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IMAGES IN INTERVENTION

Fate of Different Types of Intrastent Tissue Protrusion

Optical Coherence Tomography and Angioscopic Serial Observations at Baseline and 9-Day and 3-Month Follow-Up

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A 73-year-old woman with dyslipidemia and diabetes underwent percutaneous coronary intervention in the right coronary artery due to stable angina. Tandem lesions were treated with 2 sirolimus-eluting stents (ULTIMASTER, Terumo, Tokyo, Japan) separately (**Figure 1A**). After implantation of a 2.5 mm × 38 mm ULTIMASTER to the distal lesion and a 2.75 mm × 38 mm ULTIMASTER to the proximal lesion, coronary angiogram revealed slow-flow phenomenon (Thrombolysis In Myocardial Infarction [TIMI] flow grade I). The TIMI flow grade III coronary flow was successfully obtained by thrombus aspiration and intracoronary injection of nicorandil (**Figure 1B**).

At both proximal and distal stents, optical coherence tomography (OCT) presented the intrastent protruded tissue with low attenuation and heterogeneous light intensity overlying the similarly attenuating plaques in both stents (**Figures 1C and 1E**). On the other hand, coronary angioscopy (CAS) demonstrated clearly different tissue types; at the proximal stent, red thrombi on the yellow plaque were detected (**Figure 1D**), whereas at the distal stent a red thrombus and a white protruding thrombus on the white plaque were observed (**Figure 1F**). Nine-day follow-up OCT showed a reduction of the intrastent tissue protrusion area in both stents (**Figures 1C′, 1E′, and 2**). However, at 3-month follow-up, more intensive neointimal hyperplasia were found at the yellow plaque site (proximal stent) (**Figures 1C″ and 2**) than at the white plaque lesion (distal stent) (**Figures 1E″ and 2**).

Yellow and white plaques observed by CAS are associated with lipid-rich plaque and stable plaque, respectively (1). In the present case, CAS in combination with OCT successfully demonstrated the different types of intrastent tissue protrusion, which may have different fate in acute and late phase (2–5).

