Impact of Angiographical Lesion Complexity Score and In-Hospital Outcome after Percutaneous Coronary Intervention: Analysis from Japanese Multicenter Registry

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Background: Although the applicability of percutaneous coronary intervention (PCI) to patients with coronary artery disease (CAD) continues to expand, lesion complexity is associated with high risk of in-hospital complication. We sought to generate modern PCI scoring system based on angiographical lesion complexity and assess its effect on in-hospital compilations for precise risk prediction.

Methods: Data from 3692 PCI patients from September 2008 to August 2011 at 16 hospitals was analyzed. Patients were scored based on lesion complexity defined by bifurcation, chronic total occlusion (CTO), type C, and left main lesion, along with presence of acute thrombus in ST-segment elevation myocardial infarction (STEMI) presentation (1 point for each variable).

Results: In this cohort, the mean age was 67.49±10.76 years and 79.5% were male. About half of the patients (1857, 50.3%) presented with acute coronary syndrome (ACS) and 2218 (60.1%) underwent PCI for at least one of the complex lesions. The patients in higher risk score groups had significantly higher in-hospital event rate for death, heart failure and cardiogenic shock (from 0 to 4 risk score: 1.7%, 4.5%, 6.3%, 7.1%, 40%, p<0.001), bleeding (2.5%, 3.4%, 6.8%, 6.6%, 20%, p<0.001), post-operative myocardial infarction (1.5%, 3.1%, 3.8%, 3.8%, 10%, p=0.04) and reduced or no-reflow pattern after PCI (2.0%, 4.5%, 7.4%, 7.1%, 20%, p<0.001). Notably, the complexity scoring system was associated with adverse outcomes after adjustment for known clinical predictors (OR 1.72; p<0.001).

Conclusions: The complexity score was cumulatively associated with in-hospital complication rate and may be used for event prediction in PCI patients. The operator need to special attention to perform successful PCI for these complex lesions.
The Glider balloon represents an unique bail-out device which offers an effective rescue strategy for recrossing stent struts during complex bifurcation stenting.

**TCT-677**

Use Of Troponin To Diagnose Peri-procedural Myocardial Infarction: Effect On Composite Endpoints In The British Bifurcation Coronary Study (BBC ONE)

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Background: Peri-procedural myocardial infarction (PMI, ESC/ACC type 4a) is diagnosed on the basis of elevation of cardiac enzymes more than three times the 99th centile upper reference limit. Recent guidelines recommend the use of troponin instead of creatine kinase (CK) to diagnose PMI, but this assay increases diagnostic sensitivity, while the clinical significance of small increases in troponin remains undetermined. We examined the effects of using the new definition on the incidence of a composite endpoint (previously defined by CK) in a contemporary clinical randomized trial - the BBC ONE bifurcation coronary stenting trial.

Methods: The BBC ONE trial randomly allocated 500 patients with coronary bifurcation lesions to either a simple or complex stenting strategy. The composite primary endpoint (CPEP) included death, MI (PMI + subsequent MI) and target vessel failure, at 9 months.

Results: In BBC ONE the CPEP occurred in 8% vs 15.2% in the simple and complex groups respectively (HR 2.02 (1.17-3.47), p = 0.009). Using troponin, PMI would have occurred in 71 (28.4%) vs 114 (45.6%) patients respectively (HR 1.61, (1.27-2.05), p = 0.001), and the CPEP in 32% vs 48% of patients (HR 1.50, (1.30-1.71), p = 0.001). The use of troponin increased myocardial infarction detection fivefold, from 7.4% to 37.0% overall.

Conclusions: Use of troponin would have led to a fivefold increase in diagnosis of peri-procedural myocardial infarction in the BBC ONE trial. Incorporation of PMI into a composite endpoint may no longer be justified in many interventional trials.

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Tryton-Xience for the Treatment of Complex Coronary Bifurcation Lesions: A Single Center Consecutive Series

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Background: The Tryton Side-Branch Stent (Tryton) (Tryton Medical) was designed to treat complex bifurcation lesions (BL). We evaluated all treated patients with a clinical and angiographic follow-up at 9 months.

Methods: Tryton is a balloon-expandable cobalt-chromium bare-metal stent with a distal zone that scaffolds the side branch (SB), a transition zone designed to accommodate any ostial anatomy and a proximal zone designed to accommodate a standard stent. Tryton is deployed with the transition zone at the SB origin with the distal end in the SB and proximal zone into the main vessel (MV). Appropriately sized Xience Prime (Abbott Vascular) stents were positioned in the MV with the proximal portion covering the Tryton and the distal portion extending beyond the SB ostium into the distal MV.

Results: We enrolled one hundred-twenty-three consecutive patients (83% male, mean age 64.6±9.6 years) with 125 BL (79 LAD-diagonal, 26 LCx-obtuse marginal, 8 RCA-posterior descending and 12 LM-LAD) and Medina classification showing 1.1 in 107, 1.10 in 12, 0.11 in 8. Lesion angle was > 30° in 26, < 30° and < 45° in 75 and > 45° in 24. Additional SB stenting, distal to the Tryton stent, was performed in 48.9% cases to fully cover the lesion. Final kissing balloon was performed in all cases. Procedural success was 100%. Postprocedural NSTEMI were observed in 17 (13.8%; CK-MB >5 ULN) pts. No definite stent thrombosis, rePCI, CABG occurred. One cardiac unwitnessed death occurred 7 days after PCI in a previously large anterior STEMI pt.

Conclusions: Clinical and angiographic follow-up data, currently available in 113 (91%) patients are shown in the Table.