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Endovascular stent implantation for coarctation/recoarctation of the aorta

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Objectives: Endovascular stents have been used recently in coarctation (CoA) /recoarctation as an alternative method to surgery or balloon angioplasty (BA). The aim of our study was to evaluate our results of endovascular stent implantation.

Methods: We studied retrospectively the data between 2006 and 2012 regarding the types of previous invasive procedures, the types of endovascular stents, the change of invasive/noninvasive peak systolic gradient and antihypertension therapy after stent implantation.

Results: Twenty-one patients with CoA (11 native and 10 re-coarctation after surgery or BA) with a mean age of 17 yrs (range 12-54) underwent stent implantation. The types of previous surgical repairs were patch aortoplasty of 7, subclavian flap of 2 and end-to-end anastomosis of 1. The ratio of bare/covered stent were 6/15. Peak systolic pressure gradient decreased from $42,20 \pm 20$ (18-88) mmHg to 5 ± 6 (0-22) mmHg ($p < 0.0001$). The peak velocity of descending aorta measured by echocardiography decreased from $3,7 \pm 0,6$ to $2,5 \pm 0,5$ m/s ($p < 0,0001$). Three patients developed complications, including two patient after bare stent implantation with small aorta rupture. One of them required surgical treatment, the other one healed without any procedures. Another patient developed a small femoral arteriovenous fistula which resolved after conservative therapy. Follow-up for 20 ± 16 months the noninvasive peak systolic pressure gradient decreased from 52 ± 21 (20-90) mmHg to 16 ± 18 mmHg ($p < 0,0001$). At their last follow-up visit, 19 from the 20 patients with hypertension remained on antihypertensive medications.

Conclusions: The blood flow dynamics in the coarctation of the aorta could be successfully managed with endovascular stents, although the patients remained on antihypertensive therapy in lower doses. Major complications occurred only with bare stent implantation. The ratio of patch aortoplasty among recoarctation were high.