

Coronary anatomy and lumen area in patients after the arterial switch operation: a long term follow-up study

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Introduction: Re-implantation of the coronary arteries is a crucial part of the arterial switch operation (ASO) for transposition of the great arteries. The current study investigates coronary obstruction and anatomic characteristics of the coronaries in patients (pts) after ASO compared to controls.

Methods: Subjects underwent prospective triggered coronary CT-angiography (cCTA) using a 256-slice scanner. CCTAs were analyzed for coronary branching pattern (normal=1LCx-2R or variant), presence of coronary stenosis and course between great arteries or contact with pulmonary artery was noted as 'wedged position'. Cross-sectional areas (CSA) were measured at predefined points in right (RCA) and left coronary artery (LCA) using validated software (Intellispace; Philips). Distance between lower aortic annulus and LCA/RCA coronary ostium was measured with 3Mensio (Pie Medical).

Results: 58 asymptomatic pts were included, median follow-up 20.1 yrs (range:12.1-32.8). Variant coronary branching patterns, wedged position of a coronary artery and ostial stenosis were present in 14 (24%), 9 (15.5%) and 1 (1.7%) of pts, respectively. Thirty-nine pts (age: 21.3±5.6 yrs) with 1LCx-2R (=normal branching pattern) were completely analyzed and compared to controls (age 22.9±4.6 yrs) using Student T-test (figure using Student T-test (figure)).

Conclusions: In our cohort, up to 33 years after ASO, ostial stenosis is present in 1 (1.7%) patient and in 9 (15.5%) patients a coronary is wedged between the great arteries. Coronary arteries in pts after ASO take off from the aortic root at a higher level and show small but significant differences in CSA compared to healthy controls.

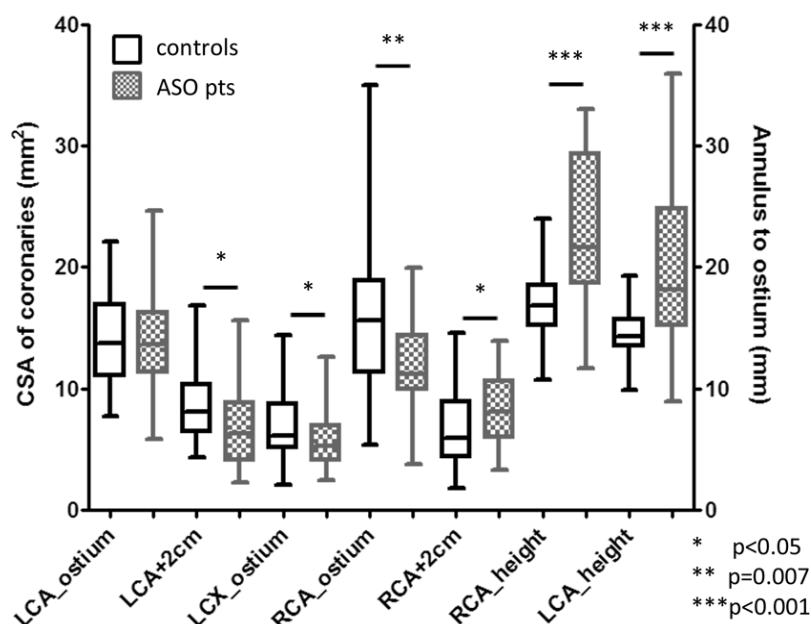


Figure 1: CSA lumen areas and angle between root and LCA/RCA of ASO patients compared to healthy controls using Student T-test.