target lesion revascularization (TLR), and stent thrombosis. This study aimed to assess the long-term clinical and angiographic impact of SF on Xience everolimus-eluting stent (EES) and Nobori biolimus-eluting stent (BES) implantation.

**METHODS** From 2010 to 2013, 3246 lesions (1783 patients) were treated with EES and 1618 lesions (986 patients) with BES, in which follow-up angiography was performed within one year after index procedure. SF was defined as the separation of stent segments or stent struts at follow-up angiography. The mid-term angiography was performed at 8 months and the late-term at 20 months. ISR was defined as more than 50% restenosis. Late catch-up phenomenon was defined as ISR, excluding that within one year after index procedure.

**RESULTS** SF was observed in 1.7% (56/3246) of the lesions treated with EES and 4.4% (72/1618) with BES. The median follow-up duration of the study population was 1028 days (the first and third quarters, 838 and 1275 days). The mid-term restenosis rate showed no significant difference between the EES and BES groups (40.7% versus 30.6%, p<0.26). The late catch-up phenomenon rate was significantly lower in the BES group (18.2% versus 2.4%, p=0.04). Very late stent thrombosis was none in the EES group, on the other hand, occurred in one patient in the BES group. The three-year cumulative rates of any TLR did not significantly differ between the 2 groups (44.8% versus 29.7%, p=0.07). A landmark analysis of the cumulative rates of any TLR within and beyond one year is shown in the figure.

**CONCLUSIONS** The long-term clinical impact of SF could be different between EES and BES implantation.

**CATEGORIES CORONARY:** Stents: Drug-Eutting

**KEYWORDS** Drug-eluting stent, second generation, Long-term follow up, Stent fracture

**TCT-S560** In-stent restenosis assessed by optical coherence tomography (OCT) indicates smooth coronary arterial healing process in second generation drug eluting stents (DES)

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**BACKGROUND** In second generation DES era, in-stent restenosis (ISR) is not commonly seen but is still encountered occasionally. The pathophysiology and mechanism of ISR after second generation DES implantation have not been fully clarified.

**METHODS** Patients who underwent follow-up coronary angiography (CAG) after first (Cypher and Taxus) and second generation DES (Nobori, Promus Element, Resolute Integrity, and Xience) implantation were examined. The first scheduled CAG was performed at six to nine months after percutaneous coronary intervention (PCI) and the second at 18 to 24 months after PCI. ISR was defined as lesions more than 75% diameter stenosis at follow-up CAG. Optical coherence tomography (OCT) was performed at the time of revascularization to ISR. Then OCT imaging of second generation DES ISR of early (<1 year) and late (≥1 year) phase were compared with first generation DES ISR, retrospectively.

**RESULTS** From April 2008 to January 2010, first generation DES were implanted in 805 lesions. From January 2011 to December 2014, second generation DES were implanted in 1260 lesions in our hospital. ISR rate was significantly lower in second generation DES ISR (9.6% (N=77) vs 4.0% (N=51), p<0.05). In qualitative OCT assessment of second generation DES ISR in total, each ratio of homogeneous, layered, heterogeneous, lipid rich attenuation, calcified nodule tissue morphology were more than 50% restenosis. Late catch-up phenomenon was defined as ISR, excluding that within one year after index procedure. SF was observed in 1.7% (56/3246) of the lesions treated with EES and 4.4% (72/1618) with BES. The median follow-up duration of the study population was 1028 days (the first and third quarters, 838 and 1275 days). The mid-term restenosis rate showed no significant difference between the EES and BES groups (40.7% versus 30.6%, p<0.26). The late catch-up phenomenon rate was significantly lower in the BES group (18.2% versus 2.4%, p<0.04). Very late stent thrombosis was none in the EES group, on the other hand, occurred in one patient in the BES group. The three-year cumulative rates of any TLR did not significantly differ between the 2 groups (44.8% versus 29.7%, p<0.07). A landmark analysis of the cumulative rates of any TLR within and beyond one year is shown in the figure.

**CONCLUSIONS** The long-term clinical impact of SF could be different between EES and BES implantation.

**CATEGORIES CORONARY:** Stents: Drug-Eutting

**TCT-S561** Final Five-Year Outcomes Following Implantation of the Promus Element® Platinum Chromium Everolimus-Eluting Stent in De Novo Coronary Artery Lesions in Small Vessels (SV) and Long Lesions (LL): Results of the PLATINUM Small Vessel and Long Lesion Trials

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**BACKGROUND** The thin-strut, everolimus-eluting, platinum chromium PROMUS Element stent (Boston Scientific, Marlborough MA) has shown favorable early outcomes up to 4 years post-implantation for the treatment of de novo long lesions or lesions in small-caliber vessels, but long-term follow-up has not been previously reported.

**METHODS** PLATINUM SV and LL are prospective, single-arm, multinational studies that enrolled patients with angina pectoris or documented silent ischemia and a single de novo native coronary artery target lesion. PLATINUM SV enrolled 94 subjects with baseline vessel diameter ≥2.25 mm to <2.50 mm and lesion length ≥28 mm, and PLATINUM LL enrolled 102 patients with a target lesion ≥24 to ≤34 mm long with vessel diameter ≥2.50 to ≤4.25 mm. Follow-up was performed for 5 years.

