Title

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Intravascular Ultrasound Guidance of Interventional Procedures: A Randomized Trial

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Intravascular ultrasound (IVUS) imaging improves the diagnostic capacity of angiography and may alter an interventional decision but it is unclear how the findings of IVUS affect the clinical course. The primary observation of IVUS studies after PTCA is that a large residual plaque occupying 65 ± 14% of the available cross sectional area (CSA) remains. To test the hypothesis that the restenosis rate can be diminished if a larger amount of plaque is removed, a randomized trial of 400 patients is in progress where IVUS measurements of lumen and plaque CSA are used on-line to determine if an adequate intervention (balloon, Rotablator, or atherectomy) is achieved which reduces the plaque to < 50% CSA. To date, 148 patients have been randomized. Only 13 of 66 (20%) have had a primary success without IVUS guidance. In the group randomized to further therapy based on IVUS measurements, 25 of 58 (43%) have achieved a successful result (residual plaque CSA < 50%).

	Usual Rx	IVUS Guided Rx	
Time of Procedure (min)	90±43	136±56*	
Lumen CSA mm^2	5.0±1.7	13.3±2.7*	
Residual Plaque mm^2	9.8±3.6	5.4±1.6*	
Percent Area Stenosis	65±9%	40±8%*	*p<0.001

IVUS can successfully guide interventional procedures to decrease the amount of residual atheroma. Patients will have angiograms at 6 months to determine if restenosis is reduced with this approach.