Bilateral origin of a split circumflex coronary artery

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DESCRIPTION
A 60-year-old man presented with exertional chest heaviness of 1 year duration. On evaluation, his ECG showed no significant abnormality to suggest previous ischaemia. He was subjected to coronary angiography. On selective coronary angiogram of the left coronary system, there was left main coronary artery bifurcating into a normal left anterior descending artery and a circumflex artery which showed minor disease. The circumflex artery continued as the second obtuse marginal branch after giving off to the first obtuse marginal artery. The distal circumflex artery could not be visualised associated with non-perfused myocardium (figures 1 and 2 and videos 1 and 2). This ‘non-perfused myocardium’ sign represents a myocardial region that is not supplied by any visualised vessel. Dominant right coronary artery was seen filling through left to right collaterals.

Selective right coronary system angiogram showed the right coronary artery giving off a second branch (after conus branch) that crossed over to the left side perfusing the distal circumflex territory and the native right coronary artery was occluded. The branch that crossed to the left side continued as distal circumflex artery after giving third obtuse marginal artery (figure 3 and video 3). Hence it was concluded that the circumflex artery had its origin from both the left and right coronary systems. The left coronary system gave rise to the proximal left circumflex artery and obtuse marginals, whereas the right coronary system branched to distal circumflex and the third obtuse marginal artery.

This variety of anomalous circumflex artery has been rarely described in the literature and also termed as double circumflex arteries or twin circumflex arteries. Only a few case reports are...
available of this type of anomaly. This coronary anomaly usually has a retroaortic course and has been described as clinically benign. This variant is not haemodynamically significant, but may complicate valve surgery. The significance of the anomaly lies in patients undergoing percutaneous coronary intervention or cardiac surgery where it might be difficulty and risk of vessel injury.\(^4\) If the anomalous circumflex originates from the right coronary sinus or very proximal right coronary artery, there might be a possibility of missing the artery unless the catheter is properly engaged during angiography. In our case, anomalous circumflex artery originated from the native right coronary artery and it was free of disease. The right coronary artery of our patient was recanalised (percutaneous coronary angioplasty) without difficulty.

**Learning points**

- ‘Sign of non-perfused myocardium’ is an important clue to look for anomalous coronary arteries.
- Anomalous circumflex artery from the right coronary artery (usually retroaortic) might run through intramural or interarterial course during the crossing to the left side which needs confirmation through radiological imaging or aortic root angiogram.
- Coronary artery disease affecting this anomalous circumflex artery might cause difficulty in percutaneous interventions and cardiac surgery.

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SBNM involved in conception and design, acquisition of data or analysis and interpretation of data. AGA involved in reporting. LV contributed in conception and design. OKG performed analysis.

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REFERENCES


