TCT-134
Residual Intra-stent Thrombus After Primary Angioplasty Identifies Patients With Worrisome Microcirculatory Indexes. Insight From The COCTAIL II
Laura Gatto1, Enrico Romagnoli2, fabrizio imola3, Tomaz Pavlović1, Silvio Fedele4, Giulia Paolletti5, Valeria Marco4, Luca Di Vito4, alessandro marzoli5, alessandro pappalardo6, maria teresa maluss7, Francesco Prati8
1San Giovanni Addolorata Hospital, CLI Foundation, Rome, Italy, 2CLI Foundation, Rome, Italy, 3CLI Foundation, Rome, Italy, 4CSK MSWiA, Warszawa, Poland, 5Sandro Pertini Hospital, Rome, Italy, 6S. Giovanni Addolorata Hospital, Rome, Italy, 7San Giovanni Addolorata Hospital, Rome, Italy

Background: Recent Frequency Domain Optical Coherence Tomography (FD-OCT) studies showed that, even with the use of aggressive technical solutions, a complete removal of thrombotic materials is rarely achieved after percutaneous coronary interventions (PCI) for ST-segment elevation myocardial infarction (STEMI). Residual intra-stent thrombus can result in distal embolization leading to microcirculatory injury. The aim of this study was to test the possible correlation between residual intrastent thrombus and angiographic indexes of myocardial reperfusion.

Methods: COCTAIL II enrolled 128 STEMI patients which underwent primary PCI within 6 h from onset of chest pain and randomized to one of the following four treatments: local infusion of abciximab delivered by the ClearWay with (group 1) or without thrombectomy (group 2), intra-coronary abciximab with (group 3) or without thrombectomy (group 4). Intra-stent thrombus at OCT assessment was defined as the maximum % value of Thrombus area (thrombus area/stent area x 100) in the cross section with largest thrombus. A value >16% was considered indicative of high residual intrastent thrombus. By design the following angiographic indexes of myocardial reperfusion were evaluated: TIMI value, corrected TIMI Frame Count (cTFC) and Myocardial Blush Grade (MBG)

Results: Finally the OCT data were available in 119 patients: 64 had a maximum % value of Thrombus area ≤16%, whilst the remaining 55 had a residual intrastent thrombus >16%. No differences were found between the two groups regarding the microcirculatory indexes assessed. After intervention patients with intrastent thrombus >16% showed a significant improvement in the final TIMI value (2.87±0.33 vs 2.67±0.54; p=0.014) and final cTFC (11.71±4.58 vs 17.44±17.44; p=0.012). No statistically significant differences were found for MBG (2.58±0.59 vs 2.41±0.62; p=0.234).

Conclusions: Data obtained from the COCTAIL II study suggest that the presence of high residual intrastent thrombus in patients undergoing primary angioplasty is associated with worsened final microcirculatory indexes.

TCT-135
A Systematic Review and Meta-analysis of Randomized Trials of Manual Thrombectomy in ST-Elevation Myocardial Infarction
Asfah Alazemi1, Aiman Alak2, Sanjib Jolly1
1McMaster University, Stoney Creek, Ontario, 2McMaster University, Hamilton, Ontario, 3McMaster University, Hamilton, Canada

Background: The utility of manual thrombectomy in patients with ST-elevation myocardial infarction (STEMI) has been questioned after the recent publication of the FASTE study (N=7244). This study was larger than all combined previous trials published to date and it found no benefit with manual thrombectomy for the primary outcome of all cause mortality. With these new findings, we sought to perform an updated meta-analysis of randomized clinical trials with a focus on clinical outcomes.

Methods: Medline, Embase and Cochrane database as well as conference proceedings from major cardiology meetings were searched for randomized trials comparing manual aspiration thrombectomy in addition to percutaneous coronary intervention (PCI) versus PCI alone in patients presenting with STEMI.

