TCT-317

The SYNTAX Trial at 3 Years: A Global Risk Approach to Identify Patients With 3-Vessel &/or Left Main Stem Disease Who Could Safely & Efficaciously Be Treated With Percutaneous Coronary Intervention Part I: The Randomised Population

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Background: PCI is increasingly acceptable in selected patients with 3VD &/or LMS coronary disease. To establish the value of the Global Risk Categorisation (GRC), a combination of the SYNTAX score (XSscore) & additive EuroSCORE, in determining the optimal revascularisation modality within the randomised SYNTAX population (n=1800).

Methods: Prior to randomisation, the XSscore & EuroSCOREs were collected in CABG (n=890) & PCI (n=899) populations, consisting of pre-specified powered LMS & 3VD cohorts. The primary (all-cause-death) & secondary (MACCE) endpoints at 36-months were analysed in pre-defined low (n=921), intermediate (n=687) & high (n=183) risk categories.

Results: At 36-months within the randomised PCI population, the XSscore could not identify a low-risk group. Conversely the GRC, within both the LMS & 3VD PCI cohorts, was able to separate a low risk group (GrClow) for death and MACCE, from the GRCint-high groups. Within the CABG population, significant differences in death and MACCE were evident between the GRCint-high groups only. Comparative analyses between CABG and PCI for the GrC low LMS cohort, demonstrated a higher mortality with CABG compared to PCI (CABG: 7.5%, PCI: 1.2%; HR 0.16 [95% CI 0.03, 0.79], p=0.0054), and a trend towards a reduced incidence of MACCE (CABG: 23%, PCI: 15.8%; HR 0.64 [95% CI 0.39, 1.07], p=0.088). Within the GRCint 3VD cohort, no statistically significant differences in death (CABG: 5.2%; PCI: 5.8%; HR 1.14 [95% CI 0.57, 2.30], p=0.71) or MACCE (CABG: 19.0%, PCI: 24.7%, HR 1.35 [95% CI 0.95, 1.92], p=0.10) were evident. Risk-model performance measures within the LMS PCI cohort established a clear incremental benefit of the GRC compared to the EuroSCORE and XSscores individually. Within the 3VD PCI cohort, the risk-model performance measures of the GRC were comparable to EuroSCORE – the GRC however still proved to better risk stratify patients compared to the XSscore and EuroSCORE alone. Reclassification analyses confirmed that the GRC appropriately reclassified patients.

Global Risk Model-incorporating historically defined ranges of additive EuroSCORE & XSscore

Conclusion: The identification of low GRC patients may further aid in the risk stratification of patients within the randomised SYNTAX population.

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Bench Micro-CT study and OCT Experience of a Final Proximal Post-Dilatation after KB

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Background: Percutaneous treatment of unprotected distal left main left (UULDM) remains a challenging procedure for most interventional cardiologists associated to higher rate of target lesion revascularization (TLR) and target vessel revascularization (TVR) – particularly at the ostium circumflex artery- or major adverse cardiac events (MACE).

Methods: We performed a retrospective study to compare two different cross-over techniques in UULDM: Left Main-Anterior Descending (LM-LAD) versus Left-Main-Circumflex (LM-CX).

Results: A total of 144 patients, 42 (29%) underwent LM-CX stenting and 102 (71%) LM-LAD. Significant baseline differences were found for coronary dominance (75% right dominance in the TC-CX group versus 94% in the other, p=0.004). Myocardial infarction as indication to PCI was more frequent in group TC-CX (41% VS 24% p=0.04).After a median follow up of 23 months, MACE rate was not statistically significantly different between the two cohorts (23% versus 24% p=0.38), whereas ULM TLR rate was significantly higher in the LM-LAD group (0% versus 9% p=0.04). There were no other significant differences in the individual components of the primary end-point; however, there was a trend toward statistically significant higher rate of death for all causes in patients with TC-CX (17% versus 10% p=0.17). Finally there were no Stent thrombosis events in both groups.

