immediately after intervention for IR. We evaluated yellow color grade (grade 0-3), neointima coverage grade (grade 0-2), and thrombus (presence or absence) at the culprit lesion. The patients were divided into two groups according to the maximum yellow color grade of the lesion (White: grade 0 or 1 vs. Yellow: grade 2 or 3) and their IS recurrence was examined by angiography at one-year follow-up. Diameter stenosis >50% was defined as ISR.

Results: The incidence of IS recurrence was higher in the patients with yellow ISIR lesion than in those with white ISIR lesion (67.8% vs. 10.0%, p=0.018). Thrombus was not detected in both groups. Neointima coverage grade was not different between the groups.

Conclusion: The patients with yellow ISIR lesion had the higher incidence of IS recurrence than those with white ISIR lesion.

TCTAP A-067
The Impact of Angiographic Peri-contrast Staining After Second the Impact of Angiographic Peri-contrast Staining After Second Generation DES
Implantation: Peri-contrast Staining DES Implantation
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Background: Several studies showed peri-contrast staining (PSS) was be associated with TLR and very late stent thrombosis. However, the incidence and clinical sequela of PSS after second generation DES implantation are unclear, so we retrospectively evaluate the clinical outcomes.

Methods: This study consisted of de novo 1622 lesions in 1150 patients that were treated with second generation DES (ZES, EES, and BES) in a single center. They were evaluated by follow-up angiography within 12 months after stent implantation, from April 2009 to August 2012. We divided into PSS group and non-PSS group and compared the two groups in clinical and angiographical outcomes.

Results: There were no significant differences between the two groups in patient background and lesion characteristics. Late acquired PSS was observed in 12 lesions (0.74%) in 11 patients (0.96%). In these lesions, 2 lesions (0.63%) were observed in BES, 4 lesions (0.4%) were EES and 6 lesions (1.9%) were ZES. (N.S.) Stent fracture was more frequently observed in lesions with PSS than in lesions without PSS (29.4% versus 1.1%, P<0.0001). Cumulative incidence of TLR and MACE in the PSS group was higher than that in the non-PSS group (33.3% versus 5.5%, and 41.7% versus 9.6%, P<0.005).

Conclusion: In this study, PSS after second generation DES seemed to be associated with TLR and MACE.

Quantitative Angiographic Results

TCTAP A-068
The Timing of Occurrence of Stent Fracture After Sirolimus-eluting Stent Implantation
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Background: SF was more commonly reported in sirolimus-eluting stent (SES), right coronary artery (RCA), longer duration of implant and longer stent length. However the timing of stent fracture of each coronary is unknown. The purpose of this study is to assess the time point at which SF of each coronary occurs by the multidetector MDCT.

Methods: We performed the 4-slice MDCT on asymptomatic and event-free 114 patients (156 lesions) who received SES implantation. These lesions are all RCA and left anterior descending artery (LAD) to compare two coronary arteries. We investigated the rate of SF, in-stent restenosis (ISR) and peri-stent aneurysms caused by SF. MDCT definition of SF is complete separation or partial separation of stent struts. The average first CT follow-up period was 24.0±5 months (3-75 months). Then we conducted the second MDCT 42.8 months (12-71 months) later after the first MDCT to non-SF 45 patients (48 lesions).

Results: SF was identified in 32 lesions of 156 lesions (20.5%) at the first MDCT. In RCA, 14 stent fractures of 39 lesions were observed. Fracture rate was 35.8%. In LAD, 18 stent fractures of 117 lesions were observed. Fracture rate was 15.3%. SF was more observed in RCA than LAD at the first MDCT (P=0.006). ISR induced by SF was 1 lesion (3.1%), peri-stent aneurysms were 2 lesions (6.2%). At the second MDCT, new SF occurred in 3 lesions of non-SF 48 lesions. The rate of new SF was 6.2%. The coronary of new SF was all LAD and new SF didn’t occur at RCA. About these lesions, ISR and peri-stent aneurysm induced by SF were not detected.

