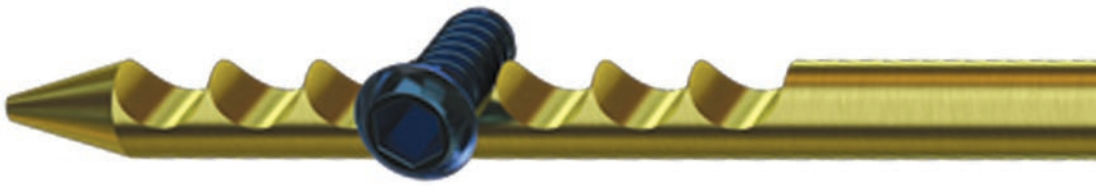
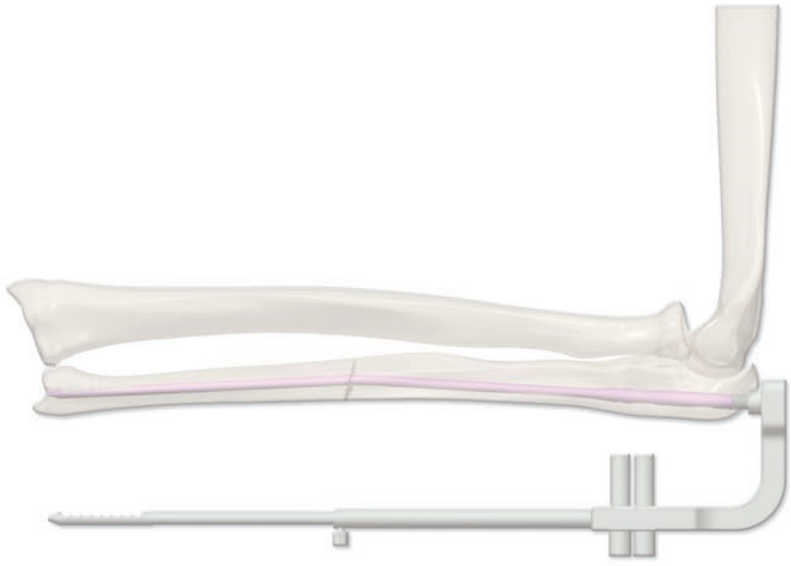
UlnA Nail

Multifunctional Interlocking Intramedullary Nailing System

Patented



Index



08050000001
ULNA INTERFIX
NAIL GUIDE

ULNA INTERFIX
COMPRESSION SCREW LOCK. TI

CORTICAL SCREW TI

08050000002
DRILL GUIDE

02005100036
OBLIQUE DRILL
GUIDE Ø2mm

08050000003
PROX. DRILL
GUIDE Ø2mm

80500000090
COMPRESSION WASHER TI

02016000250
SCREW DRIVER

08040000400
HAMMER

02005005012 DEPTH GAUGE

Ulna Interfix Nail

80520200035 ULNA INTERFIX NAIL -TITANIUM Ø 3.5X200 MM
80520220035 ULNA INTERFIX NAIL - TITANIUM Ø 3.5X220 MM
80520240035 ULNA INTERFIX NAIL - TITANIUM Ø 3.5X240 MM
80520260035 ULNA INTERFIX NAIL - TITANIUM Ø 3.5X260 MM
80520280035 ULNA INTERFIX NAIL - TITANIUM Ø 3.5X280 MM
80520300036 ULNA INTERFIX NAIL - TITANIUM Ø 3.5X300 MM
80520200040 ULNA INTERFIX NAIL - TITANIUM Ø 4 X 200 MM
80520220040 ULNA INTERFIX NAIL - TITANIUM Ø 4 X 220 MM
80520240040 ULNA INTERFIX NAIL - TITANIUM Ø 4 X 240 MM
80520260040 ULNA INTERFIX NAIL - TITANIUM Ø 4 X 260 MM
80520280040 ULNA INTERFIX NAIL - TITANIUM Ø 4 X 280 MM
80520300040 ULNA INTERFIX NAIL - TITANIUM Ø 4 X 300 MM
80520200045 ULNA INTERFIX NAIL - TITANIUM Ø 4,5 X 200 MM
80520220045 ULNA INTERFIX NAIL - TITANIUM Ø 4,5 X 220 MM
80520240045 ULNA INTERFIX NAIL - TITANIUM Ø 4,5 X 240 MM
80520260045 ULNA INTERFIX NAIL - TITANIUM Ø 4,5 X 260 MM
80520280045 ULNA INTERFIX NAIL - TITANIUM Ø 4,5 X 280 MM
80520300045 ULNA INTERFIX NAIL - TITANIUM Ø 4,5 X 300 MM
80520200050 ULNA INTERFIX NAIL - TITANIUM Ø 5 X 200 MM
80520220050 ULNA INTERFIX NAIL - TITANIUM Ø 5 X 220 MM
80520240050 ULNA INTERFIX NAIL - TITANIUM Ø 5 X 240 MM
80520260050 ULNA INTERFIX NAIL - TITANIUM Ø 5 X 260 MM
80520280050 ULNA INTERFIX NAIL - TITANIUM Ø 5 X 280 MM
80520300050 ULNA INTERFIX NAIL - TITANIUM Ø 5 X 300 MM
80520220059 ULNA INTER FIX NAIL - TITANIUM Ø 6 X 220 MM
80520240060 ULNA INTERFIX NAIL - TITANIUM Ø 6 X 240 MM
80520260060 ULNA INTERFIX NAIL - TITANIUM Ø 6 X 260 MM
80520280060 ULNA INTERFIX NAIL - TITANIUM Ø 6 X 280 MM
80520300060 ULNA INTERFIX NAIL - TITANIUM Ø 6 X 300 MM

