

# Rotational atherectomy and intravascular lithotripsy (RotaTripsy) in a massive heavily calcified coronary aneurysm in a young woman

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DOI: 10.33963/v.phj.99399

**Received:**

December 29, 2023

**Accepted:**

February 15, 2024

**Early publication date:**

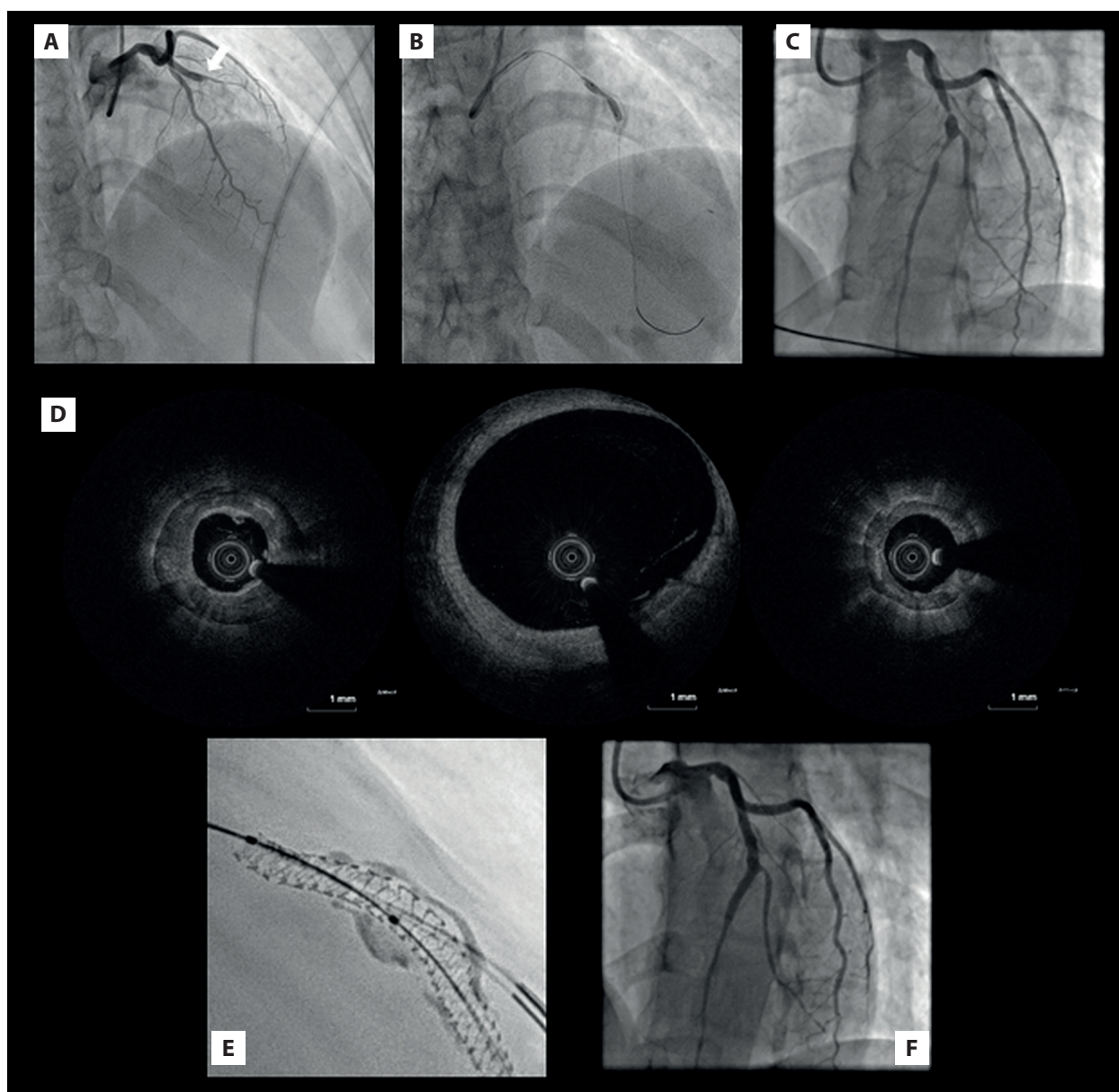
March 1, 2024

The management of calcified coronary lesions remains a complex challenge in percutaneous coronary interventions (PCI). Intracoronary calcification has been linked to less favorable outcomes after PCI, mostly attributed to inadequate stent expansion and/or malapposition, which often result in more frequent occurrence of stent thrombosis or restenosis [1]. Traditionally balloon-focused techniques, characterized by lesion pre-dilatation to high pressures using non-compliant or cutting balloons were considered the first-step interventional approach [2]. Nonetheless, obstructive calcification may impede successful delivery and optimal expansion of balloons [2]. Rotational atherectomy is a standard approach, facilitating the passage of balloons or stents through highly calcified lesions. Nevertheless, in cases where extensive calcified plaques are present, its efficacy might prove insufficient for achieving optimal expansion. Employing a combined strategy involving both intravascular lithotripsy (IVL) and rotational atherectomy (RotaTripsy) could enhance stent expansion [3].

A 37-year-old woman presented to the hospital with ST-segment elevation acute myocardial infarction of the anterior wall. She had no history of cardiovascular risk factors, however, she disclosed an episode of hospitalization due to a prolonged fever of unknown cause in childhood. Immediate coronary angiography was performed. Fluoroscopy alone revealed massive calcifications in the medial segment of the left anterior descending artery (LAD). Contrast injection showed total occlusion of the LAD in the medial segment (Figure 1A; Supplementary material, Figure

S1A–B). Other coronary arteries did not show any atherosclerotic lesions. After advancing a guidewire into the distal part of the LAD, blood flow was restored, and a massive calcified aneurysm in the LAD with critical stenoses at the entry and the exit, with a diagonal branch originating from the aneurysm, was revealed (Supplementary material, Figure S1C–D). Multiple