

When an interventional cardiologist needs an interventional radiologist: Efficient treatment of coronary perforation

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Coronary artery perforation is a life-threatening sequel complicating 0.2%–0.9% of percutaneous coronary interventions (PCI) [1]. Here, we present an example of fruitful cooperation between an interventional cardiologist and a radiologist in managing distal right coronary artery (RCA) perforation. A 76-year-old male with a history of dyslipidemia, type 2 diabetes mellitus, and prior PCI in the left circumflex artery was admitted for PCI in RCA with rotational atherectomy. The patient was on dual antiplatelet therapy (acetylsalicylic acid 75 mg and clopidogrel 75 mg). From the right radial approach, rotablation was performed with 1.5 mm and 1.75 mm burrs in the proximal and mid RCA segments (Figure 1A–B). After successful rotablation, a working guidewire was advanced (Sion blue with a J tip, Asahi Intecc, Irvine, CA, US), and two sirolimus-eluting stents Prolim (Balton, Poland) were deployed in the mid (3.5 × 25 mm) and proximal (4.0 × 29 mm) segments. Stents were optimized with a non-compliant balloon catheter (4.0 × 12 mm) under intravascular ultrasound imaging (Figure 1C). However, at the final checking, the contrast extravasation next to one of the posterolateral branches was disclosed (Figure 1D; Supplementary material, Video S1). Despite three prolonged balloon inflations, the leakage was not stopped. Echocardiography showed no signs of cardiac tamponade; therefore, no protamine sulfate was administered. After consulting with an interventional radiologist, five spiral coils were used: three 1 mm/3 cm MicroPlex Hydrosoft 3D (MicroVention, Aliso Viejo, CA, US) and two 2 mm/3 cm + 2.5 mm/6 cm Axiom Prime coils

(Medtronic, Minneapolis, MN, US) (Figure 1E). The perforation was successfully closed with no excessive fluid in the pericardium (Figure 1F; Supplementary material, Video S2, and S3). The patient was discharged after two days on dual antiplatelet therapy.

In some cases, prolonged balloon inflation may lead to hemostasis, but if pericardial bleeding continues, definitive treatment may be needed (covered stents or cardiac surgery) [2]. However, covered stents are not feasible for small vessels. In such cases, embolization may play a part. In our patient, the radiologist used coils designed to close intracranial aneurysms. When introduced, their successive loops change direction, evenly distribute themselves within the vessel, and efficiently close the perforation. Moreover, poly (glycolide-co-L-lactide) or nylon microfilaments reduce the flow and accelerate thrombosis [3]. Such an approach allowed the patient to avoid open heart surgery and enabled quick discharge.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/kardiologia_polska.

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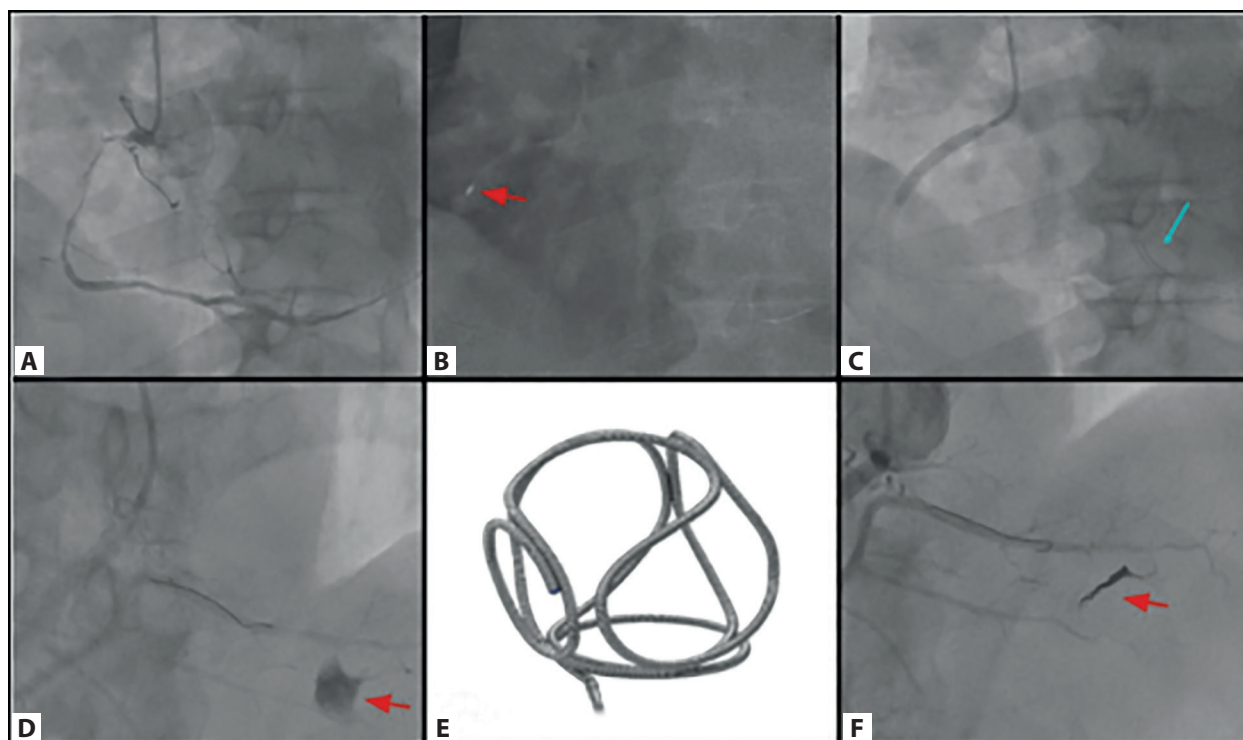


Figure 1. **A.** Significant long stenosis in the proximal and medial RCA. **B.** A rotablation procedure (the red arrow showing the burr). **C.** Stent optimization with deep location of the distal guidewire (the arrow showing the distal end of the guidewire). **D.** Contrast extravasation (the red arrow). **E.** An example spiral coils used to close the perforation. **F.** The final view with coils (the red arrow) implanted in the posterolateral branch of the RCA

Abbreviation: RCA, right coronary artery

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