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Breast Imaging: A View from the Present to the Future

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Abstract. The breast, by virtue of its superficial location, is amenable to examination by a larger selection of imaging techniques than almost any other organ in the body. I will discuss the current roles of mammography, sonography, thermography, CT scanning, transillumination, and magnetic resonance imaging in evaluating the breast for disease, with emphasis on possible future developments of each of these techniques.

Mammography

Mammography is, justifiably, the most widely used of the many breast imaging techniques currently available, but to a great extent this situation has developed despite continuing underutilization of the examination. The major clinical use for mammography in 1985 remains the same as it has always been: the evaluation of women with signs or symptoms that suggest the possibility of breast cancer. However, as a *diagnostic* test in such symptomatic patients (one that is used to differentiate benign from malignant lesions) mammography is far from specific, with a substantial false-positive rate of cancer diagnosis. Rather, the real strength of mammography lies in its unequalled ability to detect breast cancers before the tumors have grown large enough to

be palpable, suggesting that it will be utilized to full potential only if also used as a *screening* test to evaluate asymptomatic women for otherwise occult cancer. Indeed, we are now beginning to see a shift in mammography referral patterns, with increasing use of the examination for screening. With the anticipated availability to large segments of the population of low-cost, high-volume mammography, there should be further, dramatic increases in screening [1] utilization, resulting in what I believe will be the most important advance in breast imaging in the near future: the *widespread* use of mammography to advance the stage of breast cancer detection, thereby permitting less aggressive and probably also more effective therapy.

Mammography is a relatively mature imaging technique. The equipment and

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