ITS.

Implants
trauma

DA

Dens Axis Screw

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Introduction

1.

Preface

The Dens Axis Screw of I.T.S. GmbH was especially developed for fractures of the dens.

The low profile height and the small diameter of the screw head minimizes the soft tissue irritation and enables a minimal invasive treatment.

In addition to the main indication the dens axis screw is also appropriate for extended indications like fractures of the radius, malleolus or middle foot bones.

Properties

Properties of the material:

- Screw material: TiAl6V4 ELI
- Easy removal of the the implant after the fracture healing
- Improved fatigue strength of the implant
- Reduced risk of inflammation and allergy

Properties of the implant:

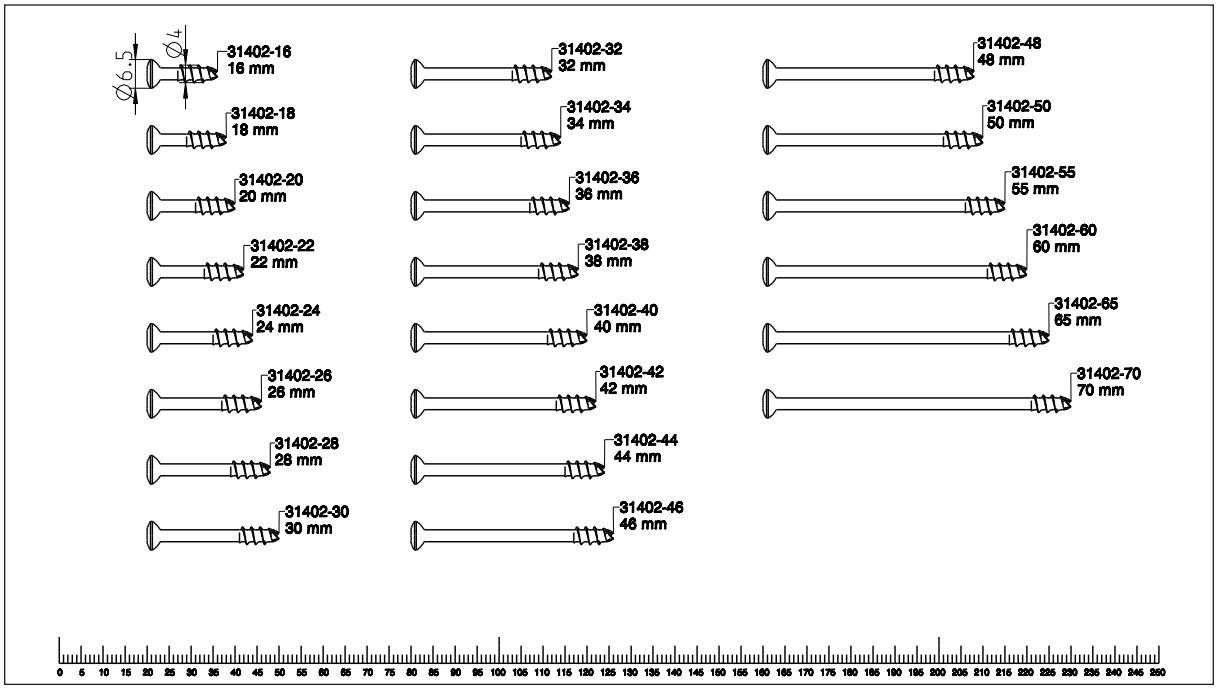
- Self-drilling & self-tapping
- Cannulated for minimal invasive treatment and guided insertion
- Outer diameter: D=4.0mm
- Lengths: 16 - 50mm in 2mm steps
  50 - 70mm in 5mm steps
- Length of the thread: 9.0mm

Screwdriver:

- Cannulated
- WS 2.5mm
- Length: 170mm

Guide Wire:

- Trocar with thread
- Length: 228mm
- D=1.6mm



Indications & Contraindications

Indications:

The screw was especially developed for the fracture of the dens, in addition there are the following possible indications:

