Pelvic Ring Emergency Stabilizing System (PRESS)

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Technology description

An innovative pelvic fracture stabilization system to be used for severe "open book" type fracture of the pelvis due to traumatic injury.
This bio-inspired device can provide equivalent loads to the pelvis while leaving the abdomen and groin areas accessible for physician access, a method not previously developed for pelvic compression devices. Additionally, this system allows for single person application on a patient, it is radiolucent, and has a reduced loading area over existing systems. The device can also be adjustable to a wide array of patient shapes/sizes, and allows for easy moving of patients with stabilization maintained throughout transport.

Background

Pelvic ring fracture is a disruption of the bony structure of the pelvis, anteriorly and posteriorly, in at least two locations causing a separation of the bones that form the pelvic ring. Pelvic fractures can occur due to high-energy trauma such as motor vehicle accidents or a fall from a great height. These types of incidents represent almost 8% of all skeletal injuries. Hemodynamic instability or arterial hemorrhage from this fracture may result in 10-50% mortality rate. Historically, a pelvic binder has been the optimal choice for initial stabilization of pelvic ring injuries and control of severe blood loss caused by pelvic trauma. The pelvic binder aims to provide the best mechanical stability for the pelvic ring and serves as an effective, simple procedure to limit motion of the fracture by applying a large compressive force to the pelvic ring in order to reduce the volume of the pelvis and reduce pain during transport or pre-surgical care. A major key function of the pelvic ring binder is that it should allow easy access to the groin and the abdominal area without removal or reposition of the device.
Presently, there are several types of non-invasive binders which have been shown to provide sufficient reduction in partially stable and unstable pelvic fractures with little adverse reaction. Unfortunately, these technologies fail to adequately provide access to the abdominal and groin area for emergency treatment. This heightens the risk of arterial hemorrhage due to removal or reposition of the device. There exists a current need for an innovative pelvic ring support system that has significant stability and allows access to vital surgical areas (such as the abdomen and groin) without disrupting the pelvis.

Technology Description

Researchers at the University of New Mexico have developed an innovative pelvic fracture stabilization system to be used for severe "open book" type fracture of the pelvis due to traumatic injury. This bio-inspired device can provide equivalent loads to the pelvis while leaving the abdomen and groin areas accessible for physician access, a method not previously developed for pelvic compression devices. Additionally, this system allows for single person application on a patient, it is radiolucent, and has a reduced loading area over existing systems. The device can also be adjustable to a wide array of patient shapes/sizes, and allows for easy moving of patients with stabilization maintained throughout transport.

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Application area

Does not require circumferential loading of the pelvic region
Single person deployment; limited training required for use
Full abdominal and groin access
Radiolucent for X-ray and CT scanning
Reduced load area at greater trochanters to minimize pressure sores
Low cost/disposable
Radiolucent

Maintains stabilization during patient movement

Institution

The University of New Mexico

Inventors

Sherif Aboubakr
Rachel Tufaro
Aneesha Kondapi
Christina Salas