Calibrated Drill Sleeve Also Protects Soft Tissue

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Technology description

Drills are commonly used during orthopedic surgery to place screws that allow fixation of fractured bones. One problem that surgeons face while drilling is the overlying soft tissue becoming entangled in the drill bit. Another issue is the drill plunging into the soft tissue structures on the far side of the bone, which can endanger neurovascular structures. Also, surgeons must use a depth gauge to measure the length of the hole to allow accurately sized screws to be placed. This additional step takes time and can also plunge and cause damage.

A streamlined tool is needed that combines depth measurement, soft tissue protection and better bit control. UW–Madison researchers have developed a separable drill sleeve that provides braking resistance and can be used with conventional orthopedic drills and bits. The sleeve protects soft tissue from the drill bit, measures the depth of the bore hole and prevents the drill from plunging through the far side of the bone.

The sleeve features upper and lower tube segments. At the lower end is a base that contacts bone and provides a passage for the drill bit. The upper segment is able to slide relative to the base and indicate bore depth. In between the segments is a fluid damper that resists sudden acceleration of the drill bit as it pushes beyond the bone.
The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing methods to reduce soft tissue damage during bone boring by using a protective and depth-measuring drill sleeve.

Application area

Orthopedic drilling

Advantages

Braking capability
Less soft tissue damage

Drill sleeve is unobtrusive and sterilized separately.
Built-in depth measurement
Efficient use of tools and time
Combines multiple functions in one tool, reducing the number of tools used during surgery

Institution

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