


Clinical vignette
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Combined cardiac congenital anomalies assessed by multi-slice spiral computed tomography

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Case presentation: A 27-year-old male was admitted for work-up of severe hypertension unresponsive to medical therapy. Chest X-ray was normal except for slight enlargement of the vessels in the superior mediastinum. A thoracic aortogram demonstrated a focal aortic coarctation in the descending thoracic aorta with large intercostal and internal mammary artery collaterals (Panels A and B). Patient was referred for pre-operative coronary evaluation with multi-slice computed tomography (MSCT). Non-invasive coronary angiography was performed on 16-MSCT using a standard retrospective ECG-gated protocol. The study confirmed the presence of an aortic coarctation distal to the left subclavian artery with severe luminal narrowing (80% lumen reduction) combined with extensive collaterals distal to the aortic coarctation (Panels C and D), anomalous origin of the right coronary artery from the left coronary sinus coursing between the right ventricular outflow tract and the ascending aorta and no evidence of obstructive coronary artery disease (Panel E). MSCT represents a useful non-invasive diagnostic tool for the assessment of possible concomitant cardiac anomalies that may warrant additional surgical intervention at the time of the repair of the coarctation.

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Thoracic X-ray aortogram.
Panel A. A-P projection shows focal descending aortic coarctation.
Panel B. A-P projection demonstrates withdrawal of a catheter to the proximal descending aortic arch.
Panel C. MSCT images with three-dimensional volume rendering (3D-VR) reconstruction. A sagittal view shows coarctation of the aorta (blue arrow) distal to the left subclavian artery.
Panel D. Coronal view of the chest highlights extensive bilateral collaterals to the intercostal and vertebral arteries from the descending aorta.
Panel E. A 3D-VR reconstruction image of the heart. A cranial view of the aorta (Ao) shows anomalous origin of the right coronary artery (RCA) arising from the left coronary sinus (LCS).