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SUTURE CHIRURGICHE
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More than surgery

D.O.S.® System

New Osteosynthesis Device for Shoulders

Any patient will recover moving freedom

Gexfix®

D.O.S.® System

The D.O.S.® System was created in response to the need for a minimally invasive osteosynthesis surgical device for the treatment of fractures of the upper limbs (shoulder and humerus).

Description

The D.O.S.® System is an HYBRID type or MIXED SYSTEM external fixator composed by an adjustable TELESCOPIC CARBON BAR for compression/distraction of the fracture and a system of Kirschner wires and pins that are connected to the bar for the synthesis.

Indications

The D.O.S.® System is an Osteosynthesis Device (External Fixator) used in 2-3 fragments fractures of the proximal third humeral shaft, with or without detachment of the great tuberosity (according to A.O. classification).

It is used:

- In emergency trauma in cases of vascular-nervous involvement
- In patients with polytrauma in temporary or definitive treatments
- Bilateral proximal humerus fractures
- In patients with pathologies that make major surgery contraindicated
- In patients with associated co-morbidities where anesthesia times are important (average D.O.S.® implantation time 20 minutes after fracture reduction)
- In patients who refuse prothesis

Characteristics and advantages

HYBRID FIXATOR

(characterized by an adjustable telescopic bar for compression / distraction of the fracture that combines the flexibility of the Kirschner wires and the static nature of the Pins).

MINIMALLY INVASIVE DEVICE

the implantation procedure is “CLOSED SKY”, percutaneous, it does not cause any damage to the periarticular structures by providing only small holes for the implantation of the pins and Kirschner wires, reducing to a minimum the damaging risks for tissues and muscles (Rotator cuff) compared to “open sky” surgeries.

TELESCOPIC BAR

made of carbon, resistant, radiolucent, dynamizable in compression / distraction, adjustable with central slider, which perfects the reduction once synthesis is complete, under radioscopic control.

THE TELESCOPIC BAR IS ADJUSTABLE

in the three spatial dimensions with holes at 125/130° to allow the best positioning on the patient.

LIGHTNESS OF THE BAR

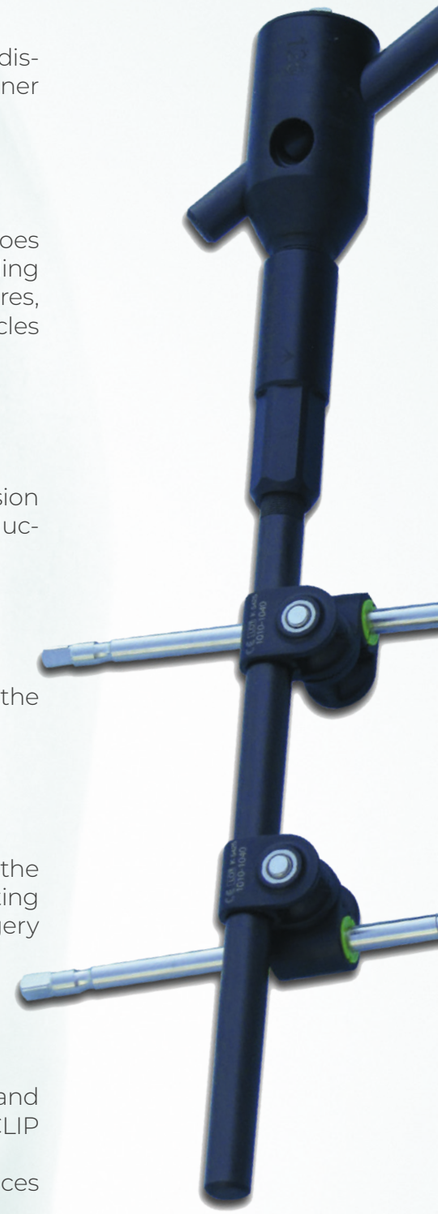
the weight of the telescopic bar (80gr) makes it very tolerated by the patient making the limb free from excessive loads and facilitating immediate active and passive movements 48 hours after surgery avoiding muscle and joint stiffness.

EASY CLIP

quick assembly, multifunctional clip able to assemble pins and Kirschner wires and allow the bar-bar assembly. MULTIPLANAR CLIP with 360° rotation on its axis.
Clip ADAPTABLE to the different diameters of the fixation devices with a range of INTERCHANGEABLE REDUCERS.

