



LVAD Supported High Risk PCI in District Hospital. High-Volume Centre or High-Volume Operator is Needed?

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Case Study

The percentage of high-risk PCIs performed increased to about one third of all interventional procedures. Taking into account numerous comorbidities, as well as significantly reduced systolic function of the left ventricle, it is often not easy for Heart Team to make a decision regarding the method of revascularization in such patients [1]. In the case of an unacceptably high risk of coronary artery bypass grafting, or in the absence of patient consent to cardiac surgery, performing a coronary angioplasty using the Impella CP left ventricular assist device may be an interesting and sometimes the only alternative [2]. Mentioned criteria were met by 74-year-old man with a history of COVID-19 a few weeks earlier, previously not treated cardiologically, however admitted due to angina chest pain and increasing dyspnea on exertion with elevation of troponin level. The coronary angiography on the day of admission showed the occluded Right Coronary Artery (RCA) and the critically stenotic distal Left Main (LM), Left Anterior Descending artery (LAD) and the significantly narrowed Circumflex Artery (CX) [Panel A]. An ineffective attempt was made to open the RCA, confirming the chronic nature of the occlusion. Echocardiography revealed severe left ventricular systolic dysfunction (mainly in the area of LAD vascularity) with an LVEF of 15%. The patient was qualified for Heart Team consultation. In addition, due to the signs of bilateral pneumonia visible also on X-ray, and disseminated changes such as cobblestones and frosted glass found in chest CT, pharmacological treatment was initiated, resulting in partial stabilization of the clinical condition. Due to too high periprocedural risk, the patient was disqualified from coronary artery bypass grafting. In view of the above, with the protection of the Impella CP system [Panel B], effective angioplasty of the LM and LAD was performed using rotational atherectomy under IVUS control with the implantation of three drug-eluting stents in district hospital in Sandomierz [Panel C, D]. The patient on the 25th day of hospitalization in good general condition was discharged from the department for further outpatient treatment.

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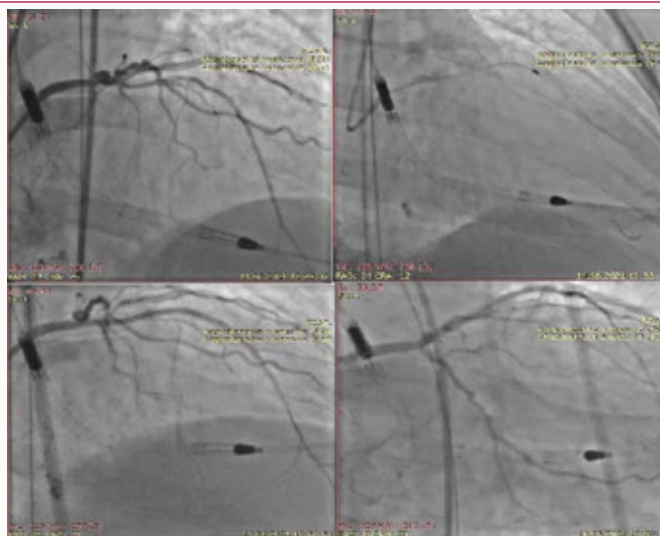


Figure 1: Panel A - Critical lesion in LM and 6-7 segment of LAD; Panel B - Rotational atherectomy of LM and LAD with Impella CP support; Panel C - Final result after LM-LAD stenting in RAO-cranial projection; Panel D - Final result in AP-caudal projection.

Patients with severe systolic dysfunction undergoing coronary angioplasty of LM with simultaneous occlusion of RCA constitute one of the most difficult groups of patients in whom invasive cardiology procedures are performed - especially if it is necessary to use intraoperative I aggravating techniques as rotablation or intravascular lithotripsy [3]. The use of the Impella CP system and providing real support for left ventricular output at the level of 3.7 l/min (4.3 l/min with new SmartAssist) protects the patient against deterioration, dangerous arrhythmias, reduces the load on the left ventricle muscle and allows for safe conduct of the procedure by experienced staff. In the case of our patient, immediately after the procedure, it was possible to reduce the pump support to the P1 level and completely remove the system. Although it was the first LVAD treatment in the Cath Lab of the Hospital in Sandomierz, and the equipment was brought in a way dedicated to the patient, the personnel performing the procedure used the Impella CP pump many times previously. The ability to use a pump to assist the left ventricle in such particular case is not dependent on the 'ad hoc' availability of the device at the facility, but on the experience of the personnel performing the procedure in its use. Not necessarily 'high-volume' center is always needed, sometime 'high-volume' operator is enough.

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