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What Are the Predictors of Achieving Significant Lumen Gain Using Intravascular Ultrasound Interrogation After Coronary Stenting?

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The purpose of this study was to determine the factors predictive of higher lumen gain with intravascular ultrasound (IVUS) guided stenting. We studied 403 consecutive pts (479 lesions) who underwent (> 1) IVUS interrogation after angiographically successful Palmaz-Schatz stent implantation. Reference diameter was 3.24±0.54 mm, %DS 69±17 and a mean of 1.5±0.8 stent per lesion was implanted. First, stents were angiographically optimized using a B/V ratio of 1.1±0.17 and an inflation pressure of 15±3 atm. After IVUS interrogation, the final B/V ratio was 1.17±0.18 and inflation pressure 16±3 atm. Lumen gain was defined as an increase in the final stent minimum lumen cross sectional area (MLCSA) of >20% of the MLCSA on the initial IVUS interrogation after stent deployment (mean lumen gain 3.0±1.6 mm^2). Factors predicting a higher probability of achieving this gain are shown in the table below by logistic regression analysis.Conclusions: In this era of stent implantation, the larger the vessel and/or the more severe the lesion, the higher the probability of achieving significant lumen gain using the information obtained by IVUS interrogation. This benefit is specially pronounced if a lower balloon to vessel ratio and/or lower inflation pressures were used for initial angiographic optimization prior to IVUS interrogation. This data could help select pts who might benefit from IVUS guidance of coronary stenting.

	Univariate Estimate ± SE	P value	Multivariate Estimate ± SE	P value
Reference diameter (mm)	0.55±0.19	0.004	0.55±0.22	0.01
% diameter stenosis	0.02±0.01	0.009	0.01±0.006	0.03
Initial B/V ratio	-1.71±0.59	0.004		
Initial balloon inflation pressure (atm)	-0.07±0.03	0.02	-0.07±0.03	0.03