A NEW ULTRASOUND MAMMOGRAPHY TECHNIQUE THAT PROVIDES
IMPROVED CORRELATION WITH X-RAY MAMMOGRAPHY

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Purpose of Study

The primary purpose of this study is to develop an ultrasound instrumentation technique that can provide images that correlate more closely with X-ray mammography than those currently produced by standard ultrasound mammography. Secondary goals include decreasing the time required for ultrasound breast examination and improving the detection of small breast masses by the application of high ultrasound frequencies without experiencing undue attenuation of the beam.

Materials, Methods and Procedures

Long term studies were carried out on materials that would allow the transfer of x-ray and ultrasound energy, yet provide appropriate compression of the breast. Following completion of these investigations, compression paddles, fabricated from the new membrane materials, were tested by obtaining mammograms on human subjects, using a standard x-ray mammography unit. Ultrasound images were obtained using several commercial ultrasound instruments and these were compared with conventional sonographic images. Subsequently, a separate test instrument was designed and fabricated in order to determine the potential of this new ultrasound technique. As currently designed, this test unit includes features that permit ultrasound scan planes of breast that are not available with conventional equipment.

Results

Results obtained to date indicate that the proposed new examination technique has significant potential in terms of rapidly examining the breast under patient orientation and position circumstances which are identical to those applied in x-ray mammography. Sonograms obtained by this new ultrasound mammography approach should correlate more closely with that provided by x-ray mammography, in comparison to standard ultrasound mammography techniques. Specific features of the new test unit will be illustrated.

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