

## IMAGE FOCUS

doi:10.1093/ejehocardiography/erj156

Online publish-ahead-of-print 24 August 2011

## Aorta to right ventricular tunnel: a rare cause of holodiastolic flow reversal in aorta in an infant

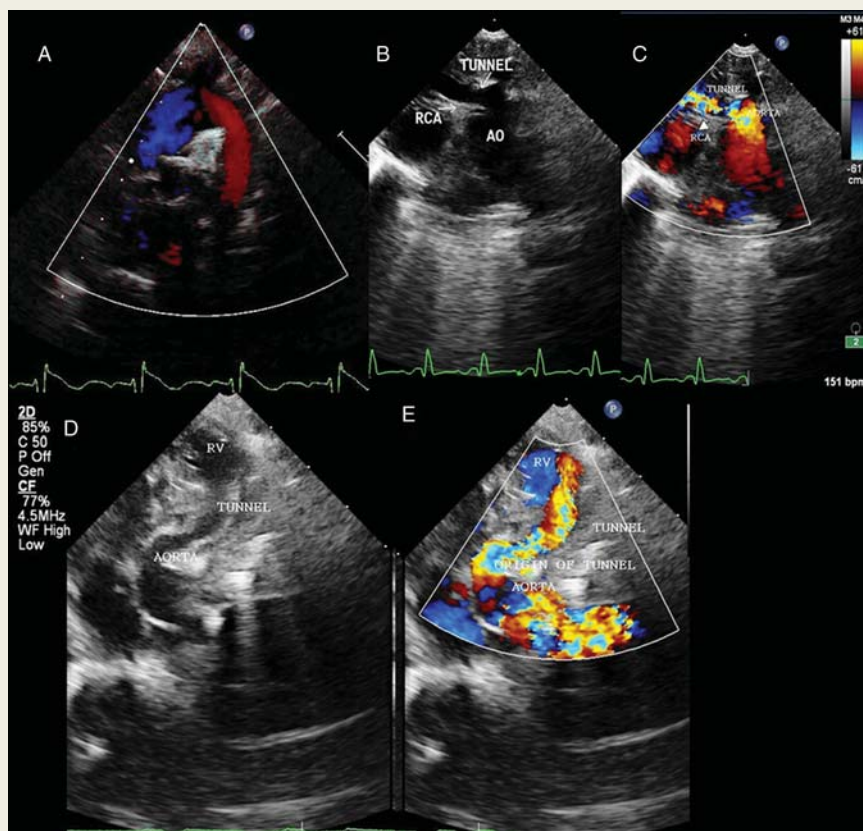
Nagendra Boopathy Senguttuvan, Nilkanth Chandrakant Patil, and Shyam Sunder Kothari\*

Department of Cardiology, Cardio-thoracic Centre, All India Institute of Medical Sciences, New Delhi 110029, India

\*Corresponding author. Tel: +91 11 26594419; fax: +91 11 26588663, Email: kothariss@vsnl.com

A 40-day-old baby presented with tachypnoea, failure to thrive without cyanosis. His pulse rate was 150/min and respiration rate was 66/min with a normal capillary filling time. The cardiac examination revealed a loud, continuous murmur at the left second/third intercostal places. Electrocardiogram showed sinus tachycardia and chest X-ray showed increased pulmonary blood flow with cardiomegaly. A two-dimensional transthoracic echocardiography showed dilated left atrium, left ventricle, and right ventricle (RV) with normal venous drainage. There was a small secundum atrial septal defect with intact ventricular septum. All four valves were normal and the ventricular contractility was also normal. The aortic cusps and the sinuses of Valsalva were normal. A suprasternal sagittal view revealed a holodiastolic flow reversal in both the ascending and descending aorta (Figure 1A; see Supplementary data online, Videos 1). A parasternal short-axis view showed a mildly dilated right coronary artery (RCA) and normal left coronary artery (LCA) without any evidence of coronary arterio-venous fistulae or aorto-pulmonary window. It also revealed a bigger structure arising from aorta appearing as a third coronary artery. This structure arose close to the right coronary sinus running anterior to the RCA towards the RV and opening into the RV (Figure 1B–E; see Supplementary data online, Videos 2). A diagnosis of aorto-RV tunnel (ARVT) was made. Since coronary anomalies including the origin of LCA from the tunnel have been reported, it is mandatory to delineate the coronary anatomy before surgical correction. The prevalence of coronary anomalies in ARVT is not clear, as only few such cases have been reported. He underwent surgery successfully. This report highlights the echocardiographic findings of a large aorto-RV tunnel.

Supplementary data are available at *European Journal of Echocardiography* online.



**Figure 1** (A) Suprasternal sagittal view showing holodiastolic flow reversal in both the ascending and descending aorta. (B) Parasternal short-axis image showing the aorta to right ventricular tunnel. It is seen anterior to the right coronary artery (RCA). (C) Parasternal short-axis two-dimensional colour Doppler image shows the tunnel and its relationship with RCA. (D and E) Customized apical five-chamber view showing the origin of the tunnel from the aorta and its termination into the right ventricle.