

**TCT-459****Effect of bleeding complications as assessed by the National Cardiovascular Data Registry (NCDR) bleeding risk calculator in patients undergoing Primary Percutaneous Coronary Intervention**Ashim Aggarwal,<sup>1</sup> Sandeep Banga,<sup>2</sup> R.P. McRae,<sup>3</sup> Sudhir Mungee,<sup>4</sup> Tinoy Kizhakekuttu<sup>5</sup><sup>1</sup>Univ. of Illinois College of Medicine at Peoria/ HCM, Peoria, IL;<sup>2</sup>University of Illinois College of Medicine, Peoria, IL; <sup>3</sup>OSF St. Francis Medical center, Peoria, IL; <sup>4</sup>OSF St. Francis Medical Center, Peoria, IL;<sup>5</sup>University of Illinois College of Medicine in Peoria, Peoria, IL

**BACKGROUND** Bleeding in patients undergoing percutaneous coronary intervention (PCI) is associated with increased morbidity, mortality, length of hospitalization, and cost. National Cardiovascular Data Registry (NCDR) bleeding risk calculator is one such tool which has been validated to predict bleeding risk in such patients.

**METHODS** Data for all patients who underwent PCI for ST-elevation myocardial infarction (STEMI) and Non-STEMI from December 2013 to March 2015 at our hospital was studied retrospectively. Patients were divided into three groups: Group A with NCDR bleeding Score 1 to 7 (low risk); Group B with 8 to 17 (moderate risk) and Group C with >18 (high risk). The data was taken from NCDR's ACTION Registry for our hospital. The effect of bleeding complications as calculated by the NCDR calculator on bleeding events, length of hospital stay, readmissions and mortality was assessed. Continuous data were expressed as mean SD and categorical data as percentage. ANOVA was used for continuous variables, and Chi Square test was used for categorical variables as appropriate.

**RESULTS** Among all 802 patients, Group A had 31 patients with 100% males and mean age of 54.5±6.8 years versus Group B with 427 patients with 363 (85%) male and mean age of 59.9±11.6 years versus Group C with 344 patients with 150 (43.6%) males and mean age 71±13.5 years. Refer to Table 1 for different parameters.

Incidence of different factors	Group A	Group B	Group C	p-value
Cardiogenic shock	0(0%)	0(0%)	27(7.8%)	<0.001
Congestive Heart Failure, N (N %)	0(0%)	11(2.6%)	75(21.8%)	<0.001
Patients on GPlIb IIIa inhibitors, N (N %)	4(12.9%)	45(10.5%)	40(11.5%)	0.97
Patients on Warfarin, N (N %)	0(0%)	13(3%)	22(6.4%)	<0.05
Significant Access site Hematoma, N (N %)	1(3.2%)	4(0.9%)	3(0.9%)	0.4
Retroperitoneal hematoma, N (N %)	0(0%)	0(0%)	3(0.9%)	0.13
Gastrointestinal bleed	0(0%)	2(0.5%)	6(1.7%)	0.17
Blood transfusion, N (N %)	0(0%)	26(6.1%)	35(10.2%)	<0.05
Length of stay in days Mean ±SD	2±1	3.6± 5.4	4.1±5.2	<0.05
Readmissions in 30 days, N (N %)	0(0%)	12(2.8%)	37(10.8%)	<0.001
All-cause mortality N (N %)	0(0%)	4(0.9%)	27(7.8%)	< 0.001

**CONCLUSIONS** There was a statistically significant increase in the bleeding events, length of stay, readmissions and deaths in the patients with higher NCDR scores. Improved identification of high-risk patients will enable physicians to develop alternative approaches to mitigate the risk of bleeding and potentially improve outcomes among patients undergoing PCI.

**CATEGORIES CORONARY:** PCI Outcomes

**KEYWORDS** Bleeding, Primary PCI, Registry

**TCT-460****Septal Surfing in Retrograde Recanalization of Chronic Total Occlusions: The Quebec Experience**Rustem Dautov,<sup>1</sup> Marina Urena,<sup>2</sup> Stéphane Rinfret<sup>3</sup><sup>1</sup>Quebec Heart and Lung Institute, Quebec, Quebec; <sup>2</sup>Quebec Lung and Heart Institute, Laval University, Québec, Canada; <sup>3</sup>Laval University/ Québec Heart And Lung Institute, Quebec City, Canada

**BACKGROUND** The ability to cross a collateral channel (CC) with a wire and position a microcatheter (MC) at the distal CTO cap is an essential step to technical success in retrograde approach. The suitability for crossing a septal CC has been considered dependent on the size of CC and the ability to visualize a connection. However, the ability to successfully cross a septal CC might depend on the technique used. We examined the feasibility and safety of "Septal Surfing" (SS) technique in a consecutive series of patients.

