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Surgical versus percutaneous stenting treatment of isolated aortic coarctation: long-term follow-up.

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Objectives: We sought to compare long-term outcomes of surgical versus percutaneous stenting strategies for aortic coarctation (CoA) repair in a large cohort of pediatric and adult patients.

Methods: We identify 212 patients ($20 \pm 8,7$ yrs, 72% male, 47% <18 yrs of age) with isolated CoA with median follow-up of 17 years after aortic repair. Patients were divided into 3 groups: 139 (median age at repair 39 days, 68% male) with single-time surgical repair (end-to-end anastomosis, patch angioplasty or subclavian flap) (CoA-S group), 18 (median age at repair 12 yrs, 56% male) with single-time percutaneous stenting (CoA-PS group) and 55 (median age at repair 23 days, 85% male) with recurrence of CoA who underwent multiple aortic procedures with or without balloon angioplasty (BA) intervention (CoA-H group). All subjects underwent 24-hour ambulatory blood pressure monitoring (ABPM) and trans-thoracic echocardiography.

Results: HTN therapy was observed in a significantly higher proportion (83%) of patients in the CoA-PS group, compared to 65% and 46% of CoA-H and CoA-S patients, respectively ($p=0.002$). Also, CoA-PS group exhibited a significantly higher proportion of mean daytime systolic BP values above 95th centile at ABPM (22% vs 6,5%, $p=0.045$). Echocardiogram revealed a higher median residual aortic gradient at the site of repair in CoA-H compared to CoA-S patients ($p<0.001$) and the number of patients with re-CoA gradient >20 mmHg was progressively higher in CoA-S (33%), CoA-PS (50%) and CoA-H (73%) groups ($p<0.0001$). At Kaplan Meier survival analysis, stent treatment was associated with significantly higher incidence of recoarctation (log rank $p<0.0001$) compared to other techniques. At multivariate regression Cox analysis adjusted for gender, age at CoA repair, BMI $>90^\circ$ and need for HTN therapy, aortic stenting was an independent predictor of echocardiographic evidence of recoarctation (H.R. 7,931, 95% CI 2,870-21,916 $p<0.0001$).

Conclusions: In our study, CoA stenting was independently associated with recoarctation during long-term follow up when compared to surgical procedures. Furthermore, patients with percutaneous stenting had lower blood pressure control at ABPM and higher need for antihypertensive therapy.