1054 **A Case of Three Vessel Disease with Severely Reduced LV Function Successfully Treated by Staged PCI Following ECPR for Cardiac Arrest During Initial Left Main PCI.**

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A 74-year-old man was transferred to our hospital with new-onset heart failure (HF; Killip class III, EF 20%). ECG showed ST depression in leads II, III, aVF, and V5?6, and elevated troponin T (0.212 ng/mL). Given the absence of chest pain and the decreasing troponin trend, emergency PCI was deferred in favor of HF management. After clinical stabilization, CAG was performed on day 5, revealing three vessel disease: #2 100% #5 50%, #6?7 75%, #8 90%, #9 75%, #11 75%, and #13 90%. Collateral flow from the septal branch to #4PD was classified as grade 3. Despite a high SYNTAX score, our Heart Team selected PCI over CABG, considering the absence of severe LAD stenosis, low cardiac function and the patient's informed preference.

Initially, as the RCA lesion was judged as CTO, PCI for the LMT and LCX was prioritized. On day 8, the PCI was performed under IABP support. After engaging with a 7Fr Hyperion JL3.5SH via left radial artery and crossing with a Sion Blue wire to LAD, IVUS revealed a predominantly fibrotic plaque in the LMT lesion, with a minimal lumen of approximately 2 mm. Pre-dilation of the LMT with a 2.5/15 mm balloon was initially performed. After crossing into LCX and protecting the PL branch, 2.75/15 mm balloon dilatation of LCX was performed. Due to delivery failure of a 2.5/38 mm Everolimus-eluting stent (ESS) in LCX lesion, a 6Fr Guideplus ST with anchor balloon technique was employed for successful stent delivery. The subsequent CAG revealed occlusion of the PL branch, prompting recrossing with SASUKE/XTR and an attempted microcatheter passage.

However, the patient suddenly developed chest pain and agitation. CAG revealed no flow in both LAD and LCX. Suspecting LMT dissection, IVUS was attempted but interrupted due to pulseless electrical activity (PEA). Cardiopulmonary resuscitation was initiated and VA-ECMO was inserted. IVUS revealed no dissection, and thrombus formation was considered secondary to deep device insertion. Therefore, an EES 4.0/12 mm was implanted in the LMT, and thrombectomy was performed in both LAD and LCX. Considering possible distal embolization, intracoronary nitroprusside injection was administered. After removal of the IABP, Impella CP was inserted due to suboptimal coronary flow and inadequate hemodynamic support. Subsequent administration of intracoronary nitroprusside and nicorandil led to final TIMI 2 flow in both vessels.

On day 11, As the general condition was improved, VA-ECMO was weaned. On day 15, PCI was performed on RCA. As Impella interfered with the manipulation of 7Fr Hyperion AL 1.0, a 7Fr Hyperion JR 4.0 SH was used instead. The lesion was crossed with a Miracle Neo3/Corsair PV. Following pre-dilation with 2.5/15 mm balloon, IVUS showed an attenuated plaque. Two overlapping 3.5/48 mm EESs were deployed and post-dilated with 3.5/15 mm balloon, completing the procedure.

The patient had a favorable recovery and was discharged ambulatory on day 36. This case highlights a complex PCI in a NSTEMI patient with reduced LV function. Despite preemptive IABP support, cardiac arrest occurred during the initial procedure, necessitating VA-ECMO rescue. The PROTECT III study demonstrated that early elective use of Impella in Complex PCI was associated with improved hemodynamic stability and reduced periprocedural complications. While IABP was chosen in this case, it remains possible that Impella, if used upfront, might have prevented circulatory collapse. However, in Japan, Impella use is currently limited to indications such as cardiogenic shock and is not reimbursed for prophylactic use in elective complex PCI. In retrospect, the RCA lesion may have

represented recent MI and been amenable to initial intervention. Additionally, initial stenting of the LMT (rather than POBA only) or limiting treatment to the LMT alone, considering the LCX, might have been more appropriate. Although the patient was ultimately discharged without major sequelae, this case underscores the importance of careful invasive strategy planning in complex PCI.