TCT-199

ENERGY 1’000 Patient Registry with a Thin Strut Bare Metal Stent with Passive Coating Presenting Six Month Follow-up MACE

Raimund Erbel1, Holger Eggebrecht1, Ariel Roguin2, Erwin Schroeder3, Thomas Heitzer4, Sebastian Philipp5, Odet Ayzenberg6, Harald Schwacke7, Antonio Serra8, Kenneth Tandjung9, Mounir W Basalus1, Esther Muurman1, Hans Louwerenburg1, K. Krzych1, Miroslaw Wilczynski1, Marek Krejca1, Marek Kondys1, Janusz Drezewicz1, Wojciech Wojakowski1, Pawel E Buzzan1 –2, Andrzej Bochenek1 –2, Clemens von Birgelen1, 5

1Westdeutsches Herzzentrum, Essen, Germany; 2Ramban Medical Centre, Haifa, Israel; 3Cliniques Universitaires, UCL de Mont-Godinne, Yvoir, Belgium; 4Klinikum Dortmund, Dortmund, Germany; 5MIRA - Institute for Biomedical Technology and Technical Medicine, University of Twente, Enschede, Netherlands

Background: The minimally invasive direct coronary artery bypassing (MIDCAB) has proven its superiority over bare metal stenting of proximal left anterior descending (LAD) artery in reducing the need of repeated revascularizations. Nevertheless, the long term outcome of percutaneous coronary interventional (PCI) utilizing new generation of drug eluting stenting (DES), in this lesion subset is unknown.

Methods: This is a multicenter prospective registry of 463 consecutive patients, enrolled between 2004 and 2009 with proximal, significant, type B and C LAD lesion (>70% DS) who underwent either PCI with exclusive use of DES (72% of 2nd generation) or MIDCAB. We excluded patients with myocardial infarction (MI) on admission, concomitant lesions in the right and/or circumflex coronary arteries, previous PCI within 6 months, or previous CABG. A propensity score was utilized for patients baseline characteristics matching and results adjustment.

Results: One hundred and eighty seven patients underwent PCI with DES while 276 MIDCAB. Patients in PCI group were older (63.6 ± 9.3 vs. 59.7 ± 10.2 y.o.; p<0.05), more often female (32 vs. 21%; p<0.01) had higher CCS class (2.53 ± 0.9 vs. 2 ± 0.3; p<0.01), higher Euroscore (4 ± 2.2; p<0.01) and more often presented with peripheral artery disease (8 vs. 2%; p<0.01). At 30 day follow up there was no death in both groups. There were also no differences in the occurrence of major adverse cardiovascular and cerebral events (MACCE) defined as death, stroke, myocardial infarction or repeated revascularization between PCI and MIDCAB groups (0% vs. 0.7%; p=0.22). However there were less serious adverse events (SAE) defined as atrial fibrillation, wound infection, low output syndrome or serious bleeding in patients who underwent MIDCAB (0 vs. 5%; p<0.01). After adjustment at 5 year follow up there were no differences in survival (93.5 vs. 95.7%; p=0.56), MACCE free survival (64.9 vs. 74.4%; p=0.05) and MI – free survival (94.9 vs. 95.8%; p=0.46) between PCI and MIDCAB respectively.

Conclusion: Both procedures show exceptional safety, with no deaths and only minor adverse events rate at perioperative period. At long term PCI with DES is non inferior to MIDCAB with regard to safety endpoints. The rate of repeated revascularizations remained higher in the PCI group.

TCT-201

Incidence of Periprocedural Myocardial Infarction Following Stent Implantation: Comparison Between First and Second Generation Drug-Eluting Stents

Kenneth Tanndjung1, Mourir W Basalus1, Esther Muurman1, Hans Louwerenburg1, K. Gert van Houwelingen1, Martin G Stoel1, Frits H de Man1, Hannke Jansen1, Jennifer Huisman1, Gerard C Lussen1, Herman T Droste1, Mark B Nienhuis1, Clemens von Birgel1, 2

1Cardiology, Thoraxcentrum Twente, Enschede, Netherlands; 2Hospital Group Twente, Almelo, Netherlands; 3Hospital Group Twente, Hengelo, Netherlands; 4Lieve Vrouwe Gasthuis, Amsterdam, Netherlands

Background: Drug eluting stents (DES) of the first and second generation, differ in their coating material which may have implications for the incidence of periprocedural myocardial infarction (PMI). The aim of this registry is to evaluate the coincidence of PMI using the revised Academic Research Consortium (ARC) definition of PMI between Taxus Liberté, Endeavor Sprint, Endeavor Resolute and Xience V.

