

IMAGES IN INTERVENTION

Aorta to Right Atrial Tunnel

Prenatal Diagnosis and Transcatheter Management in a Neonate

Kappanayil Mahesh FNB, Edwin Francis, DM, Raman Krishna Kumar, DM, FACC

Kochi, India

These images show an example of aorta to right atrial tunnel, a rare form of aorto-right atrial communication that was closed on the 4th day of life in the catheterization laboratory. The condition was suspected on fetal echocardiogram at 31 weeks of gestation that showed the presence of a large vascular communication between the rightward aspect of the aortic root and the right atrium (Fig. 1), with impressive flow reversal in the ascending and descending aorta. The baby was delivered at term (birth weight 2.7 kg) and had signs of aortic run-off and a loud continuous murmur. Postnatal echocardiogram confirmed the diagnosis of aorta to right atrial tunnel with a 3-mm opening into the right atrium. Three days after birth, the child became critically ill with congestive cardiac failure, poor systemic perfusion, and renal failure and required mechanical ventilation. The patient underwent cardiac catheterization on the next day. Angiograms in anterior-posterior view (Fig. 2A) and lateral view (Fig. 2B) showed the course and anatomy of the tunnel. The right coronary artery was seen arising separately from the right coronary sinus with normal course and branching pattern. The tunnel was successfully occluded by delivery of multiple coils into the tunnel with the assistance of a 3-F biopptome, through a 5.5-F long-sheath passed via the femoral vein after establishment of an arteriovenous wire loop (Fig. 3A). An additional coil was delivered into the coil mass from the arterial route by a 4-F Right Judkins catheter. Figure 3B shows the final coil mass occluding the tunnel. The patient had complete clinical recovery after the procedure. Six

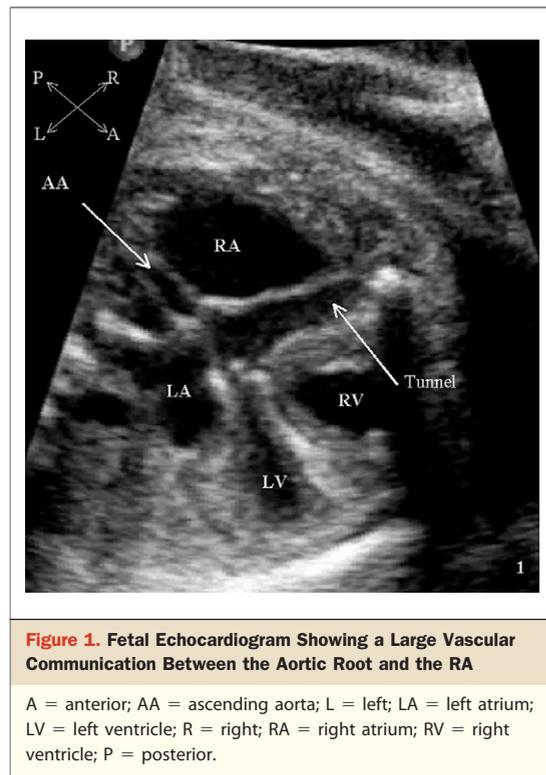


Figure 1. Fetal Echocardiogram Showing a Large Vascular Communication Between the Aortic Root and the RA

A = anterior; AA = ascending aorta; L = left; LA = left atrium; LV = left ventricle; R = right; RA = right atrium; RV = right ventricle; P = posterior.

months after the procedure, she is well with no residual flows.

Reprint requests and correspondence: Dr. R. Krishna Kumar, Chief Pediatric Cardiologist, Department of Pediatric Cardiology, Amrita Institute of Medical Sciences and Research Centre, Amrita Lane, Elamakkara P.O., Kochi, Kerala, India. E-mail: rkrishnakumar@aims.amrita.edu.

Key Words: aorta to right atrial tunnel ■ coil embolization ■ fetal echocardiography ■ neonate ■ transcatheter.

From the Department of Pediatric Cardiology, Amrita Institute of Medical Sciences and Research Centre, Amrita Lane, Elamakkara, Kochi, India.

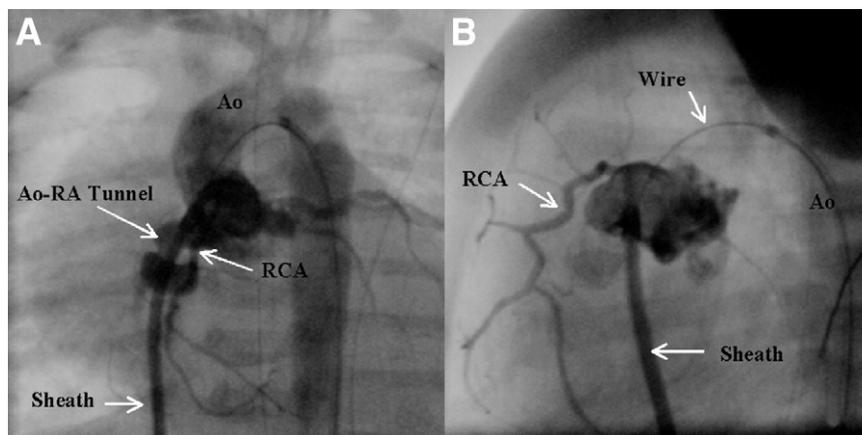


Figure 2. Angiograms Showing Course and Anatomy of Tunnel

(A) Angiographic frame (posterior–anterior view) showing an arterio-venous wire loop with sheath positioned within the aorta-right atrial tunnel. The right coronary artery is seen arising separately with normal course and branching pattern. (B) Lateral view angiographic frame showing the tunnel and the separate course of the right coronary artery (RCA). Ao = aorta; RA = right atrium.

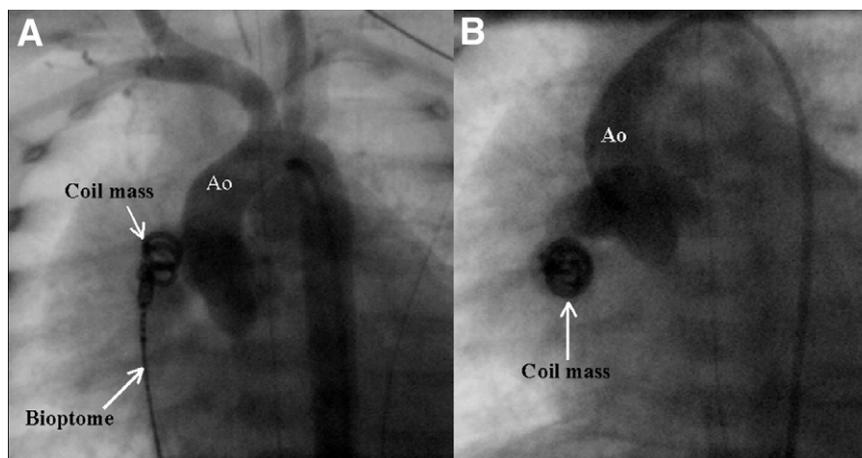


Figure 3. Angiographic Frame Showing Coil Mass

(A) Angiographic frame showing the coil mass being positioned within the aorta to right atrial tunnel with a biptome. (B) Angiographic frame showing the final position of the coil mass occluding the tunnel. Ao = Aorta.