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A 65-year-old ex-smoker with hypertension and prior PCI to the LAD and RCA presented with Canadian Cardiovascular Society class III angina despite optimal medical therapy. Angiography (2022) revealed ostial and in-stent restenosis (ISR) of the RCA, severe ostial LCx disease, and moderate LAD disease, with a SYNTAX I score of 25; CABG was recommended, but the patient initially opted for repeat PCI (RCA ISR and ostial LCx stenting, 3 drug-eluting stents). Recurrent angina led to CABG (SVG to PDA, LIMA to LAD) after angiography outside showed RCA ISR and LCx occlusion with distal left main disease.

One month post-CABG, the patient developed recurrent angina. Angiography demonstrated a 100% occluded SVG graft and a 99% anastomotic lesion at the LIMA-LAD graft, with native left main plus triple-vessel disease and an 80–90% ostial RCA lesion. The patient then presented emergently with ST-elevation anterior wall MI due to acute LIMA-LAD graft occlusion — the "second battle." Via an IMA guiding catheter (right femoral access), the LIMA-LAD occlusion was crossed with a Fielder FC wire, pre-dilated, and modified with a cutting balloon, followed by a drug-coated balloon (DCB), achieving TIMI III flow without edge dissection. In the same setting, IVUS-guided PCI of the diffusely in-stent restenosed RCA (minimum stent area 3.52 mm², plaque burden >75%) was performed using a cutting balloon and OPN NC high-pressure balloon lesion preparation, followed by two overlapping drug-eluting stents with high-pressure non-compliant post-dilatation, achieving a final minimum stent area of 9.14–12.08 mm² across segments.

Three years later, the patient returned with effort angina, breathlessness, new inferior ST elevations, and elevated troponin, consistent with very late stent thrombosis — the "third battle." Angiography confirmed 100% mid-RCA stent thrombosis, with the LIMA-LAD graft remaining patent. IVUS evaluation identified a peri-stent calcium arc as the likely mechanistic culprit underlying stent under-expansion and thrombosis. A calcium-modification strategy was adopted: intravascular lithotripsy (3.5 mm, 80 pulses) followed by high-pressure OPN NC balloon dilatation (3.5 mm at 42 atm) resolved a persistent balloon waist, achieving adequate luminal gain. A DCB (3.5 × 30 mm) was then deployed across the distal, mid, and proximal segments with adequate dwell time, avoiding a further metal layer. Final angiography and IVUS confirmed an excellent result.

This case illustrates that very late stent thrombosis is frequently mechanical rather than purely biological in origin, with under-expansion from unrecognised calcium nodules as a hidden culprit. Intravascular imaging (IVUS) was essential in identifying the true cause across multiple interventions in this patient. Calcium modification with intravascular lithotripsy plus high-pressure non-compliant balloon angioplasty enabled optimal stent-bed preparation, after which a DCB provided a durable, stent-free solution — avoiding an additional metal layer in an already heavily stented, multiply-revascularized coronary tree. The previously DCB-treated LIMA-LAD anastomotic lesion also remained patent at 3-year follow-up, supporting the durability of a leave-nothing-behind strategy in select repeat-intervention scenarios.