

A First Septal Perforator Arising Directly from the Left Main Coronary Artery

Youssef Fihri^{1*}, Driss Britel¹, Aatef Benyass¹, Zouhair Lakhal¹

¹Department of Cardiology, Mohammed V Military Teaching Hospital, Rabat, Morocco

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*Corresponding author: Youssef Fihri

Department of Cardiology, Mohammed V Military Teaching Hospital, Rabat, Morocco

Abstract

Case Report

An anomalous origin of the first septal perforator artery is uncommon, and an origin directly from the left main coronary artery (LMCA) is exceptional. We report the case of a 61-year-old man with type 2 diabetes mellitus and hypertension, admitted for a non-ST-elevation acute coronary syndrome. Coronary angiography revealed two tandem stenoses involving the ostial and proximal left anterior descending artery (LAD). Incidentally, the first septal perforator arose directly from the LMCA, proximal to the LAD–circumflex bifurcation, rather than from the proximal LAD. The patient underwent percutaneous treatment of the proximal LAD, with preservation of the anomalous septal branch at the end of the procedure. He was discharged on optimal medical therapy and remained asymptomatic. Recognising this variant is clinically relevant. Because this branch supplies the anterior interventricular septum and the proximal conduction system, it may be jailed during left main or bifurcation revascularisation, influencing the choice of technique and the need for branch protection. An aberrant origin may also lead to cannulation of the wrong vessel during alcohol septal ablation for hypertrophic obstructive cardiomyopathy. Finally, an apparently absent proximal septal branch on the LAD should prompt a search for an ectopic origin.

Keywords: first septal perforator; left main coronary artery; coronary artery anomaly; coronary angiography; percutaneous coronary intervention.

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CASE AND IMAGE

A 61-year-old man with type 2 diabetes mellitus and hypertension was admitted for a non-ST-elevation acute coronary syndrome. Coronary angiography demonstrated two tandem stenoses involving the ostial and proximal segments of the left anterior descending artery (LAD). Incidentally, the first septal perforator was seen to arise directly from the LMCA, proximal to the LAD–circumflex bifurcation, rather than from the proximal LAD (Figure 1A–C). The lesion was treated percutaneously with an angioplasty of the proximal LAD, with angiographic preservation of the anomalous septal branch at the end of the procedure (Figure 1D). The patient was discharged on optimal medical therapy and remained asymptomatic.

COMMENT

Anomalous origin of the first septal perforator is uncommon, and an origin from the left main itself is exceptional. In the angiographic series reported by Bream et al., an anomalous septal perforating artery was identified in 18 of 800 consecutive patients studied over

14 months; in every case the vessel arose from the first diagonal, the first marginal or the circumflex artery, and none originated from the left main coronary artery.[1] Since then, only isolated observations have documented a first septal perforator arising directly from the LMCA, including a case characterised by multidetector-row computed tomography [2] and, more recently, a case discovered during the work-up of a non-ST-elevation myocardial infarction. [3]

Recognising this variant is of more than descriptive interest. The first septal perforator supplies the anterior portion of the interventricular septum, including the proximal conduction system, so its occlusion is not necessarily silent. When the vessel arises from the left main, it lies within the very segment addressed by percutaneous or surgical left main revascularisation, and may be jailed by a stent or compromised during bifurcation treatment — a consideration that influences the choice of technique and the decision to protect the branch. The first septal perforator is also the conventional target of alcohol septal ablation in hypertrophic obstructive cardiomyopathy,

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where an aberrant origin may lead to cannulation of the wrong vessel. Finally, an apparently absent proximal septal branch on the LAD should prompt a deliberate

search for an ectopic origin rather than being attributed to occlusion or to a non-dominant septal network.

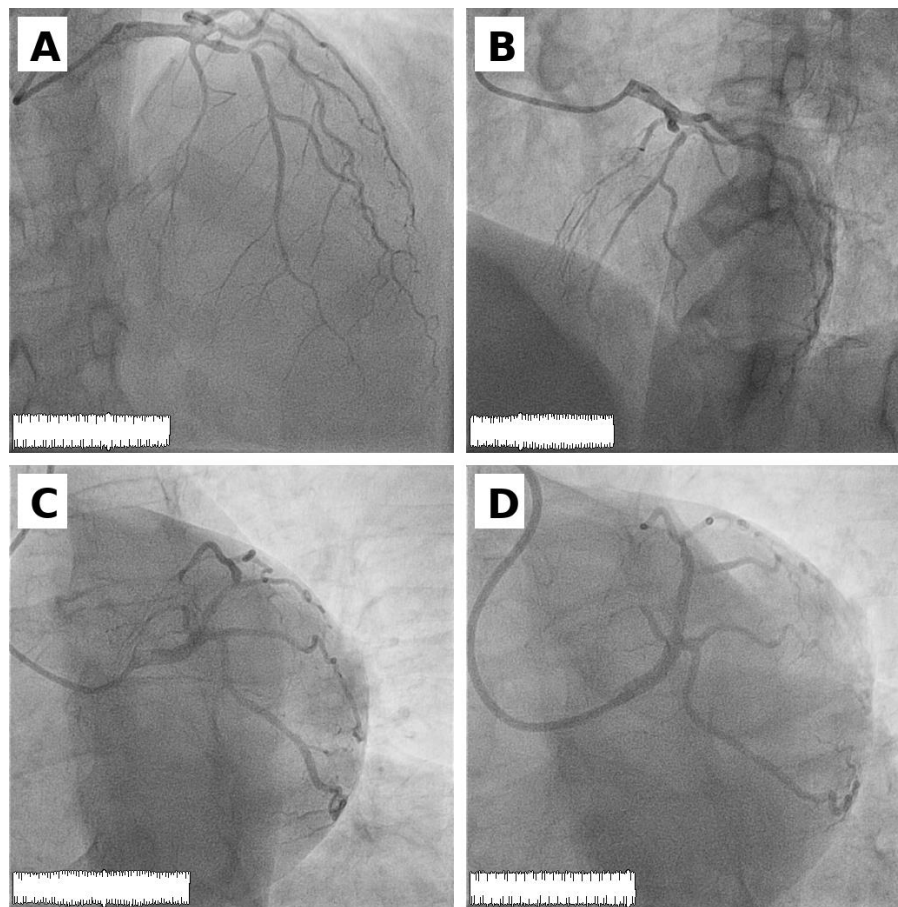


Figure 1: Coronary angiography in a 61-year-old man presenting with a non-ST-elevation acute coronary syndrome. (A) Right anterior oblique cranial view and (B) left anterior oblique cranial view showing the first septal perforator arising directly from the left main coronary artery (arrows). (C) Spider view (left anterior oblique caudal) demonstrating the anomalous origin proximal to the LAD–circumflex bifurcation, together with the ostial and proximal LAD stenoses. (D) Spider view after implantation stents in the proximal LAD, with preservation of the anomalous septal branch

DECLARATIONS

Patient consent: written informed consent was obtained from the patient for publication of this image and the accompanying clinical details.

Conflicts of interest: none declared.

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