UTSouthwestern Medical Center

TITLE: Devices, Systems and Methods for Fixation of Osteoporotic Acetabular Fractures with a Limited-Open Surgical Approach

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TECHNOLOGY: Device

UTSD: 3232

SUMMARY:

This technology describes a novel device for fixing osteoporotic acetabular (hip socket) fractures that requires a limited invasive surgical procedure and that does not depend on the mechanical properties of the bone (crucial for treating osteoporotic patients).

Medically, the biggest bone health challenge is fractures, and the most common cause of fractures is osteoporosis (progressive loss of bone resulting in skeletal weakness).

Osteoporosis is responsible for more than 2 million fractures annually in North America. The largest osteoporosis market is postmenopausal women, estimated in 2015 to be worth $11.0 billion worldwide and expected to reach nearly $13.3 billion by 2020. The US market represents ~66% of the worldwide market. Currently available devices depend on the mechanical properties of the bone, and cause osteoporotic bone fragmentation around the screws, and the screws and plates loosen or strip with bodily movement. Since osteoporotic bone has different mechanical properties than regular bone this leads to plate failure. Up to 20% of current procedures have significant complications during surgery, and up to 40% within two years post-surgery. Between 10 and 31% require a total hip replacement surgery, and up to 21% result in deaths. In some reports, for elderly patients (mean 77 years of age) the 1-year mortality rate is as high as 85%, where up to 75% of those patients die within 90 days.

The present invention describes a device for fixing fractures of the hip socket, a system to deliver and affix the device into the pelvic structures, and the methods to perform a limited invasive surgical procedure. The disclosed invention may significantly increase the strength of fixation by applying compression external to the bony matrix, as well as significantly reduce the likelihood of equipment failure by eliminating dependence of compression on bone strength.

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