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"Navigating the Maze: Real-time IVUS-guided Rewiring Through Malapposed Stent"

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A 55-year-old man with a history of coronary artery disease (CAD) and dyslipidemia (DLP), who underwent percutaneous coronary intervention (PCI) approximately 3-4 years ago at another hospital for chronic coronary syndrome, presented with acute chest pain triggered by playing basketball. Notably, he had never experienced similar symptoms, even prior to his previous PCI.

Initial electrocardiogram (EKG) demonstrated ST-segment elevation in the anterior leads. Echocardiography revealed regional wall motion abnormalities confined to the anterior wall, with no evidence of mechanical complications.

Urgent coronary angiography (CAG) identified a filling defect within the proximal portion of the previously placed stent in the proximal left anterior descending artery (LAD), as well as an additional filling defect at the distal LAD segment. A workhorse guidewire was promptly advanced distal to the LAD lesion. Initial balloon predilatation using a 1.5 mm balloon was challenging at the proximal segment of the stent but ultimately successful. Sequential plain old balloon angioplasty (POBA) was subsequently performed with 1.5 mm and 2.0 mm balloons at the proximal stent region.

Intravascular ultrasound (IVUS) assessment revealed a significant filling defect at the proximal portion of the stent, accompanied by marked stent underexpansion. IVUS imaging demonstrated that prior balloon angioplasty attempts had inadvertently compressed the stent struts, worsening stent malapposition.

A drug-coated balloon (DCB) was used at the distal LAD lesion following predilatation. Subsequently, meticulous rewiring was performed under real-time IVUS guidance to ensure accurate passage through the true stent lumen, a critical step that highlighted the utility of IVUS for complex intervention.

Following successful IVUS-guided rewiring, aggressive predilatation with non-compliant (NC) balloons was attempted. Despite extensive predilatation, persistent stent underexpansion and residual filling defects necessitated the deployment of an additional stent. After careful placement and aggressive post-dilatation, repeat coronary angiography demonstrated excellent TIMI flow without residual stenosis. Final IVUS confirmed satisfactory stent expansion, proper apposition, and an optimal minimal stent area.

This case emphasizes the critical role of real-time IVUS guidance in facilitating successful rewiring into the true stent lumen, particularly in challenging scenarios involving stent underexpansion and malapposition.