- Fractures of the radius
- Fractures of the distal and proximal humerus
- Fractures of the patella
- Fractures of the proximal tibia
- Fractures of the malleolus
- Fractures of the middle foot bones
- Fractures of the carpal bone
- Fractures of the talus
- Avulsion fractures
- Ligament Fixation

No Indication

Ideal Indication

Possible Indication

Dens fracturesType I to III to Anderson

Contraindications:

- With advanced osteoporosis

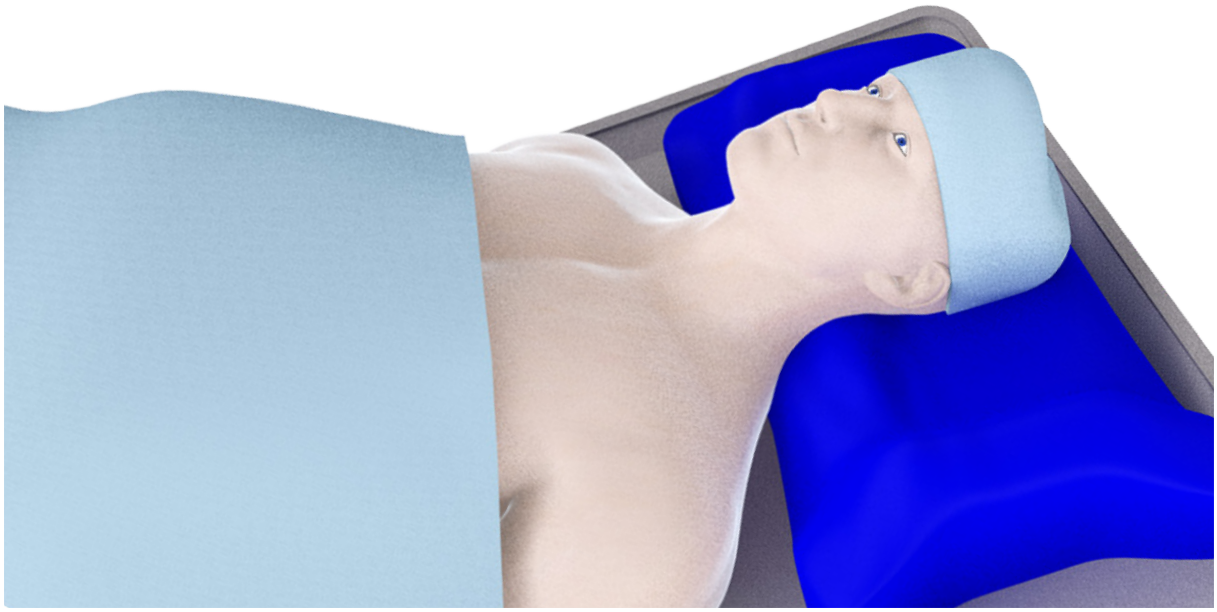
Time of operation & Pre-operative patient preparation

Time of operation:

- Primary: Within the first hours after trauma
- Secondary: After swelling subsides, intermediate fixation with external fixation or extension

Pre-operative patient preparation:

- Position the patient supine on a radiolucent table
- The operator always stands on the right side



Surgical Technique

2.

Reduction

- Reduction manoeuvres can be practised using an external halo fixator or by the corresponding positioning on the operation table according to standard two fluoroscopys (one in the lateral, the other in the a.p. path of radiation rays)
- The entrance to the throat spinal column has to be free accessible (sternum does not prevent from manipulation)

