Aorto-left ventricular tunnel causing severe aortic regurgitation in adult man

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A 30-year-old man with history of patent ductus arteriosus ligation since he was 3 years old was referred for examination. He complained of chest pain and mild dyspnoea on exertion. Physical examination revealed diastolic decrescendo murmur with maximum at left parasternal border, blood pressure was 140/50, heart rate 94 b.p.m., and there were no signs of congestive heart failure. On electrocardiograph, there was sinus tachycardia with left ventricle hypertrophy and a chest X-ray showed moderately enlarged cardiac silhouette. Echocardiogram revealed ejection fraction of 50%, left ventricle dilatation and severe aortic regurgitation with effective regurgitant orifice of 0.6 cm², regurgitant volume 73 mL, pressure half-time 320 ms, and diastolic reversal flow in descending aorta. The regurgitation jet was outgoing from area between right and left aortic cusp and eccentrically crossed left ventricular outflow tract in posterior direction. The finding was initially considered to be a sequela of infective aortic endocarditis with perivalvular aorto-ventricular fistulation, but there was no history or evidence of underwent endocarditis and therefore aorto-left ventricular tunnel (ALVT) was diagnosed (Panel A, ALVT is indicated by arrows in all figures). Moreover, a transoesophageal echocardiographic study was performed and confirmed the presence of ALVT. The aortic end of the tunnel was above sinotubular junction and localized in between of left and right coronary cusp (Panel B). The ventricular end vented beneath the aortic valve in interventricular septum (Panel C). Patient was referred to cardiac surgeon and successful closure of ALVT was performed (perioperative finding is in Panel D, ostium of ALVT indicated by arrow).