**METHODS** Among 403 CTO procedures performed between 01.2009 and 01.2015 by a single CTO operator (SR) or a team of 2 operators (SR and CMN) in our institution, we selected only those where septal CC were utilized as a part of a retrograde or hybrid CTO approach. We assessed our ability to place the wire with or without the MC as a function of the appearance of the septal CCs. We preferentially used the SS technique to cross septal CCs; this technique involves the advancement of the wire searching for a path of least resistance. Tip injections (TI) are performed without wedging the MC and only in failed attempts. We used the Werner classification to assess the CCs, as well as other factors that may influence success in crossing the CC such as the number of septals from the main donor artery, tortuosity in its course, especially in their distal 1/3, need for distal TI. We examined what we called the 'Surfers Paradise' angiographic sign, defined as the presence of ≥5 septal trunks ≥1mm from the donor artery, each with visible septals running straight in the mid 1/3 of the septum, with a 'tree-like' network in the distal 1/3, as a predictor of septal crossing. We also assessed time to cross the septals, to cross the CTO and presence of septal perforations.

**RESULTS** The final study cohort had 129 patients with J-CTO score ≥2 in 82.9%. The average time to cross the septal CC with SS was 21.3 ± 2.3 minutes. TI was required in 27.1% of cases. Septal CC were successfully crossed with the SS technique in 78.3% of cases. The MC was able to reach the distal cap of CTO in 76.7% of cases (98% of all CC crossed with the wire). Successful placement of the guidewire at the distal cap was done in 83.3% with CCO, 72.3% with CC1 and 90.9% with CC2 (p=NS). The success rate of septal crossing was 93.1% if the 'Surfers Paradise' angiographic sign was present and 74% if absent (p<0.01). 1/3 of cases had septal perforations; they were minor and asymptomatic.

**CONCLUSIONS** SS is a simple and safe technique of crossing septal CC in retrograde CTO PCI with high success rate. Therefore, small or even invisible channels should not discourage a CTO operator to attempt a retrograde technique when the algorithm suggests it is the preferred approach for a given anatomy. In fact, surfing CCO/CC1 septals rather than CC2 in order to avoid ischemia during collaterals crossing or in case of perforation, may be safer. The 'Surfers Paradise' angiographic sign is a predictor of successful retrograde gear placement.

**CATEGORIES CORONARY:** PCI Outcomes

**KEYWORDS** Chronic total occlusion, Collateral grade, Percutaneous Coronary Intervention. CTO

**TCT-461****Association of Peri-procedural Myocardial Infarction with Long-term survival in Patients Treated with Coronary Revascularization Therapy of Chronic Total Occlusion**Woo Jin Jang,<sup>1</sup> Joo-Yong Hahn,<sup>2</sup> Seung-Hyuk Choi,<sup>2</sup> Jeong Hoon Yang,<sup>2</sup> Young Bin Song,<sup>2</sup> Hyeon-Cheol Gwon,<sup>3</sup> Ju Hyeon Oh<sup>4</sup><sup>1</sup>Samsung Changwon Hospital, Sungkyunkwan University, School of Medicine, Changwon, Kyungnam; <sup>2</sup>Samsung Medical Center, Seoul, Korea, Republic of; <sup>3</sup>Samsung Medical Center, Seoul, Seoul; <sup>4</sup>Samsung Changwon Hospital, Sungkyunkwan University School of Medicine, Changwon, Gyeongsangnamdo

**BACKGROUND** Little is known about the clinical impact of PMI on long-term cardiac mortality after CTO revascularization in patients with CTO.

**METHODS** We analyzed data from 927 patients with CTO and stable angina who were treated with coronary artery bypass grafting (CABG, n=367) or percutaneous coronary intervention (PCI, n=560). PMI was defined as a peak CK-MB ≥ 3 times the upper limit of normal (ULN) after PCI or CK-MB ≥ 5 times the ULN after CABG. The primary outcome was cardiac death in patients with PMI (PMI group, n=118 [12.7%]) and without PMI (No PMI group, n=809 [87.3%]) after revascularization.

