

# Shepherd's crook configuration of an early preventricular branch of right coronary artery

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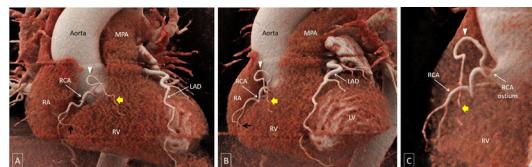
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## DESCRIPTION

A 58-year-old man with rheumatic mitral and aortic stenosis underwent CT angiography for preoperative evaluation. No coronary atherosclerotic disease was present. Incidentally, an early branching of a large preventricular branch, as the first branch of the right coronary artery (RCA), was noted. The proximal part of preventricular branch was seen coursing cranially above the level of its ostium followed by a 'U-turn' to course caudally and supply the right ventricular myocardium (**figure 1**).

Shepherd's crook configuration typically involves the main RCA (having a prevalence of 5%) where the RCA ostium is oriented superiorly and the proximal RCA courses upwards before making a U-turn to enter the right atrioventricular groove.<sup>1</sup> Percutaneous transluminal angioplasty of lesions in 'Shepherd's crook' RCA poses procedural challenges as steering the hardware across 180° turn is difficult and results in inferior primary success rates and greater complication rates.<sup>2–4</sup> This case is unique as instead of RCA, an early preventricular branch is seen to have the 'Shepherd's crook' configuration. Prior knowledge of this variant would prevent it



**Figure 1** Volume-rendered images (A to C) demonstrate the superiorly directed right coronary artery (RCA) ostium with early origin of a large preventricular branch (thick yellow arrow) from the RCA. The preventricular branch is seen coursing cranially followed by a 'U-turn' (arrowhead) to travel caudally along its expected course supplying the right ventricular (RV) myocardium. The RCA and its acute marginal branch (black arrow) are in their expected locations. RA, right atrium; LAD, left anterior descending artery; MPA, main pulmonary artery; LV, left ventricle.

## Learning points

- ▶ Shepherd's crook configuration of a coronary artery is typically described where the ostium is oriented superiorly and the proximal artery travels upwards before making a U-turn to resume its normal course.
- ▶ This configuration is most commonly seen involving the right coronary artery, but can also involve its branches.
- ▶ Percutaneous transluminal angioplasty of lesions in arteries with Shepherd's crook configuration poses procedural challenges as steering the hardware across the 180° turn is difficult and results in inferior primary success rates and greater complication rates.

being misdiagnosed as a 'Shepherd's crook' RCA in the event of inadvertent selective cannulation of this early branch.

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