these modalities can play an important option in further stratifying vulnerable plaques.

P2636
Comparison of the efficacy of balloon angioplasty or paclitaxel-coated balloon or stent implantation for in-stent restenosis based on analysis by optical coherence tomography

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Background/Introduction: We could distinguish the restenotic tissue structure patterns in detail by optical coherence tomography (OCT). We hypothesized that the recurrent restenosis of the in-stent restenosis (ISR) lesions might be different among restenotic tissue structure patterns analyzed by OCT.
Purpose: The purpose of this study was to investigate the efficacy of balloon angioplasty (BA) or paclitaxel-coated balloon (PCB) or stent implantation (SI) for the treatment of the in-stent restenosis (ISR) based on the restenotic tissue structure analyzed by optical coherence tomography (OCT).
Methods: From January 2010 to September 2016, we evaluated 330 patients with 365 ISR lesions that required revascularization (281 drug-eluting stents (DES) and 84 bare-metal stents (BMS)). Based on their OCT appearance at the minimum lumen area, the lesions were classified as homogeneous and non-homogeneous. We compared recurrent target lesion revascularization (TLR) at 1year follow-up after BA or PCB or SI.
Results: By OCT, the restenotic tissue structure was homogeneous in 149 (41%) and non-homogeneous in 216 (59%). In homogeneous group, 55 patients had BA, 45 patients had PCB and 49 patients had SI. In non-homogeneous group, 87 patients had BA, 50 patients had PCB and 79 patients had SI. Angiographic follow-up after TLR was performed in 263 patients (80%) with 294 lesions (81%) at 1 year. As OCT appeared homogeneous, recurrent TLR was noted in 22% of BA group, in 13% of PCB group and in 16% of SI group (p=0.5). As OCT appeared non-homogeneous, recurrent TLR occurred in 33% of BA group, in 14% of PCB group and in 13% of SI group (p=0.002).
Conclusion: We concluded that morphological assessment of restenotic tissue by OCT might be helpful to decide the treatment strategies of ISR.

CORONARY INTERVENTIONS – STENTS

P2637
Preclinical evaluation of a bioresorbable vascular scaffold (BRS) on the reduction of neoatherosclerosis

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Background: Neoatherosclerosis contributes to late stent-failure after implantation of metallic drug-eluting stents (DES) due to drug-induced sustained disruption of endothelial integrity. Novel bioresorbable scaffolds (BRS) might be able to reduce the incidence of neoatherosclerosis by improving vascular properties after dissolution. We therefore evaluated the incidence of neoatherosclerosis as well as differences in reendothelialization in the Magmaris® BRS compared to a 316L metallic DES in a preclinical rabbit model of neoatherosclerosis. As statin therapy remains a very effective approach to prevent progression of atherosclerosis, we further aimed to examine the impact of high-dose statin therapy on neoatherosclerosis formation.
Methods and results: BRS and DES of equivalent design were implanted into iliac arteries of neoatherosclerotic New Zealand White Rabbits (n=33). Investigation of endothelial integrity was performed in a subset of animals (n=11). Formation of neoatherosclerosis was evaluated after 161 days by optical coherence tomography (OCT) as well as histology using dedicated scoring systems. Endothelialization was investigated by scanning electron microscopy (SEM). After 161 days, BRS showed a significant reduction in foam cell infiltration as a sign of early neoatherosclerosis compared to DES by OCT and histology (mean score 1.20 vs. 2.09; p<0.0001 and 1.16 vs. 1.53; p<0.0001, respectively). Statin treatment resulted in significantly reduced foam cell infiltration by histopathology (1.23 vs. 1.53; p=0,001) but not in OCT (1.57 vs. 1.60; p=0.873). RAM11-staining confirmed reduced neointimal foamy macrophages in BRS. SEM analysis showed significantly greater reendothelialization above struts in BRS as compared to DES (91,7%± 20,2 vs. 42,1±5,716; p<0,001). Impaired cell-to-cell junctions regarded as "leaky" endothelial phenotype were frequently observed in DES but not in BRS. (see Fig. 1)

