

Treatment of coronary anomalies in adults

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Objectives: Prevalence of coronary anomalies is unknown. Symptoms in adults occur rarely prior to the 4th decade except in competitive sports; incidence of these is also unknown. Sudden cardiac death has been reported. Conventional treatment with CABG (interior thoracic arteries or veins) has proven ineffective.

Methods: Seven patients (4 male, 48±14.4 years (24-68, one <40 years) with variable symptoms of angina had normal coronary angiography except for the difficulty to inject into the RCA (6) or the LAD (1). 3D-MRI/CT scan showed an atypical origin of the RCA (6) or LAD (1) of the respective other sinus crossing the commissure between the left and right cusp running between the aorta and pulmonary artery. Surgery addressed all three components of the anomaly (orifice without a funnel, intramural course crossing the commissure, course between pulmonary artery and aorta). Surgical steps under CPB were: aortotomy, unroofing of the ostium distally to the pulmonary artery throughout the intramural course and additional in-situ RIMA Bypass to RCA or LIMA bypass to LAD, respectively. The latter were performed to protect against early occlusion or thrombosis of the reconstructed orifice.

Results: Intraoperative course was uneventful. Patency of the reconstruction was proven by increase of the RIMA/LIMA flow in ultrasonic flow measurement under transient occlusion of the proximal RCA/LAD. All patients were extubated on the day of surgery. One patient had sudden cardiac fibrillation on the ICU with emergent ECMO implantation. Cardiac cath. revealed no filling of the RCA, so that emergent revision of the distally dissected RITA-bypass was performed. The patient was weaned from ECMO and recovered completely being discharged with normal (60%) LV-function. At follow-up of 19.3±11 months (7-36 months), all patients are clinically well without cardiac symptoms. Control CT in two patients showed an occluded ITA graft and a 'normal' reconstructed coronary ostium.

Conclusion: Angina in young or mid-aged patients without coronary artery disease may be caused by coronary anomalies. Anatomical reconstruction with protective bypass grafting is a convincing surgical strategy with excellent results protecting against sudden cardiac death. However, indication is still intriguing as neither prevalence nor incidence of clinical events are known.