

Section A – Abstract 2 – 9:15 AM

Effect of Stenting Aortic Coarctation on Exercise Capacity: A Single-Center Case Series

Morriscal, Brandon D.; Anderson, Jason; and Taggart, Nathaniel W.

Department of Pediatric and Adolescent Medicine, Mayo Clinic, Rochester, MN

Introduction: In the last 15 years, stent placement has become a viable and safe alternative to surgical repair for native and recurrent coarctation of the aorta. Patients with coarctation of the aorta often have lower exercise tolerance, but there is no data regarding the effect of coarctation stenting on exercise capacity.

Purpose: We aimed to determine the effect of coarctation stent placement on exercise capacity.

Methods: We conducted a retrospective chart review of all patients who have undergone stent placement for native or recurrent coarctation of the aorta since 2000. We identified those patients who underwent exercise testing before and after stent placement. We compared measures of exercise capacity pre- and post-stent placement using a paired t-test.

Results: Among 48 patients who underwent coarctation stenting, 7 (mean age = 39, range 21-65 years) were found to have the necessary pre- and post-stent exercise data. Only one patient had native coarctation of the aorta. The peak-to-peak systolic gradient improved by a mean of 24 mmHg ($p < 0.007$) after stent placement. Collectively, functional aerobic capacity (FAC) among this group improved from a mean of 67% to 78% after stent placement ($p < 0.05$). There was also a trend toward an improvement in metabolic equivalents (METs) from a mean of 8.3 to 9.5 ($p = 0.05$). Six patients manifested an objective improvement in FAC and METs. One patient had no significant change in exercise capacity. The only patient who showed a decline in exercise performance had a mild coarctation prior to stent placement (peak systolic gradient = 11mmHg) and significant complicating comorbidities, including moderate mitral and tricuspid valve regurgitation). Excluding this patient from analysis results in an even more significant improvement in FAC from 69% to 83% ($p < 0.03$), and METs from 8.7 to 10.2 ($p < 0.03$).

Conclusions: Stent placement for relief of recurrent coarctation of the aorta results in an improvement in exercise capacity. This improvement may be limited in patients with less severe coarctation of the aorta or those with complicating comorbidities. Larger studies and longer-term follow-up is needed to better quantify this improvement and determine the lasting effect of coarctation stenting on exercise capacity.