

Measurement of vessel shape for estimating viscoelastic properties of the radial artery under ultrasound probe pressure

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Abstract

Here, the blood vessel shape was accurately measured to evaluate the viscoelastic properties of the radial artery. For a robust measurement, the shape parameters of the elliptical blood vessel were determined by integrating brightness over the entire vessel instead of using the brightness gradient at the vessel boundary. The usefulness of the proposed method was demonstrated via simulations and in vivo experiments. The obtained results exhibited considerable potential for estimating the viscoelastic properties of elliptically deformed blood vessels.

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