Methods: We assessed 800 patients treated with first (Taxus Liberté or Endeavor) or second generation DES (Xience V or Resolute). Each DES group consisted of 200 consecutive patients, who were treated during the transition from first to second generation DES. Routine peri-interventional assessment of cardiac biomarkers was performed to compare the incidence of PMI between DES groups according to ARC: 2x upper reference limit of creatine kinase (CK), confirmed by CK-MB elevation. Results: In 800 patients, a total of 1522 DES (363 Taxus; 385 Endeavor; 382 Xience V; 392 Resolute) were implanted to treat 1232 lesions. Patient characteristics did not differ from 27 - 96 years, were enrolled in 48 sites in 10 countries. The majority of the subjects presented with hypertension (71%), hyperlipidemia (68%) smoker (31%), diabetes (16%). Fourteen percent of the patients experienced unstable angina. ACS due to MI was seen in 452 patients. The portion of elderly patients is represented by 19%. Type A (21%), B1 (40%) B2 (29%) and C (10%) lesions were seen in this cohort. Eighty-six percent (874/1016) follow up compliance at six-month follow-up was achieved. MACE (hierarchial) occurred in 4.7% between baseline and 6 month follow-up including 2.5% target lesion revascularizations.2.3% stent thrombosis, 1.5% myocardial infarctions (incl. AMI) and 0.7% cardiac death.

Conclusion: New generation bare metal stents (BMS) like the PRO-Kinetic Energy with very thin struts and passive coating show a very favorable result compared to previous BMS. Utility of such modern BMS platforms are still very relevant in the era of DES.
differ between groups. In patients receiving second generation DES, more multivessel PCI were performed (p=0.01). The overall incidence of PMI was 4.73%. Between first and second generation DES, there was no significant difference in PMI (5.5% vs. 4.0%, p=0.29). In a multivariate analysis, only the total number of stents implanted (p=0.001) and presentation with acute coronary syndrome (p=0.02) were independent predictors of PMI.

### Table 1. Cardiac biomarkers for each DES type and DES generation. Values are mean±SD, numbers of patients (percentage).

<table>
<thead>
<tr>
<th>CK</th>
<th>Creatine kinase</th>
<th>CK-MB</th>
<th>Creatine kinase MB</th>
</tr>
</thead>
<tbody>
<tr>
<td>PES</td>
<td>9.4±5.5</td>
<td>45.1±8.1</td>
<td>9.4±5.5</td>
</tr>
<tr>
<td>SES</td>
<td>13.6±6.5</td>
<td>24.2±12.0</td>
<td>12.0±6.0</td>
</tr>
<tr>
<td>ZES</td>
<td>8.4±4.0</td>
<td>23.1±11.5</td>
<td>8.4±4.0</td>
</tr>
<tr>
<td>EXT</td>
<td>16.4±4.0</td>
<td>45.1±11.3</td>
<td>16.4±4.0</td>
</tr>
</tbody>
</table>

**Conclusion:** Using the revised ARC definition of PMI, there was no significant difference in PMI between first and second generation DES following routine clinical PCI.

### TCT-202

**The Difference of Predictors for Occurrence of Instant Restenosis in the under-expanded or non under-expanded post-DES implantation: An intravascular ultrasound analysis from multicenter, randomized trials**

*Ki-Woon Kang*, Byeong-Keuk Kim, Young-Guk Ko, Dong-Ho Shin, Myeong-Ki Hong, Jung-Sun Kim, Donghoon Choi, Yangsoo Jung, Myeong-Ki Hong

**Severance Cardiovascular Hospital, Seoul, Republic of Korea; Severance Biomedical Science Institute, Seoul, Republic of Korea**

**Background:** Stent underexpansion (SUE), defined by minimal stent CSA (MSA < 5 mm²), is one of the most important predictor of in-stent restenosis (ISR) in the era of drug-eluting stent (DES) implantation. However, the difference of predictors for occurrence of ISR between SUE and non-SUE might not be well known.

**Methods:** The EXCELLENT and POET were a multicenter, randomized trial comparing paclitaxel-eluting stent (PES) (n=121), sirolimus-eluting stent (SES), zotarolimus-eluting stent (ZES) and everolimus-eluting stent (EES) in patients with stable or unstable angina. Angiographically ISR at follow-up was observed in 450 lesions treated with DES implantation. A total 393 of enrolled patients who underwent post-intervention and 9-month follow-up IVUS investigation were followed clinically for 3-year period (PES n=121, SES n=161, ZES n=59, EES n=52). We classified these into 2 groups based on the MSA; SUE group (n=107, MSA < 5 mm²) vs. non-SUE group (n=286, MSA ≥ 5 mm²).

**Results:** Significant intimal hyperplasia (IH) was defined as IH area more than 50% of stent area of stent. Overall, 25 lesions (23.3%) among SUE group had IVUS-defined ISR, whereas 30 lesions (10.4%) among non-SUE group has IVUS-defined ISR (p=0.005). Multivariate logistic regression for the determinant for the IVUS-defined ISR was compared. In SUE group, diabetes mellitus [odd ratio (OR) = 3.03, confidence interval (CI) = 1.10-8.39, p=0.021] were predictors for IVUS-defined ISR, however in non-SUE group, diabetes mellitus (OR = 2.99, CI = 1.29-6.92, p=0.014) and age (OR = 1.12, CI = 1.02-1.25, p=0.04) were predictors for IVUS-defined ISR at follow-up.

**Conclusion:** The difference of predictors for occurrence of ISR at follow-up might exist between SUE and non-SUE group. However, in general, diabetes mellitus showed a universal predictor for occurrence of ISR at follow-up regardless of under-expansion after DES implantation.