IMAGE FOCUS

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Coronary artery aneurysm following stent implantation: insights from serial multiple intravascular imaging modalities

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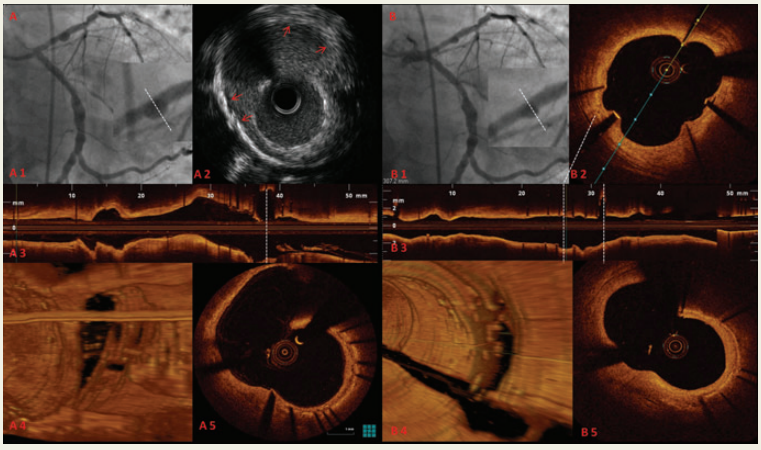

Coronary artery aneurysms after coronary intervention are rare and most 'aneurysms' are, in fact, pseudoaneurysms rather than true aneurysms. A correct diagnosis is mandatory for optimal management of this rare coronary complication. Intravascular ultrasound (IVUS) has become the gold standard for providing crucial information on the anatomical composition of the vessel wall, necessary to achieve the diagnosis. On the other hand, optical coherence tomography (OCT) is the most accurate diagnostic tool for providing luminal coronary measurement, allowing strict follow-up of coronary aneurysm dimensions.

A 38-year-old gentleman with hypercholesterolaemia and hypertension was admitted to our centre following an anterior ecg ST segment-elevation myocardial infarction. The patient underwent primary percutaneous coronary intervention with implantation of an everolimus-eluting stent 3 × 15 mm (Xience V, Abbott Vascular, Santa Clara, CA, USA) in the proximal part of the left anterior descending (LAD). The stent was post-dilated to 3.35 mm with a non-compliant balloon at 24 atm. A final angiogram showed a good result with a final thrombolisis in myocardial infarction 3 flow. After 6 months, a control angiogram was performed due to the presence of perinecrotic-inducible ischaemia in the anterior wall, detected with a myocardial perfusion scan. The angiogram showed the presence of an aneurysm originating in the stented LAD segment (*Panel A1*). Frequency-domain OCT (FD-OCT) pullback was performed allowing an accurate measurement of dimension (transversal diameter of 3.5 mm, longitudinal diameter of 4.5 mm; *Panel A5*), but it was not able to define the nature of the dilatation. IVUS was eventually used to confirm the diagnosis of aneurysm, making it possible to recognize a preserved vessel structure inside the aneurysm (*Panel A2*). At 12-month follow-up, a repeat FD-OCT showed a reduction in aneurysm dimension (transversal diameter of 2.5 mm, longitudinal diameter of 3.5 mm; *Panel B5*), revealing also a mild positive remodelling in the distal part of the stent (*Panel B2*). The off-line three-dimensional OCT reconstruction also showed a reduction in the aneurysm collect (*Panels A4 and B4*).

Management of post-interventional aneurysm or pseudoaneurysm is still a challenge for the interventional cardiologist. Combining different information provided by IVUS and OCT may shed light on the correct approach to this rare iatrogenic coronary artery complication, possibly avoiding inappropriate implantation of covered stents.

Supplementary data are available at *European Heart Journal – Cardiovascular Imaging* online.