

CLINICAL IMAGES

Intravascular Lithotripsy for In-Stent Calcified Neoatherosclerosis

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An 80-year-old man with a history of acute inferior myocardial infarction was admitted to our hospital. He had undergone bare-metal stent (3.5/28 mm) implantation in the mid-right coronary artery 22 years prior. Drug-induced myocardial perfusion imaging revealed perfusion defects in the peri-infarction lesion, accompanied by left ventricular hypokinesis during stress. Coronary angiography demonstrated in-stent restenosis (ISR) in the distal segment of the stent (**Figure A**). Given these findings, we planned revascularization for this ISR lesion.

Intravascular ultrasound (IVUS) AltaView, Terumo) revealed neointima with a circumferential high-intensity surface, suggesting calcified neoatherosclerosis (**Figure B**). Optical coherence tomography (OCT) (Dragonfly OpStar, Abbott) further confirmed the presence of circumferential calcified plaque with a maximum thickness of 200 μ m (**Figure C, Video 1**). With the aim of creating fractures in this calcified neointima to achieve luminal gain, we performed intravascular lithotripsy (IVL) (Shockwave C2 3.5/12 mm; Shockwave Medical) (Figure D). Subsequent IVUS and OCT showed the formation of multiple cracks within the calcified plaque (**Figure E and F, Video 2**). Finally, a new everolimus-eluting stent (4.5/20 mm) successfully dilated the lesion (**Figure G-I, Video 3**). The procedure was completed without complications, and the patient has remained free of symptoms since the intervention.

Inadequate luminal gain in the treatment of calcified neoatherosclerosis may contribute to recurrent restenosis. Achieving sufficient lesion dilation in severe in-stent calcification requires an effective strategy to disrupt the calcified tissue. Although clinical data on IVL for ISR remain limited, this case highlights the potential of IVL in facilitating lesion expansion in calcified neoatherosclerosis. IVL is a simple and effective technique with a low incidence of slow flow, and its application in managing calcified coronary lesions is steadily increasing. Further dedicated studies are warranted to evaluate the efficacy of IVL in treating significant in-stent calcification.

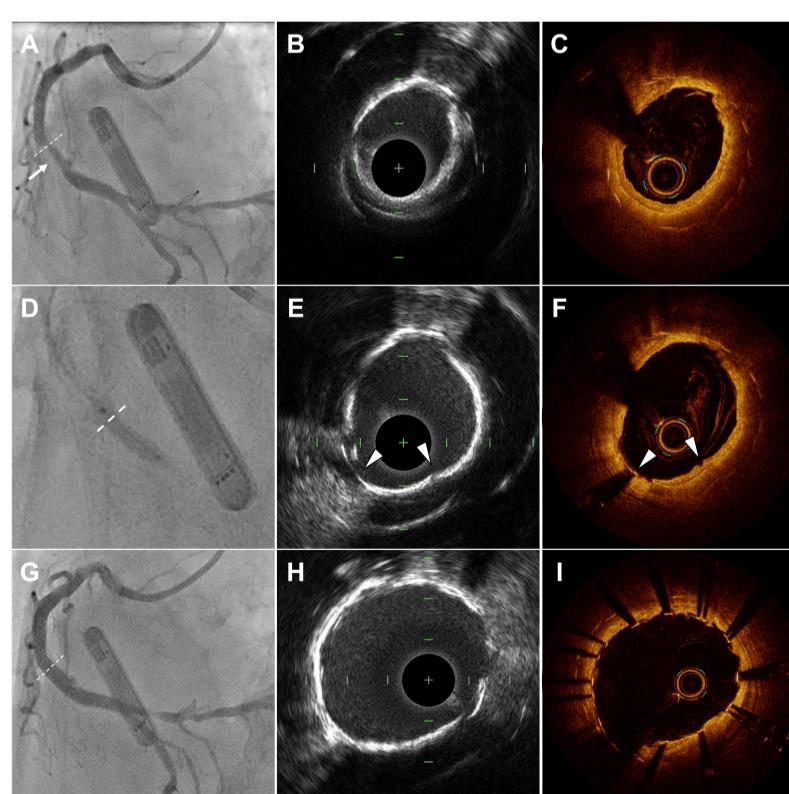


Figure. Intravascular lithotripsy (IVL) for calcified neoatherosclerosis. **(A)** Coronary angiography demonstrated in-stent restenosis (**arrow**). **(B)** Intravascular ultrasound (IVUS) and **(C)** optical coherence tomography (OCT) revealed calcified neoatherosclerosis. **(D)** Following IVL, **(E)** IVUS and **(F)** OCT showed multiple fractures in the calcified plaque (**arrowheads**). **(G-I)** The lesion was successfully dilated with a new stent. The white dashed line in **(A)**, **(D)**, and **(G)** corresponds to the cross-sectional IVUS and OCT images.

Affiliations and Disclosures

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