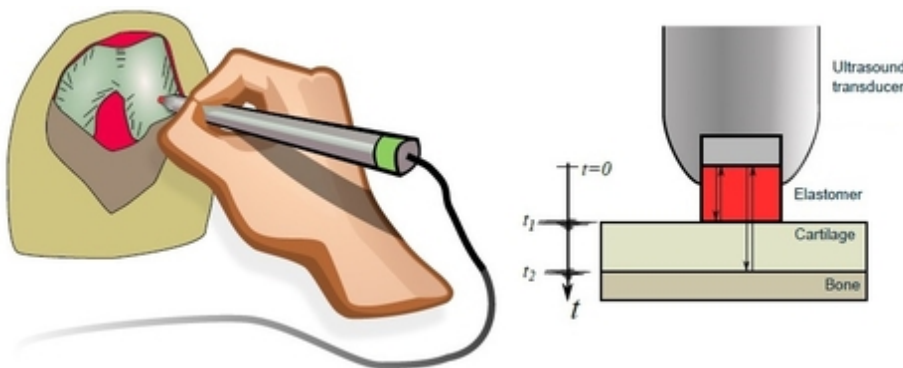


Ultrasound Palpator

Reference Number: TO 32-00005

Challenge

Cartilage defects, most frequently caused by aging, overload and injuries, have very limited self-healing capacity. Progression of defects leads to pain, reduced joint function and instable joints. Osteoarthritis of the knee affects ~ ¼ of the population. Cartilage repair, e.g. by osteochondral transplantation, requires both, the exact demarcation of defect cartilage tissue and proper thickness matching of the implants. Currently, cartilage quality is assessed visually and by manual palpation during surgery. Besides requiring sophisticated personal experience, these methods cannot be standardized to grade early stages of cartilage degeneration. Moreover, they cannot probe the cartilage thickness in the transplant region. Thus, the results of cartilage arthroplasty often remain sub-optimal.



Handheld device for ultrasound palpation of articular cartilage

Technology

Ultrasound palpation enables local quantification of cartilage stiffness and thickness intra-operatively. The ultrasound signal is coupled into the tissue via a calibrated, single-use elastomer tip. Manually performed palpations cause changes of signal transit-times through both, elastomer and cartilage. Transit time differences allow the real-time estimation of both, compressional stiffness and thickness.

Benefits:

- Simple set-up based on standard ultrasound technique and robust design
- Integrated quality assessment by means of spectral signal analysis
- Computer-guided measuring process enhances diagnostic objectivity and quality

Commercial Opportunity

The technology is available for in-licensing or co-development.

Developmental Status

A prototype of the ultrasound palpator has been validated on tissue phantoms and was tested *ex vivo* on articular cartilage of various species.

Patent Situation

Priority claiming German patent application filed in 2012. PCT application WO2014056964A1 filed in 2013. Patent owner: Charité - Universitätsmedizin Berlin.

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