

Recanalization of in-stent chronic total occlusion using intravascular lithotripsy and Firehawk[®] rapamycin target eluting coronary stents: A case report

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A 73-year-old patient, who had undergone several stent implantations of the right coronary artery (RCA) after bypass graft failure, was referred for coronary angiography (CAG) based on stable angina and positive imaging stress test for inferior wall ischemia. CAG showed in-stent restenosis of the proximal RCA and chronic total occlusion (CTO) of the mid RCA due to stent underexpansion (Fig. 1A, B).

After vessel intubation and tedious guidewire advancement, pre-dilatations were performed restoring a Thrombolysis in Myocardial Infarction 2 flow. As expansion of a 3.5 mm non-compliant balloon was suboptimal but the lesion could be crossed, intravascular lithotripsy was used instead of rotational atherectomy, facilitating stent deployment (Fig. 1C, D). Furthermore, the stents implanted in the past were at least 6 months old, so endothelialization was presumed, thus not jeop-

ardizing stent architecture. Therefore, 80 impulses were administered to the proximal and mid RCA upon inflation of the 3.5 × 12 mm Shockwave balloon, followed by implantation of 3 Firehawk[®] rapamycin target eluting coronary stents, ranging in diameter from 2.75 mm to 3.5 mm, as previously everolimus and zotarolimus eluting stents were used (Fig. 1E, F).

The Firehawk[®] stent proved to be non-inferior to an everolimus-eluting stent in the TARGET All comers trial and has a fully biodegradable polymer, the lowest drug dosage on the market, and an excellent radial strength despite ultrathin (86 µg) struts. This case demonstrates the importance of intravascular lithotripsy in treating in-stent restenosis, even in the presence of CTO. It also highlights that the Firehawk[®] stent can be used for management of complex lesions.

Conflict of interest: Doctor Christian Templin reports receiving consulting fees from Biotronik, Microport and Schnell Medical; lecture fees from Novartis; and serving on advisory boards from Amgen. All other authors declare no conflict of interest.

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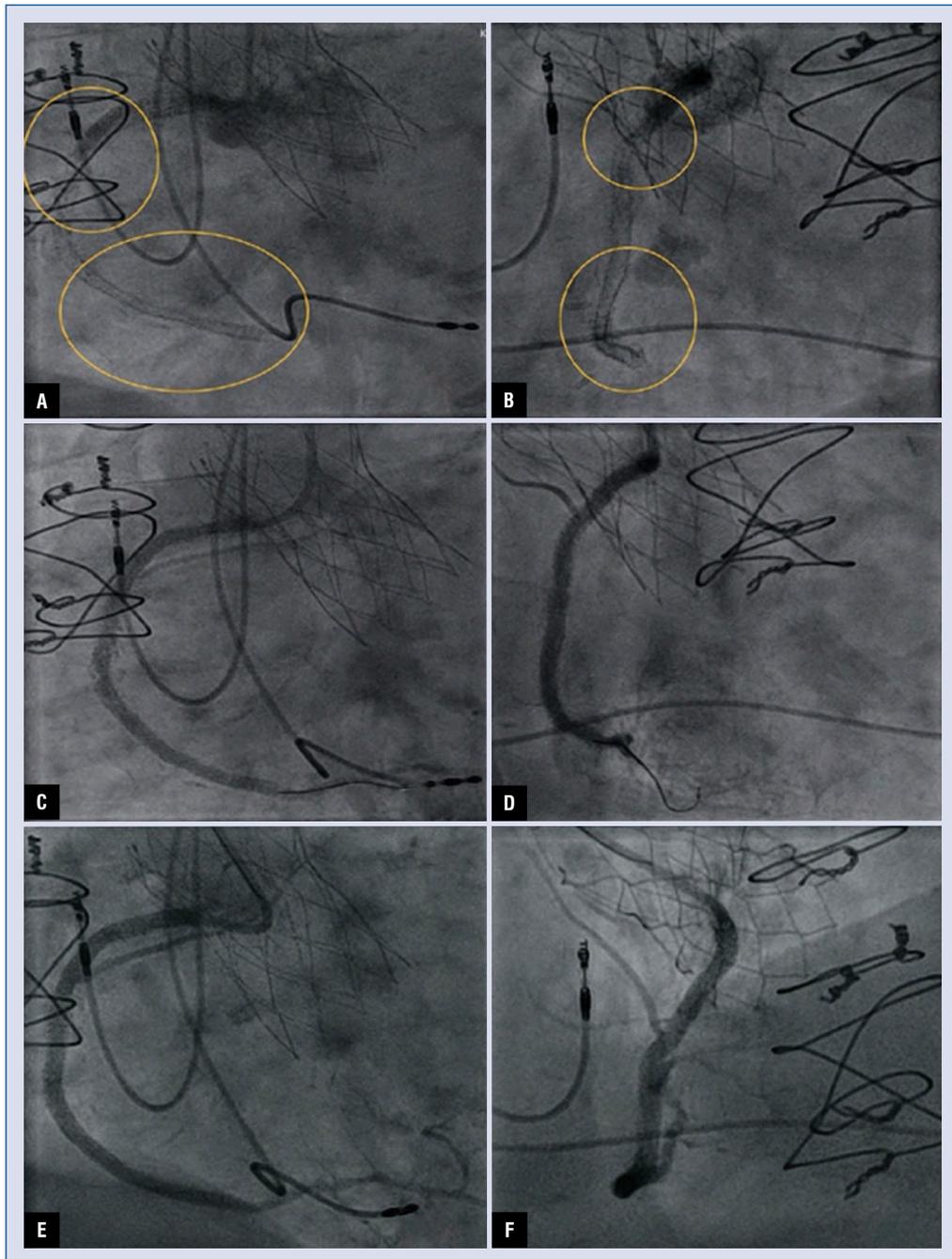


Figure 1. A–F. Left column: Left anterior oblique view of the right coronary artery (RCA); **Right column:** Right anterior oblique view of the RCA; notice long segments of stent under-expansion (yellow circles); **Middle row:** Restoration of Thrombolysis in Myocardial Infarction flow 2 after balloon pre-dilatation and intravascular lithotripsy; **Bottom row:** Final result after implantation of 3 Firehawk® rapamycin target eluting coronary stents.