Plaque Morphology Predictors of Side Branch Occlusion after Provisional Stenting in Coronary Bifurcation Lesion: Results of Optical Coherence Tomography Bifurcation Study (ORBID)

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Background
Provisional stenting remains the main approach to treatment of bifurcation lesions; however, it may result in the narrowing of side branch (SB) ostium. There is little information about underlying plaque morphology of the main vessel (MV) lesion and its potential impact on the SB after provisional stenting. The aim of this study was to identify the predictors of SB ostial stenosis developed after provisional stenting of the MV using Optical Coherence Tomography (OCT).

Methods
Patients with stable coronary disease with angiographic MV lesion not involving SB were included in a prospective single center study. The primary outcome was significant SB ostium stenosis (SBOS), defined as residual stenosis of > 50% after MV stenting.

Results
Thirty bifurcation lesions in 30 patients were analyzed in the study. Post-stenting significant SBOS was observed in 30% of patients (Figure 1). The MV lesions with SBOS > 50% were characterized by a higher prevalence of lipid rich plaques (100% vs. 64%, p=0.040) and spotty calcifications (60 vs 0%, p=0.005). Maximal lipid arcs were greater (257 vs 1320, p=0.001) and lipid volume index was higher (1380 vs 574, p=0.012) in the SBOS > 50% group. Multivariate logistic regression analysis identified maximal lipid arc (odds ratio (OR): 1.014, p=0.038) and the presence of lipid plaque contralateral to SB ostium (OR: 8.14, p=0.046) before stenting as independent predictors of significant SBOS after PCI.

Conclusion
High lipid content of the MV lesion and a contralateral location of lipid in the bifurcation area may contribute to SBOS after provisional stenting.
Other Information
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