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Percutaneous treatment of complex aortic coarctation and aortic arch hypoplasies with Cheatham Platinum stents

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Background

Transcatheter stent implantation (SI) is widely considered as the first-choice treatment of aortic coarctation in adolescents, adults and children over a certain weight. However the procedure is still challenging in complex anatomic variations such as sub-atretic obstruction or isthmus atresia, arcus aorta lesion, long-segment aortic hypoplasia or in the case of coexistence of aneurysm or in Turner syndrome.

Method

Between August 2007 and December 2011 totally 79 stent implantation was performed in 74 patients with aortic pathologies. Safety and efficacy of the procedure was retrospectively evaluated in 25 patients with coarctation having different features than standard coarctation. In 9 patients coarctation was associated with PDA. The lesion was in transverse aortic arch in 3 cases. In 2 patients with isthmus atresia SI was performed after guide wire perforation and balloon dilatation. In 6 patients with sub-atretic coarctation predilatation had to be done before SI since the severe obstruction did not let the passage of long sheath or even the catheter. The lesion was aneurysmatic in three cases. A patient had a very long coarctation segment and the other had clinical features of Turner syndrome.

Results

Stent implantation was successfully completed in all cases. 29 Cheatham platinum stents (NuMED, Hopkinton, NY) were used in 25 cases. Mean age 15.82 ± 7.9 years (4.2- 38 years) and mean weight was 50.8 ± 21.6 . Covered stents were used in all cases except in three patients with aortic arcus lesion. Mean pressure gradient dropped from 43.5 ± 23 to 2.7 ± 3.2 mmHg. There was no residual leak in patients with PDA. Aneurysmatic lesion was completely covered in 3 patients. The mean follow up duration was 23.5 ± 12.3 (2-46), median 25 months (2-46 months). There was no procedure related death.

Conclusion

Our results showed that transcatheter SI is safe and effective in “complex” form of aortic coarctation. Since each case may require different technical approaches it is recommended to display detailed anatomical features before procedures.