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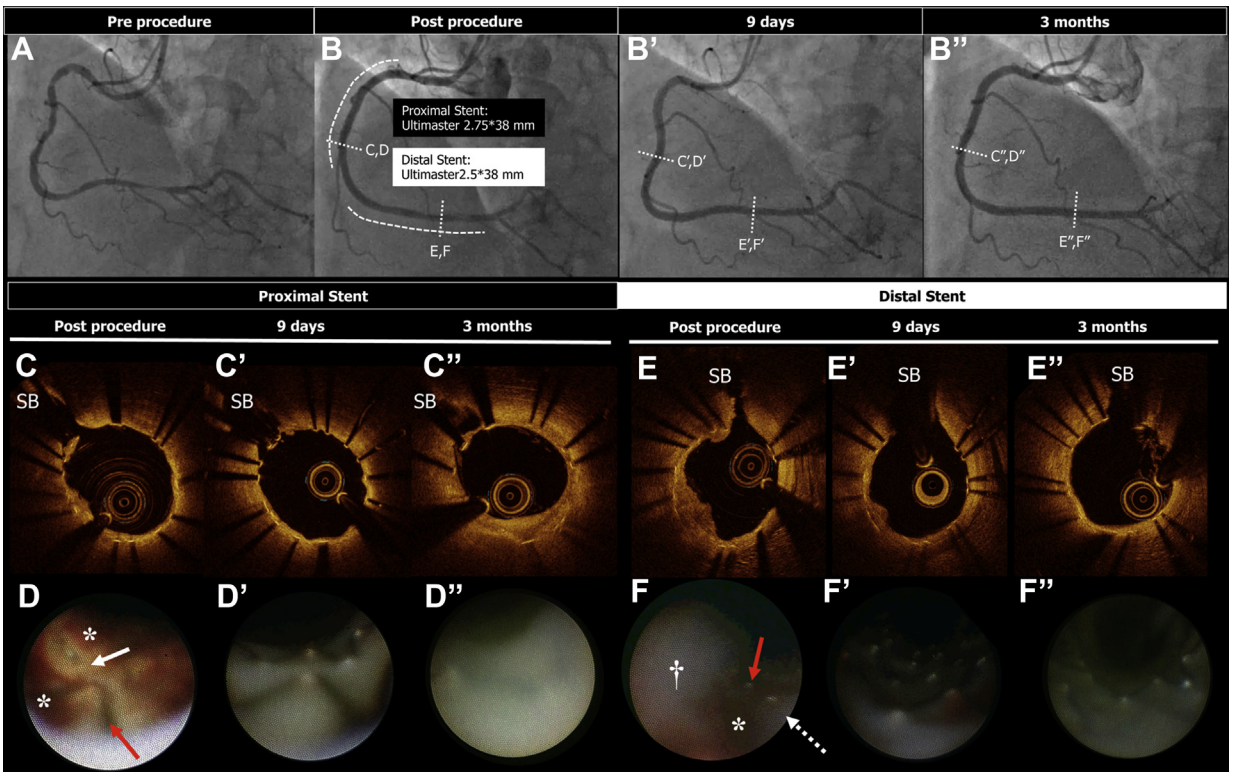
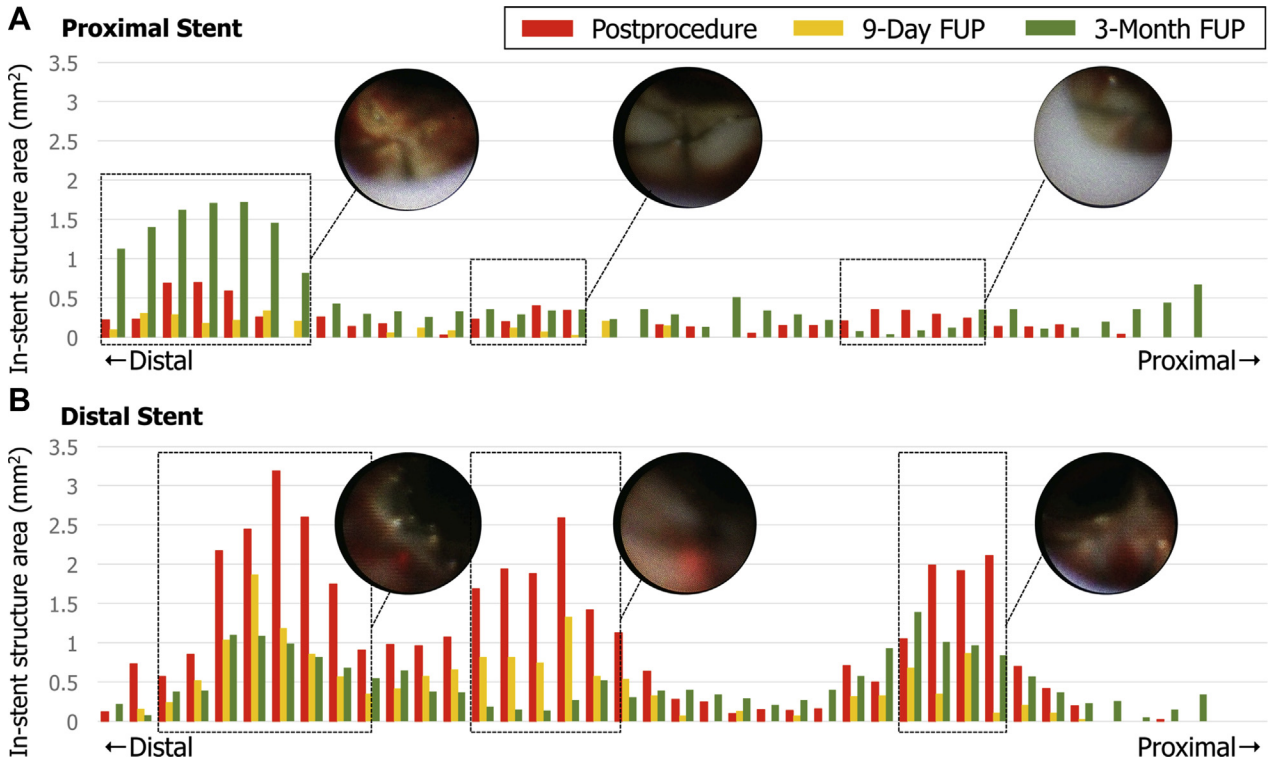
FIGURE 1 **Serial Optical Coherence Tomography and Angioscopic Assessments After Stent Implantation**



The coronary cine angiograms at **(A)** baseline and **(B)** post-procedure, **(B')** 9-day, and **(B")** 3-month follow-up are presented. Matched optical coherence tomography cross sections at **(C, E)** baseline, **(C', E')** 9 days, and **(C", E")** 3 months are shown with corresponding angioscopic images at **(D, F)** baseline, **(D', F')** 9 days, and **(D", F")** 3 months, respectively. On coronary angioscopy, red thrombi **(asterisk)** on the yellow plaque **(white arrow)** was found at the proximal stent **(D)**, whereas at the distal stent **(F)**, a red thrombus **(*)** and a white protruding thrombus **(†)** on the white plaque **(white dotted arrow)** were observed. **Red arrows** indicate the stent struts.

FIGURE 2 **Dynamic Changes of In-Stent Structure Assessed by Optical Coherence Tomography**



The vertical axis indicates in-stent structure area assessed by optical coherence tomography: **(A)** proximal stent, **(B)** distal stent. **Red, yellow, and green bars** present baseline, 9 days, and 3 months, respectively. FUP = follow-up.

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