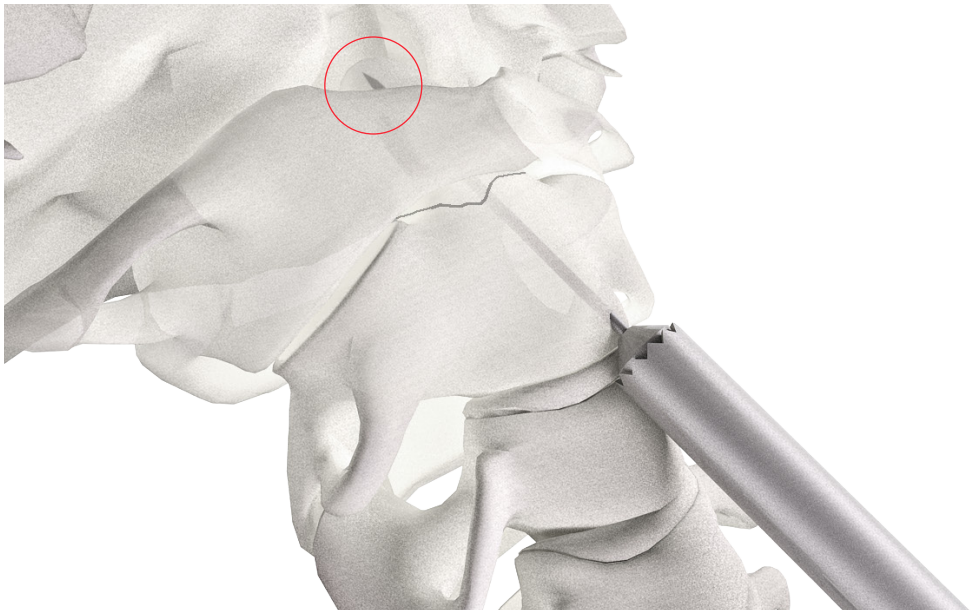
Access

- The determination of the skin incision takes place by putting a guide wire in the lateral path of rays at the neck
- The place of the incision results inevitably from the cross place between guide wire and skin
- 2.5cm long incision is executed diagonally on the right side of the neck (distal end comes to be situated in the mediane)
- After splitting of the platysmas go bluntly to the spine using scissors or wabs (very helpful to use the moistened index finger)
- Under fluoroscopy check insert the tissue protection sleeve **(62300)** with the central and the middle trocar
- Ideal entry point is exactly median at the lower edge of the 2nd cervical vertebra

Temporary fixation with K-Wire

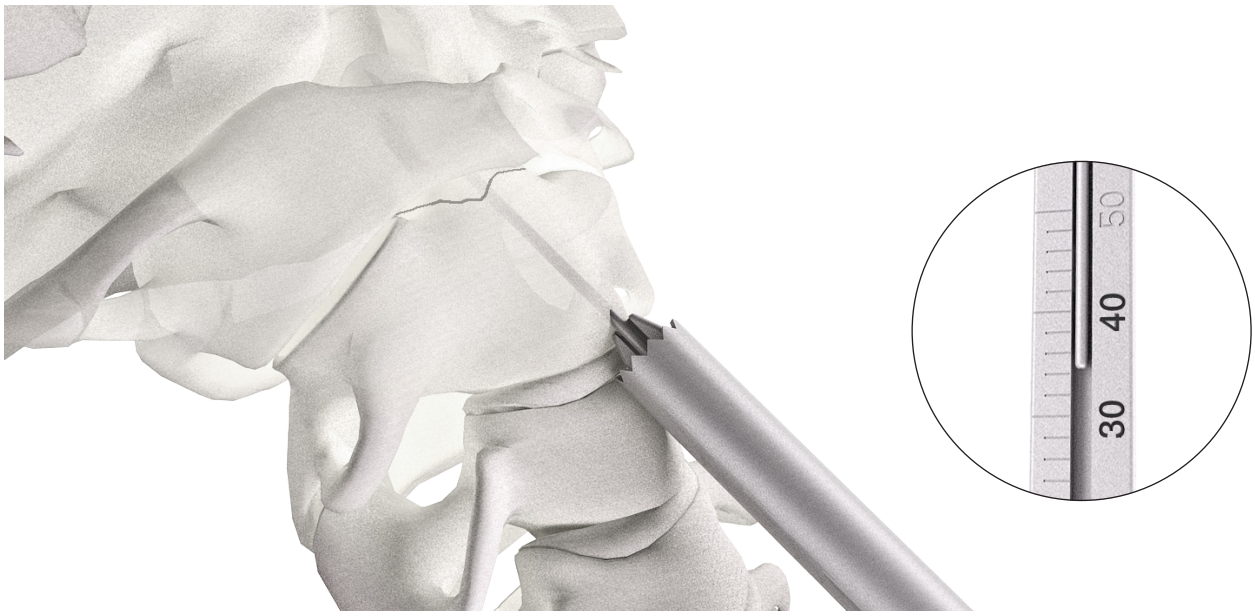
For temporary fixation exchange the central trocar against the guide wire, steel, D=1.6mm, L=228mm, TR, with thread **(35164-228)**. The guide wire is placed beginning at the base of the 2nd cervical vertebra up to the dens top.

