The limited flexibility medullary cavity stabilizer for the treatment of shaft fractures
BONEHELIX® is the revolutionary implant for the treatment of long bone fractures, particularly in the upper arm and lower leg. The use of BONEHELIX® allows shorter and less stressful operations, and leads to more rapid healing of the fracture.

**BONEHELIX® is a story of inventiveness**

Prof. Dr. Reiner Labitzke is an experienced and seasoned surgeon who has worked in many operating theatres all over the world. During his entire medical career he has questioned, to the benefit of patients, treatment methods, always searching for better options. As a result, his first invention, the use of metal cables in the treatment of bone fractures, saw the light in the 1970s. Instead of the cables used up to that point, he used flexible wire cables, and quickly established these were far more suitable. This method resulted in a surgical technique which is now standard all over the world.

Prof. Dr. Labitzke has also proposed improvements in the treatment of long bone fractures. The use of intramedullary nails, in his view, results in more problems for patients. Just the forces produced during the hammering in of the nails and the accompanying destruction of bone marrow raised questions regarding the treatment. This is also true during removal of the nails, when considerable forces are again at work.

Added to this the knowledge that rigid binding does not necessarily speed up healing, and that some mobility stimulates the osteoblasts (according to Wolf and Basset), which leads to rapid healing of the fracture.

**BONEHELIX® – a spring which isn’t a spring**

His idea, therefore, consisted of a spring which isn’t a spring, but is so flexible in motion that slight movement, to stimulate callus formation at the edge of the fracture, is possible, while retaining all the stability required for fracture healing.

Prof. Dr. Labitzke ended up at the German spring manufacturer H&R with his idea, and found a willingness to listen. The specialists for springs in the automotive, aerospace and aviation sectors have decades of experience in designing and manufacturing high-precision components. BONEHELIX® was born and within a very short time the product received CE approval in many European countries.

All required tools and basic equipment are supplied in a sterilization box.
Everything in a sterilization box

Compact and budget-friendly
The BONEHELIX® is supplied with all necessary tools and basic equipment in different lengths and diameters, and ensures complete, all-round provision for clinics. For future use, only individual components required for surgery need to be replenished. This leads to space saving as well as exceptionally high savings in costs.

Depending on the application, helices differ in length and outside diameter (cable strength).
- For use in the humerus: H1, H2 and H3 with three diameters
- For use in the tibia: T1, T2 and T3 with three diameters
- For use in children: C1, C2 and C3 with three diameters

The material used is the surgical long-term implant steel alloy 1.4441, in compliance with the requirements of DIN EN 3832-1.

The system in use
- There is no risk of splitting the bone, such as when a nail is inserted, during insertion and removal of the BONEHELIX®.
- The volume of the inserted BONEHELIX® is only one tenth of an intramedullary nail. Unlike during the use of an intramedullary nail, the medulla is protected by the BONEHELIX®.
- Surgery time with the BONEHELIX® is only 30 minutes, clearly below the usual times, estimated at 102 to 108 minutes on average.
- Significantly less radiation exposure for the patient and the surgeon, since no permanent checking of positioning of locks must be carried out.

Included in the box:
- Awl
- Insertion/removal driver
- T-grip with silicon cover
- Bolt cutters
- Repositioning rod with integrated silicon handle
- Guide rod
- Forceps
- Small hammer

Three BONEHELIX® for fractures of the humerus, tibia or in children, in different wire thicknesses, are contained in the unit.
As a producer of technical springs and sports chassis components H&R Spezialfedern has enjoyed a worldwide reputation for the highest quality for more than 35 years. State-of-the-art production methods, innovative developments and 100 percent German-based production ensure uncompromised quality.

Automotive and aerospace industries have long trusted the company’s expertise. The Sauerland family business, in establishing H&R Medizintechnik GmbH & Co. KG, has expanded its portfolio.

A special clean room was installed in the main factory in Lennestadt, where the implants are manufactured with the utmost precision and care. The H&R quality management system has been extended in accordance with the Medical Devices Act and certified in compliance with DIN EN ISO 13485: 2012 in March 2014. The scope includes the development, manufacture, distribution and sale of surgical medical products and implants.
A study has confirmed the BONEHELIX® features. The first clinical results for the BONEHELIX® in humerus fractures are encouraging. The medullary cavity remains intact, and callus formation is actively stimulated by the micro movement allowed. Observation of the indicators and the details of fracture formation showed a shorter bone healing time during the natural callus formation process.

The BONEHELIX®, with its features, is a convincing tool for use particularly in transverse and short oblique fractures of the humerus and tibia. The BONEHELIX® can also be used to stabilize long slant fractures, provided that the anatomy has been reproduced so that the BONEHELIX® can find traction.

- Lower leg fracture with grade 2 closed soft tissue damage in a bedridden multimorbid female patient. She was not primarily fit for surgery. Therefore, initially conservative therapy with plaster immobilization was deemed indicated. Given her persistent pain and improvement in general status, the indication for minimally invasive antegrade treatment with BONEHELIX® was rendered. A marked reduction in symptoms as well as improved soft tissue conditioning was achieved.

- Femoral fracture with concomitant open metaphyseal fracture (Gustilo type OII) in an 11-year-old boy. Initial stabilization was accomplished by external fixation extending over the knee joint plus soft tissue debridement, secondary management by antegrade insertion of a BONEHELIX® through the proximal femur. Fast mobilization was possible. Uncomplicated removal of metal took place 6 months after implantation.

Advantages of the BONEHELIX®

Patients benefit from:
- Significantly reduction in surgery time
- Rapid healing of the fracture
- Reduced radiation exposure due to simplified surgery
- Active stimulation of the osteoblasts for callus formation through the limited flexibility BONEHELIX®
- Effective, careful stabilization of the fracture, since the volume of the helix is only one tenth of a rigid intramedullary nail

Doctors enjoy the following benefits:
- Significant reduction in surgery time to an average of 30 minutes
- No splicing of the bone, by gentle turning in and out of the helix instead of inserting a nail
- The absence of locking means that the radiation load is significantly lower for surgical staff
- BONEHELIX® is screwed in like a corkscrew, leaving the bone marrow intact (instead of boring the bone)

Hospitals benefit from:
- Cost-effective storage of only a small number of necessary helices and tools
- Shortened cleaning times for instruments
- No special requirements for storage and/or transport
- The specific tools for using the BONEHELIX® are supplied
- Shortened waiting times for patients in treatment

Service for Operators

Always there for you – with quick delivery
Once the sterilization box, with all the tools, has been delivered to the clinic, only replenishment orders are required to be completely prepared for any case. This does not require extensive storage. If the required BONEHELIX® is not available on site, we deliver the appropriate implant to the hospital quickly, and if necessary overnight.

Do you want to make an appointment? Or to organize a presentation, need training in your home, or support during an operation? Then contact our sales team, at

vertrieb@hr-medizintechnik.com

Please contact customer services on
+49 (2721) 9260-99
for any questions.