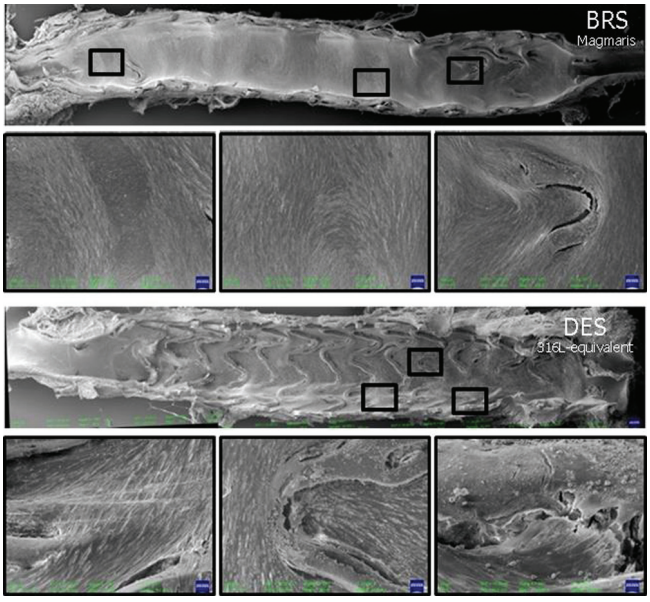

Figure 1. BRS and DES SEM images

Conclusions: Our findings suggest decreased neoatherosclerotic formation in BRS compared to DES as a direct consequence of improved endothelial healing. Future clinical studies will have to confirm whether the use of BRS can reduce the incidence of neoatherosclerosis in clinical practice.

P2638
Comparison of in-stent responses in 8 month between durable polymer and bioabsorbable polymer everolimus-eluting stent: serial observation with angioscopy and optical coherence tomography

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Background: Clinical trials reported that there were no significant differences in 12-month outcome between durable polymer everolimus-eluting stent (DP-EES) and bioabsorbable polymer everolimus-eluting stent (BP-EES). However, in-stent responses after BP-EES implantation are still unknown. We compared the in-stent responses between BP-EES and DP-EES using coronary angioscopy (CAS) and optical coherence tomography (OCT).
Methods: Eight months after DP-EES (PROMUS-premier, n=71, 54 men, mean age 65.9 years) or BP-EES (SYNERGY, n=50, 36 men, mean age 67.5 years) implantation to de novo coronary artery stenosis, we consecutively observed the coronary arteries with both CAS and OCT. We assessed a coverage of neointima, yellow grade, and presence of in-stent thrombus in CAS; a thickness of neointima, a neointimal area and a lumen area in OCT.
Results: CAS revealed that the maximum coverage of neointima grade in BP-EES was greater than that in DP-EES (1.7±0.8 vs 1.4±0.6, P=0.040) and the prevalence of in-stent thrombus was less in BP-EES than in DP-EES (9.1% vs 29.7%, P=0.041), however the neointimal yellow grade between BP-EES and DP-EES was comparable. Furthermore, OCT revealed that the maximum thickness of neointima and the area of neointima in BP-EES were significantly greater than those in DP-EES (0.22±0.11 mm vs 0.17±0.10 mm; 0.89 cm^2±0.49 vs 0.59±0.46 cm^2, P<0.001 respectively), and the minimum lumen area in BP-EES was smaller than that in DP-EES (3.28±0.56 cm^2 vs 4.54±1.38 cm^2, P=0.032).
Conclusions: Our results showed that BP-EES has better re-endothelialization and neointimal stabilization than DP-EES. These findings may support optimal duration of anti-platelet drugs. However, a long-term follow-up study on the in-stent response is needed.

Abstract P2636 – Table 1. Clinical outcomes at 1 year follow-up

	Overall (n=365)			p	Homogeneous (n=149)			p	Non-Homogeneous (n=216)			p
	Balloon (n=142)	PCB (n=95)	Stent (n=128)		Balloon (n=55)	PCB (n=45)	Stent (n=49)		Balloon (n=87)	PCB (n=50)	Stent (n=79)	
Recurrent restenosis	46 (32%)	14 (15%)	20 (16%)	0.0007	16 (29%)	7 (16%)	8 (16%)	0.2	30 (34%)	7 (14%)	12 (15%)	0.003
Recurrent TLR	41 (29%)	13 (14%)	18 (14%)	0.003	12 (22%)	6 (13%)	8 (16%)	0.5	29 (33%)	7 (14%)	10 (13%)	0.002
Cardiac death	2 (1.4%)	4 (3.1%)	4 (3.1%)	0.5	2 (3.6%)	0 (0%)	1 (2%)	0.4	0 (0%)	1 (2%)	3 (3.8%)	0.2
Myocardial infarction	4 (2.8%)	1 (1.1%)	1 (0.8%)	0.4	1 (1.8%)	1 (2.2%)	0 (0%)	0.6	3 (3.5%)	0 (0%)	1 (1.3%)	0.3
Stent thrombosis	4 (2.8%)	1 (1.1%)	1 (0.8%)	0.4	1 (1.8%)	1 (2.2%)	0 (0%)	0.6	3 (3.5%)	0 (0%)	1 (1.3%)	0.3
MACE	42 (30%)	13 (14%)	21 (16%)	0.004	13 (24%)	6 (13%)	8 (16%)	0.4	29 (33%)	7 (14%)	13 (16%)	0.009

MACE indicate composite of cardiac death, target vessel-related reinfarction, and recurrent TLR.