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Microvascular dysfunction after immediate versus deferred stenting in patients with acute myocardial infarction

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BACKGROUND Conventional immediate stenting (IS) in highly prothrombotic and inflammatory milieu of infarct related arteries (IRA) during primary percutaneous coronary intervention (PCI) would increase distal embolization of clot and atheromatous plaque debris, and provoke subsequent microvascular obstruction (MVO). This study evaluated the effect of deferred stenting (DS), defined as elective stenting following cooling down of IRA for several days after restoration of epicardial coronary blood flow, on microvascular dysfunction after acute myocardial infarction (AMI).

METHODS Fifty-nine patients (IS, 28 and DS, 31) with ST-segment elevation MI or Non ST-segment elevation MI with ongoing ischemia and high thrombus burden were prospectively enrolled in our registry. Primary endpoint was the index of microcirculatory resistance (IMR) of IRA, measured by pressure and temperature sensors-tipped guidewire at second cardiac catheterization procedure. The incidence of MVO was assessed by cardiac MRI in 32 patients.

RESULTS Stent implantation was performed median 79 hours after primary reperfusion of IRA in the DS group. The median time from the restoration of TIMI 3 flow to IMR measurement of IRA between IS and DS groups were not different (3.9 [3.1-5.36] vs 3.3 [2.6-3.8] days, p=0.076). IMR values were comparable between both groups (23.2±11.6 vs 21.8±12.8, p=0.637). The incidence of IMR $\geq$ 34 IU (75 percentile) was not different between the two groups (25% vs 26%, p=0.999). Coronary flow reserve (CFR) and Fractional flow reserve (FFR) also were not different between two groups (2.8 ± 1.4 vs 3.0 ± 2.0, p=0.609 for CFR, and 0.90 ± 0.07 vs 0.91 ± 0.05, p=0.402 for FFR). The rate of patients with functionally and anatomically patent microvasculature (IMR <34 and MVO (-)) was not different between the two groups (30% vs 41%, p=0.703). Multivariate analysis showed DS was not significantly associated with low IMR (hazard ratio 1.14, 95% confidence interval 0.24-5.50; p=0.869).

	IS group (n=28)	DS group (n=31)	P value
Reperfusion to IMR time (hours)	94 (74-128)	79 (63-90)	0.076
IMR	23.2±11.6	21.8±12.8	0.637
IMR $\geq$ 34 (75 percentile)	7 (25%)	8 (26%)	0.999
CFR	2.8 ± 1.4	3.0 ± 2.0	0.609
FFR	0.90 ± 0.07	0.91 ± 0.05	0.402
Reperfusion to MRI time (days)	27 (2-32)	31 (25-33)	0.251
MVO (+)	6 (60%)	10 (45%)	0.704
IMR $\geq$ 34 and MVO (+)	1 (10%)	5 (23%)	0.637
IMR < 34 and MVO (-)	3 (30%)	9 (41%)	0.703

CONCLUSION Routine DS does not seem to prevent or mitigate microvascular dysfunction during PCI in patients with AMI.

CATEGORIES CORONARY: Acute Myocardial Infarction

NEWER DES - III

Abstract nos: 547 - 551

TCT-547

Initial Experience With Ultrathin Strut Biodegradable Polymer-Coated Everolimus-Eluting Coronary Stent in Coronary Artery Disease Patients

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BACKGROUND Early-generation stents had stainless-steel platforms and released sirolimus or paclitaxel, while new-generation stents release everolimus and feature cobalt-chromium with an ultrathin strut (50 μm). The aim of the study was to determine the safety and performance of ultrathin strut biodegradable polymer-coated with everolimus-eluting coronary stent (EES, Evermine 50™, Meril Life Sciences, India) in patients with coronary artery disease (CAD).

METHODS This was a prospective, non-randomised, multi-center study conducted in 110 patients who had undergone EES implantation for the treatment of CAD at nine clinical sites in India. Study endpoints were major adverse cardiac events (MACE), defined as a composite of cardiac death, myocardial infarction (MI) and ischemia-driven target lesion revascularization at 6-month follow-up.

RESULTS A total of 110 patients were included with mean patient age was 57.87 ± 11.63 years and 87 (79.1%) were male. Among these, 55 (50%) patients had hypertension and 44 (40%) patients with diabetics. A total of 128 lesions were treated with EES. Single vessel disease was present in 46 (41.8%) patients and most of the lesions were located in the left anterior descending artery 62 (48.4%). Device and procedural success was 100%. At 6-month follow-up, no MACE was observed. No stent thrombosis or MI was reported.

CONCLUSION The present study demonstrated the safety and performance of ultra-thin strut everolimus-eluting coronary stent in real-world coronary artery disease patients. CTRI number- CTRI/2017/02/007781

CATEGORIES CORONARY: Stents: Drug-Eluting

TCT-548

Predictors of clinical outcomes after polymer free amphilimus- and biolimus-eluting stents: the FREE-FUTURE study

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BACKGROUND Despite impressive improvements in drug eluting stents (DES) technology, diabetic patients still represent one of the main unsolved issue for percutaneous coronary intervention. In this setting, the Cre8 polymer free amphilimus eluting stent (AES) has shown some promising results in both preclinical and clinical studies. However, no direct comparison between the Cre8 AES and other polymer free DES are available at this point in time.

METHODS In the FREE-FUTURE study, the Biofreedom polymer-free biolimus-eluting stents (BES) and the Cre8 AES were compared after propensity score matching pooling two large-scale multicenter registries including 2,320 real-world patients treated at 22 Italian centers between 2011 and 2016 (RUDI-FREE, N=1,104; ASTUTE, N=1,216). The primary endpoint was target-lesion failure - a composite of cardiac death, target-vessel myocardial infarction (TV-MI), and target lesion revascularization (TLR). In the present sub-analysis, we performed multivariable analyses stratified for DM status in order to assess the presence and the impact of predictors on the primary endpoint.

RESULTS In non-DM patients, the multivariable analysis identified STEMI as clinical presentation (HR 4.12, 95% CI 1.38-12.28) and shorter DAPT duration (HR 0.36, 95% CI 0.24-0.52) as independent