

Crescent Moon Image as a Peculiar Complication During Percutaneous Coronary Intervention of an In-Stent Chronic Total Occlusion

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Case

55-year-old male with history of ischemic cardiomyopathy with previous percutaneous coronary intervention (PCI) in the anterior descending coronary artery (LAD) middle segment was admitted to our hospital for chest pains. A new coronary angiogram showed in-stent chronic total occlusion (ISCTO) of LAD receiving collaterals from right coronary artery (RCA). Left circumflex (LCX) was totally occluded and RCA presented a significant mid-segment lesion. Complete percutaneous revascularization was planned. First attempt to recanalize the LAD failed because the lesion obstructed the passage of the balloon, so a second dedicated attempt was planned. Bilateral injection using radial and femoral arteries was used, and a Confianza Pro 9 (Asahi Intecc, Japan) guidewire was progressively advanced through the ISCTO (Figure 1a) and the wire's position in true lumen was verified by contralateral injection. Considering the lesion, which impeded the balloon's passage, a microcatheter Tornus (Asahi Intecc, Japan) was utilized to penetrate and advance through and past the occlusion (Figure 1b). After balloon predilatation, intravascular ultrasound sonography (IVUS) verified the position of the wire in a very short segment into true lumen, but outside the previously implanted stent (Figure 1c). Several drug eluting stents (DES)

were implanted and the artery was successfully recanalized, although a very distal embolization was detected (Figure 1d). A new IVUS examination showed partial crush of the previous stent in the shape of a crescent moon (Figure 1e).

This rare complication is likely due to an underexpanded stent point in the first procedure. The guidewire in this point got out through a stent strut but remained within the true lumen (Figure 1f). After balloon predilatation and stent implantation, the former stent was crushed in its underexpanded point. This is a potential complication which could happen during ISCTO-PCI and a careful examination by IVUS before stent implantation can localize the wire bias. There is a difficult but feasible manoeuvre consisting of reintroducing a new wire into the stent lumen guided by IVUS, which can potentially avoid the above complication.

Author contributions

Conception and design of the research: Mohandes M, Guarinos J; Acquisition of data: Mohandes M, Guarinos J, Moreno C; Writing of the manuscript: Mohandes M, Rojas S; Critical revision of the manuscript for intellectual content: Mohandes M, Bardají A.

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Study Association

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Percutaneous Coronary Intervention; Coronary Occlusion; Drug Eluting Stents; Ultrasonography, Interventional; Cardiac Catheters.

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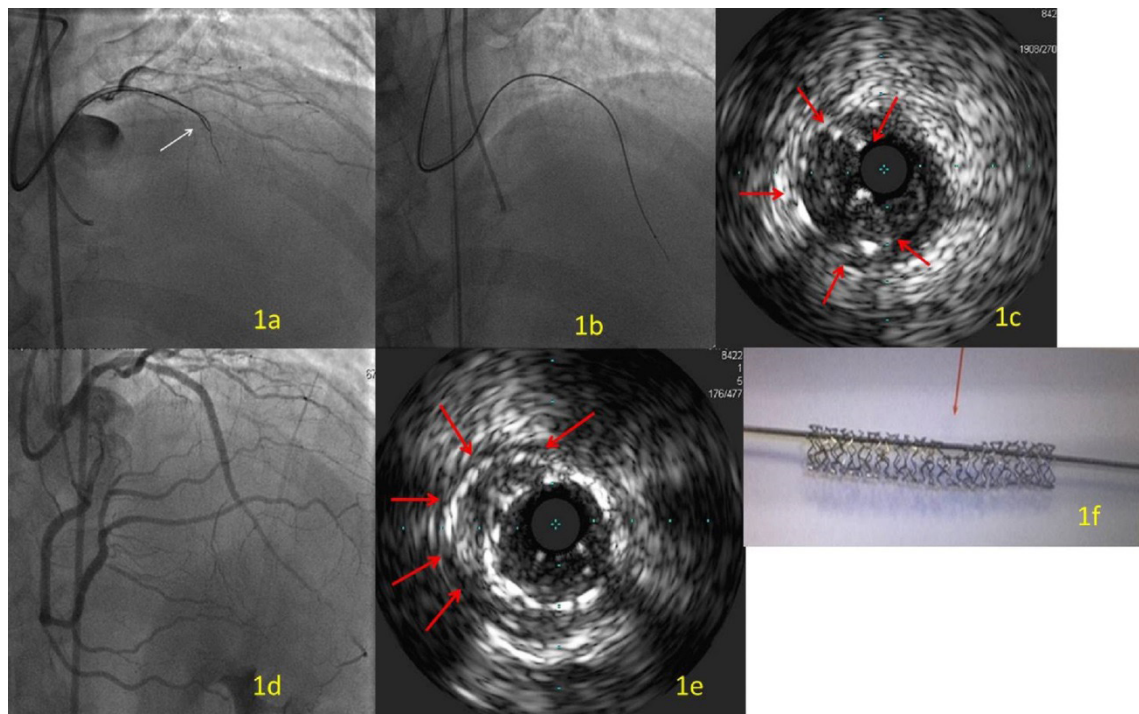


Figure 1 – 1a) Confianza Pro 9 guidewire penetrated in-stent occluded segment using parallel wire technique. 1b) Tornus microcatheter successfully passed through the in-stent occluded segment and advanced up to the distal portion of the artery. 1c) Arrowheads limit the stent's underexpanded point with further distortion after balloon dilatation. IVUS probe in this point is positioned into coronary true lumen but out of the previously implanted stent. 1d) successful recanalization of left anterior descending coronary artery after implantation of several drug eluting stent, although distal embolization is observed. 1e) crescent moon image after implantation of new stent crushing the previous one. 1f) on-bench model of an underexpanded stent shows how the guidewire could get out of the stent and re-enter again into the stent lumen.