Results: A total of 19 randomized controlled trials enrolled 11,197 patients presenting with STEMI to either manual thrombectomy and PCI or conventional PCI. There was a non significant trend toward reduction in all cause death with manual thrombectomy vs PCI alone (2.9% vs 3.5% with an odds ratio (OR) of 0.82 (95% CI: 0.66 to 1.01; p=0.06). Manual thrombectomy was associated with a reduction in symptom time (OR: 0.60 vs 0.88; p=0.008). Manual thrombectomy was associated with a reduction in duration of hospital stay (OR: 0.72 vs 1.26; p=0.002). Manual thrombectomy was associated with a reduction in time to achieve 70% of target SYNTAX score (OR: 0.7 vs 1.77; p=0.002). Manual thrombectomy was associated with a reduction in in-hospital mortality (OR: 0.67; 95% CI: 0.5 to 0.91; p=0.01). Manual thrombectomy was associated with a reduction in re-hospitalisation for heart failure (OR: 0.25; 95% CI: 0.09 to 0.71; p=0.009). Manual thrombectomy was not associated with an increase in the risk of stroke (OR: 1.09; 95% CI: 0.62 to 1.92; p=0.83).

Conclusions: Manual thrombectomy reduced the incidence of myocardial re-infarction, stent thrombosis, target lesion revascularisation and rehospitalisation with a trend towards reduced mortality in STEMI patients treated with primary angioplasty despite the adoption of aggressive strategy for thrombus removal.
Conclusions: Effective thrombectomy protects myocardial function and functional capacity, and reduces no-reflow and hospital mortality.

<table>
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<tr>
<th>ET (n=117)</th>
<th>Non-ET (n=117)</th>
<th>P</th>
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<tbody>
<tr>
<td>No-reflow n(%)</td>
<td>28 (15.7%)</td>
<td>47 (40.2%)</td>
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<tr>
<td>Hospital mortality (%)</td>
<td>3 (1.7%)</td>
<td>7 (6%)</td>
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<tr>
<td>STR&gt;70% (n,%)</td>
<td>117 (65.7%)</td>
<td>50 (42.7%)</td>
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TCT-138

OCT evaluation of intensive vs standard manual thrombus aspiration in STEMI patients
Saint Philibert, LOMME, France

Background: Thrombus aspiration is a well-established technique in the setting of primary coronary angioplasty for STEMI. However, prior OCT studies failed to demonstrate any thrombus reduction with current thrombectomy catheters. The aim of our study is to evaluate by OCT the benefit of intensive thrombus aspiration.

Methods: 40 consecutive patients referred to our cathlab for primary coronary angioplasty were enrolled in this non-randomized single center prospective study. Once TIMI 3 flow was obtained using a thrombus aspiration catheter (standard care), a first run of OCT was obtained in order to visualise residual thrombus (initial thrombus), then supplementary aspiration was conducted with an OCT run after every 4 catheter passages. Aspiration was continued (intensive aspiration) until no further decrease in thrombus burden was observed by OCT (final thrombus). Then one or more stents were implanted in order to cover the entire lesion with systematic post-dilatation followed by a final OCT study. The primary end point was thrombus volume after standard care Vs intensive aspiration.

Results: The mean number of aspirations necessary to obtain a TIMI 3 flow was 4. A mean of 10 more catheter pullbacks were done to obtain the smallest (final) thrombus volume. At the end of the procedure the TIMI 3 flow was present in 39 patients (97%) and TIMI 3 Blush in 38 (95%). ST segment elevation decreased by more than 70% in 38 patients. Distal embolization occurred in 2 patients. On OCT, initial thrombus volume was 7.07 mm³ vs 3.80 mm³ for final thrombus (54% reduction, P<0.001). Minor incomplete stent apposition with a mean surface of 0.12 mm² was seen in 4 patients (10.8%). Intrastent protrusion was constant but minimal 0.33 mm³. Minimal stent area and minimal flow area were not different (8.28 mm² vs 7.84 mm², Δ = 0.44, p<0.07). No aneurysm, kidney injury or other complications occurred during hospital stay.

Conclusions: The results from our study suggest that intensive manual thrombus aspiration using a catheter during a primary coronary angioplasty seems to be effective in reducing the thrombus burden as assessed by OCT. These results have to be confirmed in large clinical studies.

