

LITHOTRIPSY AS CALCIUM-MODIFYING THERAPY FOLLOWING SUBOPTIMAL STENT DEPLOYMENT

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INTRODUCTION

Real-World Performance of Intravascular Lithotripsy (IVL) in Complex ACS Scenarios

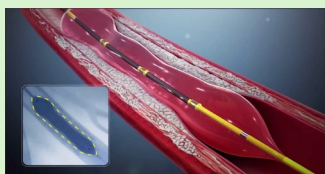
→ 92% acute success in

complex ACS lesions

→ 1.2%

complications (outperforms atherectomy)

→ **Critical gap:** Optimal management of post-stent underexpansion"



CLINICAL CASE

A 67-year-old female with medical history: Hypertension, type 2 diabetes mellitus, former smoker (inactive). No prior cardiovascular events. Admission Diagnosis: Late-presenting NSTEMI (>72 hours symptom onset) Complications on admission: Persistent complete heart block (>10 days duration). Right ventricular failure Management: Required permanent biventricular pacemaker implantation



Diagnostic coronary angiography

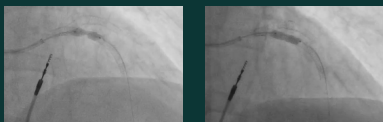
DIAGNOSTIC CORONARY ANGIOGRAPHY
Multi-vessel Coronary Artery Disease
LAD: 90% stenosis at proximal-mid junction
LCx: 75% proximal stenosis 60% mid stenosis
RCA: Proximal chronic total occlusion

Nuclear Stress Imaging: Moderate anteroseptal ischaemia. Myocardial viability. LAD territory: 91% viable. LCx territory: 39% viable. RCA territory: 24% viable **Heart Team Decision:** Approved for **elective PCI of LAD and LCx**. RCA excluded from revascularisation (limited viability)

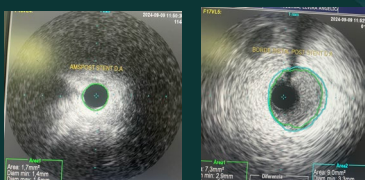
HIGH RISK LAD INTERVENTION

IVUS Findings: Distal Reference Segment: Lumen diameters: 3.3 × 3.6 mm (elliptical) Mid-LAD Lesion: Diffuse disease with: 360° circumferential calcium . Minimal lumen area (MLA): 2.8 mm². Secondary calcified plaque: 270° arc. Proximal Reference: Lumen diameters: 4.3 × 4.8 mm. Vessel area: 3.4 mm². Predilatation 2.5 × 15 mm SC balloon. DES deployment: 4.0 × 48 mm drug-eluting stent (DES) implanted from mid-to-proximal

LAD. Then "Dog Bone" phenomenon observed (indicative of rigid calcium). IVUS Findings: Severe underexpansion: MSA 1.7 mm² with Circumferential calcium: 360° arc. Calcium Modification: intravascular lithotripsy (IVL): 4.0 × 12 mm balloon (60) pulses. IVUS-Verified Outcome: Proximal Stent Segment: MSA: 9 mm².



LAD Artery: Pre and post intravascular lithotripsy therapy findings



IVUS assessment prelithotripsy ALS 1.7 mm²

IVUS assessment postlithotripsy ALS 9 mm²

Cx intervention Predilatation: 2.5 × 15 mm semi-compliant balloon. DES deployment: 3.5 × 18 mm implanted in mid-distal LCx. Post-dilatation: 4.5 × 12 mm non-compliant balloon (POT technique) Focused on proximal-mid stent segment Proximal Stent Extension: Overlapping 4.0 × 33 mm DES deployed in proximal LCx. Final POT performed to ensure ostial coverage.

Final Angiography: TIMI flow grade 3 TMP grade 3

No complications: edge dissections or side branch compromise



Final coronary angiography (2 images>)