**RESULTS** Patients were predominantly male (SV: 72.3%, LL: 62.7%) and approximately one third had diabetes (SV: 42.6%, LL: 30.0%). The mean baseline reference vessel diameter (RVD) in SV was 2.0 ± 0.3 mm and lesion length was 14.2 ± 7.0 mm. For the LL study, RVD was 2.6 ± 0.4 and mean lesion length was 24.4 ± 8.2 mm. The primary endpoint, 1-year target lesion failure (TLF; cardiac death, myocardial infarction (MI) related to the target vessel, ischemia-driven target lesion revascularization (TLR)), was 2.4% for SV and 3.2% for LL, both significantly less than prespecified performance goals (P<0.001 for each). At 5 years, TLF, TLR, cardiac death, MI and ARC stent thrombosis (ST) had occurred in 6 (7.0%), 3 (3.6%), 5 (5.9%), 2 (2.4%), and 0 (0%) patients respectively in the SV trial and TLF, TLR, cardiac death, MI and ARC stent thrombosis (ST) had occurred in 13 (13.6%), 7 (7.5%), 5 (5.9%), 1 (1.3%), and 0 (0%) patients respectively in the LL trial.
CONCLUSIONS The PROMUS Element stent demonstrated very low TLF and revascularization rates with favorable safety outcomes for the treatment of small vessels and long lesions through 5 years.

CATEGORIES CORONARY: Stents: Drug-Eluting

KEYWORDS Clinical outcomes, Coronary artery disease, Drug-eluting stent, everolimus

TCT-562

Comparison of Neointimal Growth Pattern after Thin- or Thick-Strut Drug Eluting Stents Implanted in Coronary Bifurcation Lesions: An Optical Coherence Tomography Study

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BACKGROUND Recent study reported that arterial healing of drug eluting stents was impaired with greater delay at the flow divider (high shear stress region) as compared with the opposite side of side branch (SB) (low shear stress region). This study investigated the differences in neointimal growth on stent struts between thin- and thick-strut drug eluting stents (DES) implanted in coronary bifurcation lesions by using optical coherence tomography (OCT).

METHODS Sixty-two bifurcation lesions treated with second generation DES were evaluated with OCT in 51 patients (66.1 y.o) at 6 to 12 months follow-up angiography. The stent strut was divided into thick-DES (n=42; Xience everolimus-eluting stents and Resolute abluminal coated Orsiro stent) and thin-DES (n=42; Xience everolimus-eluting stents and Zotarolimus-eluting stent). In 62% vs 50% CTO group suffered from diabetes mellitus and 28.1% (3/11) in the Zotarolimus group. In 66.2% vs 61.4% CTO was located in RCA, 18.9% vs 15.8% in L CX and in 14.9% vs 22.8% in LAD. Reference diameter post PCI was 3.040.0.49mm (1.900.50mm), MLD 2.850.51mm (3.060.48mm) and percent diameter stenosis 7.610.0 (3.78.3). Dual antiplatelet therapy (DAPT) was recommended for 12 months with aspirin and clopidogrel. Control angiography was scheduled after 9 and clinical follow-up after 12 month. The primary angiographic outcome was int- stent late lumen loss. Secondary angiographic endpoints include minimal luminal diameter, percentage of diameter stenosis, binary restenosis. Primary clinical outcome measures were target lesion revascularization rate (TLR) and major adverse cardiac events (MACE) defined as composite of cardiac death, myocardial infarction related to the target vessel and target vessel revascularization.

RESULTS The primary endpoint in-stent late lumen loss was 0.240.53mm for the Orsiro stent compared with 0.590.72mm for the Zotarolimus stent (p=0.01). MLD was 1.900.63mm versus 1.870.80mm (p=0.86), percent diameter stenosis 24.719.2% vs. 25.728.7% (p=0.58), respectively. TLR was 9.7% for O-SES and 10.5% for ZES, resulting in a total MACE rate of 10.8% vs 12.3% (p=0.79). Of note, there was no definite or probable stent thrombosis according to ARC criteria in both groups within 12 months DAPT treatment.

CONCLUSIONS Treatment of true CTO lesions with the Sirolimus eluting abluminal coated Orsiro stent resulted in a significantly lower in-stent late lumen loss compared with Zotarolimus eluting stents and no occurrence of definite or probable stent thrombosis with a 12 months dual antiplatelet therapy. Clinical results were similar to Zotarolimus eluting stents.

CATEGORIES CORONARY: Stents: Drug-Eluting

KEYWORDS Chronic total occlusion, Drug-eluting stent, sirolimus

TCT-564

Clinical Predictors of Target Lesion Revascularization after SES or EES Implantation

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BACKGROUND Several studies have performed the comparison of outcomes between 1st generation drug eluting stent Sirolimus-Eluting Stent (SES) and 2nd generation drug eluting stent Everolimus-Eluting