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Balloon Angioplasty: Factors Influencing Early and Late Results

LONG TERM RISK/BENEFIT OF PTCA OF INFARCT RELATED VESSEL.

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The goal of this study was to determine the 6 mth results of successful PTCA of an infarct related vessel (IRV) and their influence on LV function at rest. We studied 204 pts with MI, (193 M, 11 F), mean age 51 yrs. 144 had thrombolysis within 4 hours of MI and 60 received conventional treatment. All had successful PTCA of IRV. They were restudied 6 mths later. All pts underwent LV cineangiography before PTCA and at 6 mths FU. LVED volume, EF, and segmental wall motion (SWM) were calculated. Restenosis was defined as the recurrence of >50% stenosis.

1) PTCA of the IRV was followed 6 mths later by a relatively high rate of restenosis or reocclusion.

	Thrombolysed MI		Non Thrombolysed MI	
No restenosis	80		32	
Restenosis	23	46%	12	47%
Re-occlusion	41		16	

2) There were no significant changes of LV function in inferior or lateral MI and non thrombolysed anterior MI whatever the status of IRV.

3) However, in thrombolysed anterior MI, a sustained satisfactory result of IRV dilation prevented LV dilatation and improved segmental anterior wall motion.

LVEDV (ml/m2)	Before PTCA	6 months
No restenosis	87.5+/-27.4	88.2+/-24.7
Restenosis	78.8+/-20.5	96.6+/-38/8
Re-occlusion	80.7+/-24.6	100.1+/-50.4

Conclusion:Restenosis or reocclusion have few effects on LV function of inferior/lateral MI but are accompanied by LV dilation in thrombolysed anterior MI.

SILENT VERSUS PAINFUL ISCHEMIA AFTER CORONARY ANGIOPLASTY: COMPARISON OF AMOUNT AND SEVERITY OF ISCHEMIC MYOCARDIUM SECONDARY TO RESTENOSIS BY TOMOGRAPHIC THALLIUM-201 EXERCISE IMAGING

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To compare the amount and severity of jeopardized myocardium resulting from silent ischemia (SI) vs painful ischemia (PI) after coronary angioplasty (PTCA), 25 Pts without angina with restenosis (RES) in 30 vessels (V) and 44 pts with angina and RES in 55 V underwent tomographic thallium-201 exercise and redistribution imaging (SPECT) 6.4 months after PTCA. The SPECT images were divided into 20 segments (SEG) scored on a 0-4 scale (from normal to severe ischemia). Each stenotic V was assigned a SPECT severity score equal to the sum of scores of the ischemic segments in its distribution.

RESULTS:	SI			PI		
	Ischemic V(n)	SEG/V	Severity Score/V	Ischemic V(n)	SEG/V	Severity Score/V
LAD	14	7.8	19.8	30	7.6	21.1
RCA	10	4.3	12.0	14	3.7	9.1
LCX	6	3.5	8.3	11	2.3	5.9

p=n.s. for all vessels SI vs PI

Percent diameter of RES for SI vs PI was 76.1 vs 80.5 (p=n.s.). In conclusion, silent and painful ischemia secondary to RES after PTCA are associated with equal amounts and severity of ischemic myocardium and equal diameter RES.

EFFECT OF MULTIPLE INFLATIONS ON INITIAL STENOSIS REDUCTION DURING CORONARY ANGIOPLASTY: *A PROSPECTIVE INVESTIGATION*

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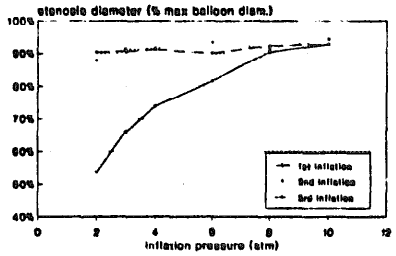
The contribution of repeated balloon inflations to the effectiveness of coronary stenosis dilation is unclear. In this prospective study, 78 lesions were subjected to stepwise inflations using noncompliant balloon systems at 2, 3, 4, 6, 8, and 10 atm. All patients received two such inflations, and 22 (28%) a third inflation. Using the centerline method, absolute stenosis diameters were derived from the lesion's pattern of indentation upon the balloon during each inflation stage. The mean balloon-to-artery ratio was 1.00 ± 0.20 [SD]. During the first inflation, minimal diameter from Stage 1 to Stage 6 increased from 1.50 ± 0.53 mm to 2.72 ± 0.47 mm (p < 0.0001), corresponding to a relative stenosis decrease from 46% to 7%. However, at the initiation of subsequent inflations, stenosis diameter was not greatly different than at the termination of the first inflation (2.72 *vs* 2.48 *vs* 2.46 mm for 1st, 2nd & 3rd). Moreover, second and third inflations did not improve stenosis severity (93% *vs* 94% *vs* 93% respectively; p=ns).



These data suggest that during PTCA, all significant gains in luminal area occur with the first inflation, and that subsequent inflations at the same pressure offer no further improvement. Thus, the routine use of multiple inflations may prolong the procedure without improving the results.

WHY IS THE MORTAL RISK OF BALLOON CORONARY ANGIOPLASTY INCREASED IN WOMEN?

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In order to examine the reported increased mortal risk of percutaneous transluminal coronary angioplasty (PTCA) in women, the acute results and complications of elective PTCA in 2033 women and 7142 men treated in the last 10 years were compared. Women were older than men (64±10 vs 59±10 years, p<.001), and more frequently had Class IV angina (53% vs 36%, p<.001) and diabetes mellitus (23% vs 12%, p<.001). There were similar numbers of women and men with LV ejection fractions ≤40% (9.2% vs 9.7%, p=NS), but fewer women had 3 vessel disease (30% vs 37%, p<.001), prior coronary bypass (17% vs. 25%, p<.001), or left main disease (1% vs 2%, p=.002). PTCA was successful in 95% of stenoses dilated in both women and men. The procedural risks in women and men of emergency bypass (1.6% vs 1.6%), and Q-wave infarction (1.7% vs 1.4%) were comparable, but death due to PTCA was more frequent in women (1.4% vs 0.8%, p=.01). Using multivariate analysis, adjustment for the increased age and anginal symptoms of women accounted for all of the difference in mortality between women and men, and PTCA in women was not picked as an independent predictor of mortality. These observations suggest that earlier identification and referral of women with coronary artery disease might improve their results with PTCA.