FIXATION DEVICES

self-drilling pins and Kirschner wires in steel and titanium (RMN compatible and hypoallergenic for the patient).



RAPID IMPLANTATION

surgery times to place the device are approximately 20 minutes, after reduction of the fracture, and recovery times have been assessed at 6-8 weeks in combination with a rehabilitation scheme.

RADIOLUCENCY

at the post-operative radiographic control, the D.O.S.® Telescopic Bar does not create overlapping of images on the fixation device.

RMN COMPATIBLE

the D.O.S.® fixator is in the TITANIUM (Kirschner wires, CLIP, and connector Titanium bar) and Carbon version.

REMOVAL

the device can be removed in an outpatient clinic without the need for admission into hospital or anaesthetic.

Osteosynthesis with D.O.S.® System

Upside-down Eiffel tower

The D.O.S.® System is made up of two or three Kirschner titanium wires with a diameter of 2.5 or 3.5 mm, depending on the consistency of the bone, that are fixed, after the fracture manual reduction through brilliance amplifier, these are secured to the head of the humerus in a proximal-distal axis and placed in a Eiffel tower position, so that they fill the diaphyseal canal and reinforce it.

Additional Kirschner wires can be added and inserted in a distal-proximal position in the head of the humerus and attached to the telescopic bar with multipurpose CLIPs, easily adjustable at 360°.

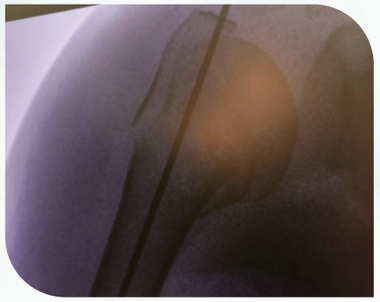
The Telescopic Bar acts as a connection between the Kirschner wires and two steel pins with diameter of 4 mm that are inserted below the fracture at the diaphyseal level (V deltoid), with the possibility to act on the reduction of the fracture focus by operating the telescopic bar in compression/distraction of 1.5 / 2 cm.

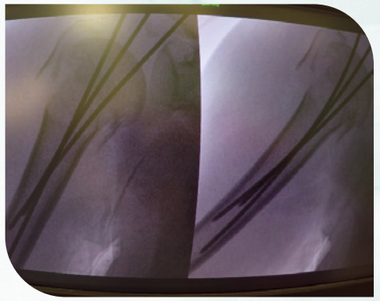
A traction system is therefore formed thanks to the flexibility of Kirschner wires and the rigidity of the pins. The structure is extremely light thanks to the use of carbon fibre (weight: 80 grams) and it keeps the fracture reduced, avoiding pain and making it possible to lift the arm just a few hours after the surgery thanks to active and passive mobility exercises.
In addition, thanks to the 'closed-sky' procedure, there is no risk of damaging the periarticular structures (rotator cuff, tendon of the long head of thebiceps) or of contracting infections due to the use of internal fixation devices.

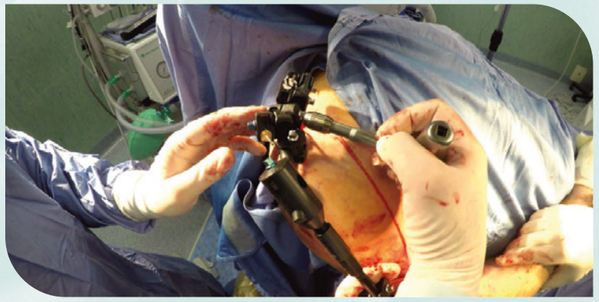
The D.O.S.® System is fully adjustable to 360°, so the best position for the patient can be selected opting for an inclination of 125° - 130° that allows the anteposition or retroposition of the bar relative to the trunk.

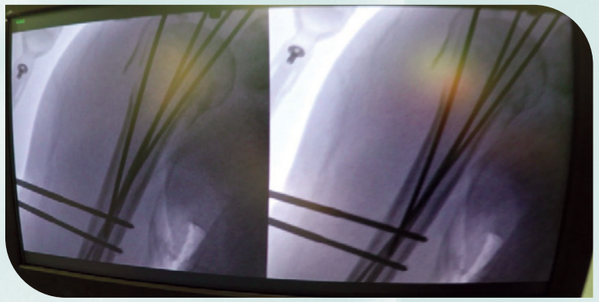
Surgical technique

- General or Supraclavicular Anesthesia
- Position of the Patient Supine on the operating table or at "BEACH CHAIR" at 30° with bent knees.
- Reduction of the humerus fracture under radioscopic control by pulling the patient's arm down and intra rotating the limb.
- Preparation of the surgical field and disinfection of the shoulder and of the whole limb.
- Positioning of the shoulder "BACK" in order to better exteriorize the surface of the head of the humerus on which insert the Kirschner wires.