Conclusion: Proximal left LAD stenting for single stent treatment is safe and effective therapeutic option, without differences in long-term outcome relatively to stent cross-over left main to LAD or left main to circumflex.

TCT-320

Natural history of Unprotected Side Branch Jailed by Drug Eluting Stent

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Background: Stent deployment across side branch (SB) ostium is common in daily practice, particularly at the ostium circumflex artery- or major adverse cardiac events (MACE).

Methods: From January 2007 to December 2010, 144 patients with UULDM were treated at our centre with provisional cross-over techniques (single stent). We compared patients underwent LM-CX with those undergone LM-LAD. The primary end-point was the long-term rate of major adverse cardiac events (MACE, i.e. the composite of death, myocardial infarction and repeat revascularization).

Results: A total of 144 patients, 42 (29%) underwent LM-CX stenting and 102 (71%) LM-LAD. Significant baseline differences were found for coronary dominance (75% right dominance in the TC-CX group versus 94% in the other, p=0.004). Myocardial infarction as indication to PCI was more frequent in group TC-CX (41% VS 24% p=0.04).After a median follow up of 23 months, MACE rate was not statistically significantly different between the two cohorts (23% versus 24% p=0.38), whereas ULM TLR rate was significantly higher in the LM-LAD group (0% versus 9% p=0.04). There were no other significant differences in the individual components of the primary end-point; however, there was a trend toward statistically significant higher rate of death for all causes in patients with TC-CX (17% versus 10% p=0.17). Finally there were no Stent thrombosis events in both groups.

Conclusion: Proximal left LAD stenting for single stent treatment is safe and effective therapeutic option, without differences in long-term outcome relatively to stent cross-over left main to LAD or left main to circumflex.
Conclusion: Jailed SBs showing good flow after stenting had a favorable angiographic and clinical outcome after 9 months of follow-up. However, pre-procedural lesion complexity and technical factors should be considered to avoid SB occlusion/flow deterioration associated with periprocedural myocardial infarction.

TCT-321
Computational analysis of wall shear stress at the distal left main coronary artery bifurcation

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Background: Low coronary artery wall shear stress (WSS) promotes atherogenesis. Intravascular ultrasound (IVUS) studies of distal left main coronary artery (LMCA) lesions have shown that 90% have plaque from the LMCA to the left anterior descending (LAD), 65% have plaque from the LMCA into the left circumflex (LCX), and that the carina is rarely diseased (Circ Cardiovasc Interv. 2010;3:105-12).

Methods: We used computational fluid dynamics (CFD) to assess WSS and plaque distribution at the distal LMCA bifurcation in 12 pts. Coronary computed tomography (CT) was the initial screening test followed by coronary angiography and Virtual Histology Intravascular Ultrasound (VH-IVUS). Vascular numerical analysis assisted by computer-aided design measured WSS in 3 regions; [1] LM into proximal LAD, [2] LMCA into proximal LCX, and [3] flow divider (carina). VH-TCFA was defined as necrotic core >10% of plaque area within a plaque burden of >40% and >30° abutting the lumen in >3 consecutive frames.

Results: Seven pts were amenable for WSS analysis. As shown in the Figure, peak WSS tended to be lower from LMCA into proximal LAD than from LMCA into proximal LCX (p<0.201) and was lower from distal LMCA into either proximal LAD or LCX than at the flow divider (p=0.033 and p=0.059, respectively). In 3 pts with VH-LM-TCAF, WSS was low and similar in both the LAD and LCX (4.44±4.79 Pa in LAD vs 4.52±3.68 Pa in LCX, p=0.9), but was higher in one side of the LMCA bifurcation than the other (3 LCC and 1 LAD) in non-TCAF.

Conclusion: CFD calculation of WSS accurately predicts reported patterns of atherosclerotic plaque distribution at the distal LMCA bifurcation and may be associated with VH-TCFA distribution.