**RESULTS** During a median follow-up duration of 42 months, PMI occurred in 118 patients (12.7% of total study population). 59 patients treated with PCI (10.5% of PCI subgroup) and 59 patients treated with CABG (16.1% of CABG subgroup) suffered from PMI. In multivariate analysis, the PMI group had a similar incidence of cardiac death (hazard ratio [HR] 0.57; 95% confidence interval [CI] 0.20 to 1.62; p=0.29) compared to the No PMI group.

	No PMI	PMI	Unadjusted HR (95% CI)	p value	<sup>1</sup> Adjusted HR(95% CI)	p value
<b>Total population (n=927)</b>	<b>n=809</b>	<b>n=118</b>				
Cardiac death	35 (4.3)	5 (4.2)	1.02 (0.40-2.61)	0.96	0.57 (0.20-1.62)	0.29
All-cause death	76 (9.4)	14 (11.9)	1.30 (0.73-2.29)	0.37	0.95 (0.52-1.73)	0.86
Spontaneous MI	3 (0.4)	3 (2.5)	7.14 (1.44-35.38)	0.02	4.76 (0.95-23.97)	0.06
Cardiac death or MI	35 (4.3)	7 (5.9)	1.45 (0.64-3.27)	0.37	0.90 (0.37-2.15)	0.81
CVA	40 (4.9)	6 (5.1)	1.08 (0.46-2.54)	0.87	0.63 (0.25-1.60)	0.33
Repeat revascularization	69 (8.5)	7 (5.9)	0.73 (0.33-1.58)	0.42	0.62 (0.27-1.44)	0.26
MACCE	158 (19.5)	26 (22.0)	1.19 (0.78-1.80)	0.42	0.97 (0.63-1.49)	0.88

Data are presented as n (%).

CI = confidence interval; CVA = cerebrovascular accident; HR = hazard ratio; LVEF = left ventricular ejection fraction; MI = myocardial infarction; MACCE = major adverse cardiac and cerebrovascular event; PMI = periprocedural MI <sup>1</sup>Adjusted covariates include LVEF (%), bridge collaterals, and multivessel disease.

**CONCLUSIONS** PMI may not be associated with increased cardiac mortality after coronary revascularization in patients with stable CTO.

**CATEGORIES CORONARY:** PCI Outcomes

**KEYWORDS** Chronic total occlusion, Peri-procedural MI, Revascularization

#### TCT-462

##### Utility of the Syntax Score in Long-Term Outcomes after Newer-Generation Drug Eluting Stents in a Real-World

HiroYuki Jinnouchi,<sup>1</sup> Shoichi Kuramitsu,<sup>2</sup> Yohei Kobayashi,<sup>2</sup>

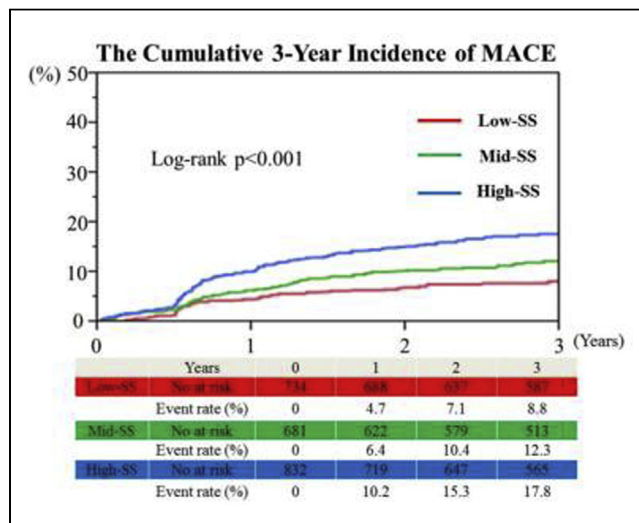
Takashi Hiromasa,<sup>2</sup> Takashi Morinaga,<sup>2</sup> Kenji Ando<sup>3</sup>

<sup>1</sup>Kokura Memorial Hospital, Kitakyusyu, Fukuoka; <sup>2</sup>Kokura Memorial Hospital, Kitakyushu, Japan; <sup>3</sup>Kokura Memorial Hospital, Kitakyusyu, Japan

**BACKGROUND** The ability of the SYNTAX score (SS) for long-term outcomes after newer-generation drug eluting stents (DES) have not been fully investigated. The aim of this study was to investigate the ability of the SS for long-term outcomes of patients treated with newer-generation DES.