Screws

20127450030 ULNA INTERFIX COMPRESSION LOCK. SCREW 3MM X 45MM TI
20127400030 ULNA INTERFIX COMPRESSION LOCK. SCREW 3MM X 40MM TI
80500000090 OLECRANON WASHER TITANIUM
20120100030 CORTICAL SCREW Ø 3,0 X 10 MM TI
20120120030 CORTICAL SCREW Ø 3,0 X 12 MM TI
20120140030 CORTICAL SCREW Ø 3,0 X 14 MM TI
20120160030 CORTICAL SCREW Ø 3,0 X 16 MM TI
20120180030 CORTICAL SCREW Ø 3,0 X 18 MM TI
20120200030 CORTICAL SCREW Ø 3,0 X 20 MM TI
20120220030 CORTICAL SCREW Ø 3,0 X 22 MM TI
20120240030 CORTICAL SCREW Ø 3,0 X 24 MM TI
20120260030 CORTICAL SCREW Ø3.0 X 26 MM TI
20120280030 CORTICAL SCREW Ø3,0 X 28 MM TI
20120300030 CORTICAL SCREW Ø3,0 X 30 MM TI

Instruments

08050000001 ULNA INTERFIX NAIL GUIDE
08050000002 DRILL GUIDE Ø 2.5 MM
08050000003 PROX. DRILL GUIDE Ø 2 MM
02016000250 SCREW DRIVER Ø 2.5 MM
2051022050 CANNULATED DRILL Ø 5 X 2,2 MM
22310130020 DRILL 2 X 130 MM
02005100036 OBLIQUE DRILL GUIDE Ø 2.5 MM
23412180020 KIRSCHNER WIRE Ø 2 X 180 MM
08040000400 HAMMER
02005005012 DEPTH GAUGE

Introduction

Multifunctional new intramedullary interlocking nail system has been developed for ulna, aiming to utilize from advantages of intramedullary fixation method.

Aims (Development reason)

- To reduce the number of the surgical instruments to be used
- To be able to insert and extract easily, and so to reduce the operation time
- To be able to perform controlled compression
- To constitute maximum resistance to rotation and angulation forces
- To perform locking easily on both ends (proximal and distal) removing the need of scopy and guide or reducing the need of those to minimum level
- To prevent screw migration on the ends (proximal and distal migration)
- To prevent screw and nail breaks
- To provide possible maximum stable fixation (maximum stability)
- To realize intramedullary fixation that allows early movement removing the need of external fixation
- To be able to make implant fixation with minimally incision

Features of Uln Ⓐ Nail

- Solid and round
- Unreamed
- Titanium flexibility and bio-compatibility
- Available different proximal locking holes (oblique, oval, round)
- Available 8 transvers grooves for distal locking
- The same nail is used for right and left ulna
- No need of usage of scopy for distal and proximal locking (usage of scopy is optional)
- Available new ergonomic and simple insertion, extraction and locking system
- Also available olecranon washer (with antirotat pin) for fixation and compression of olecranon fractures
- There are 22 different ulna nails which have 6mm proximal diameter; having 4mm, 4.5mm, 5mm, 6mm distal diameters and different lengths

The differences which is superior to other nails

Proximal locking

Screw hole

- Oblique hole: Single cortex interlocking is performed to each directions (350°) with the angle of 20° from proximal nail. There is no need for usage of scopy or guide
- Oval hole: Transvers, latero-medial and postero-anterior interlocking dynamic locking which allows 7mm compression on 30mm distal from proximal nail is performed.
- Round hole: Transvers, latero-medial and postero-anterior static interlocking which is on 40mm distal from proximal nail is performed.

