

A Minimally Invasive, Algorithm-Based Approach for AAOCA

Conway, Brian D.; Bates, Michael J.; Hanfland, Robert A.; Patel, Sonali S.; Davis, James E.; Calcaterra, Domenico ; and Turek, Joseph W.

Divisions of Pediatric Cardiac Surgery and Pediatric Cardiology, University of Iowa Children's Hospital, Iowa City, Iowa; and Division of Cardiovascular Surgery, Indiana University Health, Indianapolis, IN.

Objectives: Operative repair for anomalous aortic origin of a coronary artery (AAOCA) has been described using various innovative techniques. Common to each report is the use of a full sternotomy. As demand for minimally invasive approaches to adult cardiac surgery has increased, the upper hemi-sternotomy has emerged as a safe and effective technique for aortic valve and root replacement. This report reviews our early results and describes the application of an upper hemi-sternotomy to an algorithm-based surgical approach for AAOCA.

Methods: From January 2012 to March 2013, the aortic root was approached via a 7 cm skin incision and upper hemi-sternotomy for all patients undergoing repair of an AAOCA (n=4; median age 29.5 years). The type of repair performed was in accordance with a pre-defined surgical algorithm. Three patients were identified with a symptomatic anomalous right coronary artery (ARCA), while one patient presented with an asymptomatic anomalous left coronary artery (ALCA). The cohort was free of coronary artery disease. The anomalous vessel had a slit-like ostium and followed an intramural course above the commissure in the three patients with ARCA. These patients underwent coronary unroofing. In contrast, the patient with an ALCA presented without an intramural segment and underwent vessel translocation and reimplantation.

Results: All patients underwent AAOCA repair according to our surgical algorithm and via an upper hemi-sternotomy. The median length of stay was 4 days for the cohort. All patients had resolution of symptoms and there were no reported complications at a median follow-up of 9.4 months.

Conclusion: This is the first series describing a minimally invasive approach to AAOCA repair. When used in conjunction with a defined surgical algorithm, this technique enables a safe and effective repair in all forms of AAOCA without concomitant coronary artery disease.