predilatations with noncompliant balloons (2.5, 3.0 mm) and a 2.5 mm cutting balloon were performed (Supplementary material, Figure S1E), without achieving full vessel expansion (Figure 1B–C; Supplementary material, Figure S1F) but with TIMI 2 flow into the distal LAD. The patient was transferred to the referral center and, after Heart Team's consultation, coronary angiography with optical coherence tomography was performed (Figure 1D; Supplementary material, Figure S1G–I). The patient underwent successful rotational atherectomy using a 1.5 mm bur; nevertheless, adequate expansion of the balloons was not achieved (Supplementary material, Figure S1J). Intravascular lithotripsy (Shockwave Medical Inc., Santa Clara, CA, US) with 80 ultrasonic pulses of a 3.5 × 12 mm IVL balloon was applied (Supplementary material, Figure S1K–L), following the pre-dilatation with a 3.5 mm NC balloon, an everolimus-eluting stent was implanted with an excellent angiographic result (Figure 1E–F; Supplementary material, Figure S1M–P).

Calcified coronary artery lesions are a common finding during routine practice, with a frequency influenced by patient characteristics and diagnostic criteria [4]. Heavily calcified coronary lesions remain a therapeutic challenge, and, in some cases,



**Figure 1.** A. Total occlusion in the left anterior descending artery (arrow). B. Balloon underexpansion. C. LAD blood flow restored, without full vessel expansion. D. Optical coherence tomography. E. Stent boost imaging. F. Final result

the rotational atherectomy alone may not be sufficient to achieve proper balloon expansion [5]. Using a combined strategy with both IVL and rotational atherectomy (RotaTripsy) could enhance stent expansion [3]. We present the first documented successful case of “RotaTripsy” in a massive heavily calcified coronary aneurysm in a young woman without cardiovascular risk factors. The etiology of this calcified aneurysm has not been established. We believe that a local inflammatory process was the leading contributing factor.

#### **Supplementary material**

Supplementary material is available at [https://journals.viamedica.pl/polish\\_heart\\_journal](https://journals.viamedica.pl/polish_heart_journal).

#### **Article information**

**Conflict of interest:** None declared.

**Funding:** None.

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