

Transcatheter Takedown of the Failing Fontan

*Penford G., Chaudhuri M. Khan N. Mehta C. Stumper O.
The Heart Unit, Birmingham Children's Hospital, Birmingham, UK*

Case 1 underwent staged palliation of tricuspid atresia and truncus arteriosus. Lateral tunnel Fontan was performed at 18 months due to cyanosis secondary to arteriovenous malformations. He returned 2 weeks post Fontan with pleural effusions. Despite fenestration stenting, he developed profuse drainage, low cardiac output and renal failure. He was unlikely to survive to transplant. At catheterisation, a Rashkind balloon was used to interrogate the lateral tunnel for occlusion device sizing. This was then used to control SVC return, permitting fenestration stent dilation to 14mm. A 12mm Amplatzer muscular VSD device was then deployed into the proximal tunnel. The patient had an embolic stroke post procedure but recovered to extubation. He continues to require peritoneal dialysis and oxygen, his neurology has recovered, he was discharged home. He has since been assessed as unsuitable for cardiac transplant due to renal failure.

Case 2 underwent staged palliation of hypoplastic left heart syndrome. He acutely failed after extra-cardiac fenestrated Fontan with low cardiac output. Catheterisation at <24hours in hybrid theatre revealed Fontan pressures of 24mmHg. A sheath was placed directly via the right atrial appendage and the fenestration was stented to 10mm. The conduit was oversewn with two layers of continuous proline between two clamps, a third of the diameter of the conduit was occluded with a Ligaclip. Pleural drain losses continued, after 4 weeks he underwent further dilation of the fenestration stent to 15mm. Renal and hepatic function recovered, he was extubated after 6 weeks and drains were removed. He is now weaning off oxygen, mobile and referred for cardiac transplant.

Transcatheter takedown of Fontan may remove some of the mortality associated with further cardiac bypass. Consideration should be made to thrombus formation in the 'dead space' between a fenestration and a conduit occlusion device. In the early failing Fontan, this newly described 'Hybrid' approach may be preferred, it may also act to preserve the potential lumen of the extra-cardiac conduit for future attempts at transcatheter recanalisation to Fontan circulation.