

# Unique variant of dual left anterior descending artery

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## DESCRIPTION

CT angiography in a 45-year-old woman with atypical chest pain revealed two left anterior descending (LAD) arteries in the anterior interventricular sulcus (AIS). The longer LAD (white arrowhead in figure 1A–D) was arising from the left main coronary artery (LMCA) and was coursing up to the apex of the left ventricle. The shorter LAD (white arrow in figure 1A–D) was arising from the right coronary sinus, taking a trans-septal intramyocardial course to finally accompany the longer LAD in the proximal AIS before terminating at the mid-AIS level. The septal and the diagonal branches were seen arising from the shorter LAD and longer LAD, respectively. As there was no significant coronary artery stenosis, the patient was managed conservatively and has been advised regular follow-up.

Dual LAD anomalies are extremely rare with a reported incidence of 0.03%–0.2%. Twelve variants of dual LAD are described in the literature.<sup>1</sup> Rather than the variant of the dual LAD, the anatomy of dual LADs should be better described according to the clinical significance and risk stratification for the anomalous aortic origin of a coronary artery (AAOCA) from the inappropriate sinus of Valsalva (SOV).<sup>2</sup> In the classification proposed by Cheezum *et al*, anomalous left coronary artery (ALCA) arising from the right SOV or anomalous right coronary artery arising from the left SOV or rarely, AAOCA from the ‘noncoronary’ SOV can further be classified based on the presence of one of the five course

subtypes, that is, interarterial, retroaortic, subpulmonic (intraconal or intraseptal), prepulmonic or retrocardiac.<sup>2</sup> The risk of sudden cardiac death is highest for interarterial ALCA. Prepulmonic and retroaortic courses are usually asymptomatic. Trans-septal course has long been considered benign; however, recent literature reveals that upto one-fourth of these patients could develop adverse cardiac events.<sup>3</sup>

Our patient had a shorter LAD with an trans-septal course. This could be a reason for the atypical chest pain she experienced; however, in view of the absence of significant stenosis in the longer LAD, she was managed conservatively. Recognition of such anomalies is crucial for risk stratification to plan percutaneous or surgical revascularisations and to avoid inadvertent injuries to the coronary arteries.

## Learning points

- ▶ Dual left anterior descending (LAD) anomalies are extremely rare.
- ▶ The longer LAD arises from the left main coronary artery and the shorter LAD from the right coronary sinus in this unique variant of dual LAD.
- ▶ Recognition of such anomalies is crucial for risk stratification and to plan percutaneous or surgical revascularisations.

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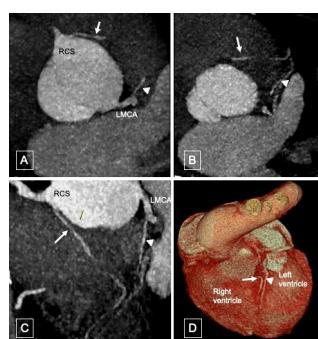
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**Figure 1** (A–C) CT angiography image at the level of the aortic root showing shorter left anterior descending (LAD) (white arrow) arising separately from the right coronary sinus (RCS) and longer LAD (white arrowhead) from the left main coronary artery (LMCA). (B) CT angiography image showing trans-septal course of the shorter LAD (arrow). (D) Volume rendered image showing both the shorter LAD (white arrow) and longer LAD (white arrowhead) in the interventricular sulcus.



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