Kardiologia Polska 2016; 74, 12: 1508; DOI: 10.5603/KP.2016.0176 ISSN 0022–9032

STUDIUM PRZYPADKU / *CLINICAL VIGNETTE*

Left ventricle assist device supported rotational atherectomy of the highly calcified last remaining vessel in a patient with acute myocardial infarction and reduced left ventricular function

Pacjent z ostrym zespołem wieńcowym, upośledzoną funkcją skurczową lewej komory oraz z silnie zwapniałą zmianą w ostatnim drożnym naczyniu poddany rotacyjnej aterektomii z urządzeniem wspomagającym lewą komorę

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An 84-year-old man with history of myocardial infarction (MI) and poorly controlled hypertension was admitted to the orthopaedics department due to femoral neck fracture. Just after right hip hemiarthroplasty the patient reported acute chest pain. Electrocardiogram showed ST segment depression in leads I, II, V4–V6. Highly sensitive troponin I was raised to 3.489 (N < 0.059) ng/mL. Echocardiography revealed decreased left ventricular ejection fraction (LVEF) 40% and diffused wall motion abnormalities. The patient was diagnosed with non-ST segment elevation MI and referred to urgent coronary angiography, which showed severe calcifications in all coronary arteries and proximal occlusion in both the circumflex and right coronary artery (RCA). Left anterior descending artery (LAD), the last remaining vessel giving collaterals to RCA, revealed highly calcified 80% stenosis in the proximal segment (Fig. 1). The heart team decided that high-risk percutaneous coronary intervention (PCI) with rotational atherectomy optimally with left ventricle assist device (LVAD) is the best therapeutic option. The procedure began by placing an Impella CP (Abiomed, USA) into the left ventricle via the left femoral artery. The left coronary artery was intubated with an EBU 3.75/7 F guiding catheter via right femoral access. Due to ectasia in LAD wiring was extremely difficult, time consuming, and possible only after use of a microcatheter. The highly calcified lesion in the proximal part of the vessel was resistant to rotational atherectomy and subsided only after 18 runs with 1.5 mm burr at 145,000 rpm (Fig. 2). Just after the last burr passage, slow flow in the LAD occurred. The patient became bradycardic and his blood pressure dropped to 50/20 mm Hg. Simultaneously maximal Impella flow (4 L/min) was established. External cardiac massage was about to be started but finally was not induced because the patient improved quickly after increasing Impella flow. Within minutes his blood pressure gradually increased to a stable level. No catecholamines were required. The procedure was continued with 1.75 mm burr for following seven runs with no other complications. After successful predilatation two Synergy (Boston Scientific, USA) stents 3.5/38 mm and 4.0/24 mm were implanted. Postdilatation with noncompliant balloons provided an optimal final result (Fig. 3). After the procedure the patient was completely angina free. Standard pharmacotherapy was recommended. Rotational atherectomy of the last remaining vessel in patients with decreased LVEF and with MI is considered contraindicated due to increased risk of slow/no-flow phenomenon, which could easily lead to rapid deterioration of the patient's haemodynamics. However, in this patient no other therapeutic option was possible. This case shows that careful planning and appropriate preparation with LVAD implantation prior to the procedure allows the prevention of potentially fatal complications of high-risk PCI. Continuous haemodynamic support ensured by LVAD allows elaborated and often lifesaving procedures to be performed in very high-risk patients. To our knowledge this is the first such case published in Polish literature.

Figure 1. Coronary angiography prior to procedure

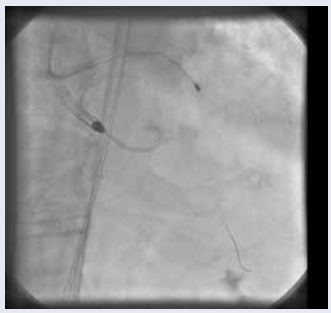

Figure 2. Impella CP placed in left ventricle and 1.5 mm burr passage

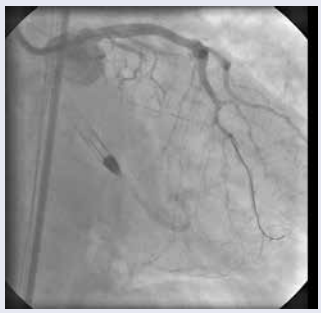

Figure 3. Final result

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Conflict of interest: *none declared*