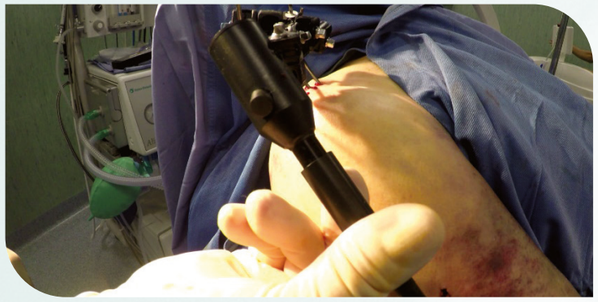


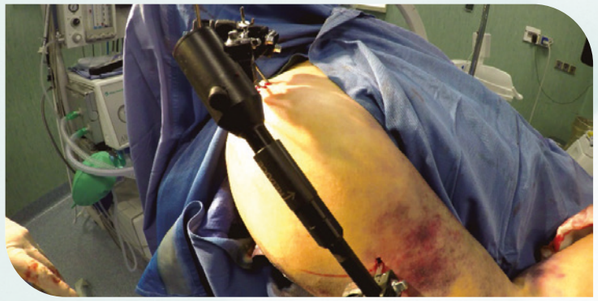






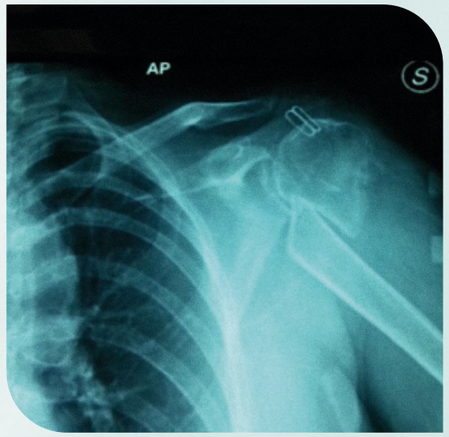
- Positioning of the 1st Kirschner wire before the Acromion and laterally to the Trochite, in order to pass the wire more centrally to the fragment of the head of the humerus in the proximal distal direction and making it progress in the diaphyseal channel.
- Immediate ampliscopic control to verify the correct path of the 1st Kirschner wire introduced.
- Introduction of the 2nd Kirschner Wire. It must cross the 1st Kirschner Wire forming a sort of X in the Diaphyseal channel.
- Possibly Introduction of a 3rd Kirschner wire in the proximal distal or distal proximal sense to complete the synthesis and stabilize the fracture at best.
- Positioning of the 1st Self-drilling pin on the Humeral Diaphysis (on the V Deltoid).
- Positioning of the 2nd pin on the humeral diaphysis at a distance of 3,4 cm distally to the first.
- Radioscopic control of all implanted fixator devices.
- The TELESCOPIC BAR is mounted by connecting pins and wires with the EASY clips.
- At this point, by rotating the slider of the bar, we can better control the fragments of the fracture being able to further distract or compact them (UNIQUE characteristic of D.O.S.®).

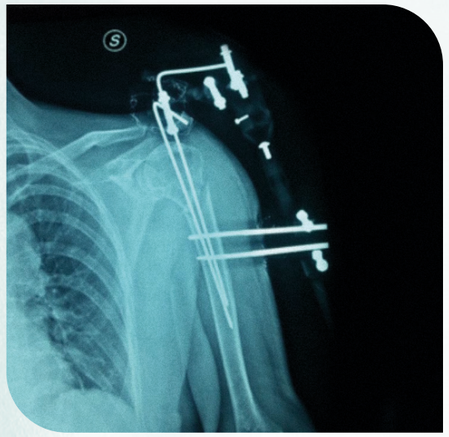




- Radioscopic control and evaluation of the completed synthesis and possible adjustment of the TELESCOPIC BAR DISTRACTING or COMPRESSING it in order to perfect the synthesis achieved.
- Assembly and solidarization of all external fixator components with T-screw driver.
- Adjustment of the TELESCOPIC BAR with the central slider that, manually rotated, allows to COMPACT or DISTRACT the bar in order to perfect the synthesis achieved.
- Medical treatment.