Locking Screw

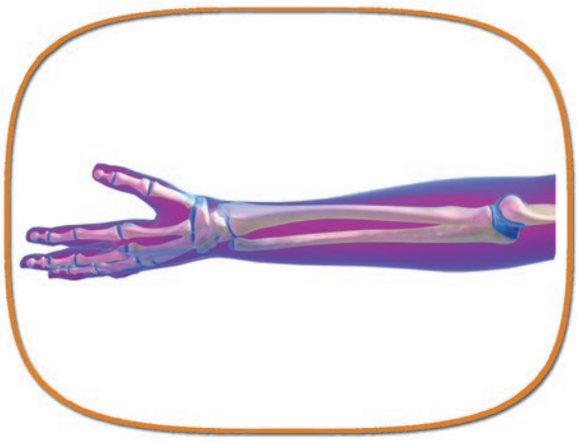
- 3x40mm locking screw is used for the oblique hole locking and the oval hole compression.
- Locking screws for oval and round holes have different lengths and 3mm diameter. The same screws are also used for distal locking.

Distal Locking

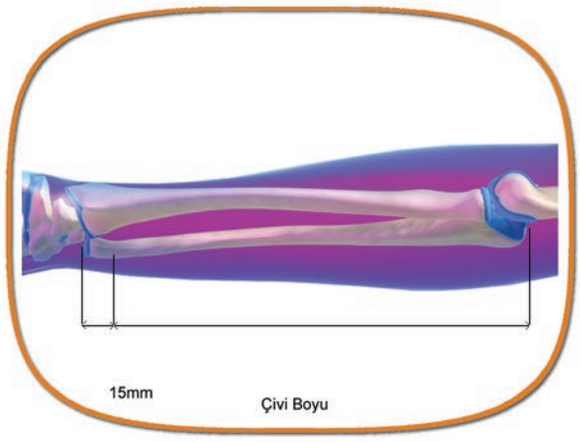
- It's achieved by screws passing through one or more of the 8 transvers grooves which are on the 32mm distal part of the nail.
- Locking nails have 3mm diameter, different length and the same screws are also used for proximal locking. **Usage of scopy may not be needed.**
- One or more screws can be used easily for distal locking via described technique.
- Static semi interlocking is performed to every direction (360°)
- After distal locking, Proximal locking can be performed in an intended way, making rotation correction in an intended degree.
- It reduces fracture reduction time (minimizes) and need of scopy to minimum time for application of multifunctional new ulna intramedullary nail fixation.

Indication

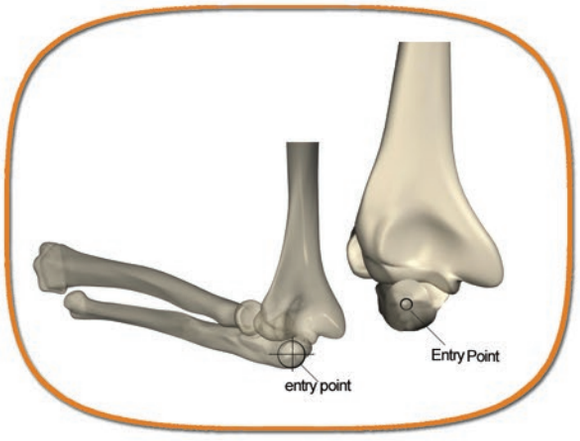
- For all ulna fractures covering from 1cm distal of the top of olecranon to 2.5cm proximal of ulna stiloid end (open, closed, simple, fragments, segments, ipsilateral olecranon)
- For malunion or nonunion (pseudarthrosis) conditions
- For Monteggia luxation (dislocation) with fractures
- For shortening osteotomies
- For tumor resection



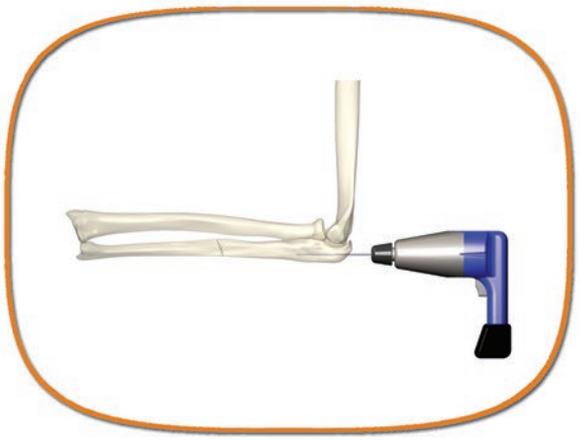
- Dual radiography is taken 1 meter away from the healthy arm before operation.



