the incidence of SAT between ST-segment elevation myocardial infarction (STEMI), non-ST-segment elevation ACS (NSTEMI) and elective patient was investigated the impact of two-stent procedure.

**METHODS** From January 2001 to December 2013, percutaneous coronary intervention was performed in 2241 STEMI, 3098 NSTEMI, and 13392 elective patients, in whom the incidence of SAT was compared between those treated with two-stent procedure and single stent procedure. SAT was defined as stent thrombosis which occurs from one day to one month after procedure according to the Academic Research Consortium definition. The patients whose cause of stent thrombosis was diagnosed as heparin-induced thrombocytopenia were excluded.

**RESULTS** SAT occurred in 12 (0.54%) of the 2241 STEMI patients, 13 (0.42%) of the 3098 NSTEMI patients and 35 (0.26%) of the 13392 elective patients. And data are shown in the figure.

**CONCLUSION** The incidence of SAT was significantly higher in STEMI patients than in elective patients. The difference was remarkable in those treated with two-stent procedure but not significant in those treated with single stent procedure.

**TCTAP A-012**

Classification of Patients by Pathophysiological Stages, A New Method to Stratify Post-STEMI Patients

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**BACKGROUND** The prognosis of ST-segment Elevation Myocardial Infarction (STEMI) remains hugely different. Risk stratification is therefore very important for individual patient in terms of prognostic estimation and medical regiment planning. However, the ways for stratification are far from uniform. Evaluations are made based on different considerations but largely dependent on doctors own experiences. We presumed that a classification based on different pathophysiological stages would be an objective way to stratify patients.

**METHODS** 140 first-STEMI patients were classified as: grade 0, no detectable myocardial necrosis; grade 1, with myocardial necrosis; grade 2, myocardial necrosis with reduced left ventricular ejection fractions (LVEF); grade 3, reduced LVEF accompanied with cardiac remodeling; grade 4, apparent mitral regurgitation additional to the grade-3 criteria. To guarantee the equal comparison, myocardial necrosis, infarction size and cardiac remodeling was determined by cardiac magnetic resonance while mitral regurgitation and cardiac improvements were assessed by echocardiography.

**RESULTS** 1.4%, 42.1%, 27.2%, 25% and 4.3% patients were classified as grade 0 to grade 4, respectively. According rate of 90-day MACEs (any death, resuscitated cardiac arrest, acute heart failure and stroke) was 0%, 5.1%, 7.9%, 47.1% and 71.4% (p < 0.001). Grade-2 patients had more LVEF improvements than grade-3/4 patients after 90 days (44.7% vs 18.4%, p < 0.001). Both the classification and the infarction size were independent predictors for 90-day MACEs. However, without the necessity to quantify infarction extent directly, the classification is a good reflection of infarction size (0.822 vs. 0.815, p = 0.855 by C-statistics).

**CONCLUSION** The new classification may provide a standard scale to describe the impact of STEMI on individual patient and facilitate diagnostic consensus among doctors.

**TCTAP A-013**

Nine-Month Outcomes Following Primary PCI with Bioresorbable Vascular Scaffold Implantation in Patients With ST-Segment Myocardial Infarction: Results from the Multicentre “Registro ABSORB Italiano” (RAI Registry)

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**BACKGROUND** Newer-generation DES may be considered the standard of care for the treatment of STEMI patients undergoing primary PCI. However, the implantation of these permanent devices can be associated with important limitations in this setting. The bioresorbable vascular scaffold (Absorb BVS) has been designed to overcome their limitations, disappearing entirely within 3 years and restoring native vessel state. In this multicentre prospective registry we sought to evaluate the immediate and midterm clinical outcomes following single or multiple overlapping BVS implantation in the STEMI setting.

**METHODS** A prospective cohort analysis was performed on all STEMI patients (symptom onset < 24 hours from hospital admission) who underwent primary PCI with BVS implantation in different Italian Hospitals. The primary endpoint of the study was procedural success, defined as BVS implantation at the “culprit” lesion site with less than 30% final stenosis and TIMI 3 flow without in-hospital MACE (cardiac death, myocardial infarction [MI] or need for emergent target lesion revascularization [TLR]). Furthermore, we evaluated the occurrence of cardiac death, MI, TLR and BVS thrombosis up to 9-month follow-up.

