ITS.

Implants trauma



FCN Flexible Children Nail

Contents

I. Introduction

- P.5 Preface
- P.6 Screw
- P.6 Properties
- P.7 Indications & Contraindications
- P.8 Biomechanics

2. Surgical Technique

- P.9 Instruments
- P.9 Presurgical
- P. 10 Surgical Technique
- P. II Postoperative treatment
- P.II Explantation
- P. II Summary

3. Information

P. 13 Order list

Introduction

• Preface

Over the last years, the elastic, yet stable medullary fixation of shaft fractures in children has become standard when treating diaphyseal fractures.

Paediatric nails have been modified to match conditions in children and are now available in different lengths and diameters.





32346-XX Cortical Screw, D=3.4mm

61273-220 Spiral Drill, D=2.7mm, L=220mm, AO Connector

56352-SH Screwdriver, WS 3.5, conic, self-holding





• Properties

Properties of the implant:

- Elastic, yet stable fracture fixation
- Small skin incision
 - Implant insertion at a side distant to the fracture (closed procedure)
 - Fracture haematoma is left untouched (healing)
- Simple technique
- Early weight-bearing
- Short hospital stay
- Distal lock for increased stability possible
- Version with loop and hook



Indications & Contraindications

Indications:

- Ideal in cases of easily stabilisable fractures such as transverse or short oblique fractures of the medial diaphyseal area.
- Also suitable for borderline indications in difficultly stabilisable fractures, long oblique fractures, rotation or fragmented fractures, at least of the upper extremity.
- Pathologically benign fractures (e.g. juvenile bone cysts)

Contraindications:

- Pathological fractures without identification of the malignant/benign character, particulary in cases of malignant tumours
- Existing infections in the fracture zone and operation area
- Common situations that do not allow osteosynthesis
- Lack of patient compliance

Surgical Technique



o Biomechanics

- The principle of the paediatric medullary nail is based on an "elastic, yet stable fixation".
- Due to the tolerance of the medullary nail to micro-movement, forces causing thrust and shear that may have negative impact on fracture healing will mainly be transformed into axial powers beneficial for fracture healing (pressure and traction).
- Due to early movement (muscle tension) and weight-bearing, such positive powers will even be enhanced. As a consequence, rapid fracture consolidation based on extensive callus formation is observed.
- Locking for increased stability is possible, particularly in fractures of the lower extremity.
- Locking prevents implant migration out of the distal end of the bone.



S = Thrust and shear forcesD = Axial distraction forcesK = Axial compression forces

8







Instruments

- The instruments are used to introduce the nails of different lengths (I3 I4cm) and diameters (2.0mm, 2.5mm, 3.0mm, 3.5mm and 4.0mm) into the medullary cavity.
- The instruments provide easy handling, comply with needs of shaft fracture treatment in children and thus allow for rapid and profound repair.

• Presurgical

- The patient is positioned with the leg isolated and covered with drapes (or on an extension table) using at least one fluoroscopy in order to display both planes simultaneously.
- Identification of the nail length is either performed using the fluoroscopy under consideration of magnification or intraoperatively directly aligned with the extremity.
- The nail will be pre-curved with the maximum curvature at the fracture level.

• Surgical Technique

- After skin incision, soft tissue is bluntly separated and then the drilling hole is established with the nail being carefully introduced into the created opening.
- Using the awl, the drilling hole is established above the epiphysis maintaining a distance that allows for additional locking above the epiphyseal plate.
- Perform the same procedure on the other side.
- Then, both nails are being successively introduced beyond the fracture gap under fluoroscopy guidance.
- In femoral fractures:
- The medial nail is anchored in the femoral neck, the lateral nail under the greater trochanter.
- In case of persistent diastasis after nail insertion, the fracture may be interlocked by hits against the knee.
- Afterwards, the eye will be locked above the epiphyseal plate using a screw.
- Finally, the fracture should then be evaluated by fluoroscopy in both planes.







Postoperative treatment

 Mobilization with forearm crutches, while increasing weight-bearing (depending on pain).

• Explantation

After 6-9 months (depending on age and fracture), the material is removed using appropriate removal instruments.



• Summary

The elastic stable feather nail is the ideal paediatric medullary nail when repairing shaft fractures in growing bones. Due to implant insertion at a distant site, the fracture can be stabilized without impairment of the periosteum or the fracture haematoma. The 3-point support offers sufficient stability.

The optional distal lock prevents any migration of the nails, particularly in fractures of the lower extremity. Moreover, locking provides increased stability.

The implant offers ideal properties to perform child-oriented fracture repair.

