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Stent malapposition is associated with unfavorable long-term outcomes in patients treated by primary coronary angioplasty: six-year follow-up of ROBUST study

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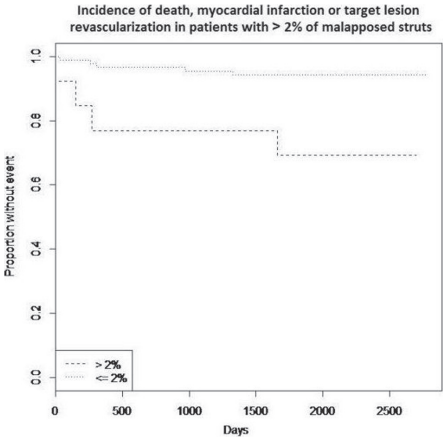
Background: Stent malapposition is anticipated to be associated with unfavorable long-term outcomes, but data from patients treated by primary percutaneous coronary intervention (PCI) are rare. According to our previous data, stent restenosis or uncovered struts are more frequent in patients with more than 2% malapposed struts in baseline analysis.
Purpose: To evaluate association of baseline stent malapposition to death, myocardial infarction or target vessel revascularization in six-year follow-up.
Methods: 105 patients with acute ST segment elevation myocardial infarction underwent OCT guided primary PCI. In 100 of these patients the OCT record was eligible for malapposition analysis. Either biolimus A9 or everolimus eluting stents were used in the trail. The OCT study was performed with C7-XRTM intravascular imaging system employing a non-occlusive technique. It was intended to maintain complete stent apposition, if feasible. Subsequent offline pullback analysis was performed using OCTivat-Stent software. Data in groups were compared by log-rank test.
Results: Mean follow-up was 6.3 (5.2 - 7.8 years). More than 2% of malapposed struts were present in 13 (13%) of study patients. Of these patients, 1 (7.7%) patient died, 1 suffered myocardial infarction and 3 (23.1%) patients underwent target lesion revascularization. In patients with <2% of malapposed struts, 5 (5.7%) died, 2 (2.3%) suffered myocardial infarction and 4 (4.6%) underwent target lesion revascularization (p<0.01 for combined endpoint of death, myocardial infarction and target lesion revascularization).



Conclusion: Stent malapposition is associated with unfavorable results in long-term follow-up in patients treated by primary coronary angioplasty.
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Impact of final minimal stent area by IVUS on 1-year outcome after PCI in the SYNTAX II trial

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Aims: To investigate the impact of final minimal stent area (MSA) evaluated by post-procedural IVUS on clinical outcomes after contemporary PCI in patients with multi-vessel coronary artery disease.
Methods and results: The SYNTAX II study is a multicentre, all-comers, open-label, single arm study that investigated the impact of a state-of-the-art PCI strategy on clinical outcomes in patients with three-vessel disease. (454 patients with 1,559 lesions)
Post-implantation IVUS was performed in 84.1% of the patients (76.4% of the lesions, n=876/1146) leading to a further optimization (i.e. balloon post-dilatation) of the stented lesion in 30.2%. The mean minimum stent area post-procedure was 6.17±2.31 mm^2.
The final minimum stent area per patient was divided into terciles (smaller tercile: 1.9- 4.3 mm^2, intermediate tercile: 4.4–5.7 mm^2, and largest tercile 5.8–12.3 mm^2). TVF was observed in 14/125 (11.2%), 17/122 (13.9%), and 7/120 (5.8%), respectively (p=0.115). Cardiac death was observed in 1/125 (0.8%), 2/122 (1.6%), and 2/120 (1.7%), respectively (p=0.792). Target-vessel myocardial infarction was observed in 3/125 (2.4%), 3/122 (2.5%), and 0/120 (0.0%), respectively (p=0.238). Clinically-driven TVR was observed in 7/125 (5.6%), 7/122 (5.7%), and 2/120 (1.7%), respectively (p=0.228).
For a lesion level analysis, the final minimum stent area per lesion was divided into terciles (smaller tercile: 1.9–5.0 mm^2, intermediate tercile: 5.1 - 6.7 mm^2, and largest tercile: 6.8–19.6 mm^2). All TVR was observed in 14/288 (4.9%), 9/265 (3.4%), and 2/267 (0.7%), respectively (p=0.019). Clinically driven TVR was observed in 11/288 (3.8%), 8/265 (3.0%), and 2/267 (0.7%), respectively (p=0.067). All TLR was observed in 12/288 (4.2%), 9/265 (3.4%), and 2/267 (0.7%), respectively (p=0.043). Clinically driven TLR was observed in 9/288 (3.1%), 8/265 (3.0%), and 2/267 (0.7%), respectively (p=0.123). Definite/Probable stent thrombosis was observed in 0/288 (0.0%), 3/265 (1.1%), and 2/267 (0.7%), respectively (p=0.219).
Conclusions: In the SYNTAX II trial, the final MSA measured by IVUS after PCI correlates with adverse events at 1 year in a lesion level.
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Long vs. short dual antiplatelet therapy in ACS patients treated with prasugrel or ticagrelor and coronary revascularization: a propensity score analysis from the RENAMI registry