Conclusion: SF was more observed in RCA than LAD at the first MDCT, however the new SF was identified in only LAD. About LAD, it is the possibility to increase the rate of SF in chronic phase. We continue to follow up the patients who received SES implantation.

TCTAP A-069
Clinical and Angiographic Results in Patients with Very Small Coronary Vessel After Biolimus A9-eluting Stent Implantation
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Background: Percutaneous coronary interventions (PCI) to small-diameter vessels remain an important challenge because of increased complications.

Methods: Between May 2011 and January 2012, 83 patients with very small coronary vessels (reference vessel diameter <2.5 mm) were submitted to PCI. Biolimus-eluting stent (BES) was deployed at a low pressure with low inflation time.

Results: Two cases of distal edge dissection were observed and one of them needed additional stent implantation. Postprocedural TIMI grade 3 flows were achieved in all patients. There were no death, myocardial infarction (MI) and target lesion revascularization (TLR) during the initial hospitalization. The angiographic data is shown in Figure. Average luminal diameters (ALD) in distal segments significantly increased from baseline (1.36±0.49 mm vs. 1.56±0.31, p=0.01). At 12 months after procedure, the rate of TLR was 8.9%. There were no cardiac death and MI related to target lesions. Distal TLR tended to increase from initial procedure (1.71±0.30mm, p=0.07).

Conclusion: BES implantation to very small coronary vessels achieved a high clinical success and luminal diameter distal to stent significantly increased and remained unchanged at 12-month follow-up.

TCTAP A-070
Clinical and Angiographic Results in Patients with Very Small Coronary Vessel After Biolimus A9-eluting Stent Implantation
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Background: Stent thrombosis has been strongly associated with discontinuation of dual antiplatelet therapy. The central point of stent thrombosis seems to be the impaired, or delayed re-endothelialization, and the most important histological and morphometric predictors of late stent thrombosis (LST) were endothelial coverage and the ratio of uncovered to total stents after drug-eluting stent (DES) implantation. However, recent controversies regarding the risk of stent thrombosis in patients receiving DES has brought up the issue of the appropriate duration of antiplatelet therapy after percutaneous coronary intervention, and a recent study reported that the use of extended DAPT for a period longer than 12 months in patients who had received DES was not significantly more effective than aspirin monotherapy in reducing the rate of MI or death for cardiac causes. While second generation DES promote more favorable vascular healing comparing to first generation DES, biodegradable polymer containing stents might have a yield in terms of duration of dual antiplatelet therapy (DAPT) than durable polymer stents. We aimed to test whether biolimus-eluting stent (BES) with 6-month DAPT would be non-inferior 12-month clinical and angiographic outcome to Zotarolimus-eluting stent (ZES) with 6-month DAPT.

Methods: This is a prospective, randomized, open-label, multicenter trial to compare one year Clinical, Angiographic, and Optical Coherence Tomography Outcomes of 2nd Generation Drug Eluting Stents 6 Months Dual Antiplatelet Therapy Between Biodegradable and Durable Polymer Stent

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Methods: This study consisted of de novo 1622 lesions in 1150 patients that were treated with second generation DES (ZES, EES, and BES) in a single center. They were evaluated by follow-up angiography within 12 months after stent implantation, from April 2009 to August 2012. We divided into PSS group and non-PSS group and compared the two groups in clinical and angiographical outcomes.

Results: There were no significant differences between the two groups in patient background and lesion characteristics. Late acquired PSS was observed in 12 lesions (0.74%) in 11 patients (0.96%). In these lesions, 2 lesions (0.63%) were observed in BES, 4 lesions (0.4%) were EES and 6 lesions (1.9%) were ZES. (N.S.) Stent fracture was more frequently observed in lesions with PSS than in lesions without PSS (29.4% versus 1.1%, P<0.0001). Cumulative incidence of TLR and MACE in the PSS group was higher than that in the non-PSS group (33.3% versus 5.5%, and 41.7% versus 9.6%, P<0.005).

