OCT ASSESSMENT OF CUTTING BALLOON ANGIoplasty FOR IN-STENT RESTENOSIS

Division of Cardiology, Mount Sinai Hospital, New York, NY, USA

Yuliya Vengrenyuk, PhD;
and Annapoorna Kini, MD
OCT ASSESSMENT OF CUTTING BALLOON ANGIOPLASTY FOR IN-STENT RESTENOSIS

CLINICAL HISTORY

- A 57-year-old male with hyperlipidemia, controlled hypertension, and controlled non-insulin-dependent diabetes mellitus (NIDDM) presented with CCS class IV angina. The patient had multiple previous drug-eluting stent (DES) percutaneous coronary interventions (PCI). The last PCI was done 9 months earlier in the mid RCA and proximal LAD.

PROCEDURE

- Coronary angiogram showed 90-95% diffuse in-stent restenosis of the Promus Premier™ stent, which had been implanted in the RCA 9 months earlier (Figure 1A, arrow).

- The lesion was first treated using a 4x6 mm Flextome™ Cutting Balloon™ (CB) inflated to 12 atm (Figure 1B); then, an optical coherence tomography (OCT) pullback was performed to assess the effects of CB angioplasty.

Figure 1. Coronary angiography shows severe in-stent restenosis in the mid RCA before (A, arrow) and after cutting balloon angioplasty (B).
After the CB procedure, OCT detected irregular lumen surface with several intimal fissures and flaps (Figure 2, frames 3 and 4). A long intimal flap was detected in the OCT longitudinal view (Figure 2, top, arrow) and frame 3 (arrows). Minimal lumen area was 6.26 mm² suggesting effective plaque scoring.

A thin layer of neointima was detected at the proximal and distal stent edge (Figure 2, 2 and 5). OCT showed a small calcification proximal to the stent (Figure 2, 1) and large circumferential calcification distal to the stent (Figure 2, 6, asterisks); no calcium deposits were detected inside the stent.

Two original stent layers were visualized by OCT imaging (inserts in Figure 2, 2 and 4).
Based on the preprocedural evaluation of lesion morphology and CB effects, a Xience Xpedition™ stent DES 4×20 mm was deployed.

OCT/angiogram pullback after the new stent placement shown in Figure 3 confirmed good stent expansion and apposition (2), detected a small tissue protrusion (3), didn’t detect stent edge dissections (1, 4-6).

CONCLUSIONS

In-stent restenosis (ISR) after PCI remains one of the major clinical problems in the DES era. Treatment of ISR lesions includes conventional percutaneous transluminal coronary angioplasty (PTCA) or CB angioplasty with or without restenting. In this case, we used OCT/angiography co-registration imaging to analyze the effects of cutting balloon angioplasty and evaluate the characteristics of in-stent restenosis lesion. The decision to put another stent was made based on OCT detection of a large intimal flap after cutting balloon. Post-PCI OCT imaging was used to verify new stent expansion and apposition.
Brief Summary: Prior to using these devices, please review the Instructions for Use for a complete listing of indications, contraindications, warnings, precautions, potential adverse events and directions for use.

Promus Premier, Flexorome Cutting Balloon and Xience Xpedition are trademarks of Boston Scientific Corporation or its affiliates.

Unless otherwise noted, ™ indicates that the name is a trademark of, or licensed to, St. Jude Medical or one of its subsidiaries. ST. JUDE MEDICAL and the nine-squares symbol are trademarks and service marks of St. Jude Medical, Inc. and its related companies. © 2015 St. Jude Medical, Inc. All Rights Reserved.