VIA MEDICA

IMAGE IN CARDIOVASCULAR MEDICINE

Cardiology Journal
2021, Vol. 28, No. 6, 993–994
DOI: 10.5603/CJ.2021.0144

ISSN 1897–5593
eISSN 1898–018X

Rota-lithotripsy: A combination of rotational atherectomy and intravascular lithotripsy (Shockwaves) as a novel strategy for a rotablation--resistant lesion in a patient with ST-segment elevation myocardial infarction

Adrian Włodarczak[1] *, Piotr Rola[2] *, Mateusz Barycki[2], Barbara Engel[2], Marek Szudrowicz[1], Jan Jakub Kulczycki[1], Maciej Lesiak[3], Adrian Doroszko[4]

[1]Department of Cardiology, The Copper Health Centre (MCZ), Lubin, Poland
[2]Department of Cardiology, Provincial Specialized Hospital, Legnica, Poland
[3]1st Department of Cardiology, University of Medical Sciences, Poznan, Poland
[4]Department of Internal Medicine, Hypertension and Clinical Oncology, Wroclaw Medical University, Wroclaw, Poland

A 71-year-old female was admitted to the documented cath-lab with ST-segment elevation myocardial infarction (STEMI) of the inferior wall. Coronary angiogram revealed acute occlusion of the right coronary artery without other significant lesions (Fig. 1A). Percutaneous coronary intervention (PCI) was performed by the right-radial access, using the JR4.0 (6 F) Guide-Catheter. Initial high-pressure (22 atm.) predilation with a non--compliant balloon (NCB) catheter 2.5 × 20 mm was performed (Fig. 1B). Due to incomplete expansion, the size of NCB was decreased to 2.0 × 15 mm (24 atm.) with unfavourable effect (Fig. 1C). Afterwards, we switched to the 7 F right--radial access (JR 4.0) and despite use of an extra support guidewire, subsequent guide extension and additional anchor-balloon manoeuvre, we were still unable to cross the lesion with the ShockWave Intravascular Lithotripsy (S-IVL) balloon-catheter (3.5 × 12 mm). Therefore, we exchanged a guidewire on the Rotawire-Extra-Support and performed a successful rotational atherectomy (RA) with Rotablator burr size 1.75 mm (Fig. 1D). Subsequently, a high-pressure (22 atm.) inflation of a 3.5 × 15 mm NCB was performed. Despite lesion preparation with the RA, a significant "dogbone effect" was still observed (Fig. 1E). Hence, we performed the S-IVL using a 3.5 × 12 mm catheter. After application of 40 ultrasonic pulses, full expansion was obtained (Fig. 1F). Drug eluting stent 3.5 × × 38 mm (16 atm.) implantation was followed by a 4.0 × 20 mm (20 atm.) NCB post-dilation. Finally, a satisfying angiographic result was obtained, and was confirmed by the optical coherence tomography (minimal lumen area 8.06 cm^2) (Fig. 1G–J).

According to available research, we are the very first to present a well-documented successful application of a complex advanced plaque-modifying method (RA+S-IVL bailout PCI) in a subject with STEMI *via* radial access.

Conflict of interest: None declared

Address for correspondence: Piotr Rola, MD, PhD, Department of Cardiology, Provincial Specialized Hospital Legnica, ul. Iwaszkiewicza 5, 55–220 Legnica, Poland, tel: +48 888 272 007, e-mail: piotr.rola@gmail.com