**RESULTS** Between December 2012 and February 2014, 1,232 STEMI patients underwent primary PCI. Of these, 74 (6.0%) received a BVS, 1,158 (93.9%) of them were multiple and overlapping. Procedural success was obtained in 72 (97.3%) cases without differences between the groups (overlapping BVS100% vs. single BVS 96.4%, p = 0.5). One patient experienced a re-infarction due to sub-acute BVS thrombosis (the other patient had a sub-acute TIMI flow grade 2 at 90 days). The difference was remarkable in those treated with two-stent procedure and single stent procedure.

**CONCLUSION** Single or multiple overlapping BVS implantation in STEMI patients can be successfully performed with a high procedural success rate and encouraging 9-month outcomes. Larger randomized trials and longer follow-up are needed to assess the potential clinical benefit of BVS versus new-generation DES in this setting.

**TCTAP A-014**

Complete Versus Target-Vessel Revascularization in NSTEMI Patients

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**BACKGROUND** Acute myocardial infarction without ST segment elevation (NSTEMI) is the most common form of presentation of acute myocardial necrosis. Optimal therapeutic strategy in NSTEMI patients is a subject of debate - it has been shown recently that disturbed myocardial perfusion in the non-target coronary arteries is associated with worse prognosis and potential benefits of expanding the primary intervention to full instead of target-vessel revascularization are being discussed. The aim of this study is to compare the incidence of
Major adverse cardiac events (MACE) between NSTEMI patients with complete versus target-vessel revascularization.

METHODS We analyzed retrospectively 114 patients, mean age 67 ± 12 years, 69% male, hospitalized with NSTEMI between June and December 2012 and followed-up 12 months. Inclusion criteria were angiographic data for significant atherosclerotic involvement of more than one coronary artery and proceeding to percutaneous coronary intervention (PCI). 71 patients (62%) underwent target-vessel revascularization, the rest 43 (38%) - complete revascularization.

RESULTS Demographic and clinical characteristics did not differ significantly between groups except for smoking (more prevalent in target-vessel revascularization group). Procedure success was 91% in target-vessel revascularization group and 88% in patients with complete revascularization. Rate of early in-hospital complications was not significantly different between the groups: mortality - 2 (2.7%) versus 1 (2.3%), periprocedural myocardial infarction - 11 (7.7%) versus 12 (3.3%), in-target-vessel and full revascularization groups, respectively.

During one-year follow-up combined incidence of MACE (mortality, myocardial infarction, revascularization) was significantly reduced after full revascularization (4 patients, 9.3%) compared to target-vessel intervention (12 patients, 9%), p < 0.01. The difference in MACE was driven mainly by the significant reduction in the rate of repeat revascularization and mortality.

CONCLUSION NSTEMI patients have improved prognosis with complete versus target vessel revascularization during one-year follow-up, without increase in the rate of in-hospital complications.

TCTAP A-015

Bleeding Events of STEMI Patients After PCI is Associated with a Genetic Risk Score Based on High-Risk Genetic Polymorphisms

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BACKGROUND Gene polymorphisms of ABCB1, CYP2C19, PON1 and P2Y12 may influence pharmacodynamics and clinical events of clopidogrel treatment. We assessed the hypothesis that a genetic risk score based on identified high-risk single nucleotide polymorphisms (SNPs) would be associated with bleedings in clopidogrel-treated Chinese STEMI patients after percutaneous coronary intervention (PCI).

A total of 510 consecutive patients with STEMI who received an uneventful PCI and were exposed to clopidogrel treatment for 12 months, were enrolled in the single-center registry. There were 7 high-risk SNPs selected from ABCB1 (rs1045642, rs2235047), CYP2C19 (*1/*2, PON1 (rs662, rs54560) and P2Y12 (rs6785930, rs6809699) genes, which were detected by the ligase detection reaction. The primary clinical safety endpoint was the incidence of major bleeding events. Major bleeding was quantified according to bleeding academic research consortium definition (BARC) criteria, including type 3 and 5 in the analysis. The follow-up period was 12 months.