Conclusion: In this study, PSS after second generation DES seemed to be associated with TLR and MACE.
between the BES and ZES, including MACE (5.5 vs. 6.4%; p = 0.76) and stent thrombosis (0.3 vs. 0.3%; p = 0.99). The secondary endpoints also were not significantly different between BES and ZES, including target lesion failure (2.0 vs. 1.6%; p = 0.53), in-segment LL (mm) at 12 months (0.09±0.37 vs. 0.05±0.39, p = 0.61). OCT at 6 months revealed that mean NIH thickness (μm) of BES and ZES were 59.1±30.3, 54.0±25.6, respectively (p = 0.49), and uncovered stent strut percentage (%) of BES and ZES were 20.5±1.8, 17.7±2.4, respectively (p = 0.63).

Conclusion: BES with biodegradable polymer with 6 month DAPT did not increase the risk of MACE, stent thrombosis, target lesion failure, and LL at 12 months comparing with ZES with durable polymer. The 2nd generation DES including BES and ZES are comparably efficacious. Our results need to be confirmed in larger trials, and further follow up data.

TCTAP A-071
One-year Outcomes Following Implantation of the Resolute Zotarolimus-eluting Stent in an Asian, Dual Vessel Population: RESOLUTE Asia
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Background: Coronary artery disease in Asian populations is rising and is commonly treated with drug-eluting stents (DES). Clinical evidence is needed on outcomes of new-generation DES implantation in Asian patients with lesions in more than 1 vessel.

Methods: Patients with de novo lesions (length ≤27 mm and reference vessel diameter 2.25−4.0 mm) in 2 vessels were enrolled from 24 sites across Asia. The Resolute(R) zotarolimus-eluting stent (2-ZES) was implanted in both lesions at the same index procedure. Postprocedure dual antiplatelet therapy (DAPT) was recommended for 6 to 12 months. An independent clinical events committee adjudicated all events. The primary endpoint was 1-year target vessel failure (TVF; cardiac death, target vessel myocardial infarction [TVMI], or clinically-driven target vessel revascularization [TVR]). A secondary endpoint was target lesion failure (TLF; cardiac death, TVMI, or clinically-driven target lesion revascularization [TLR]).

Results: There were 202 subjects (n=406 lesions) enrolled. The mean age was 60.1 years (standard deviation [SD], 9.8), 85% (n=171) of patients were male, and 46% (n=93) had diabetes. DAPT use was 92% (n=185/201) at 6 months and 91% (n=182/201) at 1 year. Mean lesion length was 15.3 mm (SD, 6.6) and 61.1% were ACC/AHA class B2/C. The rate of TVF at 1 year was 4.5% (n=9/202); the rate of TLF was 4.0% (n=8/202). Cardiac death occurred in 0.5% (n=1) of patients, TVMI in 2.5% (n=5), clinically-driven TVR in 1.5% (n=3), and clinically-driven TLR in 1.5% (n=3). There were no events of Academic Research Consortium definite or probable stent thrombosis.

Conclusion: Use of the Z-DES was safe and effective with a low rate of clinical events and no stent thrombosis events in Asian patients with dual-vessel coronary artery disease.

TCTAP A-072
The Outcome of Drug-eluting Stent Implantation in Saphenous Vein Graft Comparing Among Recipient Native Vessel Territories
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Background: The efficacy of drug eluting stent for saphenous vein graft (SVG) is proven, however the difference of the location of the recipient artery remains unclear. In this study, we compared angiographic outcome for SVG, including in-stent restenosis (ISR), stent fracture (SF) or target lesion recanalization (TLR) among recipient native vessel territory (left circumflex artery group versus left ascending and right coronary artery group).

