IMAGES IN INTERVENTION

Image of a Chronic Recanalized Thrombus by Intracoronary Imaging

Intravascular Ultrasound and Optical Coherence Tomography Analysis

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A 65-year-old male was admitted to our institution due to atypical chest pain. His previous medical history revealed the presence of an anterior wall myocardial infarction that extended clinically silent 30 years ago. Angiographic images revealed the presence of a linear filling defect in the proximal left anterior descending artery (LAD) (Fig. 1). For further characterization of the lesion we decided to perform an intravascular ultrasound (IVUS), showing a coronary lumen divided into several cavities and partitioned by ultrasound tissue similar to the intima (Fig. 2). We also performed an optical coherence tomography study, where we can observe more clearly the multi-lumen appearance of the lesion but with more cavities than observed with IVUS and more

clearly defined intima-like wall (Fig. 3). The most plausible mechanism for that image is the presence of an old thrombus (history of previous myocardial infarction) with subsequent recanalization and formation of multiple lumens.

Intracoronary diagnostic imaging techniques have given interventional cardiologists a better understanding of coronary disease and how to optimize percutaneous coronary interventions. Optical coherence tomography has become a key coronary imaging diagnostic tool and, due to its greater spatial resolution (15 μm), is able to better characterize the processes of atherosclerotic plaques, providing additional detailed structural information over IVUS imaging (1,2). Thus, optical coherence tomography
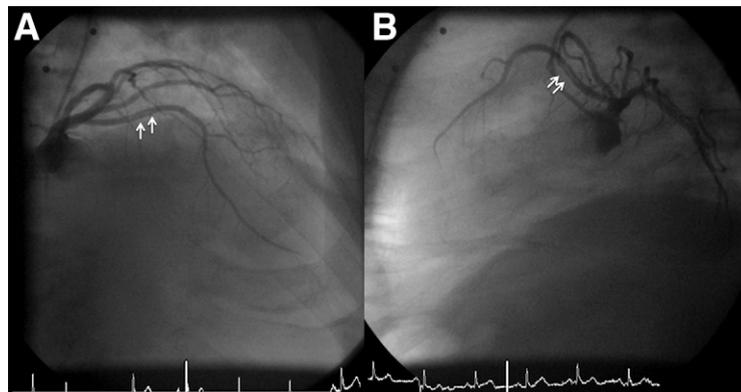

Figure 1. Angiographic Image

Angiographic image showing a linear filling defect at the level of proximal left anterior descending artery **(arrows)**.
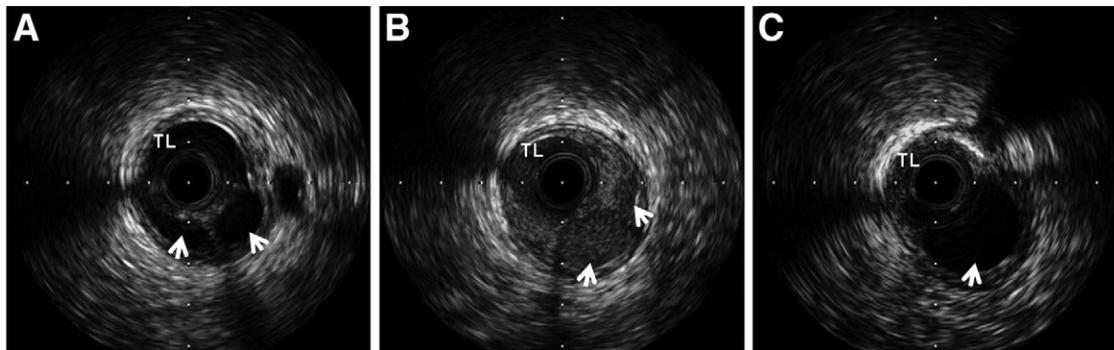
Figure 2. IVUS Image

(**A**) Intravascular ultrasound (IVUS) image of the area of the radiolucent lesion while injecting contrast. Note the presence of a true lumen (TL) and 2 accessory lumens (**arrowheads**). (**B**) An IVUS image in an area proximal to the previous and this time without injecting contrast. (**C**) An IVUS image in an area proximal to that of previous panels. It is observed that the cavities have fused into one (**arrowhead**).
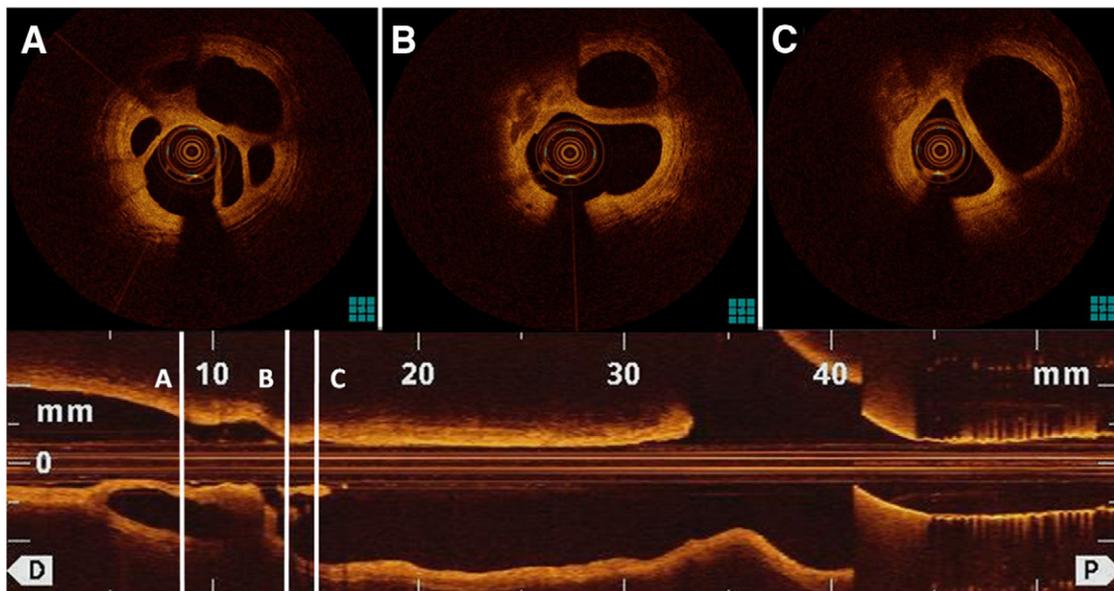
Figure 3. OCT Image

(**A**) Optical coherence tomography (OCT) imaging at the distal portion of the lesion. We can observe the presence of a multiple-lumen image. (**B**, **C**) Proximal to previous image, multiple cavities converge in a larger one, as it was depicted by intravascular ultrasound.

might be useful as well to further characterize ambiguous angiographic images with better-quality images than IVUS.

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REFERENCES

1. Diaz-Sandoval LJ, Bouma BE, Tearney GJ, Jang IK. Optical coherence tomography as a tool for percutaneous coronary interventions. Catheter Cardiovasc Interv 2005;65:492–6.
2. Jang IK, Bouma BE, Kang DH, et al. Visualization of coronary atherosclerotic plaques in patients using optical coherence tomography: comparison with intravascular ultrasound. J Am Coll Cardiol 2002;39:604–9.