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Anomalous Aortic Origin of a Coronary Artery: Outcomes of Surgical and Non-surgical Treatment in a Single-Center

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Background: Anomalous aortic origin of the coronary artery (AAOCA) has been associated with coronary ischemia, myocardial infarction, and sudden death. Risk stratification and management remain controversial, especially for the asymptomatic children. The aim of this study was to analyze all patients with AAOCA managed surgically or non-surgically at our Center over a 10-year period.

Methods: Retrospective chart review of patients with isolated diagnosis of AAOCA from 2007 to 2017. Follow-up obtained by chart review or contact with cardiologists. Treatment algorithm based on surgical intervention for patients who are symptomatic with right AAOCA and asymptomatic older than 10 years with left AAOCA.

Results: Fifty patients were managed for AAOCA. Mean age was 20.7 ± 15 years (range, 5-63 years). Thirty patients (60%) had right AAOCA and twenty patients (40%) had left AAOCA. There is no significant difference in age between left and right AAOCA patients (20 ± 18 vs 21 ± 13 ; $p=0.88$). Age of surgically treated patients and non-surgical patients at last follow-up are shown in Figure. Twenty-eight underwent surgical intervention (14 with right AAOCA and 14 with left AAOCA). Surgical intervention included unroofing in 23 (82%), reimplantation in 2 (7%), and coronary artery bypass grafting in 3 (11%) patients. Median follow-up was 2 years (0-10 years) and follow-up was completed in 82% of patients. There has been only 1 death that was perioperative in an adult patient. All patients have been free of any cardiac symptoms postoperatively. At follow-up 74% of surgical patients ($n=20$) underwent functional testing and had no evidence of ischemia. In the non-surgical group ($n=22$), surgery was not recommended yet in 20 (91%), and 2 (9%) are undergoing further testing.

Conclusions: Our program uses a treatment algorithm to select patients for surgical intervention. Only a half subset of AAOCA patients (symptomatic with right AAOCA and asymptomatic older than 10 years with left AAOCA) requires an operation, and we favor unroofing and translocation techniques. With this paradigm, outcomes are excellent, as validated with anatomic- and function-based testing. Further follow up and subtype classification will be important for risk

stratification.

