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i2 SUMMIT

IMPACT OF UNCOVERED STENT STRUTS ON OPTICAL COHERENCE TOMOGRAPHY (OCT) DETECTED THROMBUS FORMATION AT 10-MONTH FOLLOW-UP OF SIROLIMUS-ELUTING STENTS (SES)

i2 Oral Contributions

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Background: While early promising results with drug-eluting stents (DES) have been tempered by the relatively rare but devastating development of late and very late stent thrombosis (LST/VLST). OCT having high resolution (up to 10 μ m) would be useful to detect the neointimal hyperplasia and thrombus.

Methods & Results: We performed 3993 strut analysis by OCT at every 1 millimeter in 30 patients with sirolimus-eluting stent (SES) at 10-month follow-up. Stent diameter used was 2.92+0.35mm with the length of 19.0+3.6mm. Of the 3993 struts, 622 (15.6%) struts remained uncovered (<10 μ m) and the remaining 3371 (84.4%) struts had covered strut (figure). While thrombi were identified as protruding masses, red thrombi were characterized as high-backscattering protrusions with signal-free shadowing and white thrombi were signal-rich and low-backscattering. Of the 25 thrombi, 3 were red, 8 white and 14 mixed thrombi. Of the 25 thrombi, 16 (64%) were observed on uncovered struts and the remaining 9 (36%) were seen on covered struts, with significantly higher incidence of thrombus on uncovered struts than on covered struts ($p<0.001$).

Conclusion: While 64% of OCT-detected thrombus was found on uncovered stent struts, the remaining 36% was observed on covered stent struts at follow-up of SES ($p<0.001$). While uncovered stent struts could play a role in the thrombus formation, other mechanisms such as fibrin deposit over the stent strut and incomplete stent apposition would also relate to the occurrence of LST/VLST.

Frequency distribution of neointimal thickness on SES struts by OCT at follow-up