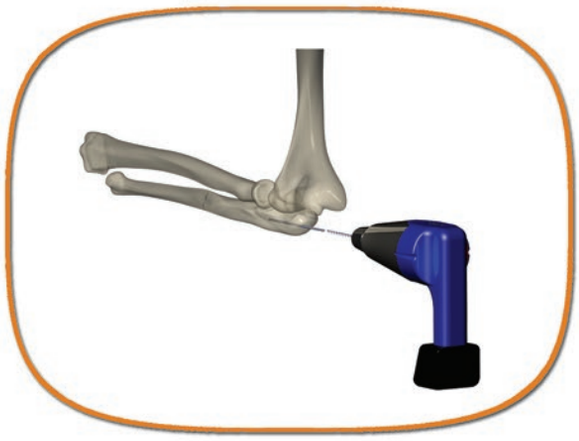
- The diameter of the nail is determined according to the narrowest medullary region. 15mm is substracted from the distance between the top of the olecranon and stiloid end in order to find out the length of the nail. Approximately 10% Xray enlargement proportion is also substracted from the diameter and the length of the nail.



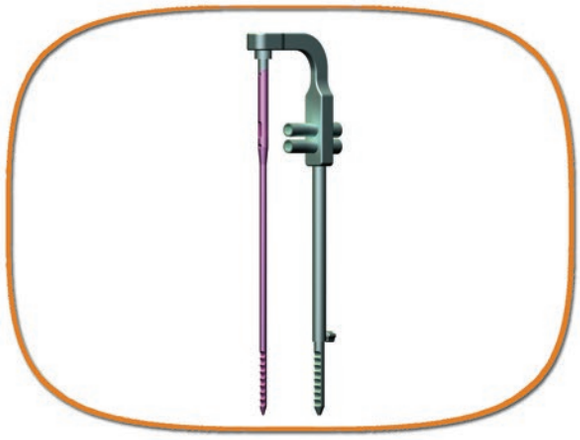
- 2cm longitudinal incision from the top of olecranon is applied to the patient.



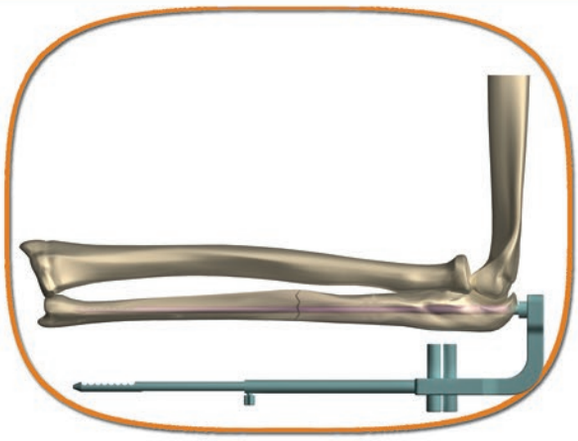
- Ulna's medulla is reached with 2mm Kirschner wire from 6.5mm proximal, 3mm lateral of the most prominant part of the top of the olecranon (entry point).



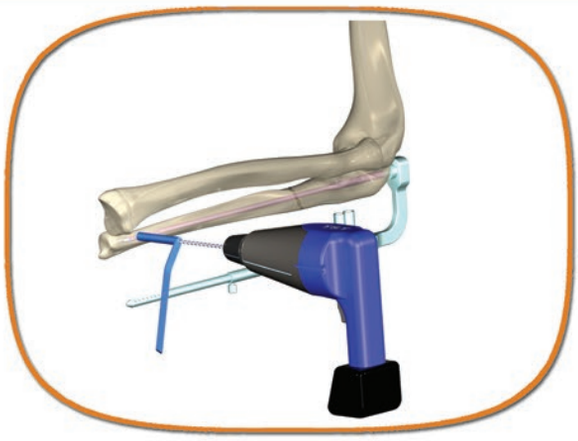
- 5cm is moved ahead in the medulla from on to the Kirschner wire by the cannulated drill.



