1016 **Climbing the Spiral Stairway from Hell to Heaven: A Case of Post-Drug-Coated Balloon Dissection**

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A 66 years old gentleman with diabetes mellitus type 2, hypertension, and dyslipidaemia presented with stable angina (CCS class II). He had undergone coronary artery bypass grafting in 2003, with two grafts - left internal mammary artery (LIMA) to left anterior descending artery (LAD), and saphenous vein graft (SVG) to obtuse marginal (OM). A nuclear stress perfusion scan showed significant stress-induced ischemia with small area of non-transmural infarct in the RCA territory. He was thus electively admitted for coronary angiogram and graft study.

Angiogram via right femoral approach revealed patent LIMA to LAD, but a stumped SVG to OM. The unprotected left circumflex artery (LCx) had only mild 40% stenosis. However, the unprotected right coronary artery (RCA) was severely, diffusely diseased from ostium to mid segment, and severely calcified, with TIMI II flow. Decision was made to intervene the RCA with a hybrid strategy of stenting the ostial-proximal segment and overlapping it with a drug-coated balloon (DCB) to the mid segment, under intravascular ultrasound (IVUS) guidance.

Ostial RCA engagement was attempted with a Judkins right (JR) 3.5/6Fr guiding catheter which unfortunately caused severe pressure dampening and chest pain. Side holes were created near the tip of the guiding catheter, which was then reengaged. Distal RCA was swiftly wired with Runthrough Floppy, and a large right ventricle (RV) branch wired with Sion Blue. The guide was then slightly disengaged and a third wire (Runthrough Floppy) was delivered to the aorta ("sepal" wire technique) to prevent accidental re-engagement of the diseased ostium. Predilatation with a semi-compliant (Ryurei) 2.0/15mm balloon was done to open a channel to pass the IVUS transducer, which showed fibrocalcific lesion (calcium score 2) and distal/proximal references of 2.5/3.5mm respectively. Mid RCA was further predilated with scoring (Wedge NC) 2.5/15mm balloon, and proximal to ostial segment with scoring (Scoreflex Trio) 3.0/15mm balloon, up to 22atm. A cineangiography (cine) showed non-flow limiting type B dissection, hence a DCB (Essential Pro) 2.5/40mm was delivered and inflated to 6atm for 45seconds, limited by patient's chest pain. Proximal RCA was then stented to ostium with a drug-eluting stent (Biofreedom) 3.0/19mm, guided by the "sepal" wire, and then postdilated to 3.0mm at high pressures. A cine on LAO view showed acceptable results, and the RCA wire was withdrawn. However, subsequent cine without the wire showed worsened mid segment dissection ? now a type D spiral dissection. Patient complained of worsening chest pain and became hypotensive down to 70/40mmHg. Fluid bolus and IV noradrenaline was immediately started to support his blood pressure. Distal RCA was rewired carefully, making sure to remain in the true lumen by forming a distal-end wire loop. A drug-eluting stent (Ultimaster Tansei) 2.5/38mm was delivered distally to ensure it is indeed free in the true lumen, and then withdrawn and deployed at the mid RCA, overlapping with the previous stent, and finally postdilated up to 3.0mm. IVUS was repeated showing well-apposed and well-expanded stent, with no stent edge dissections. Flow was improved to TIMI III and noradrenaline was weaned off at the end of the procedure.

A previously acceptable (i.e., intended) dissection prior to DCB delivery can significantly worsen after balloon inflation - especially with longer DCBs. Dissections should be interrogated thoroughly with at least two orthogonal angiographic views prior to coronary wire withdrawal. Severe coronary artery dissections can result in hemodynamic compromise and must be managed rapidly and decisively by stenting the affected segment.