

## *Images in Congenital Cardiac Disease*

# Anomalies of ventricular septation and apical formation

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**T**HE FIGURES SHOW MAGNETIC RESONANCE IMAGES of two patients with anomalies of the interventricular septum.

The first (Fig. 1) was an 18-year-old female with chest discomfort who was known to have had a perimembranous ventricular septal defect in infancy. Echocardiography reported an abnormal interventricular septum without evidence of a residual defect. Magnetic resonance imaging showed normal connections, but the cavity of the right ventricle (RV) did not extend to the apex, whereas the left ventricle (LV) had a normally located but relatively heavily trabeculated apical portion, and a large

diverticulum (D) from its main cavity. After gadolinium injection, there was no evidence of late hyperenhancement. The diverticulum had a location and trabecular pattern consistent with its having originated in a region that might otherwise have formed the apex of the right ventricle.

The second case (Fig. 2) shows a somewhat similar but more localized malformation. The 11-year-old boy was known to have had a muscular ventricular septal defect which had closed spontaneously, and a coarctation of the aorta which had been repaired. Magnetic resonance imaging showed no evidence of a residual shunt or coarctation. Cine

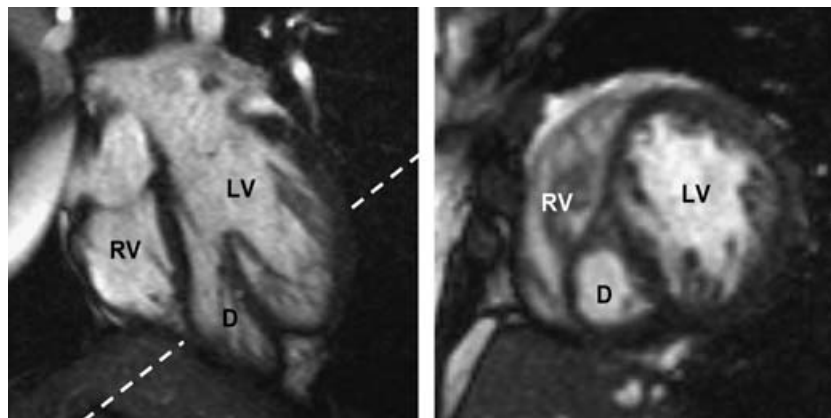


Figure 1.

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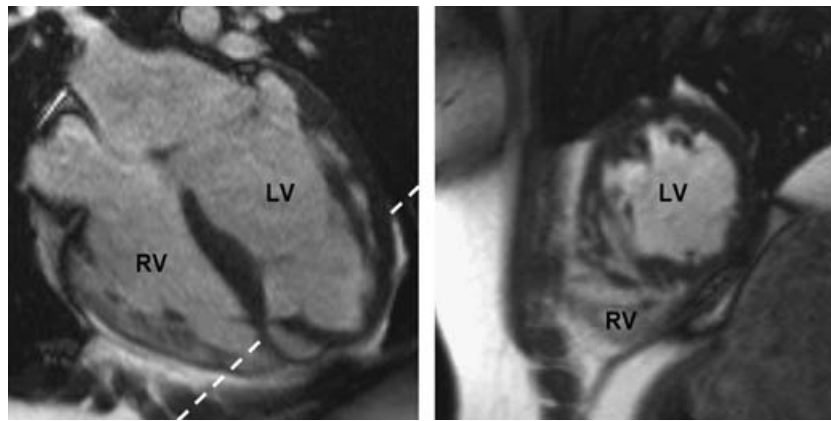


Figure 2.

appearances were compatible with a previous muscular ventricular septal defect which had become closed by adhesions between muscle bands in the apical portion of the right ventricle (see website <http://journals.cambridge.org/cty>).

While it is impossible to be sure of the origins of the malformations illustrated, both appear to represent abnormalities of ventricular compaction, septation and apical formation, probably involving the spontaneous

closure of muscular ventricular septal defects by adhesions between muscle bands of the right ventricle. Presumably this occurred prenatally in the first case, and in such a way as to include the apex of what would have been the right ventricle as a diverticulum of the left, giving the appearance of a cloven or double-apex left ventricle. We have no evidence that the findings are of functional significance, although the long term implications remain unknown.