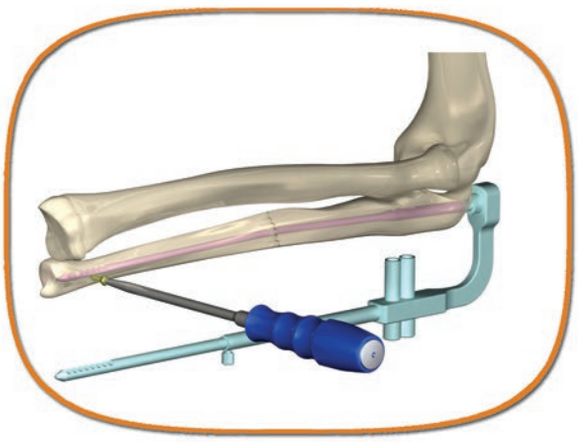
- The nail that has been prepared is screwed to the guide. The directions of the grooves of the nail and the guide are kept in mind.



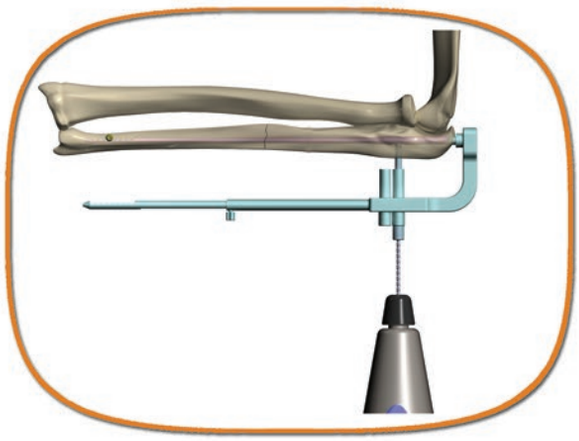
- The nail part which the grooves of the nail and the guide have been prepared in the same or different direction previously is moved forward from the top of the olecranon to distal by rotations.
- If the reduction has been able to obtain by hand, the nail is moved forward, and it is passed through the distal fragment.
- If the reduction hasn't been able to obtain, it's provided via scopy control or but if it isn't provided so, it's obtained with mini incision. After reduction, the nail is moved forward to as distal as it is possible.
- When required, the direction and the region of the grooves are watched for by the external guide in the nailing system.



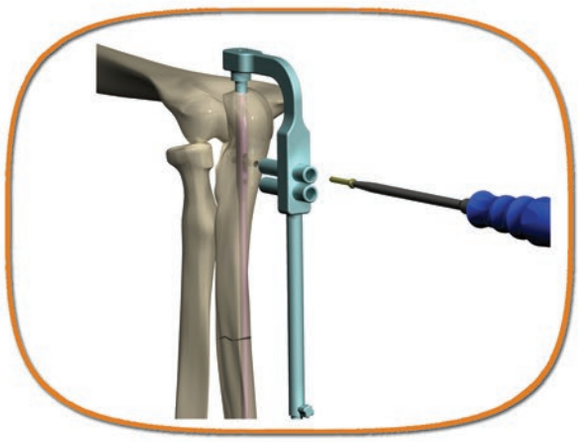
- For distal locking screw, both cortex is drilled with 2.5mm drill (under external carpi ulnaris tendon)



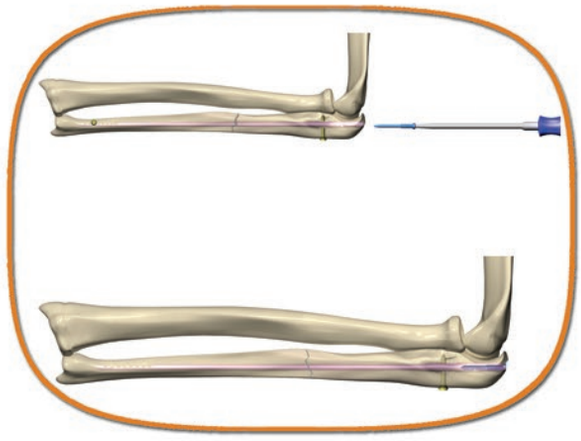
- By aid of Kirschner wire, it's made sure that it's passed through one of the grooves. If It has not to be able to be fitted on the locking groove, the groove is found by applying impulse&pull and slight rotations to the nail, and distal is locked by locking screw of 3mm. Rotations is made to the front arm by grasping the wrist and then proximal locking is performed.



