it was 250 ± 285.5 days (P = 0.677). When assessing only patients under 35 kg the mean weight at intervention was 11.3 ± 9.1 for the surgical group and 13.0 ± 6.8 for the stented group (P = 0.532). Fifty-three percent (9/17) of the surgical cohort, and 15% (3/20) of the stented cohort required re-intervention (P = 0.014). The average time to re-intervention remained the same as above.

Conclusion: Children undergoing primary surgical branch pulmonary arterioplasty are more likely to require re-intervention than those undergoing stent placement. There was no significant difference in the time to re-intervention between the cohorts.

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SUCCESSFUL TRANSCATHETER PERFORATION OF PULMONARY VALVE USING THE HIGH-PENETRATION GUIDE WIRE USED FOR CHRONIC TOTAL CORONARY ARTERY OCCLUSION (CTO WIRE) AND 2.7 FRENCH MICRO-CATHETER WITHOUT REACHING THE TIP OF 4 FRENCH GUIDING CATHETER ONTO PULMONARY VALVE IN PULMONARY ATRESIA WITH INTACT VENTRICULAR SEPTUM: TWO CASE REPORTS

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Background: Sometimes it is very difficult to deliver the tip of 4 or 5 Fr guiding catheter onto pulmonary valve in procedure of antegrade perforation of pulmonary valve in pulmonary atresia with intact ventricular septum (PAIVS).

Case 1: 16 days old neonate with PAIVS. Body weight was 3.5 kg, end-diastolic volume of right ventricle was 8.1 ml (110% of normal) with tripartite portion (Alwi group A). Diameter of pulmonary valve was 7.8 mm in measurement of lateral angiography of main pulmonary artery. There was no sinusoidal communication. At first, we put a retrograde snare catheter (EN Snare, Merit Medical systems Inc. USA) onto pulmonary valve as a landmark to grasp precise position of pulmonary valve, and for snaring the wire after perforation of pulmonary valve, from 4 Fr femoral artery introducer sheath through a patent ductus arteriosus. We tried to deliver the tip of various types of 4 Fr guiding catheter onto pulmonary valve through the femoral introducer sheath, but any guiding catheter did not reach to valve. Finally, we put the tip of 4 Fr guiding catheter (Amplatz II Judkins Right, Technowood Inc. Japan) at proximal side of right ventricular outflow tract as a supportive catheter. Subsequently, we used 2.7 Fr micro-catheter (Akatsuki, Cathex Inc. Japan) through the guiding catheter, using 0.014 inch micro-wire (014 Begin PLUS, ASAHI INTECC inc. Japan) as a guiding, and succeeded to deliver a tip of AKATSUKI onto pulmonary valve. We exchanged a micro wire to chronic total coronary artery occlusion (CTO) wire (Astato XS 9-12, ASAHI INTECC Inc. Japan), and were able to perforate pulmonary valve using slowly twisting maneuver with torque. After successful perforation, AKATSUKI slid into main pulmonary artery. We exchange the Astato to 0.014 inch long stiff wire. EN Snare retrieved the wire and exteriorized through the right femoral introducer sheath, and fixed in place with clamps at its soft tip ends (arteriovenous railway technique). Progressive percutaneous transluminal pulmonary valvuloplasty was done from a diameter of 2.0 mm to a maximum diameter of 8.0 mm. Reduction in the right ventricular pressure was from 76 to 48 mm Hg.

Case 2: Four days old neonate with PAIVS. Body weight was 3.6 kg, end diastolic volume of right ventricular was 6.4 ml (76% of normal) with tripartite portion (Alwi group A). Diameter of pulmonary valve was 6.9 mm. It was also impossible to deliver the tip of guiding catheter onto pulmonary valve, we put the tip of guiding catheter (GLIDECATH II COBRA, TERUMO Inc. Japan) in trabecular portion of right ventricle, and delivered only AKATSUKI to pulmonary valve without using a micro-guiding wire, and made perforation of valve using CTO wire (Astato 30, ASAHI INTECC Inc. Japan). With the same subsequent procedure, pulmonary valvotomy was successful. Reduction in the right ventricular pressure was from 96 to 30 mm Hg.

Discussion: The Astato 30 is a high-penetration guide wire specially designed with tapered hydrophobic tip and 30 g tip load (Astato XS 9-12 is 12 g tip load) for the lesion of CTO. Although radiofrequency valvotomy has become the standard of primary care of PAIVS, it is not permitted to use in Japan, and the feasibilities of CTO wire for valvotomy have been reported recently from some institutions. It is necessary for safe perforation of pulmonary valve that the tip of guiding catheter should reach to the valve with stability. But sometimes it is very difficult, because of great morphological variability in PAIVS, such as enlarged right atrium, small diameter of tricuspid valve, and trabeculation of right ventricle. It should be feasible procedure to use the combination of antegrade micro-catheter and CTO wire for penetration of pulmonary valve in PAIVS, under the condition that guiding catheter dose not reach to pulmonary valve.

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PALLIATION OF OBSTRUCTED INFRADIAPHRAGMATIC TAPVR IN SINGLE VENTRICLE HETEROTAXY VIA DUCTUS VENOSUS STENTING

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Two single ventricle patients with heterotaxy and infradiaphragmatic total anomalous pulmonary venous return (ID-TAPVR) underwent transcatheter palliation with stenting of the DV (Ductus Venosus). A third case involving DV stenting in a biventricular child with obstructed ID-TAPVR and coarctation was also palliated in this fashion. Records of all three cases of DV stenting were reviewed retrospectively. The two children with single ventricle (SV), heterotaxy, and obstructive ID-TAPVR were diagnosed prenatally by ultrasound and MRI. Both infants were delivered next door to the cardiac catheterization laboratory by C-section with surgical standby. Angiograms and echocardiogrmas were performed to assess the ductus venosus and verticle vein (VV) anatomy. The DV was crossed using coronary wires and a 5 Fr sheath was placed across the DV via the UV. Four, 4.5 and 5 mm coronary multilink ultra stents were used to stent the DV. All cases were technically successful and the DV was successfully stented open in all neonates. In both cases, heterotaxy, SV, the oxygen saturations improved acutely by 30–40% (pre-stent 50–55%, post 85–90%) and venous congestion on CXR resolved. In both cases, the patients went on to have successful semi-elective TAPVR repairs with BT shunts, without venous congestion at the time of repair. Stenting of the DV can successfully palliate obstructed ID-TAPVR. This can be especially useful in SV patients with obstructed TAPVR as it allows for surgical shunt placement or stenting of the DV electively and without pulmonary venous congestion. The course of the VV and cause of obstruction must be well defined as stenting of the DV does not always relieve and can even worsen the obstruction. In some cases, a jugular approach may be needed. Angiogram showing the venous return to the heart via the narrowed ductus venosus with notable pulmonary congestion (A). Angiogram after successful stenting of the ductus venosus with significantly less pulmonary congestion and appropriate blood return to the heart (B).