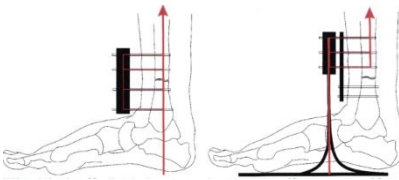


Ü-Fix

Bridging foot element for external fixation

Invention

Orthopedic treatment of the lower extremities involves a variety of approaches that use technical medical accessories such as external fixators. Functionality assessment, external fixator design, and thus treatment success are all usually dependent on the experience of the orthopedists



Comparison: Left: Force flow for a classic fixator for lower extremities; Right: Force flow with the new foot fixator

responsible for treatment. Insufficient stability resulting from patient failure to comply with strain constraints in conjunction with such disorders as diabetic foot syndrome (DFS) can lead to complications and even amputation. Commercially available solutions for external fixators are not optimal, since the force of the patient's weight is guided by both the fracture point and the fixator. To immobilize a fracture, the fixator must be very stiff and/or stress must be reduced throughout the system initially.

This has various disadvantages: the patient must comply or his mobility be greatly reduced, or the fixator must be very large.

The new invention provides a foot element for an external fixator that mechanically bridges the damage point or the foot/ankle fracture so that loads are introduced proximally during movement. This allows immediate patient mobilization with full load, no matter the degree of recuperation. Mechanical bridging of a fracture allows a much smaller immobilizing fixator than was previously possible, since stiffness requirements are much lower.



Foot fixator element prototype

Commercial Opportunities

In Germany alone, annual health expenses for diabetic foot syndrome (DFS) come to 2.5 billion euros. One reason for these expenses is the high occurrence of

amputation due to diabetes. The newly developed fixator will greatly improve care during recuperation, with earlier patient mobilization and fewer expected side effects. This allows rehabilitation measures to begin earlier. Since mobility is without crutches, outpatient care can be avoided in some cases. Besides monetary considerations, quality of life improves for the patient, since he is able to move about in a biomechanically correct manner that leaves his hands free. This added value is considerable given the long application of an external fixator for DFS. For one thing, it ensures ideal patient care. For another, there is potential cost savings for health insurance funds, since the product reduces amputations when used post-operatively.

Current Status

Functionality can be demonstrated with a prototype. A patent is pending for this invention. International patents are also possible. We would be happy to give you an update on the application process. On behalf of Paderborn University, PROvendis is looking for companies interested in refining the invention or cooperating with the university.

An invention from Paderborn University.

Competitive Advantages

- Makes patients mobile
- Provides biomechanically correct absorption/damping for walking
- Improves care
- Decreases amputations

Technology Readiness Level

1 2 3 4 5 6 7 8 9

Technology demonstrated in relevant environment

Industries

- Orthopedic workshops and businesses
- Medical technology

Ref. No.

6759

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