

ELASTOGRAPHY: PROGRESS AND PROSPECTS

J. Ophir

The University of Texas Medical School, Houston, Texas 77030, USA

The idea of measuring the stiffness of soft tissues using ultrasound was suggested in the literature some 25 years ago. Since then, the measurement and later imaging of the local elastic properties of tissues have progressed from this idea to a new commercial reality that is based on solid fundamentals. Today, it is possible to obtain high-resolution real-time images (elastograms) of the axial strain components in soft tissues *in vivo* that are subjected to an external or internal mechanical load. These images have shown that new and potentially useful information can be obtained, far beyond that which is available from sonograms alone. The road ahead involves several additional possibilities of gleaning substantially more information relating to the mechanics of tissues. These include the calculation and imaging of the elastic modulus, imaging the Poisson's ratio and its temporal evolution for the study of fluid flow in tissues that are affected by diseases such as lymphedema, and the imaging of shear strains at tissue boundaries that characterize the bonding strength between tissue layers that may be specific for various disease states. This talk will illustrate some of the progress in the field and will demonstrate some of the diverse future possibilities.

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