Fixation and Reconstruction System for Ankle Fractures

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Technology description

Background

Syndesmotic Ankle fractures are common, and sometimes challenging to treat clinically. These fractures are a common source of substantial patient morbidity. It is estimated that about 290,000 people suffer syndesmotic ankle injuries every year in the United States. Devices that are currently used to treat these ankle injuries include syndesmosis screws, TightRope® fixation devices, intramedullary screws, intramedullary fibular nails and cannulated screws. However, these devices have some major setbacks. For example, the syndesmosis screw, a static fixation system, is usually used in conjunction with a fibular plate, which renders it relatively invasive with an increased risk of post-procedure complications, such as infection, delayed union or non-union. Additionally, it requires 6-8 weeks of immobilization and non-weight-bearing, which may result in delayed function recovery. Furthermore, a second procedure is required to remove the screw before weight bearing, otherwise the screws may cause pain or limit mobility and could be broken upon weight bearing. Diastasis (separation) following screw removal is also common.

Invention Description

Researchers at the University of Toledo, led by Dr. Jiayong Liu, have developed a combined fixation and reduction system for the treatment of syndesmotic ankle fractures. This technology is minimally invasive, can provide a better biological and biomechanical environment for healing, and does not require a second procedure.

Application area

• The fixation-reduction system may be used for the effective treatment of syndesmotic ankle fractures

Advantages

• The system combines reduction, fixation and reconstruction simultaneously for treatment of syndesmotic ankle fractures
• The system uses a minimally invasive approach
• The device may provide better fixation strength

• There is no need for a second procedure for implant removal
• The device may provide earlier physiologic motion and weight-bearing of the ankle and syndesmosis following reduction and fixation. This can accelerate rehabilitation and recovery
• The system allows percutaneous insertion and may be safely used in high-risk patients

Institution

University of Toledo

Inventors

Josh Vander Maten
Student
Orthopedic Surgery
Jiayong Liu
Assistant Professor
Orthopaedics

联系我们

叶先生

电 话：021-65679356

手 机：13414935137

邮 箱：yeyingsheng@zf-ym.com