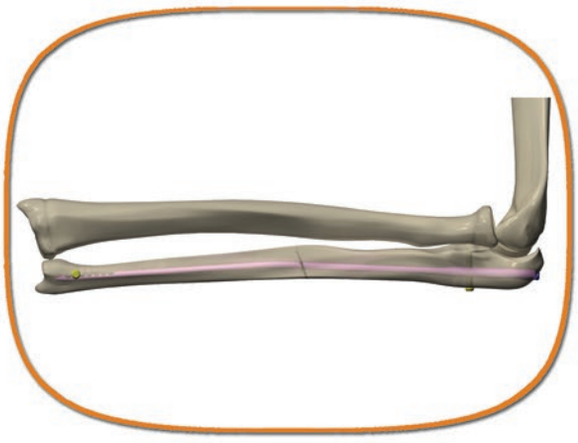
- Proximal locking can be performed easily in any way desired.



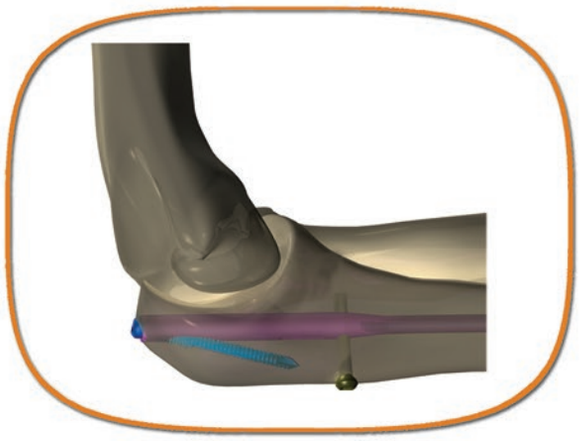
- If compression is required, latero-medial or postero-anterior dynamic interlocking can be made through the oval hole.



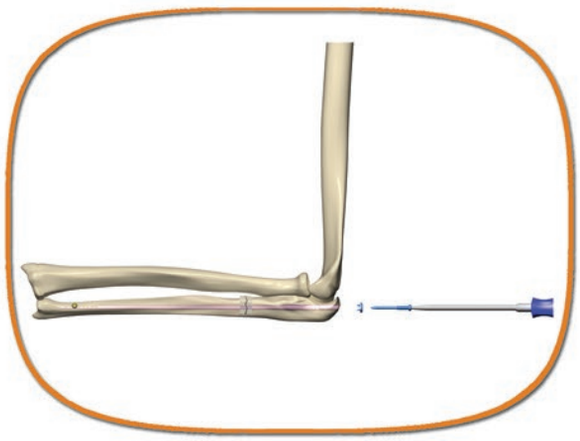
- To make compression; locking compression screw of 3x40mm is applied from the top of the olecranon, so 7mm compression can be made.

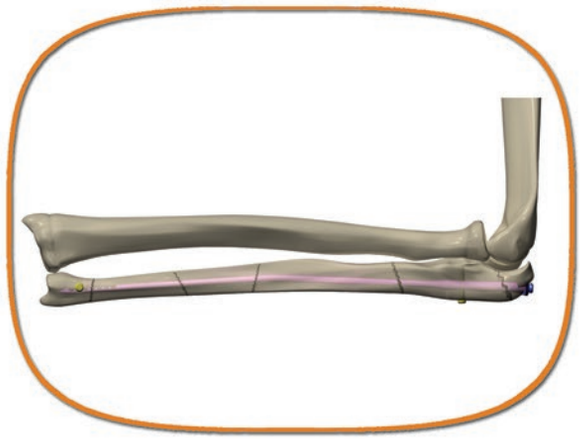


- If static locking is required, latero-medial or postero-anterior interlocking can be made from the round hole.