Information

• Order list

Children's Nail, D=2.0mm, L=130mm, with hook Children's Nail, D=2.0mm, L=140mm, with hook Children's Nail, D=2.0mm, L=150mm, with hook Children's Nail, D=2.0mm, L=160mm, with hook Children's Nail, D=2.0mm, L=170mm, with hook Children's Nail, D=2.0mm, L=180mm, with hook Children's Nail, D=2.0mm, L=190mm, with hook Children's Nail, D=2.0mm, L=200mm, with hook	1720-130 1720-140 1720-150 1720-160 1720-170 1720-180 1720-190 1720-200 1720-210
Children's Nail, D=2.5mm, L=150mm, with hook	1725-150
Children's Nail, D=2.5mm, L=160mm, with hook	1725-160
Children's Nail, D=2.5mm, L=170mm, with hook	1725-170
Children's Nail, D=2.5mm, L=180mm, with hook	1725-180
Children's Nail, D=2.5mm, L=190mm, with hook	1725-190
Children's Nail, D=2.5mm, L=200mm, with hook	1725-200
Children's Nail, D=2.5mm, L=210mm, with hook	1725-210
Children's Nail, D=2.5mm, L=220mm, with hook	1725-220
Children's Nail, D=2.5mm, L=230mm, with hook	1725-230
Children's Nail, D=3.0mm, L=210mm, with loop	1730-210
Children's Nail, D=3.0mm, L=220mm, with loop	1730-220
Children's Nail, D=3.0mm, L=230mm, with loop	1730-230
Children's Nail, D=3.0mm, L=240mm, with loop	1730-240
Children's Nail, D=3.0mm, L=250mm, with loop	1730-250
Children's Nail, D=3.0mm, L=260mm, with loop	1730-260
Children's Nail, D=3.0mm, L=270mm, with loop	1730-270
Children's Nail, D=3.0mm, L=280mm, with loop	1730-280
Children's Nail, D=3.0mm, L=280mm, with loop	1730-290
Children's Nail, D=3.5mm, L=270mm, with loop	1735-270
Children's Nail, D=3.5mm, L=280mm, with loop	1735-280
Children's Nail, D=3.5mm, L=290mm, with loop	1735-290
Children's Nail, D=3.5mm, L=300mm, with loop	1735-300
Children's Nail, D=3.5mm, L=310mm, with loop	1735-310
Children's Nail, D=3.5mm, L=320mm, with loop	1735-320
Children's Nail, D=3.5mm, L=330mm, with loop	1735-330
Children's Nail, D=3.5mm, L=340mm, with loop	1735-340
Children's Nail, D=3.5mm, L=350mm, with loop	1735-350
Cortical Screw, D=3.4mm, L=30mm Cortical Screw, D=3.4mm, L=32mm Cortical Screw, D=3.4mm, L=34mm Cortical Screw, D=3.4mm, L=38mm Cortical Screw, D=3.4mm, L=40mm Cortical Screw, D=3.4mm, L=42mm Cortical Screw, D=3.4mm, L=44mm Cortical Screw, D=3.4mm, L=44mm Cortical Screw, D=3.4mm, L=46mm Cortical Screw, D=3.4mm, L=50mm Cortical Screw, D=3.4mm, L=50mm Cortical Screw, D=3.4mm, L=52mm Cortical Screw, D=3.4mm, L=54mm Cortical Screw, D=3.4mm, L=56mm Cortical Screw, D=3.4mm, L=58mm Cortical Screw, D=3.4mm, L=58mm Cortical Screw, D=3.4mm, L=58mm	32346-30 32346-32 32346-34 32346-36 32346-38 32346-40 32346-42 32346-44 32346-46 32346-48 32346-50 32346-52 32346-52 32346-54 32346-58 32346-60

Order list

Intubation Instrument	1-1272
Impactor, Children's Nail	- 274
Extraction Instrument	1-1280
Impaction, Extraction Instrument	1-1278
Screwdriver, WS 3.5, conic, self-holding	56352-SH
Spiral Drill, D=2.7mm, L=220mm, AO Connector	61273-220
Sterilization Tray, Children's Nail, Implants Sterilization Tray, Children's Nail, Instruments	50188 50189

1740-260

1740-270

1740-280

1740-290

1740-300

1740-310

1740-320

1740-330

1740-340

1740-350

1740-360

1740-370

1740-380

1740-390

1740-400

Special sizes & instruments optional on request *

Children's Nail, D=4.0mm, L=260mm, with loop Children's Nail, D=4.0mm, L=270mm, with loop Children's Nail, D=4.0mm, L=280mm, with loop Children's Nail, D=4.0mm, L=290mm, with loop Children's Nail, D=4.0mm, L=310mm, with loop Children's Nail, D=4.0mm, L=310mm, with loop Children's Nail, D=4.0mm, L=330mm, with loop Children's Nail, D=4.0mm, L=330mm, with loop Children's Nail, D=4.0mm, L=350mm, with loop Children's Nail, D=4.0mm, L=350mm, with loop Children's Nail, D=4.0mm, L=350mm, with loop Children's Nail, D=4.0mm, L=360mm, with loop Children's Nail, D=4.0mm, L=370mm, with loop Children's Nail, D=4.0mm, L=370mm, with loop Children's Nail, D=4.0mm, L=380mm, with loop Children's Nail, D=4.0mm, L=390mm, with loop Children's Nail, D=4.0mm, L=390mm, with loop

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



0

ITS. GmbH Autal 28, 830I Lassnitzhöhe, Austria Tel.: +43 (0) 316 / 211 21 0 Fax: +43 (0) 316 / 211 21 20 office@its-implant.com www.its-implant.com

C € 0297

Order No. FCN-OP-0717-E Edition: July/2017

© ITS. GmbH Graz/Austria 2017. Subject to technical alterations, errors and misprints excepted.