

Clinical implications of post-stent optical coherence tomographic findings after drug-eluting stent implantation: severe malapposition and thrombotic events

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Background: The clinical implications of optical coherence tomography (OCT) assessment following percutaneous coronary intervention are controversial.

Purpose: We sought to evaluate the impact of post-stent OCT findings, including significant malapposition, on long-term clinical outcomes.

Methods: A total of 1,290 patients with 1,348 lesions, in which OCT was performed immediately post-stent, were consecutively enrolled in the prospective OCT registry. Post-stent OCT findings were assessed to identify predictors of device-oriented clinical end points (DoCE), including cardiac death, target vessel-related myocardial infarction (MI), stent thrombosis, and target lesion revascularization (TLR). We also looked for significant malapposition criteria that may be associated with thrombotic events such as cardiac death, target vessel-related MI, and stent thrombosis.

Results: Incidences of stent edge dissection, tissue prolapse, thrombus,

and malapposition after intervention were not associated with occurrence of adverse thrombotic events. However, patients with significant malapposition [total malapposition volume (TMV) ≥ 7.0 mm³ or TMV/stent volume $\geq 4.1\%$] exhibited more frequent thrombotic events. In multivariate analysis, smaller minimal stent area (MSA) was identified as an independent predictor for DoCE (hazard ratio [HR], 1.21 [1.01–1.45]; $P=0.037$). Malapposition with TMV ≥ 7.0 mm³ was found to be an independent predictor of thrombotic events (HR, 4.62 [1.29–16.47]; $P=0.018$).

Conclusions: Although most high-resolution OCT findings were not associated with clinical outcome, smaller MSA was associated with DoCE, driven mainly by TLR, and significant malapposition with TMV ≥ 7.0 mm³ was associated with more thrombotic events after drug-eluting stent implantation.