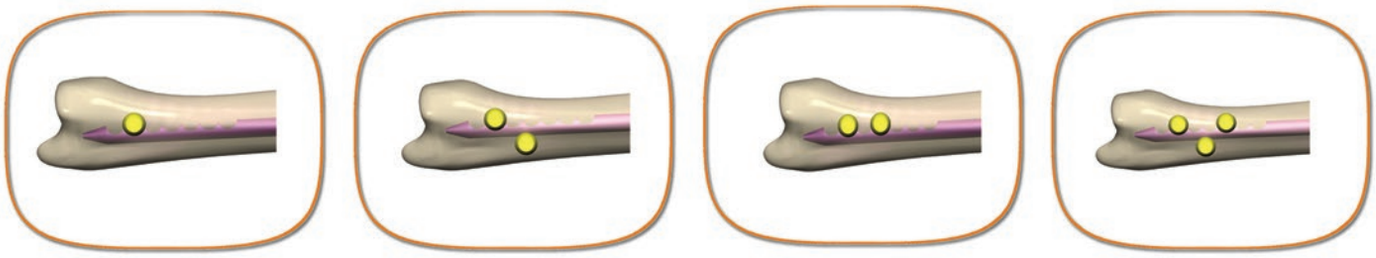
- If locking without any guide is required, Intramedullary single cortex locking fixation is provided using the oblique hole.



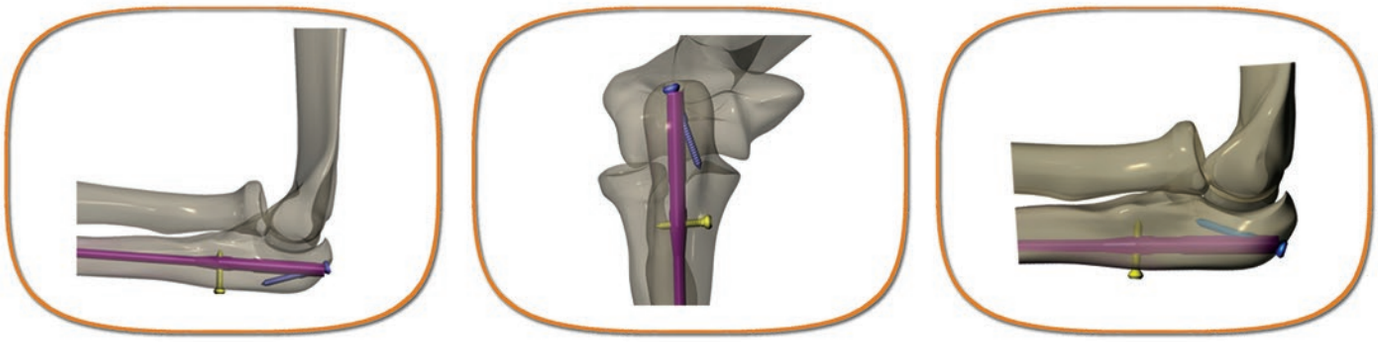


- For olecranon fractures3 x 40mm locking coortical screw is used. Compression on the top of the olecranon can be made by using a washer and a locking screw of 3x40mm.

