

Extension During High-Risk Left Main PCIWinnie Soo Yee Hoo¹

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Introduction

A 75-year-old gentleman with diabetes mellitus, hypertension, and dyslipidaemia was referred for coronary artery bypass grafting (CABG) after being diagnosed with triple-vessel coronary artery disease involving the distal left main coronary artery. However, his hospitalisation was complicated by septicaemia followed by a non-ST-elevation myocardial infarction (NSTEMI), rendering him a high-risk surgical candidate. He was therefore referred for high-risk percutaneous coronary intervention (PCI).

Objective

To demonstrate the successful management of a fractured drug-coated balloon (DCB) shaft during complex PCI using bailout retrieval techniques.

Case Description

PCI was performed using a 7 Fr EBU 3.5 guiding catheter. Intravascular ultrasound (IVUS) demonstrated severe calcification extending from the distal left main (LM) to the proximal left anterior descending artery (LAD), with fibrocalcific disease involving the proximal left circumflex artery (LCx). A provisional single-stent bifurcation strategy was planned, comprising DCB angioplasty to the LCx followed by drug-eluting stent implantation from the proximal LAD to the LM.

Lesion preparation of the LM–LAD segment was performed using scoring balloons, a non-compliant balloon, and 90 pulses of intravascular lithotripsy (IVL). The LCx lesion was prepared using Raiden3 and Naviscore balloons. A 3.5 × 20 mm Restore Plus drug-coated balloon was selected for LCx angioplasty. During advancement of the DCB across the left main bifurcation, significant resistance was encountered at the guiding catheter, resulting in fracture of the DCB shaft within the 7 Fr guiding catheter while the balloon and distal shaft remained within the coronary artery. Initial retrieval using the twirling (twisting-wire) technique was unsuccessful. Balloon trapping was first attempted using a 2.0 × 15 mm and 2.5 × 15mm Sapphire 3 balloon, but adequate purchase could not be achieved. The trapping balloon was subsequently upsized to NC Sapphire 3.0 × 15mm within a Guideplus II guide extension catheter, enabling successful en bloc retrieval of the fractured DCB shaft together with the guide extension catheter and guiding catheter without vascular injury or device embolization.

Results

The fractured DCB assembly was successfully retrieved en bloc. A new 7 Fr EBU 3.5 guiding catheter was used to re-engage the left main coronary artery, and the planned PCI was successfully completed. DCB angioplasty was performed to the LCx, followed by drug-eluting stent implantation from the LM to the LAD, achieving final TIMI 3 flow. Post-procedural IVUS confirmed optimal stent expansion and apposition without edge dissection or other procedural complications.

Conclusion

Fracture of a DCB shaft is a rare but potentially serious complication during complex PCI. Prompt recognition and a stepwise bailout strategy using balloon trapping within a Guideplus II guide extension catheter enabled safe en bloc retrieval of the fractured device, avoided procedural abandonment, and allowed successful completion of the planned revascularization.