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IMPACT OF POSITIVE AND NEGATIVE CORONARY REMODELING ON CULPRIT LESION MORPHOMETRY: THE ADAPT-DES IVUS SUBSTUDY

Poster Contributions
Poster Sessions, Expo North
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Background: The relationship between vessel remodeling and plaque characteristics is incompletely understood.

Methods: ADAPT-DES was a prospective, multicenter observational study of 8,583 consecutive pts undergoing PCI with DES. A pre-specified intravascular ultrasound (IVUS) substudy enrolled 2670 pts; 831 culprit and 768 non-culprit lesions in 913 pts were evaluated by grayscale and virtual histology (VH)- IVUS pre-PCI. Receiver operating curve analysis identified 2 separate cut-off points that differentiated culprit from non-culprit lesions: Remodeling index (RI=lesion/reference arterial area)=0.85 and RI=1.09 [AUC; 0.66 (0.64-0.68)]. We then defined negative remodeling as RI ≤0.85, intermediate remodeling as 0.85< RI ≤1.09, and positive remodeling as RI >1.09.

Results: Lesions with either positive or negative remodeling were longer, had a smaller MLA and a larger plaque burden, and more often contained a VH-TCFA (thin-cap fibroatheroma) compared to intermediate remodeled lesions. However, plaque rupture was observed far more frequently in positive remodeled lesions, while a calcified nodules were observed more frequently in negatively remodeled lesions (Table).

Conclusions: Both negative and positive remodeling are associated with clinically active coronary lesions (larger plaque burden, smaller MLA, more common VH-TCFA, plaque rupture, and calcified nodules) indicating that it is the magnitude of remodeling and not just the direction (inward or outward) that is important.

	Negative remodeling (n=469)	Intermediate remodeling (n=779)	Positive remodeling (n=351)	P value
Culprit lesions	60.6% (284)	35.4% (276)	77.2% (271)	<0.0001
Remodeling index	0.71 [0.70, 0.72]	0.97 [0.96, 0.97]	1.35 [1.31, 1.39]	<0.0001
MLA, mm2	3.89 [3.69, 4.08]	5.43 [5.20, 5.67]	3.49 [3.23, 3.74]	<0.0001
Plaque burden at MLA, %	64.8 [63.5, 66.0]	63.0 [62.1, 63.9]	75.1 [73.8, 76.4]	<0.0001
Area stenosis	0.75 [0.74, 0.76]	0.64 [0.63, 0.65]	0.68 [0.66, 0.69]	<0.0001
Lesion length, mm	24.0 [22.6, 25.5]	15.0 [14.2, 15.9]	24.2 [22.4, 25.9]	<0.0001
VH-TCFA	61.2% (287)	51.6% (402)	60.1% (211)	0.0003
TCFA length, mm	7.5 [6.7, 8.3]	6.3 [5.7, 6.9]	8.2 [7.1, 9.2]	0.004
Plaque rupture	13.9% (65)	14.0% (109)	35.6% (125)	<0.0001
Calcified nodule	17.9% (84)	8.5% (66)	10.5% (37)	<0.0001