Invasive Coronary Imaging: IVUS, OCT, Spectroscopy, and Other
(TCTAP A-081 to TCTAP A-086)

TCTAP A-081
Efficacy of the Combination Catheter: Intravascular Ultrasound(IVUS) with a Balloon
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Background: VIIBE RX catheter is the world’s first catheter that combines intravascular ultrasound(IVUS) with a balloon in one device. We evaluated the efficacy of the novel catheter.

Methods: 50 patients who underwent percutaneous coronary intervention (PCI) in our hospital between July 2012 and October 2012 were enrolled in this study. They were randomly divided into two groups: using IVUS with a balloon (n=25), and using ordinary IVUS (n=25). Patients with distal lesions, chronic total occlusion (CTO) and acute myocardial infarction (AMI) were excluded. We assessed procedure time, fluoroscopy time, contrast volume, the device crossability.

Results: Procedure time were 67.7±24.7 minutes in VIIBE group and 79.1±23.3 minutes in EagleEye group (p=0.06). Fluoroscopy time were 20.7±10.5 minutes in VIIBE group and 25.5±11.7 minutes in EagleEye group (p=0.11). Contrast volume were 120.2±34.8 ml in VIIBE group and 119.0±34.1 ml in EagleEye group (p=0.81).

3 patients in both groups had difficulties of the device crossvability.

Conclusion: Our study suggests that using VIIBE RX catheter may contribute to reduce procedure time and fluoroscopy time. Further studies about the economic efficacy and the usefulness for more complex situations are needed.

TCTAP A-082
Optical Frequency Domain Imaging Guidance for Coronary Stent Implantation in Comparison with Intraluminal Guidance
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Background: Intravascular ultrasound (IVUS) has been used as a guidance of stenting. Optical Frequency Domain Imaging (OFDI) has high resolution and super-processed technology on cinnematic imaging. The aim of this study was to assess the feasibility of OFDI-guided stent implantation.

Methods: Total of 25 de novo, consecutive, elective stenting lesions (22 patients) were enrolled in this study. OFDI and IVUS images were recorded before intervention. IVUS images were blinded for operators. Stent implantation was performed under OFDI-guidance alone. IVUS confirmation was performed after the procedure and further treatment was permitted based on IVUS results. One-month after the procedures, strategy of stent deployment was re-built by the same operator with the IVUS results before intervention.

Results: Selected stent length and diameter were equal between OFDI-guidance and IVUS-guidance (O:23.8mm vs I:23.3mm, p=0.53, O:3.83mm vs I:3.33mm, p=0.41). The selected landing point difference of OFDI-guidance and IVUS-guidance were 1.8mm at proximal edge and 0.8mm at distal edge. Distal protection device was deployed 4 cases according to OFDI images. Additional inflation was performed after final IVUS in 2 cases. There was no complication (perforation, slow-flow/no-flow, dissection to need additional stenting) during procedure and no in-hospital MACE (death, QMI/nonQMI, subacute stent thrombosis).

Conclusion: OFDI-guidance is comparable to IVUS-guidance for elective stent implantation.

TCTAP A-083
Impact of Diabetes on Heavily Calcified Plaque in Extremely Late In-stent Restenosis Lesions After Bare-metal Stent Implantation
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Background: In-stent neatherosclerosis is a major concern of late in-stent restenosis after either drug-eluting stent or BMS implantation. Patients with DM increase requiring target lesion revascularization(TLR) at long-term follow-up. The characteristics of lesions with extremely late in-stent restenosis after BMS implantation remain unclear.

Methods: Median follow-up duration after BMS implantation was 10.0±2.8 years (range 4-16 years). Consecutive 35 late in-stent restenosis lesions required the first TLR beyond 4 years after BMS implantation were estimated with IVUS measuring the calcium arc and length. Results: All patients (67.5±5.0 y.o.; 28 male) presented ischemic symptoms (18 ACS including 5 STEMI, 17 stable ischemia). All in-stent lesions contained various calcified plaque. The mean calcium arc was 138±100 degree and length 8.2±10 mm respectively. In DM patients, calcium arc was significantly greater than those of non-DM (195±83 vs 83±79 degree; p<0.01). The rate of severely calcified lesion defined as calcium arc over 180 degree was higher in DM than those in non-DM (63.1% vs 12.5%; p<0.01). There was no difference in the period between the index procedure and TLR (DM 9.8±3.0 years, non DM 10.6±2.1 years).

Conclusion: Various calcified plaque are contained in the late in-stent restenosis lesions regardless of DM. However DM is correlated with heavily calcified plaque in in-stent lesions with late in-stent restenosis. We should pay attention to treatment of late in-stent restenosis with DM patients because of existence of heavily calcified plaque.

TCTAP A-084
Impact of Pre-dilation Strategy on Vessel Response Following Stent Implantation in Patients with De Novo Coronary Artery Lesion
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Background: Although follow-up event rates have significantly improved since the introduction of drug-eluting stents, pre-dilation strategy before stenting is still important to achieve better stent expansion. The Lacrosse non-slip element (NSE)