Attention: To avoid possible bending, insert the guide wire carefully. It is to be noted however that the guide wire penetrates excactly central into the dens top.



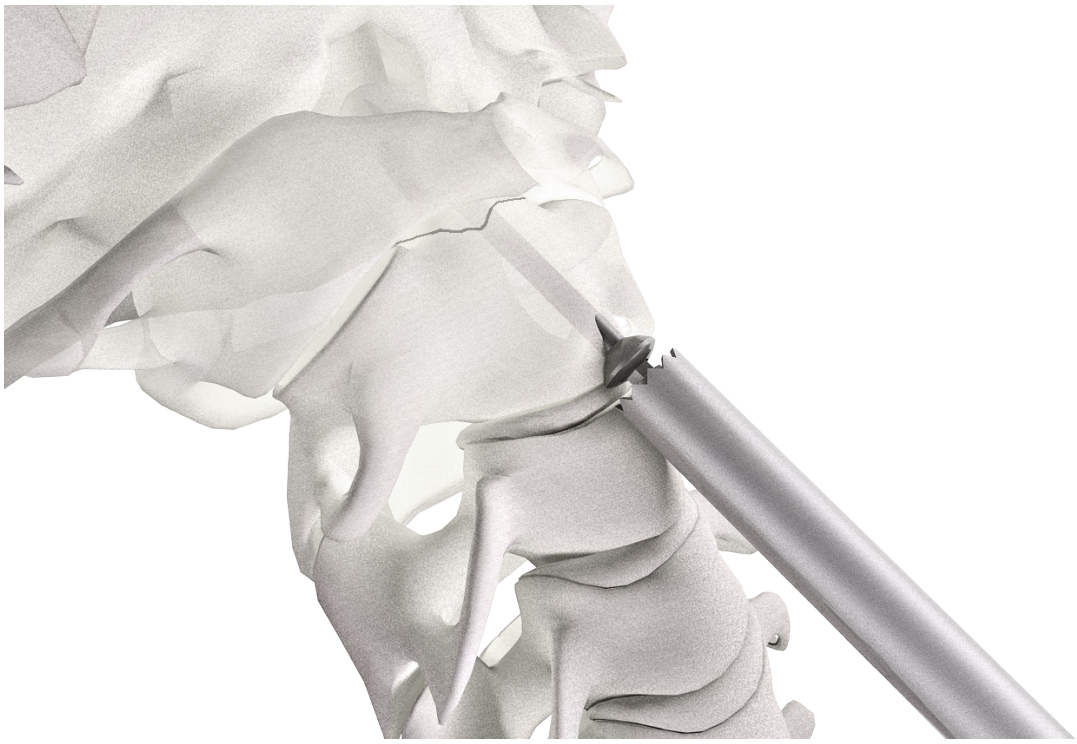
Identification of screw length

After removal of the middle trocar the depth gauge is introduced. Position the depth gauge **(59163)** at the guide wire and lead it to the bone. Afterwards read off the required screw length at the end of the calibrated guide wire.



