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IMAGES IN CARDIOVASCULAR INTERVENTION

Side by side: late coronary aneurysm as consequence of two parallel stents

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We present a case of a 51 years old male, with cardiovascular risk factors and a history of two previous anterior ST elevation myocardial infarctions (STEMI). The first event had occurred 10 years ago, with coronary angiography showing a proximal occlusion of left anterior descending (LAD) coronary artery, successfully treated with one first-generation drug-eluting stent (Cypher®). The patient completed double antiplatelet therapy during 1 year and remained on Aspirin 100 mg thereafter, although with poor compliance. Seven years later the patient presented with another anterior STEMI: coronary angiography revealed an intra-stent occlusion and a percutaneous coronary intervention (PCI) was conducted. It was difficult to pass the guidewire through the acute occlusion and a hydrophilic wire was needed to succeed. The lesion was pre-dilated with 2.5 mm and 3.0 mm balloons and treated with a drug-eluting stent (Resolute Onyx® 2.75 × 18 mm), with a good angiographic result (no intracoronary image was used) (Fig. 1a). Severe left ventricular dysfunction ensued and a cardioverter defibrillator was implanted for primary prevention of sudden cardiac death. Three years later the patient was referred to our cardiology consultation due to recurrent episodes of angina. Coronary angiography showed flow disturbance at the level of overlapped stents previously implanted at LAD, with a large aneurysmatic dilatation (Fig. 1b). Stent-boost imaging (Fig. 1c) suggested that the proximal segment of the second drug-eluting stent had been implanted outside and parallel to the first stent, which was confirmed with optical coherence tomography imaging (OCT) (Fig. 1d, e). The case presented illustrates a very rare complication, highlighting the role of intravascular imaging. We postulate that during the second STEMI, the guidewire crossed the struts of the stent which had been previously implanted into the mid-LAD (occupying the space between stent and vessel wall), re-entering the stent again distally and continuing through the vessel lumen. OCT-imaging nicely confirmed the suspicion raised by the stent-boost: the proximal segment of the second drug-eluting stent had been implanted between the first stent and the vessel wall, resulting in stent malapposition due to severe positive remodelling in the confluence of both stents. Although a first-generation DES on itself may be associated with delayed aneurysm formation from 6 to 9 months after PCI (due to the potent antiproliferative effect of drugs such as sirolimus), we assumed this was not the dominant mechanism in our case, since there was no aneurysm at the second coronary angiogram made 7 years later [1]. This case also underscores that guidewire advancement to treat in-stent thrombosis should be done with great care to

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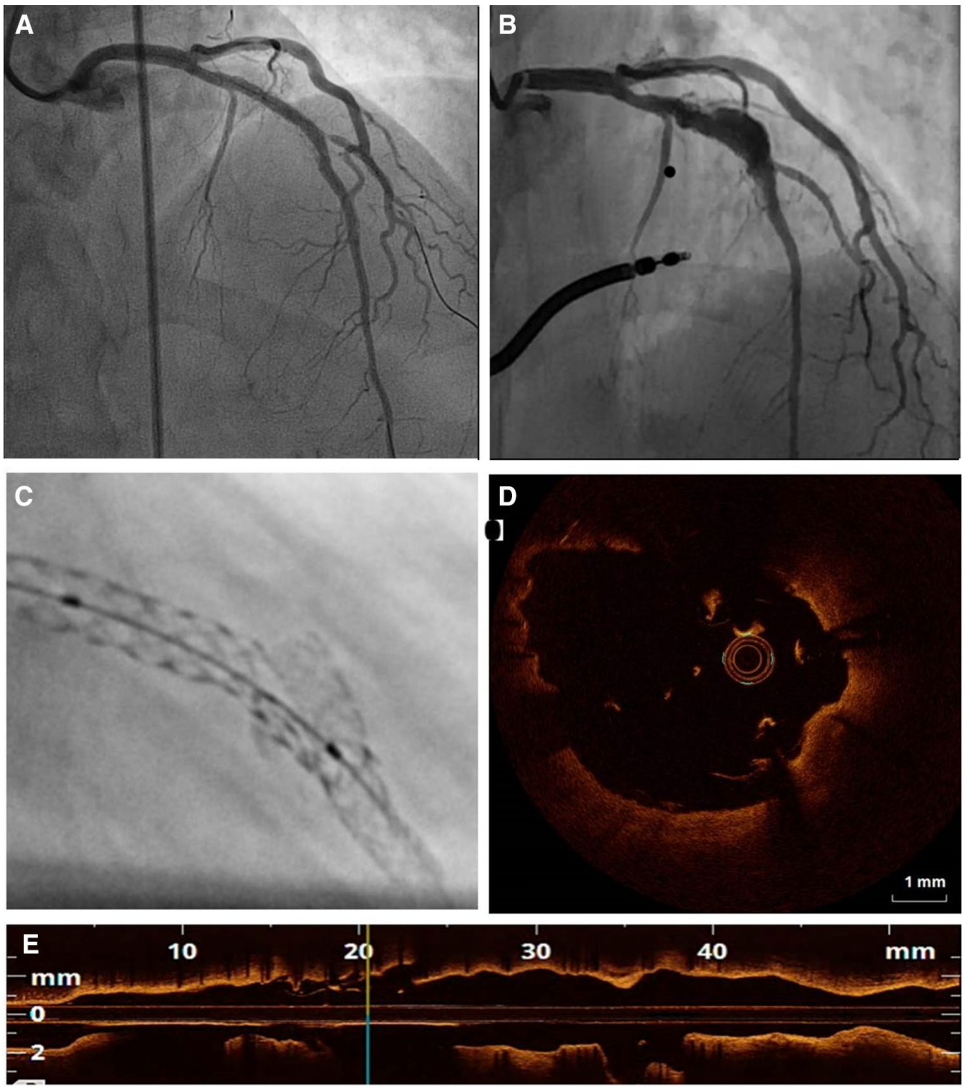

Fig. 1 **a** Final angiographic result after second PCI of the LAD; **b** coronary aneurysm of the LAD at the site of stent overlap; **c**, **d** stent-boost imaging and OCT showing the proximal segment of the second drug-eluting stent has been implanted outside and parallel to the first stent

avoid this kind of complications, even more so when using a hydrophilic guidewire. The patient underwent by-pass surgery, which resolved angina symptoms.

Compliance with ethical standards

Conflict of interest None to declare.

Reference

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