The Piezoelectric ESWL

More than 20 years of clinical success worldwide

**Conclusions**

Incorporation of accurate imaging guidance into robotic surgical procedures, especially partial nephrectomy and solid abdominal organ surgery, holds great promise. A variety of important base concepts is required knowledge for robotic surgeons and will be defined. We present our initial engineering assessment and the creation of a da Vinci based RIGS system and ongoing work towards image guided kidney surgery.

**Author:** S. Duke Herrell, David Kwiatkowski, Herman Altman, Davis Viprepitant, Anne Benincasa, Paul Milhous, Rowena Ong, Courtney Glisson, Michael Migli, Robert L. Galloway

**Departments of Urologic Surgery and Biomechanical Engineering, Vanderbilt University Medical Center, Nashville, USA**

**e-mail:** duke.herrail@vanderbilt.edu

**Fig. 1:** Schematic cross-section through the piezoelectric shockwave transducer employing Double-Layer Technology (DLT), the different focus zones of the “Triple Focus” and an example of a fragmentation crater.

**Fig. 2:** The dual-simultaneous-realtime localization (DSR).

**Fig. 3:** A simulation model of deformation and post deformation analysis.