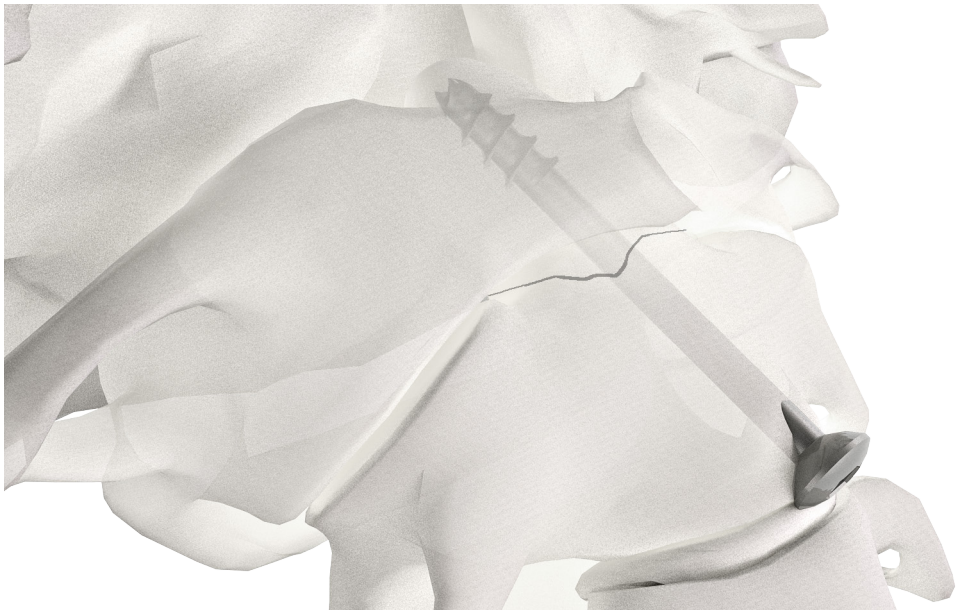
Placement of the screw

The distal corticalis is drilled out on the base of the second cervical vertebra with the spiral drill, cannulated, D=2.6mm, L=220mm, AO Connector **(61262-220)**. Afterwards the D=4.0mm cannulated cancellous screw with 9mm thread **(31402-XX)** is brought in through the tissue protection sleeve with the screwdriver, cannulated, WS 2.5, L=170mm **(56253-170)** per hand.



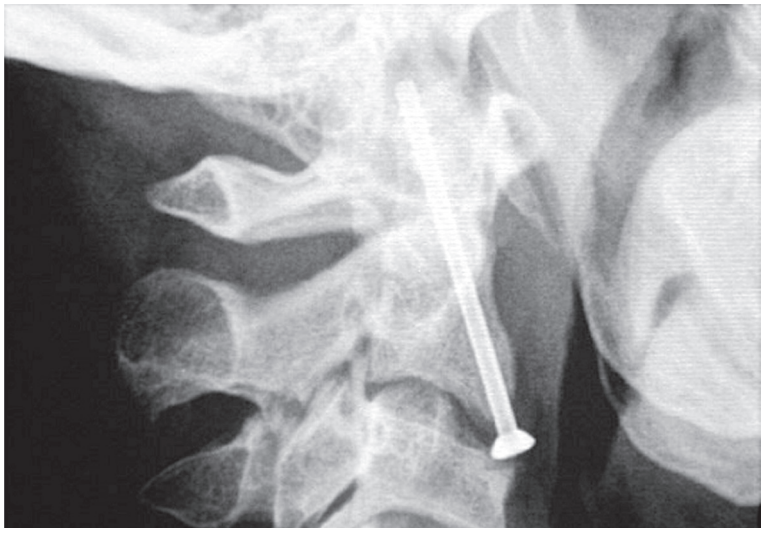
Following the tissue proteciton sleeve and the guide wire are removed. Check the correct position with the fluoroscopy.

Attention: The second corticalis must not be perforated.



Postoperative treatment

- The patient gets a stiff Schanz‘ collar brace for 2 weeks, afterwards a soft Schanz‘ collar brace for the following 6 weeks.
- Depending on the fracture healing the Schanz‘ collar brace can be removed after 8 weeks.



Information

3.

