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# DIFFERENT VESSEL RESPONSE BETWEEN CHRONIC TOTAL OCCLUSIONS AND NON-CTO LESION AFTER SIROLIMUS-ELUTING STENT IMPLANTATION: A SERIAL OPTICAL COHERENCE TOMOGRAPHY STUDY

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**Objectives** To investigate the neointimal coverage and malapposition of sirolimus-eluting stent in treatment of CTOs and non-CTO lesions (including lipid-rich plaque and non-lipid-rich plaque) by optical coherence tomography.

**Methods** We enrolled 64 patients (CTO: n=29 stents/21 patients, lipid-rich plaque: n=33 stents/26 patients, and non-lipid-rich plaque: n=21 stents/17 patients) with 68 target vessels and examined lesion characteristics by using OCT at pre- and post-SES implantation and 6 months follow-up. Lipid rich plaque was defined as the plaque with lipid content in  $\geq 2$  quadrants. Non-lipid-rich plaque consists of fibrous, fibrocalcific plaque, and lipid plaque with less than two quadrants lipid content.

**Results** The incidence of incomplete stent apposition was higher in CTO and lesion with lipid rich plaque compared with those with non-lipid rich plaque (3.03%, 2.58% vs 0.64%,  $p=0.0219$ ). The tissue protrusion (14.99 % vs 11.00% vs 6.41%,  $p<0.001$ ) and intra-stent thrombus (3.81% vs 2.39% vs 1.07%,  $p=0.0119$ ) after percutaneous coronary intervention were observed most frequently in lipid-rich plaque group then followed by those in CTO group and non-lipid rich plaque group. At 6 months follow-up, the incidence of malapposition (5.0% vs 1.04% and 0.4%,  $p=0.002$ ), the cross section with uncovered struts (23.4% vs 8.2% and 6.6%,  $p<0.001$ ), and protrusion (30.8% vs 9.6% and 9.6%,  $p<0.001$ ) was significantly greater in patients with CTO than those with lipid rich plaque and non-lipid rich plaque. Although the incidence of in-stent thrombus was non-significantly higher in CTO than LRP and non-LRP (9.4% vs 3.1% vs 0%,  $p=0.26$ ), there was no adverse event in these patients with CTO.

**Conclusions** Initial lesion morphology is contributable to coronary artery response to DES after stent implantation. CTOs and lipid rich plaque is associated with higher incidence of malapposition, tissue protrusion, and mural thrombus after stenting. At 6 months follow-up, the vessels with CTO lesions were characterised by delayed healing and higher incidence of malapposition.