RESULTS Overall, 46 BARC 3 bleeding events (9.0%) occurred, which included 11 (2.2%) cases of BARC 3b bleedings and 35 (6.8%) cases of BARC 3a bleedings. After adjustment for traditional clinical risk factors, multivariate logistic regression analysis identified SNPs significantly associated with bleedings were ABCB1 (rs1045642, rs2235047) and P2Y12 (rs6785930, rs6809699). A genetic risk score was constructed by summing the number of risk alleles. As a continuous variable, the risk score resulted in an OR of 1.226 per unit increase in score (95%CI = 1.098-1.361, p < 0.003). The addition of this genetic risk score significantly increased AUC from 79.3% to 82.4% (p < 0.03), and significantly improved the predictive ability on bleeding risk by 20% using the NRI approach (p = 0.01).

CONCLUSION This genetic score was significantly associated with bleedings after PCI in our study population.

TCTAP A-016

Sequential Therapy of Higher Doses of Atorvastatin Could Decrease Soluble CD40L and Increase Coronary Blood Perfusion with Improvement of Endothelial and Ventricular Function in STEMI Patients During Primary Percutaneous Coronary Intervention

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BACKGROUND Studies indicate that soluble CD40 ligand (sCD40L) is associated with disease progression and severity in acute coronary syndrome (ACS), while it may provide a mechanistic link between inflammation and myocardial reperfusion as well as cardiac function. However, it is still controversial whether sequential therapy of higher doses of atorvastatin could provide more benefits in regulating sCD40L, coronary blood perfusion and ventricular function compared with a conventional dose in STEMI patients undergoing primary PCI.

METHODS After screening, 136 STEMI patients met the inclusion criteria and were included for analysis. All of them were divided into three groups by using an electronic spreadsheet indicating the group assignment by random numbers: Group A (n = 48) (received 80mg of Atorvastatin before primary PCI, post-PCI (within 12 h) Atorvastatin 40mg for 1 month, and Atorvastatin 20mg for 5 months); Group B (n = 43) (received no pre-PCI loading dose of atorvastatin but did receive Atorvastatin 40mg for 1 month and then Atorvastatin 20mg for 5 months); Group C (n = 45) (received only post-PCI Atorvastatin for 6 months). TIMI flow grade and Correction TIMI Frame Count (CTFC) after PCI would be recorded and compared among three groups. In addition, the serum sCD40L and endothelial nitric oxide synthase (eNOS) would be measured at admission and 1-day, 7-day, 1-month, 6-month after PCI. Improvement of cardiac function would also be evaluated during the follow-up.

RESULTS Patients among the three groups were well matched in demographic and clinical characteristics (P > 0.05). Patients in Group A exhibited much better myocardial reperfusion indicated by CTFC compared with Group B or Group C (no differences were observed in TIMI flow Grade 3 among three groups after PCI (P > 0.05)). The levels of sCD40L in Group A were significantly lower than those in Group B or Group C on 1-day and 7-day (P < 0.05), but not in later sampling points (P > 0.05). Patients in Group A also gained higher levels of eNOS and showed improved in heart performance, with significant increases in their left ventricular ejection fraction (LVEF) (P < 0.05). Patients in Group B had relatively higher levels of eNOS as well as significant improvement in LVEF compared with Group C (P < 0.05), although no statistical differences were observed in sCD40L comparison (P > 0.05). No severe adverse reactions were observed during study period.

CONCLUSION For STEMI patients, the sequential therapy of atorvastatin during primary PCI could significantly lower serum sCD40L, shorten CTFC and increase eNOS and LVEF. The sequential therapy of atorvastatin treatment may reduce inflammatory response, improve myocardial reperfusion and mend cardiac function with acute coronary syndromes undergoing primary PCI. (ClinicalTrials.gov Identifier: NCT 01334671)