

compared to the no COPD group (52% of UCOPD vessels; 15% of no COPD vessels, $p < 0.001$).

Conclusions: Patients with UCOPD hospitalized for NSTEMI-ACS showed a comparable Syntax score and a higher LCBI and max LCBI 4 mm compared to smoker patients without COPD both in culprit and non-culprit lesions. UCOPD increases plaque vulnerability through a higher lipid content, likely consequent to higher inflammation and endothelial dysfunction.

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Neoatherosclerosis in patients with coronary stent thrombosis: findings from optical coherence tomography imaging

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Background: In-stent neoatherosclerosis was recently identified as novel disease manifestation of atherosclerosis after coronary stent implantation. The objective of this study was to assess neoatherosclerosis in a European registry of prospectively enrolled patients presenting with stent thrombosis (ST) using optical coherence tomography (OCT).

Methods: Angiographic and intravascular OCT imaging was used to investigate etiological factors of neoatherosclerosis in patients presenting with ST >1 year after implantation (VLST). Clinical data were collected according to a standardized protocol. OCT acquisitions were analyzed in a core laboratory. Dominant and contributing factors of VLST were identified by an imaging adjudication committee and analyzed for cases with and without neoatherosclerosis. Cox regression analysis was performed to identify factors associated with formation of neoatherosclerosis and plaque rupture as a function of time.

Results: OCT imaging was performed in 134 patients presenting with VLST. A total of 58 lesions in 58 patients with neoatherosclerosis were compared to 76 lesions in 76 patients without neoatherosclerosis. Baseline characteristics were similar among groups. In-stent plaque rupture was the most frequent cause (31%) in all patients presenting with VLST. In patients with neoatherosclerosis in-stent plaque rupture was identified as the cause of VLST in 40 (69%) cases (Fig. 1C), while uncovered stent struts ($n=22$, 29%) were the most frequent cause in patients without neoatherosclerosis. Macrophage infiltration was significantly more frequent in OCT frames with plaque rupture as compared to those without (50.2% vs. 22.2%, $p < 0.0001$) (Fig. 1C), while calcification was more often observed in frames without plaque rupture (17.2% vs. 4%, $p < 0.0001$). Implantation of DES was significantly associated with formation of neoatherosclerosis ($p=0.02$) (Fig. 1B/D), while previous myocardial infarction was identified as significant risk factor for plaque rupture in patients with neoatherosclerosis ($p=0.003$). No significant difference was observed in thrombus composition among patients with and without neoatherosclerosis.

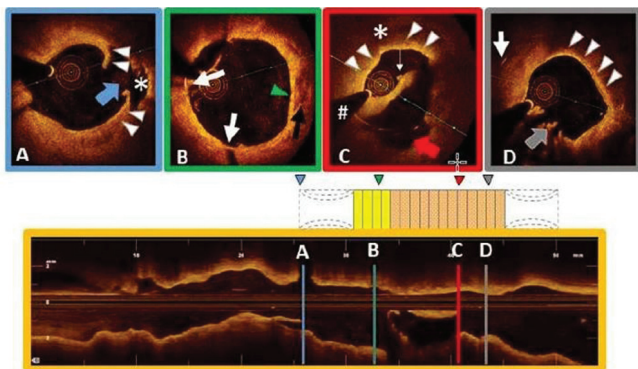


Figure 1. Representative figures of in-stent-neoatherosclerosis in a patient with very late stent thrombosis from the European PRESTIGE registry. The longitudinal reconstruction and cross-sectional views were obtained after manual thrombus aspiration.

Conclusions: Neoatherosclerosis was frequently observed in patients suffering VLST. Duration from index stenting was a significant predictor of neoatherosclerosis in patients with VLST. In-stent plaque rupture was the prevailing pathological mechanism and often occurred in patients with neoatherosclerosis and previous myocardial infarction. Increased macrophage infiltration heralded plaque vulnerability in our study and might serve as an important indicator.

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Long-term natural history of coronary artery bypass grafts depending on the initial haemodynamic significance of the native stenotic coronary arteries

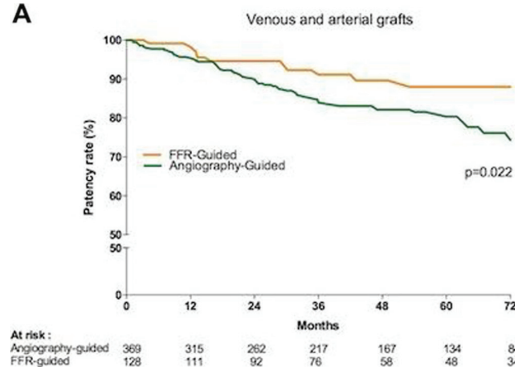
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Background: Patency of coronary artery bypass grafts (CABG) is known to be higher in arterial than in venous conduits. However, long-term graft patency rate based on the hemodynamic significance of the native stenotic coronary arteries remains poorly investigated.

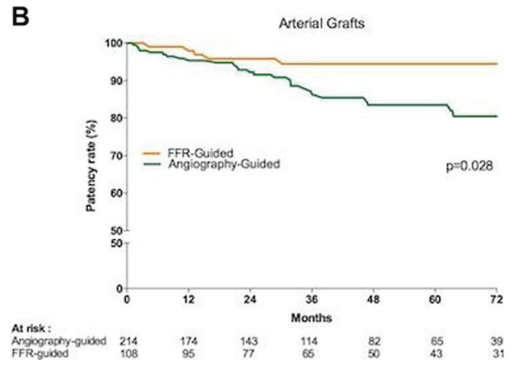
Methods: All consecutive patients treated with CABG between 2006 and 2010 who underwent a coronary angiogram during follow-up were retrospectively included. All grafts were classified into 2 groups according to whether implantation was guided by haemodynamic assessment of the native coronary artery stenosis by fractional flow reserve (FFR) (FFR-guided group) or not (angiography-guided group).

Results: An angiographic follow-up was available in 512 grafts from 171 patients: 384 (75%) grafts were angiography-guided, while 128 (25%) were FFR-guided. At 6 years, 72/512 (14%) grafts were occluded: the proportion of occluded venous grafts was higher than that of arterial grafts (24% versus 10%, respectively; $p < 0.001$). Overall, the occlusion rate was higher in the angiography-guided group than in the FFR-guided group (17% versus 9%, respectively, $p=0.022$). However, when looking at the type of grafts, the difference in term of patency according to guidance was only significant among the arterial grafts (17% versus 9%, respectively; $p=0.028$). When comparing the baseline characteristics of occluded arterial grafts with patent arterial grafts, FFR-guidance was the only independent predictor of patency (HR=2.99 [1.15; 7.78]; $p=0.028$)

A



B



Discussion: FFR-guidance is associated with higher graft patency rate at 6 years. Long-term patency of arterial grafts is higher when implanted on coronary arteries evaluated by FFR.