



STAGED LPA STENTING WITH BIODEGRADABLE IRON STENT IN A YOUNG CHILD

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History and Physical:

We describe a young child with left pulmonary artery (LPA) stenosis after arterial switch operation and implanted with a biodegradable iron stent.

FQ was diagnosed d-transposition of great arteries (d-TGA), intact ventricle septum and moderate pulmonary stenosis, which was diagnosed upon born and underwent arterial switch operation with Lecompte maneuver at age of 2 months.

He developed severe LPA stenosis on subsequent follow-up echocardiograms which was confirmed with computed tomography of pulmonary arteries (CTPA). Clinically, he appeared dysmorphic, had baseline tachypneic, left bronchomalacia and was prescribed with home CPAP. His saturation was 97% and ejection systolic heart murmur was heard.

Imaging:

The echocardiogram at age of 6 months showed severe proximal LPA stenosis measured 3 mm with peak gradient of 57 mmHg. This finding was further confirmed by CTPA with proximal LPA 2.7 x 3.7 mm, mid 5.2 x 4.5 mm and distal 3.4 x 2.9 mm; RPA was 7.4 mm.

Indication for intervention:

Proceeded to LPA stent implantation at age of 8 months with body weight 7.9 kg. Biodegradable iron stent (IBS Angel™, LifeTech Scientific Corporation) was chosen for its thin strut for small vessel, degradable and hence the ability to adapt to the child's growth.

**Intervention:**

The LPA stenting procedure was performed in the usual antegrade approach from femoral vein access. The findings of severe LPA stenosis was confirmed with angiograms, with proximal LPA 1.74 mm, length 14 mm before branching and distal LPA 4.27 mm. The LPA was predilated with coronary balloon 2.5 mm x 12 mm followed by implantation of IBS Angel™ 4 x 15mm. And the final angiogram showed an improved proximal LPA's diameter of 4.3 mm.

Re-stenting of LPA was performed after 8 months of first stent implantation (age 16 months old, body weight 10.3 kg). Similar approach utilized and angiograms showed severe proximal LPA stenosis of 1.6 mm, distal LPA 3.7 mm and length of stenosed vessel 18.9 mm. The previous LPA stent was predilated with coronary balloons 3.5 x 20 mm and then 4.5 x 20 mm followed by implantation of IBS Angel™ 6 x 23 mm via 7 Fr long sheath over the super stiff guide wire. The LPA's stent flow was good and its diameter increased to 5.6 mm.

Learning points of the procedure:

Stenting of the LPA may provide a more predictable result compared to balloon angioplasty.

However, stenting may limit the growth of the vessel and there will be a limit to balloon dilatation of the stent to adult size. Re-stenting with a bigger stent and breaking the smaller stent is not safe in a patient who had a Lecompte maneuver. Stent erosion and fistula formation had been reported.

The biodegradable iron stent is advantageous in this patient with progressive stenting to a bigger stent in a growing child without the difficulty of breaking the smaller stent.

A biodegradable stent has the theoretical advantage of reducing the risk of stent erosion.