

Novel approach for surgical stabilization of disrupted pubic symphysis in pelvic injuries

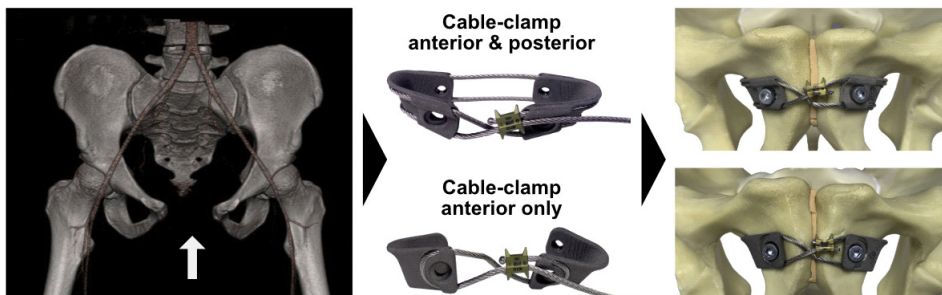
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CHALLENGE

The worldwide leading cause of death in the younger population is trauma. Road accidents and falls from great heights often result in life threatening pelvic injuries. Beside fracture of the pelvic bone disruption of the pubic symphysis is regularly seen and a great challenge in orthopaedic traumatology. The pubic symphysis is a joint-like connection of the pubic bones located at the anterior pelvic ring and disruption leads to gapping and instability. Urgent surgical care is mandatory to improve patients chance of survival and recovery. The current standard is stabilization by symphyseal plating whereby a steel plate and screws are used to rejoin and fix the pubic symphysis. Despite its widespread use the technique is often insufficient to neutralize motion related forces at the pubic symphysis. Early implant failure like screw loosening and plate fracture are therefore common complications accompanied by recurrent pelvic instability. Affected patients require revision surgery to re-fixate the pubic symphysis. To solve this problem, a new medical device is required without the limitation of early implant failure.

INNOVATION

The novel medical fixation device is a cable-clamp implant for the stabilization of a traumatic disruption of the pubic symphysis and consists of two components. The first component are two u-shaped steel clamps, which are firmly attached to the bone with the help of a screw in the pubic bone branch. The second component is a braided steel wire. The clamps in combination with the braided steel wire serve as a cerclage to hold the pubic bone branches together and stabilize the anterior pelvic ring. Two u-shaped clamp designs are developed characterized by different guiding structures for the steel cable. Hereby the steel cable can be place around the pubic symphysis or at another position anterior.



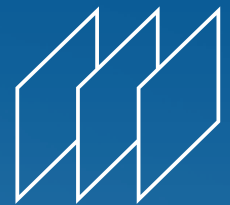
COMMERCIAL OPPORTUNITIES

- Fewer to no complications expected compared to conventional steel plate approach
- Less invasive surgical approach and shorter surgical intervention
- Applicable in primary treatment or revision cases
- Opportunity for personalized implants using CT scans and 3D-printing

DEVELOPMENT STATUS

Proof-of-concept including the following:

- Different prototypes biomechanical tested using synthetic bone models
- Series of tests on human cadaver
- Surgical approach establishing



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