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Midterm experience with a novel PTFE-tube covered cobalt-chromium stent in pediatric and adult patient with coarctation of the aorta

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Objective: Treatment of coarctation of the aorta (CoA) by either ballooning or stent implantation is a recommended treatment form in children and adults. It may include subatretic, aneurysmatic, surgical or interventional pre-treated aorta, where the use of a covered stent is favorable in order to prevent dissection, aneurysm or rupture.

Methods: We report our midterm experience with the use of the novel ePTFE-tube covered cobalt-chromium stent (BeGraft, Bentley, Germany) for aortic stentgraft implantation during 01/2017 until 08/2018.

Results: Seventeen patients were included in this study with a median age of 17.8 (3.8–49) years. Ten (58%) out of these patients were below 18 years of age and seven (41%) had a pretreated CoA (by either surgery or intervention). One patient received a bypass (Art. carotis to subclavia) 3 month prior intervention. The median weight was 55.8 (18-101) kg. Pre-catheterization imaging was performed with either MRI or CT and guidance of the catheter procedure by image fusion software was used with 3D overlay. All stent were successfully implanted: 4x 12/29, 2x 14/29, 1x 14/59, 1x 16/38, 2x 16/48, 1x 20/48, 2x 22/48, 3x 24/48mm through a 9-14Fr. sheath. Rapid pacing was performed in two, post dilatation in 7 patients with high pressure balloon (12-22mm) in order to achieve a post gradient < 5mmHg. Dysfunction (aneurysm, residual gradient, dislocation) was excluded during follow-up by using echocardiography, X-ray, RR-measurement or imaging (CT/MRI) at 3, 6 and 12 month. The median event free follow-up time was 0.72 (0.1–1.64) years.

Conclusion: This is the first report on a larger cohort with aortic stent-graft implantation in native or pre-treated CoA with the use of a pre-mounted cobalt-chromium stent-graft covered with micro-porous ePTFE tubing, since the stent received CE-mark approval in 12/2016. The pre-mounted stent showed a good radial force, reliable coverage, adequate adaptation to complex anatomy and promising function during midterm follow-up time in children and adult patients. Additional data is still necessary in order to demonstrate efficacy and long term performance of this stent.