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Introduction: The benefits of short vs. long term dual antiplatelet therapy (DAPT) using the 3rd generation P2Y12 antagonists prasugrel or ticagrelor in patients with acute coronary syndromes (ACS) treated with percutaneous coronary intervention (PCI) remain to be defined, due to evidence currently limited to patients treated with clopidogrel.
Methods: All ACS patients from the RENAMI (REgistry of New Antiplatelets in patients with Myocardial Infarction) registry undergoing PCI and treated with aspirin plus prasugrel or ticagrelor were stratified according to the length of DAPT, i.e. shorter than 12 months (D1), 12 months (D2) and longer than 12 months (D3). The groups were compared before and after propensity score matching. NACE (including all cause death, myocardial infarction (MI) and BARC 3–5 bleeding) was the primary end point, while MACE (including all cause death and MI) the secondary one. Single components of NACE and MACE were co-secondary end points, along with BARC 2–5 bleeding and stent thrombosis.
Results: A total of 4'424 patients from the RENAMI registry with data about length of DAPT available were included in the model. 985 received DAPT less than 12 months, 2'216 DAPT for 12 months, and 1'223 DAPT longer than 12 months. After propensity score matching, 628 patients from each group were selected. At 20 months of follow up, DAPT for 12 months and DAPT for longer than 12 months significantly reduced the risk of NACE compared to DAPT for less than 12 months (D1 11.6% vs. D2 6.7% vs. D3 7.2%, p=0.003), and of MACE (10% vs. 6.2% vs. 2.4%, p<0.001), mainly driven by a reduced risk of all cause death (7.8% vs. 1.3% vs. 1.6%, p<0.001), CV death (5.1% vs 1.0% vs. 1.2%,p<0.0001) and recurrent MI (8.3% vs. 5.2% vs. 3.5%, p=0.002) despite higher risk of BARC 2–5 bleeding (4.6% vs. 5.7% vs. 6.2%, p=0.04) and a trend towards BARC 3–5 bleedings (2.4% vs. 3.3% vs. 3.9% p=0.06).
In particular, DAPT beyond 12 months reduced the risk of MACE compared to DAPT for 12 months (6.2% vs, 2.4%, p<0.001), due to a reduced risk of MI (5.2% vs. 3.5% p=0.016), despite a higher risk of BARC 3–5 and 2–5 bleedings (respectively 3.3% vs. 3.9% and 5.7% vs. 6.2%, all p<0.05) resulting in a not significant trend for higher NACE (6.7% vs. 7.2%, p=0.74).
Conclusion: In unselected real world ACS patients treated with PCI, the benefit of prolonged DAPT with prasugrel or ticagrelor beyond 12 months markedly reduced fatal and non-fatal ischemic events and offset the increased risk derived from bleedings.