

TECHNOLOGY OFFER

PHARMACEUTICAL INDUSTRY & MEDICINE

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INTELLI-DRILL

Medical drilling procedure includes integrated drill-canal measurement (UN388)

THE PROBLEM

Metal implants and bone are screwed together in order to help bone fractures heal faster or to correct skeletal malpositions. When it comes to this, the depths of the drill holes are usually measured mechanically by hand. Handling the gauging tool is time consuming, cumbersome and highly prone to errors. However, it is essential for a successful outcome of the healing process that the screws match exactly with the depths of the drill canals. A wrong screw length can still be corrected, provided that it is detected by x-ray confirmation during surgery. Additional x-ray exposures and the repeated corrections impose a burden on both patients and the medical team. However, a certain percentage of falsely determined screws is likely to escape detection and will put the healing process at risk.

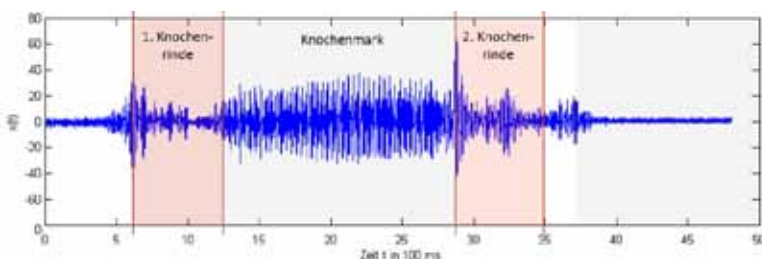
THE SOLUTION

"Intelli-Drill" measures the length of the drill canal during drilling with precision and does so in one work step. A solid-borne sound sensor records the oscillations which occur when the drill passes through the various layers of bone and registers the time until the drill reemerges from the bone. Parallel to the oscillatory profile, the length of the pathway is also measured. The distance between the site where the drill is applied for drilling and is later pulled out of the bone is then exactly identical to the depth of drill canal.

ADVANCES AND APPLICATIONS

- Easy measurement of drill-hole depths and precise measurement of the matching screws
- Drilling and measuring is done in one work step, less complications during surgery
- Reduction of x-ray exposure in the operating room
- Improved healing process, less revision surgery, shorter hospital stays
- Cost saving due to less material application of screws and reduced operating times

Hundreds of thousands interventions of this kind are applied in Germany alone, worldwide there are several million. The method presented can be applied in surgery or in nonmedical areas. This invention is addressed to manufacturers of medical devices and surgical instruments.



A sound sensor records the oscillations produced by drilling through cortical (red) and medullary (white) bone.

FIELD OF APPLICATION

Osteosynthesis, surgery,
measurement engineering

KEYWORDS

Surgical measurement engineering,
solid-borne sound, bone fractures,
orthopedics

PROPERTY RIGHTS

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