

Images in Cardiology

Unusually aggressive immature neo-intimal hyperplasia causing in-stent restenosis

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Abstract

This image illustrates a very unusual pattern of early and aggressive immature neo-intimal hyperplasia in a 52-year-old man with unstable angina, two months after deployment of a drug-eluting stent in the proximal left anterior descending artery.

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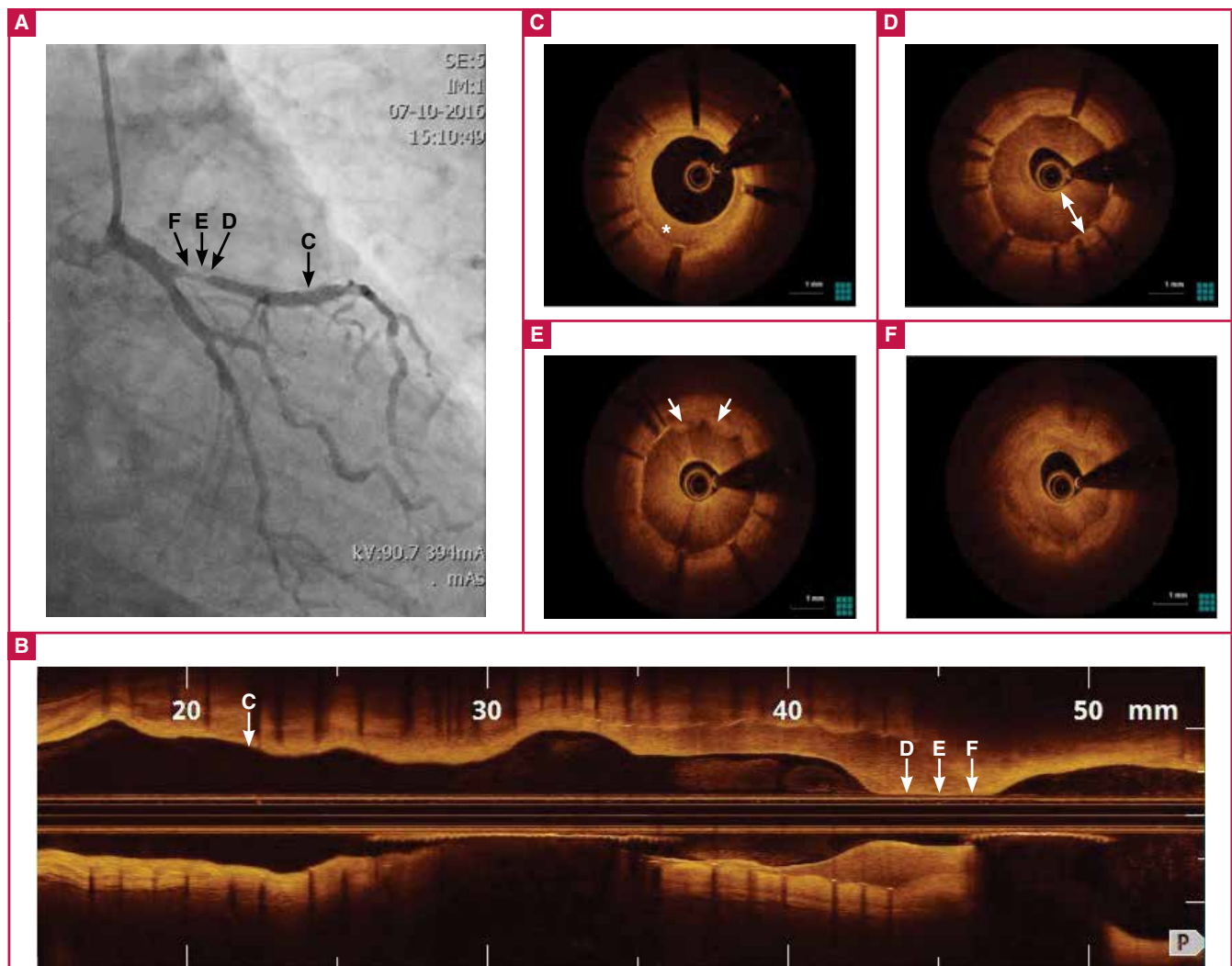


Fig. 1. A: Still frame of left coronary angiography showing restenosis in the proximal LAD. Letters in black correspond with the optical coherence tomography (OCT) images that follow. B–F: OCT from distal to proximal left anterior descending (LAD) and left main-stem demonstrating mature neo-intimal hyperplasia in mid-LAD stent (C, asterisk), aggressive immature neo-intimal hyperplasia in the proximal LAD stent (D, double arrowhead line) with tissue protrusion (E, arrowheads) and stent edge vascular response (F).

Keywords: in-stent restenosis, neo-intimal hyperplasia, optical coherence tomography

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A 52-year old man was admitted with unstable angina two months after deployment of a drug-eluting stent (DES) in the proximal left anterior descending (LAD) artery. Five months prior to the current admission he had undergone percutaneous coronary intervention (PCI) with a DES to his proximal right, proximal circumflex and mid-LAD coronary arteries. The patient had no cardiovascular risk factors apart from a family history of premature coronary artery disease.

Coronary angiography demonstrated in-stent restenosis of the proximal LAD stent (Fig. 1A). Optical coherence tomography (OCT) demonstrated various tissue responses to stent implantation (Fig. 1B). High-signal, smooth muscle-rich mature neo-intimal hyperplasia was present within the stent in the

mid-LAD (Fig. 1C; asterisk) whereas signal-poor homogeneous aggressive immature neo-intimal hyperplasia was present at the level of the proximal stent edge, causing sub-total occlusion (Fig. 1D; double arrowhead line), with tissue protrusion clearly visible below the immature neo-intimal hyperplasia in certain frames (Fig. 1E; arrowheads). Proximal to the stent, an inhomogeneous-edge vascular response was observed (Fig. 1F). The focal restenosis in the proximal stent segment was treated with another DES and post-dilated with a non-compliant balloon with a good angiographic result (not shown).

This image illustrates a very unusual pattern of early and aggressive immature neo-intimal hyperplasia. Although immature neo-intimal hyperplasia has been described,¹ to our knowledge this is the first image of such aggressive immature neo-intimal hyperplasia.

Reference

1. Malle C, Tada T, Steigerwald K, *et al.* Tissue characterization after drug-eluting stent implantation using optical coherence tomography. *Arterioscler Thromb Vasc Biol* 2013; **33**: 1376–1383.