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**CORRELATION OF MINIMUM LUMEN DIAMETER WITH LEFT
VENTRICULAR FUNCTIONAL IMPAIRMENT DURING ATRIAL PACING**

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The quantitative analysis of coronary artery disease using percent stenosis is a relative standard that is dependent upon the width of the "normal" segment. Absolute lumen diameter is a less subjective measurement but is usually tedious to obtain. The purpose of this study was to relate measurements of lesion severity to segmental wall motion abnormalities induced during atrial pacing. On line digital acquisition of coronary angiograms were performed in 18 patients to permit rapid access of computer algorithms for quantitative analysis. Low dose (15ml) contrast digital left ventriculograms were obtained at rest and peak pacing. Percent stenosis and absolute minimum lumen diameter were calculated by edge detection methods. These measurements were compared to the functional impairment in global ejection fraction (EF) and segmental percent radial shortening induced during atrial pacing studies. The mean percent stenosis was $63 \pm 16\%$ and the mean minimum lumen diameter was 1.3 ± 0.6 mm. The mean EF at rest was $62 \pm 16\%$ and at peak pacing was $54 \pm 22\%$. The mean percent radial shortening was $57 \pm 24\%$ at rest and at peak pacing was $49 \pm 31\%$. The absolute stenotic lumen diameter correlated most closely with the change in segmental wall motion ($r=0.84$) compared to the change in global EF ($r=0.64$). Percent stenosis was also correlated with EF ($r=-0.62$) and wall motion ($r=-0.68$). A proximal coronary diameter of <1.4 mm tended to identify patients with marked segmental wall motion defects induced by atrial pacing. Thus, absolute minimum lumen diameter corresponds more closely with functional assessments of coronary lesions than do calculations of percent stenosis.