA as compared to hPA was found ($117\pm 87\%$ vs. $54\pm 34\%$, $p=NS$). The final vessel size was still significantly different between the groups (dPA 7.6 ± 2.7 vs. hPA 11.9 ± 3.4 mm, $p=0.02$), although the final z-score value did not significantly differ (dPA 1.7 ± 2.2 vs. hPA 3.8 ± 0.9 mm, $p=NS$).

CONCLUSION. In conclusion, percutaneous AD stenting is effective in promoting a significant catch-up growth of duct-dependent dPA, being therefore advisable as a reliable alternative to surgical palliation.