

Myocardial bridges in a pediatric population: Outcomes following a standardized approach

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ABSTRACT

Objective: To describe clinical, functional, surgical, and outcomes data in pediatric patients with a myocardial bridge (MB) evaluated and managed following a standardized approach.

Methods: Prospective observational study included patients evaluated in the Coronary Artery Anomalies Program. Anatomy was determined by computed tomography angiography, myocardial perfusion by stress perfusion imaging, and coronary hemodynamic assessment by cardiac catheterization.

Results: In total, 39 of 42 patients with a complete evaluation for MB were included (December 2012 to June 2022) at a median age of 14.1 years (interquartile range, 12.2-16.4). Sudden cardiac arrest occurred in 3 of 39 (8%), exertional symptoms in 14 (36%), and no/nonspecific symptoms in 7 (18%) patients. Exercise stress test was abnormal in 3 of 34 (9%), stress perfusion imaging in 8 of 34 (24%), and resting instantaneous wave-free ratio ≤ 0.89 or diastolic dobutamine fractional flow reserve ≤ 0.80 in 11 of 21 (52%) patients. As a result, 15 of 39 (38%) patients were determined to have hemodynamically significant MB, 1 of 15 patients started beta-blocker, and 14 of 15 were referred for surgery. Myotomy ($n = 11$) and coronary bypass ($n = 1$) were performed successfully, resulting in improved symptoms and stress testing results. One patient required pericardiocentesis postoperatively, and all were discharged without other complications. At median follow-up time of 2.9 (1.8-5.8) years, all (except 2 pending surgery) were doing well without exercise restriction.

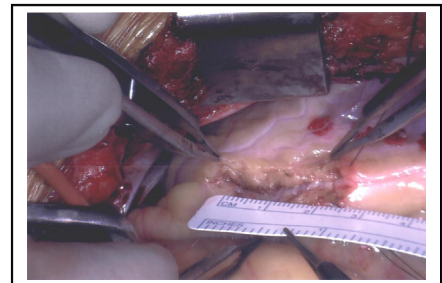
Conclusions: Pediatric patients with MB can present with myocardial ischemia and sudden cardiac arrest. Provocative stress test and intracoronary hemodynamic tests helped risk-stratify symptomatic patients with MB and concern for ischemia. Surgical repair was safe and effective in mitigating exertional symptoms and stress test results, allowing patients to return to exercise without restriction. (*J Thorac Cardiovasc Surg* 2024; ■:1-9)

Myocardial bridge (MB) is a congenital coronary anomaly characterized by a tunneled coronary artery surrounded by myocardium. A MB is identified in 33 to 42% of autopsies and 6 to 22% of patients undergoing

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Myocardial bridge in children: presentation, standardized approach, surgery, and outcomes.

CENTRAL MESSAGE

Myocardial bridges can present with myocardial ischemia and sudden cardiac arrest. Surgical repair appears to be effective in mitigating symptoms and normalizing functional tests.

PERSPECTIVE

Pediatric patients with myocardial bridges can present with myocardial ischemia and sudden cardiac arrest. Provocative ischemia and invasive hemodynamic tests can risk-stratify patients with exertional symptoms. Surgical repair appears to be effective in mitigating symptoms and normalizing functional tests. Long-term studies are necessary to determine whether surgical intervention improves outcomes.

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axial imaging.^{1,2} Although an MB is a benign anatomical variant in most patients, it has been associated with myocardial ischemia and sudden cardiac arrest in adult and pediatric patients.³⁻⁶

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