Dotize®

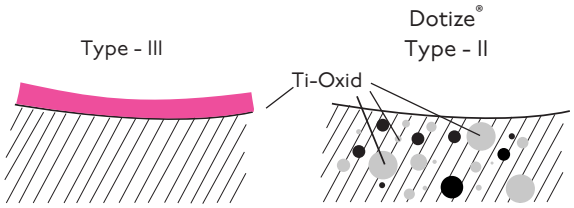
Chemical process - anodization in a strong alkaline solution*

Type III anodization

- Layer thickness 60-200nm
  - \+ Different colors
  - \- Implant surface remains sensitive to:
    Chipping
    Peeling
    Discoloration

Dotize
Type II anodization

- Layer thickness 2000-10 000nm
  - \+ Film becomes an interstitial part of the titanium
  - \- No visible cosmetic effect



Anodization Type II leads to following benefits*

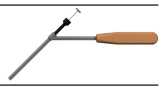
- Oxygen and silicon absorbing conversion layer
- Decrease in protein adsorption
- Closing of micro pores and micro cracks
- Reduced risk of inflammation and allergy
- Hardened titanium surface
- Reduced tendency of cold welding of titanium implants
- Increased fatigue resistance of implants
- Improved wear and friction characteristics

* White Paper: Ti6Al4V with Anodization Type II: Biological Behavior and Biomechanical Effects; Axel Baumann, Nils Zander

Order list

Cancellous Screw, Cannulated, D=4.0mm, L=16mm, 9mm Thread	31402-16
Cancellous Screw, Cannulated, D=4.0mm, L=18mm, 9mm Thread	31402-18
Cancellous Screw, Cannulated, D=4.0mm, L=20mm, 9mm Thread	31402-20
Cancellous Screw, Cannulated, D=4.0mm, L=22mm, 9mm Thread	31402-22
Cancellous Screw, Cannulated, D=4.0mm, L=24mm, 9mm Thread	31402-24
Cancellous Screw, Cannulated, D=4.0mm, L=26mm, 9mm Thread	31402-26
Cancellous Screw, Cannulated, D=4.0mm, L=28mm, 9mm Thread	31402-28
Cancellous Screw, Cannulated, D=4.0mm, L=30mm, 9mm Thread	31402-30
Cancellous Screw, Cannulated, D=4.0mm, L=32mm, 9mm Thread	31402-32
Cancellous Screw, Cannulated, D=4.0mm, L=34mm, 9mm Thread	31402-34
Cancellous Screw, Cannulated, D=4.0mm, L=36mm, 9mm Thread	31402-36
Cancellous Screw, Cannulated, D=4.0mm, L=38mm, 9mm Thread	31402-38
Cancellous Screw, Cannulated, D=4.0mm, L=40mm, 9mm Thread	31402-40
Cancellous Screw, Cannulated, D=4.0mm, L=42mm, 9mm Thread	31402-42
Cancellous Screw, Cannulated, D=4.0mm, L=44mm, 9mm Thread	31402-44
Cancellous Screw, Cannulated, D=4.0mm, L=46mm, 9mm Thread	31402-46
Cancellous Screw, Cannulated, D=4.0mm, L=48mm, 9mm Thread	31402-48
Cancellous Screw, Cannulated, D=4.0mm, L=50mm, 9mm Thread	31402-50
Cancellous Screw, Cannulated, D=4.0mm, L=55mm, 9mm Thread	31402-55
Cancellous Screw, Cannulated, D=4.0mm, L=60mm, 9mm Thread	31402-60
Cancellous Screw, Cannulated, D=4.0mm, L=65mm, 9mm Thread	31402-65
Cancellous Screw, Cannulated, D=4.0mm, L=70mm, 9mm Thread	31402-70

Tissue protection sleeve, Can. 4.0mm Screw, 9mm thread	62300



Screwdriver, WS 2.5, L=170mm, Cannulated	56253-170

Depth Gauge, 1.6mm, Can. 4.0mm Screw, 9mm thread	59163

Spiral Drill, Cannulated, D=2.6mm, L=220mm, AO Connector	61262-220

Guide Wire, Steel, D=1.6mm, L=228mm, TR, w. thread	35164-228

Sterilization Tray, Dens Axis	50173

For detailed cleaning and sterilization instructions, please refer to package insert.

Tray

Notes

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