

Salvage of a fractured pulmonary artery stent using in-stent re-stenting technique



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Background/Objective of intervention

In-situ fracture of pulmonary arterial (PA) stents are relatively common occurring in approximately 20% of patients. We describe our experience of salvaging a complete in-site fracture of PA stent using a stent-in-stent technique emphasizing key safety checkpoints.

We describe a seven-year-old girl with an underlying diagnosis of pulmonary atresia intact ventricular septum (PAIVS) who had undergone and right ventricular outflow tract reconstruction and tricuspid valve repair in the neonatal period. She developed left pulmonary artery (LPA) stenosis and received placement of Iron-based Bioresorbable Scaffold (IBS) Angel 12 x 18mm stent in November 2022. A routine fluoroscopy which is part of post IBS stent deployment follow up revealed presence of a fracture of the stent in June 2023. There was no echocardiographic evidence of LPA obstruction and chest radiograph confirmed no distal embolization of the stent.

Description of procedure

We intended to salvage the fractured stent via in-stent re-stenting technique. This was to allow a non-invasive method to rehabilitate the LPA as well as to prevent migration of the fractured segment. Due to bifemoral vein occlusion, a right internal jugular approach was used.

With the aid of 4 French Judkins right (JR) catheter, the fractured stent was crossed with a Terumo wire. This was exchanged for Hi-Torque Balanced Middle Weight (BMW) wire and CHOICE PT wire for additional support. To confirm luminal passage of the wire, we passed a Trek coronary balloon catheter 3.5 x 12 mm which confirmed passage through the lumen and not strut.

Then, we exchanged the coronary wires for an Amplatz 0.035" stiff wire on which a seven French Mullins catheter was introduced. A CID-Isthmus 10 x 19mm stent was chosen and delivered to the desired position via fluoroscopy to overlap the fractured segment. Following stent deployment, we noted presence of a gap to the inner surface of the previous stent. Hence, we performed a post dilation of the stent using Medtronic Admiral Xtreme Balloon 12 x 40mm to fix the stent position against the previous stent. Final angiogram showed good positioning and apposition of the new stent across the stenosed segment as well as good capture of the 2 segments of the fractured stent ensuring its stability.

Results & Conclusion(s)/Learning Point(s)

We demonstrated a feasible and safe method of salvaging an unstable fracture of PA stent using the stent-in-stent technique. This allows for a quick recovery without the need for a redo surgery for retrieval of fractured migrated segments. Routine radiographic follow up for this complication in the early post-discharge period is warranted.