TCT-322
Immediate and Mid term Results of the E- Tryton Spanish Registry for the Treatment of Bifurcations Lesions

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Background: Percutaneous treatment of coronary bifurcation lesions continues to be challenging and is associated with suboptimal results even with the use of drug-eluting stents (DES). These lesions are present in up to 30% of all patients (P). Dedicated bifurcation stents provide an attractive solution considering that two-stent technique or provisional stenting approaches are not always the best solution.

Methods: In a prospective multi-center single-arm national study, we characterize the procedural and 6-month clinical outcomes of the Tryton side branch stent, a novel device for the treatment of bifurcation lesions Between August 2009 and March 2011, a total of 147 consecutive P were treated with the Tryton at 10 Spanish Centers. Procedural data was obtained on 137 P, of these 64 have reached 6 months. In this series 63 percent of the lesions were located in the LAD and 85 percent of the cases were true bifurcations. The Tryton is a thin strut, cobalt chromium, balloon expandable stent which is employed in a colute style. The Tryton is composed of three zones which correspond to the side branch, the carina and main vessel. After lesion pre-treatment, the Tryton is positioned and deployed with the transition zone straddling the side branch origin. A regular DES is then tracked into main vessel.

Results: The primary endpoint was 6-month major adverse cardiac events (MACE: cardiac death, myocardial infarction, target lesion revascularization). Secondary end points were technical and procedural success. Technical and procedural success occurred in 96.6% and 97.4% respectively. The MACE rate at 6-month follow-up was 4.8%(1 cardiac death, 1.6% MI and 3.2% target lesion revascularization with stenosis in the main vessel and side branch equally divided(1.6%). One case of stent dislodgement was observed (0.7%).

Conclusion: Our series confirms the very good results of Tryton Side Branch Stent when evaluated in a real world setting in conjunction with the investigators choice of ‘work horse’ DES.

TCT-323
Five-Year Outcomes of Sirolimus-Eluting Stent in Patients with Unprotected Left Main Coronary Arteries: the Milan and New-Tokyo Registry

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Background: There is a little available data regarding the long term follow-up of patients treated with Sirolimus-eluting stents (SES) for unprotected left main (ULM) disease.

Methods: All consecutive patients with ULM stenosis between March 2002 and December 2008 were included in this retrospective analysis. The primary end-point of the study was a composite of major adverse cardiac events (MACE: defined as all cause death, myocardial infarction (MI) and target lesion revascularization (TLR) according to lesion location and stenting strategy. Secondary endpoints were the individual components of MACE.

Results: During the study period, 436 consecutive patients with ULM disease underwent SES implantation. The median follow-up period was 1370 days (IQR 836-2926 days). Sixty-six patients (15.1%) had a non-bifurcation lesion (NB-group) and 370 patients (84.9%) had distal bifurcation disease (DB-group). In the DB-group, a 1-stent strategy (1-SS) was used in 227 patients (61.4%) and a 2-stent strategy (2-SS) in 143 patients (38.6%). MACE within 5 years occurred in patients (4.5%) in the NB-group and in 107 (28.9%) in the DB-group; 50 patients (22.0%) with a 1-SS and 55 (38.5%) with a 2-SS (p=0.001). Cardiac death was observed in 1 patient (1.5%) in the NB-group and in 24 patients (6.5%) in the DB-group; 15 patients (6.6%) with a 1-SS and 9 patients (6.3%) with a 2-SS (p=1.0). MI was observed 3 patients (1.3%) following a 1-SS and in 5 patients (3.5%) following a 2-SS, while no MI was observed in the NB-group. In the DB-group, the rate of TLR in the entire bifurcation (main branch [MV] and side branch [SB]) within 5 years was 16.0% versus 36.0%, in the MV alone was 9.4% versus 13.7%, and in the SB alone was 7.6% versus 22.3% in the 1-SS versus 2-SS respectively.

Conclusion: Although long-term outcomes in patients with non-distal bifurcation ULM disease were favorable, outcomes in patients with distal ULM lesions treated with the 2-SS appeared worse than the 1-SS which reflected initial lesion severity and complexity.