Received: 25.02.2021 Accepted: 5.05.2021

**Equal authorship*

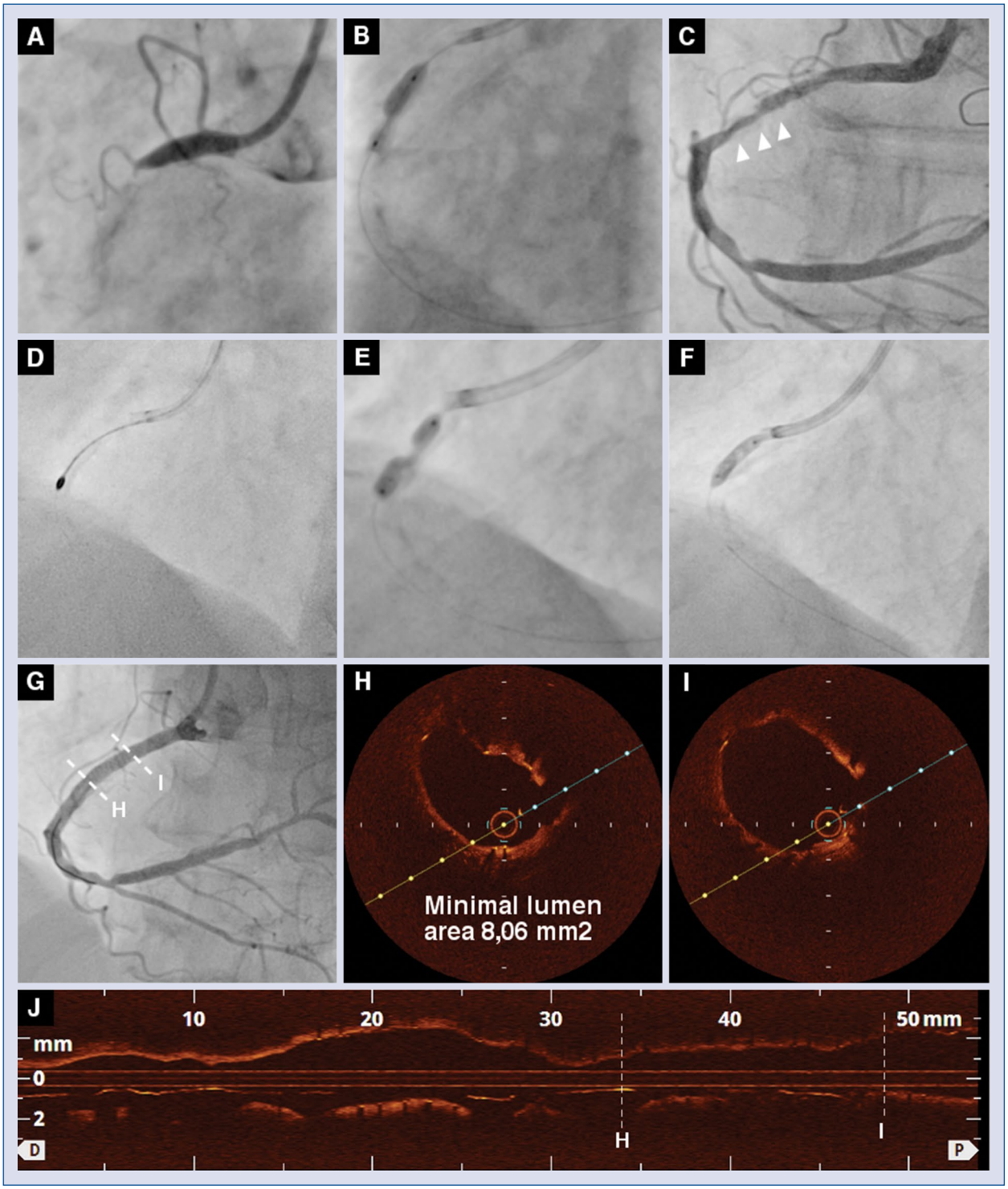

Figure 1. A. initial angiography acute occlusion of right coronary artery (RCA); **B.** Incomplete expansion of 2.5 × 20 mm non-compliant (NC) balloon catheter; **C.** Angiography after restoring flow to RCA-heavily calcified culprit lesions; **D.** Rotational atherectomy (RA) with Rotablator burr size 1.75 mm; **E.** "Dogbone effect" on NC balloon 3.5 × 15 mm after successful RA; **F.** Full expansion of ShockWave Intravascular Lithotripsy catheter after 40 pulses; **G.** Final angiography after drug eluting stent (3.5 × 38 mm) followed by NC 4.0 × 20 mm post-dilation; **H, I, J.** Optical coherence tomography demonstrating satisfying stent expansion and apposition.