**METHODS** The SS was collected consecutive 2247 patients treated with only newer-generation DES. Post hoc analysis was performed by stratifying clinical outcomes at 3-year follow-up, according to one of three SS tertiles. Tertiles for SS were defined as low-SS < 8 (n=734), 8 ≤ mid-SS ≤ 15 (n=681), high-SS > 15 (n=832).

**RESULTS** Clinical follow-up information at 3-year was obtained 98.4%. At 3-year, the rate of major adverse cardiac event (MACE), defined as cardiac death, myocardial infarction (MI), and clinically-driven target lesion revascularization (CD-TLR), was 8.8 % vs. 12.3 % vs. 17.8 % in the three SS groups, respectively (p<0.001). Similarly, CD-TLR (6.1 % vs. 7.9 % vs. 13.5 %, p<0.001), MI (0.9 % vs. 2.7 % vs. 2.8 %, p=0.03) and cardiac death (2.9 % vs. 3.7 % vs. 5.4 %, p=0.02) were increased significantly with increasing SS tertile. The SS independently predicted 3-year MACE in multivariate analysis (hazard ratio 1.05, 95 % confidence interval 1.02-1.09; p=0.001).



**CONCLUSIONS** The SS was applicable to unrestricted use of newer-generation DES in predicting the risk of long-term outcomes. The SS is a useful angiographic predictive tool after newer-generation DES.

**CATEGORIES CORONARY:** PCI Outcomes

**KEYWORDS** DES, PCI, Syntax score

#### TCT-463

##### Percutaneous Coronary Intervention Versus Coronary Artery Bypass Grafting in Left Main Coronary Artery Disease: Long-Term Follow-Up Meta-Analysis Of 6156 Patients

Aakash Garg,<sup>1</sup> Marco G. Mennuni,<sup>2</sup> Kleanthis Theodoropoulos,<sup>3</sup>

Abhishek Sharma,<sup>4</sup> John Kostis,<sup>5</sup> Giulio G. Stefanini<sup>2</sup>

<sup>1</sup>Saint Peter's University Hospital/Rutgers- RWJMS, New Brunswick, NJ;

<sup>2</sup>Humanitas Research Hospital, Rozzano, Milan, Italy; <sup>3</sup>James J Peters VA Hospital/Icahn school of medicine at Mount Sinai, Bronx, NY;

<sup>4</sup>SUNY Downstate University, Brooklyn, NY; <sup>5</sup>CVI & RWJMS, UMDNJ, New Brunswick, NJ

**BACKGROUND** Coronary artery bypass grafting (CABG) has long been the preferred revascularization approach in patients with left main (LM) disease. However, evolving percutaneous coronary intervention (PCI) techniques with DES implantation have shown comparable short-term efficacy and safety during the last decade. Concurrently, ACC/AHA guidelines have made a Class IIa recommendation for PCI in patients with LM stenosis and favorable anatomy. However, concerns persist regarding long-term prognosis of PCI with DES in high risk LM disease. Therefore, we aimed to investigate the cumulative evidence for long-term outcomes of PCI with DES versus CABG in patients with LM stenosis

**METHODS** A systematic review of randomized control trials and observational studies in MEDLINE, EMBASE, EBSICO, CINAHL, Web of Science and Cochrane databases comparing PCI with DES to CABG for LM disease was performed. Only studies with a median follow-up of at least 4 years were included. Pre-specified outcomes of interest were all-cause mortality, cardiovascular mortality, myocardial infarction (MI), stroke, and repeat revascularization. Random-effects meta-analyses were performed, using risk ratios as the metric of choice.

**RESULTS** Nine studies comprising two RCTs and seven observational studies, with a total of 6156 patients were included. Median duration of follow-up was 56 months. Overall, there were no significant differences between PCI with DES and CABG in terms of all-cause mortality [RR 0.81, 95% CI 0.63-1.04; I<sup>2</sup>=66.8%] and cardiovascular mortality [RR 0.92, 95% CI 0.54-1.58; I<sup>2</sup>=72.1%]. Compared with CABG, PCI was associated with a significant increase in the risk of MI [RR 1.59, 95% CI 1.07-2.36; I<sup>2</sup>=38.2%] and repeat revascularization [RR 2.68, 95% CI 1.98-3.62; I<sup>2</sup>=70%]. Whereas, a numerically lower risk of stroke with PCI as compared to CABG [RR 0.59, 95% CI 0.31-1.13; I<sup>2</sup>=51.3%] was observed. The results were consistent between RCTs and observational studies for each outcome.