Recanalisation of completely occluded left pulmonary arteries

Tzifa A. (1), Papagiannis J. (1), Qureshi SA. (2), Sarris G. (3), Rosenthal E. (2)
Paediatric Cardiology Department, Mitera Children’s Hospital, Athens, Greece (1)
Paediatric Cardiology Department, Evelina Children’s Hospital, Guy’s and St Thomas’ Hospital, London, UK (2)
Paediatric Cardiac Surgery Department, Mitera Children’s Hospital, Athens, Greece (3)

Objective: Total occlusion of pulmonary arteries is a rare and serious complication after congenital heart disease surgery. We sought to assess the technical difficulties, different access approaches and results of left pulmonary artery (LPA) recanalisation in a group of patients with complete occlusion.

Methods: Review of the medical and cardiac catheterisation data of 3 patients with postoperative LPA occlusion. Patient 1 had tetralogy of Fallot with pulmonary atresia and had undergone complete repair with a Contegra conduit. One year post-repair she was found to have complete LPA occlusion. Patient 2 had Fallot with pulmonary atresia and major aortopulmonary collaterals. She underwent unifocalisation and central shunt placement; 8 days later the LPA was found to be occluded. Patient 3 had univentricular heart anatomy and had undergone a Glenn shunt; on the pre-Fontan catheterisation the LPA was found to be completely occluded. Procedural details, complications and mid-term outcome were recorded.

Results: All three patients had successful LPA recanalisation and stenting. Approach was an open hybrid procedure with placement of a sheath in the distal part of the Contegra in patient 1 (age 2yrs, 12kg), percutaneously through the left axillary artery in patient 2 (age 4months, 3.5kg) and percutaneously through the right internal jugular vein in patient 3 (age 4yrs, 16kg). Pulmonary venous wedge angiograms were used in all patients to delineate the distal LPA segment and served to guide the recanalisation process. Creation of a track was performed with small diameter balloons after passage of a 0.014” guide wire and establishment of a vessel lumen was achieved with the placement of premounted Genesis stents. No complications were encountered. All patients are well at 0.5–3yrs follow-up. Stents are still in situ and functioning well in two patients. In patient 2, the stent was removed at complete repair and the LPA was reconstructed with a Goretex tube.

Conclusion: Postoperative branch pulmonary artery interruption is a rare and serious complication. An attempt to recanalise the vessel should be made as soon as it becomes apparent, in order to ensure that the thrombosed lumen can be safely accessed and stented.