Methods: From February 2004 to January 2013, 45 patients with 68 lesions underwent drug-eluting stent implantation in SVG. Angiographic follow-up at 3-6 months was obtained in 45 lesions (follow-up rate: 66%).

Results: Data are shown in the table.

Conclusion: Recurrence of ISR is frequent in the LCX group after DES implantation for SVG lesions. The location of recipient artery should be taken into account in case of treatment of SVG lesions after DES implantation.

TCTAP A-073
Angiographic and Clinical Outcome of Drug-eluting Stent Implantation for Right Coronary Ostial Lesion
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Background: In spite of availability of drug-eluting stent (DES), clinical outcome of percutaneous coronary intervention for right coronary ostial lesion (RCAs) is still poor. So we investigated the angiographic and clinical outcome of DES implantation for True RCAos.

Methods: This was a single center non-randomized retrospective study. From April 2007 to July 2012, 67 consecutive patients who underwent DES implantation for de novo RCAs were included. RCAs was defined as the lesion being within 3 mm of the ostium. We defined True RCAos as lesion contained just RCA ostium. Subjects were classified into two groups: the patients treated for True RCAos (True group, 35 patients) and for Not true RCAos (Not true group, 32 patients). Endpoint was binary restenosis at 10 months and target lesion revascularization (TLR) at 12 months.

Results: True group was older than Not true group. There were no significant differences between two groups in gender, hypertension, hyperlipidemia, diabetes, and hemodialysis. Despite True group had shorter stent length and larger lesion diameter, they had a higher rate of binary restenosis at 10 months (35.5% vs. 10.0%, p<0.05) and TLR at 12 months (28.6% vs. 6.3%, p<0.05) than Not true group.

Conclusion: Our data indicates that the outcome of DES implantation for True RCAos is worse than that of DES implantation for Not true RCAos.

TCTAP A-074
Five-year Clinical Outcomes of Drug Eluting Stents According to the On-label and Off-label Usage
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Background: The purpose of this study was to evaluate clinical outcomes of drug-eluting stent (DES) according to on versus off-label indication for 5 years. Methods: A total of 929 consecutive patients who performed percutaneous coronary intervention (PCI) with DES from April 2005 to December 2007 were enrolled. Those patients were divided into two groups according to on (n=449) versus off-label (n=480) indication. Off label usage of DES was indicated in patients with long stenotic lesion (>30mm), total occlusion, bifurcation, ostial lesion, left main disease, multivessel disease, saphenous vein graft and thrombus present. Clinical outcomes of major adverse cardiac event (MACE) including death, target vessel revascularization (TVR), target lesion revascularization (TLR), myocardial infarction (MI) and stent thrombosis (ST) were compared between two groups for 5 years. Risk factors for MACE according to on versus off label indication.

Results: There were no difference between two groups in baseline characteristics, except diabetes (24.9% [Group 1] vs. 35.4%[Group 2], p=0.002). Of 929 patients enrolled in this study, seven hundred ten patients were completely monitored for 5years (follow up rate 76.4%). At one year, group 2 was associated of higher incidence of MACE (1.9% vs. 7.5%, p=0.004), because of TLR (1.4% vs. 3.4%, p=0.047), TVR (1.6% vs. 5.2%, p=0.004) and stent thrombosis (0.2% vs 1.5%, p=0.042). From 1 year until 5 year clinical follow up, group 2 also had a higher incidence of MACE(6.4% vs. 11.3%, p=0.014) because of TLR(3.7% vs. 7.1%, p=0.029). The rate of total MACE were higher in off-label usage than those of on-label (9.1% vs. 20.0%, p=0.000). Multivessel disease [HR 2.0, p=0.004] and diabetes [HR 1.7 p=0.017] were independent risk factors for MACE in multivariate analysis.

Conclusion: Patients with On-label indication of DES had better long-term clinical outcomes than those with off-label. Further large clinical trials will be warranted.