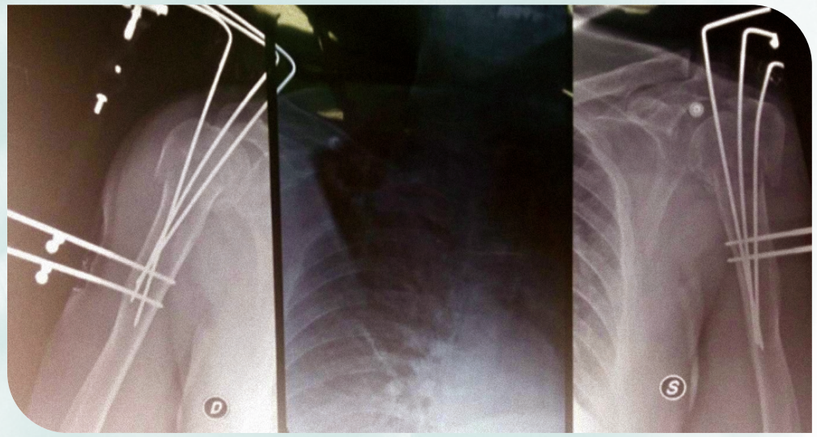
1st clinical case





Use of D.O.S.® in URGENCY (vascular nerve compression)

2nd Clinical case

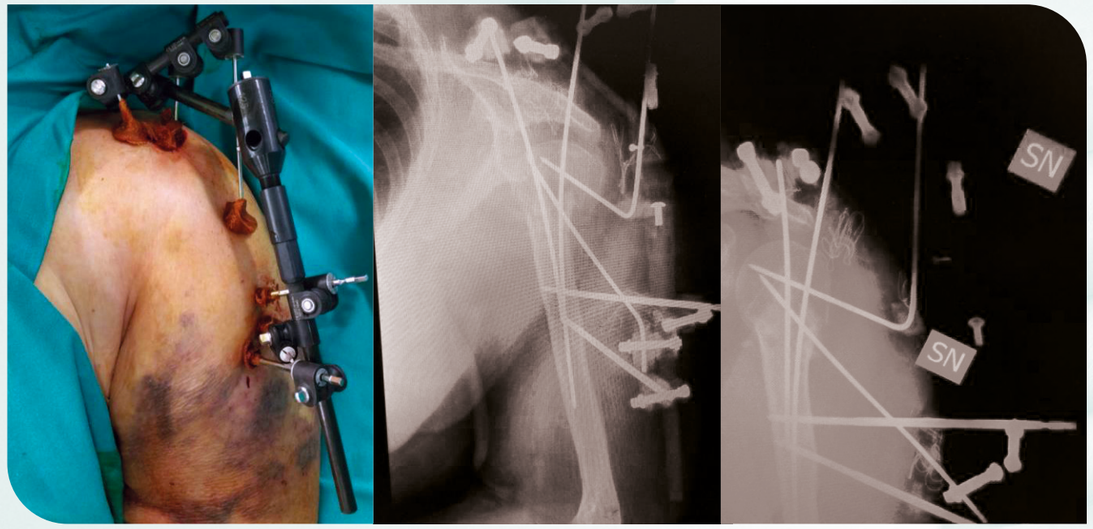


Bilateral fracture of proximal humerus

48 hours later

3rd Clinical case

Fracture of proximal humerus



Improvement of the synthesis with more wires (polyvalence of the D.O.S.®)

D.O.S.® System

Description	Code	N° pcs
Carbon Telescopic Bar (D.O.S.®)	1030-1000	1
Carbon connectors 9mm / 9mm (Small)	1010-1040	6
Self drilling pin 4 x 145	2015-1025	2
Reduction sleeve 9 / 2.5 (TGF)	1010-1055	3
Reduction sleeve 9 / 4 (Small)	1010-1053	2
Kirschner Wire 2.5x300 (TGF, D.O.S.®)	1020-1032	3
Carbon rod 9 x 90mm (Small)	1010-1063	1
Carbon rod 9 x 110mm (Small)	1010-1064	1

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