

**TCTAP A-133****Treatment Delay in Door-to-Balloon Time in South-East Asian Patients Undergoing Primary Percutaneous Coronary Intervention for ST-Segment Elevation Myocardial Infarction: A Key Process Analysis of Patient Factors**

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**BACKGROUND** In the management of patients with ST-segment elevation myocardial infarction (STEMI), the timeliness of reperfusion via primary percutaneous coronary intervention (PPCI) is important in determining mortality. The timeliness of PPCI is measured by the door-to-balloon (D2B) time and current guidelines recommend a D2B of < 90 minutes. System delays (either program or patient-related factors) may reduce the mortality benefit of PPCI and clinical predictors of delay can vary in different clinical setting. The aim of this study is to identify the clinical characteristics of South-east Asian patients with delay in the D2B time while undergoing PPCI for STEMI in a tertiary institution in Singapore.

**METHODS** From January 2009 to December 2012, 1268 patients (86% male, mean age of 58 + 12 years) presented to our hospital for STEMI and underwent PPCI. We perform a key process analysis of our PPCI program and divide the patients into two groups: Non-delay was defined as D2B <90 mins and delay group defined as D2B > 90 mins. Data were collected retrospectively on baseline clinical characteristics, mode of presentation, angiographic findings, therapeutic modality and hospital course.

**RESULTS** The median D2B for the overall study group was 60 mins and delay in D2B occurred in 16% of the patients (n= 204). There was a higher proportion of female in the delay group. They were older at presentation and tend to self-present to hospital rather than use the emergency ambulance services (51.5% vs 36.7%, p=0.0001). Patients in the delay group were also less likely to be smokers and have a higher prevalence of prior MI. The proportion of anterior MI were comparable in both groups but the incidence of posterior MI were higher in the delay group (4% vs 1%, p=0.006). The latter group also had a significantly higher incidence of triple vessel disease and a trend towards having significant left main disease on coronary angiography. There was however no socio-economic and multi-ethnic difference between both groups. The overall in-hospital mortality was 5.6% and there was a trend towards a higher in-hospital mortality for the delay group (8.4% vs 5%, p = 0.06).

**CONCLUSION** Our registry showed that delay in D2B occurred in 16% of our patients undergoing PPCI for STEMI and it was associated with higher in-hospital mortality. Patient-related factors for delay unique to the hospital and the South-east Asian patient population were identified and warrant further studies/intervention.

**TCTAP A-134****Causes of Delay in Door-to-Balloon Time in South-East Asian Patients Undergoing Primary Percutaneous Coronary Intervention for ST-Segment Elevation Myocardial Infarction**

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**BACKGROUND** In the management of patients with ST-segment elevation myocardial infarction (STEMI), the timeliness of reperfusion via primary percutaneous coronary intervention (PPCI) is important in determining mortality. The timeliness of PPCI is measured by the door-to-balloon (D2B) time which has become a key performance indicator. Current guidelines recommend a D2B of <90 minutes. System delays may reduce the mortality benefit of PPCI and specific reasons for and clinical impact of delay can vary in different clinical setting. The aim of this study is to identify the causes of delay in the D2B time for South-east Asian patients undergoing PPCI for STEMI in a tertiary institution in Singapore.

**METHODS** From January 2009 to December 2012, 1268 patients (86% male, mean age of 58+ 12 years) presented to our hospital for STEMI and underwent PPCI. Delay was defined as D2B > 90 mins. We perform a key process analysis of our PPCI program, assessed the relative contribution of individual time intervals on D2B and analyzed the specific reasons for delay.

**RESULTS** The median D2B for the overall study group was 60 mins and delay in D2B occurred in 16% of the patients (n= 204). The most common reason for delay in D2B time was delay in the emergency department (27.6%) followed by atypical clinical presentation (26.6%), unstable medical condition requiring stabilization/CT imaging (19.2%), difficult PCI (9.4%), difficult vascular access (6.6%), consent issues (2.8%) and "unknown" (6.3%). The majority of patients (76%) had only one reason for delay with 20% having 2 reasons and the remaining 4% had 3 reasons for delay. The overall in-hospital mortality was 5.6% and there was a trend towards a higher in-hospital mortality for the delay group (8.4% vs. 5%, p= 0.06).

**CONCLUSION** Despite having an efficient system for STEMI care in Singapore, our registry showed that delay in D2B still occurred in 16% of our patients undergoing PPCI and it was associated with higher in-hospital mortality. Several key reasons for delay unique to the hospital and the South-east Asian patient population were identified and warrant further studies/intervention.

**ADJUNCTIVE PROCEDURES: THROMBECTOMY, PLAQUE MODIFICATION, OTHERS (TCTAP A-135)****TCTAP A-135****Predilation with Scoring Balloon Optimized Cobalt-Chromium Stent Expansion Analyzed with Optical Coherent Tomography**

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**BACKGROUND** Stent expansion remains one of important predictors of restenosis and subacute thrombosis, even in use of the drug-eluting stent. In those patients, the role of different predilation strategies has yet to be established. Moreover, in the bioresorbable vascular scaffold era, sufficient lesion preparation is essential for their appropriate apposition. The aim of this study was to clarify the impact of lesion preparation using the scoring balloon on final stent expansion.

**METHODS** Sixty-six consecutive denovo lesions were enrolled in this trial, and finally 52 non-calcified lesions (calcification <50% of circumference) treated with single 2.5-3.0 mm Cobalt-chromium Everolimus-eluting stent (EES) under optical coherent tomography (OCT) guidance without post-stenting dilation. Enrolled lesions randomly assigned to be pre-dilated either with semi-compliant conventional balloon or semi-compliant scoring balloon. Stent expansion was defined as the ratio of OCT-measured minimum stent area to the manufacturer's predicted stent area.

**RESULTS** The stent expansion was significantly larger after predilation with scoring balloon (71 (60-74) vs. 61 (57-68) %, p=0.017), and a significantly greater percentage of stents had final minimum stent areas >5.0 mm<sup>2</sup> (27 vs. 4%, p=0.021). Gaps between reference vessel area and predicted stent area were not significantly different between groups (-10 (-21-0.2) vs. -2.3 (-20-5.5) %, p=0.41). Quantitative coronary angiography (QCA) revealed similar extent of balloon expansion at stent deployment (80 (76-84) vs. 75 (69-85) % to stent diameter, p=0.10) followed with significantly larger minimum stent diameter in scoring group on final angiography (2.43 (2.18-2.74) vs. 2.27 (1.95-2.50) mm, p=0.049), suggesting that lesion modification by scoring device may avoid acute stent recoil even in non-calcified lesions. In fact, greater dissections behind plaques were observed at scored lesions on OCT images. Finally, patient clinical profile, lesion morphology, stent and lesion length, and reference vessel size did not affect stent expansion.

**CONCLUSION** In this randomized study, pretreatment with the scoring balloon enhanced stent expansion and minimized the difference between predicted and achieved stent dimension.