i2 SUMMIT

THREE-DIMENSIONAL OPTICAL COHERENCE TOMOGRAPHY ASSESSMENT OF NEOINTIMAL COVERAGE AFTER STENT IMPLANTATION: A PROPOSAL FOR CLASSIFICATION

i2 Poster Contributions
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Background: A lack of neointimal tissue coverage (NTC) is 1 of predictors of stent thrombosis after drug eluting stent implantation. Three-dimensional (3D) reconstruction of optical coherence tomography (OCT) facilitates to understand the spatial relationship between stent struts and the vessel wall. The objective is to propose a novel classification by comparing the visual assessment of NTC on 3D image with the two-dimensional (2D) qualitative analysis.

Methods: We rendered 3D images with the 2D OCT obtained at follow up after stenting. The degree of the NTC was classified as follows; 0: stent struts were completely visible, 1: those were seen translucently ≥50%, 2: those were seen translucently <50%, 3: all struts were invisible. Two observers assessed independently. The NTC thicknesses of the same ROI were measured at intervals of 0.5mm.

Results: A total of 30 stents were evaluated. Inter observer agreement was almost perfect (κ=0.82). There were significant differences of NTC thickness between the four groups classified by the 3D images (18±36μm in group 0, 88±33μm in group 1, 185±69μm in group 2 and 358±202μm in group 3, p<0.001). In Spearman rank-order analysis, there was a significant positive correlation between the NTC thickness and the 3D classification (r=0.887, P<0.001).

Conclusions: 3D OCT classification may help to evaluate the NTC at a glance.

figure:
three-dimensional optical coherence tomography classification
for the degree of the neointimal coverage

0: stent struts are completely visible

1: stent struts are seen translucently ≥50%

2: stent struts are seen translucently <50%

3: all struts are invisible