

Real-world clinical impact of external elastic lamina-based stent sizing criteria using optical coherence tomography

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Introduction: ILUMIEN III trial has reported that non-inferiority of optical coherence tomography (OCT)-guided percutaneous coronary intervention (PCI) to intravascular ultrasound-guided PCI for postprocedural minimum stent area. In the trial, external elastic lamina (EEL)-based stent sizing criteria was introduced, however OCT has limitations including incomplete visualization of EEL in several lesions.

Purpose: The aim of the study is to investigate real-world clinical impact of EEL-based stent sizing criteria.

Methods: The study included consecutive patients who underwent OCT-guided percutaneous coronary intervention (PCI) for de novo lesions in our institution between September 2016 and April 2018. EEL visibility, mean EEL diameter, mean lumen diameter and plaque morphology were assessed at proximal and distal references. The plaque morphology at ref-

erences was categorized according to its most prevalent component as follows: normal, fibrous plaque, lipid plaque, and calcified plaque. Both references were divided into 3 groups according to visibility of EEL.

Results: Among 205 lesions, 31 lesions had artifacts at references (16 proximal and 17 distal references). EEL visibility was summarized in a table. Out of 174 lesions with both analyzable references, 111 lesions (63.8%) had >180-degree EEL visibility at both references. Proportion of plaque morphology were significantly different among 3 groups at proximal and distal references as shown in a figure.

Conclusions: EEL-based stent sizing criteria was usable for 63.8% of all the lesions. Vessel size and plaque morphology were significantly associated with EEL visibility.

EEL visibility		EEL visibility			P-value
	<180°	180–270°	270° <		
Proximal reference (n=189)					
Number	60 (31.7%)	59 (31.2%)	70 (37.0%)		
Mean EEL diameter, mm	n/a	4.20 (3.52, 4.86)	4.08 (3.52, 4.55)		0.48
Mean lumen diameter, mm	3.03 (2.70, 3.35)	3.01 (2.68, 3.70)	3.15 (2.82, 3.59)		0.33
Lesion length, mm	22.8 (14.7, 28.4)	24.0 (16.4, 30.8)	20.8 (14.5, 31.6)		0.08
Distal reference (n=188)					
Number	27 (14.3%)	49 (26.1%)	112 (59.6%)		
Mean EEL diameter, mm	n/a	3.88 (3.04, 4.44)	3.32 (2.89, 3.92)		0.01
Mean lumen diameter, mm	3.03 (2.63, 3.77)	2.98 (2.29, 3.49)	2.6 (2.35, 3.11)		0.01
Lesion length, mm	21.1 (14.2, 29.0)	20.0 (14.7, 26.2)	22.5 (15.3, 29.6)		0.47
Values are median (interquartile range) or n (%). EEL = external elastic lamina.					

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