TCT-139

Effect of thrombus burden and its residue on no-reflow phenomenon after manual thrombectomy in patients with ST-elevation myocardial infarction
Julio Garcia-Tejada1, Jurado-Roman Alfonso1, Carolina Grandal1, Agustín Albarrañ1, M. Teresa Velazquez1, Felipe Henandez1, Belen Rihu1, Sandra Mayordomo1, Juan C. Tascó1
1University Hospital 12 de Octubre, Madrid, Spain

Background: Large thrombotic burden is a well-known predictor of no-reflow phenomenon and mortality in patients with STEMI. However, few data are available on the clinical significance of residual thrombus after thrombectomy. Therefore, we aimed to investigate the efficacy of manual thrombectomy in decreasing thrombus burden, and the effect of residual thrombus on myocardial perfusion after thrombectomy.

Methods: 416 consecutive STEMI patients undergoing primary percutaneous coronary intervention (PCI) were studied. The no-reflow phenomenon incidence after PCI was compared between the small thrombus burden (n=263) and large thrombus burden (n=353) groups, defined by a thrombus score of ≥4. Aspiration thrombectomy was performed in 263 (87%) patients in the large thrombus group, and the no-reflow incidence in this group was compared based on thrombectomy treatment and pre-stenting residual thrombus. No reflow phenomenon was defined by a final TIMI flow grade of ≤2 or myocardial blush grade of ≤1.

Results: No-reflow phenomenon occurred frequently in the large thrombus burden patients without thrombectomy, followed by those who underwent thrombectomy, and by the small thrombus burden group (35% vs. 14.8% vs. 8.6%, p<0.001). Patients with pre-stenting residual thrombus had a higher no-reflow incidence than those without visible pre-stenting thrombus (79% vs. 22%, p<0.001). Multivariate analysis identified pre-stenting residual thrombus (OR 2.9, 95% CI 1.9-6.3.), balloon pre-dilatation (OR 1.4, 95% CI 1.1-2.1) and pre-stenting TIMI flow grade of ≤1 (OR 2.2, 95% CI 1.6-5.7) as independent predictors of no-reflow phenomenon.

Conclusions: Manual thrombectomy substantially reduces no-reflow phenomenon incidence in STEMI patients with large thrombus burden. However, residual thrombus after thrombectomy increases no-reflow phenomenon occurrence.

TCT-140

Prognostic value of manual thrombus aspiration in patients undergoing Primary Percutaneous Coronary Intervention
Cid Alvarez Ana Belen1, Alvarez Alvarez Belen1, Ramiro Trillo1, Lopez Otero Diego1, Ocaranza Sanchez Raymundo1, Pablo Stouto Castro1, Agustín Fernandez-Crinal1, Gestal Romani Santiago1, Pereira Lopez Eva1, Jose Ramon Gonzalez-Juanatey1
1Hospital Clínico Universitario de Santiago de Compostela, Santiago de Compostela, Spain, 2Hospital Universitario Virgen del Rocío, Seville, Spain

Background: Recent studies question the value of manual thrombus aspiration (TA) before PCI in patients with ST-segment elevation infarction (STEMI). The aim of this study was to evaluate the impact of TA in a contemporary cohort of patients admitted to our hospital with STEMI who were undergoing primary percutaneous coronary intervention (PCI).

Methods: We analyzed the data and clinical outcomes of 1044 consecutive patients undergoing PCI between January 2009 and December 2013. We classified patients into TA-PCI (n=666) and non TA-PCI (n=378). Mean follow-up was 23 months. Primary endpoint was all cause mortality and secondary endpoint was major adverse cardiovascular events (MACE; death, recurrent MI, target vessel revascularization, heart failure).

Results: The median patient age was 65 years, 76.6% were men, 50.1% had hypertension, and 24% had diabetes. Percutaneous access was via the radial approach in 88% of the patients. The variables independently associated with TA use are: sex, culprit artery, number of vessel disease and TIMI 0 before PCI. At the end of the follow-up 12.5% of the patients died: 11.1% in TA-PPCI group, and 15.1% in non-TAPPCI (p=0.040)(See Image 1). The incidence of major adverse cardiovascular events (MACE) at the end of the follow-up was 23.1%: 21% in TA-PPCI group and 23.7% in non TA-PPCI 0.022 (P=0.022). However, after cox regression analysis, we don’t find independent association between TA and mortality or MACE.

Conclusions: The use of TA in a “real-world” cohort of patients with STEMI who were undergoing PCI was not associated with a reduction in mortality or MACE risk.