

Surgical outcome of isolated aortic coarctation with or without tubular aortic arch hypoplasia

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Introduction: Coarctation of the aorta (CoA) can appear isolated or associated with tubular hypoplasia of the aortic arch (THAA). This study aimed to investigate potential differences in outcome between surgically repaired CoA patients with or without THAA.

Method: 44 patients with surgically repaired CoA (age 10 ± 5.5 years) were retrospectively evaluated at 7.1 ± 2.4 years of follow up, of whom 26 patients had isolated CoA and 18 CoA/THAA. 29 patients were treated through a lateral thoracotomy and 14 through median sternotomy. All CoA patients were compared by type of coarctation for aortic and left ventricular (LV) dimensions by echocardiography, blood pressure and reinterventions at latest follow up.

Results: Patients with CoA/THAA demonstrated a significantly higher corrected gradient across the aortic arch when compared to patients with isolated CoA (14.2 vs. 7.7 mmHg, $p=0.03$) at latest follow up. Aortic root and aortic arch dimensions were similar for patients after CoA and CoA/THAA repair, except for CoA/THAA patients having a larger sinus of Valsalva diameter (Z score 0.5 vs. -0.1, $p=0.02$). No significant differences were found in blood pressure and LV function for both groups. Three patients had aortic insufficiency in the isolated CoA group (2 mild, 1 moderate) compared to none in the CoA/THAA group.

Two patients in the isolated CoA group required reintervention (stenting and surgical aortic arch repair, respectively) vs. 2 patients in the CoA/THAA group (balloon angioplasty and stenting, respectively). Seven isolated CoA patients were hypertensive according to the AHA guidelines of the Task Force Report 2005, compared to 4 patients in the CoA/THAA group. Two isolated CoA patients used antihypertensive drugs compared to 3 in the CoA/THAA group.

Conclusions: Despite similar aortic and LV dimensions at late follow up, patients after surgical repair of CoA/THAA demonstrate an increased corrected gradient across the aortic arch when compared to patients after isolated CoA repair, posing an increased risk for future reinterventions.