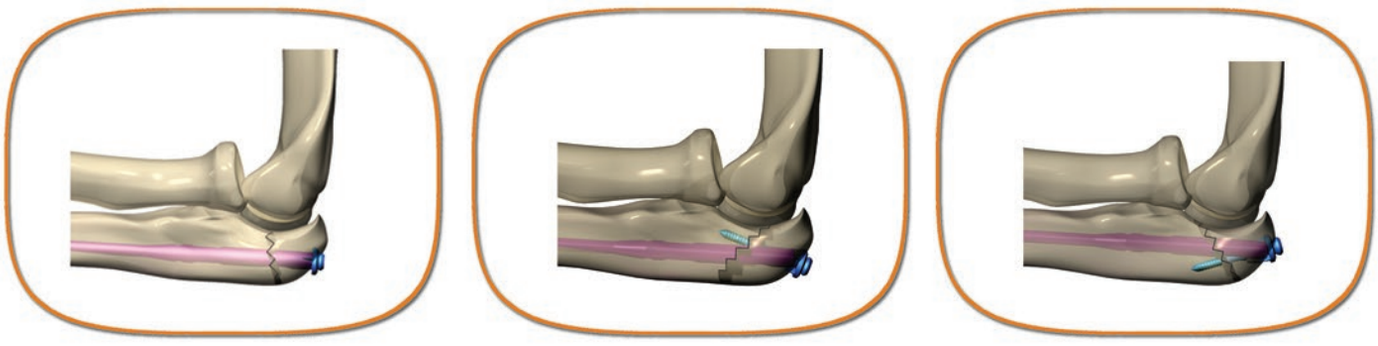
Distal Locking Options



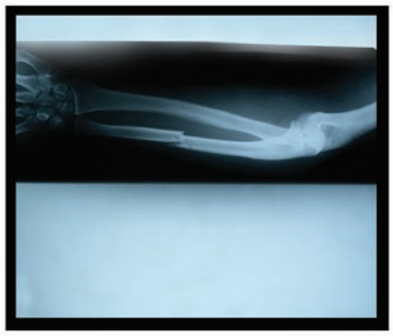
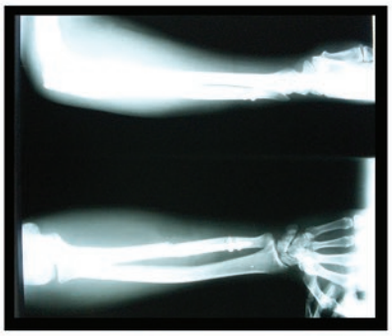
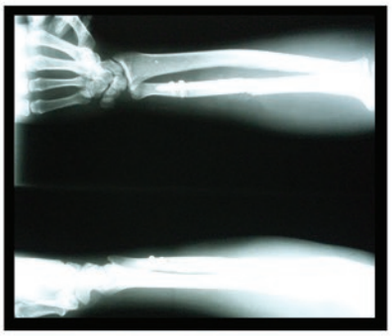
Proximal Locking Options

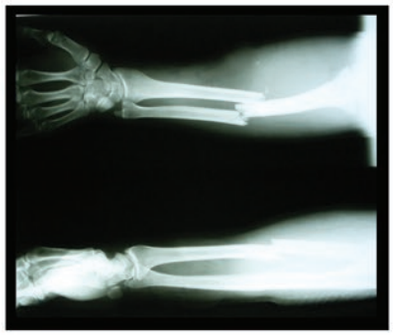
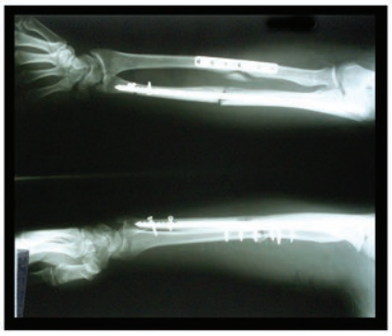
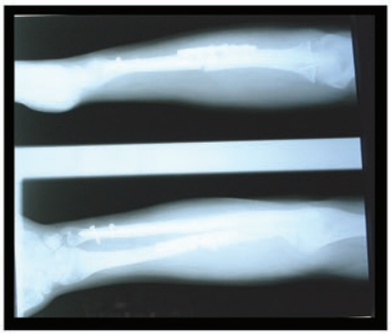


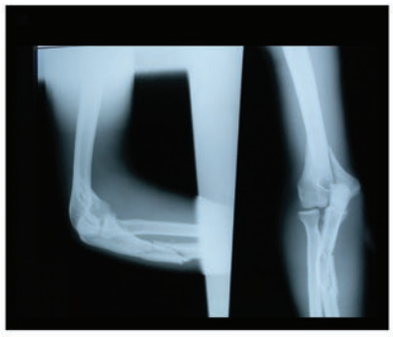
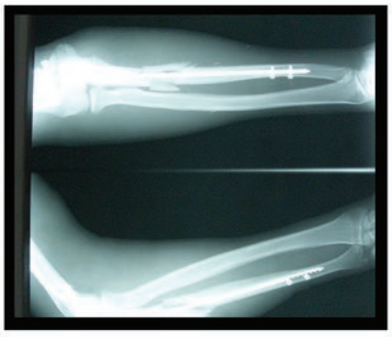
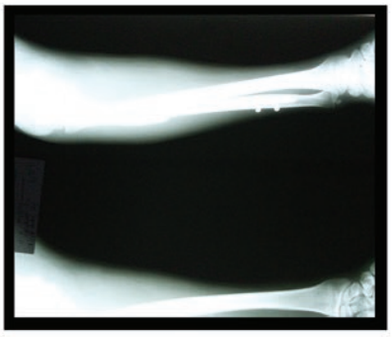
Fixation Options of Olecranon Fractures

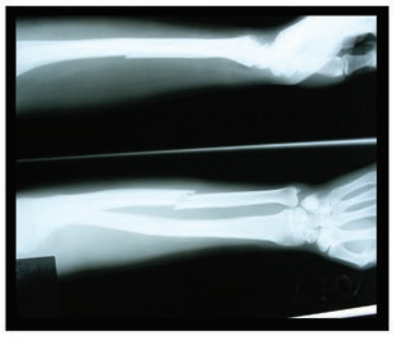
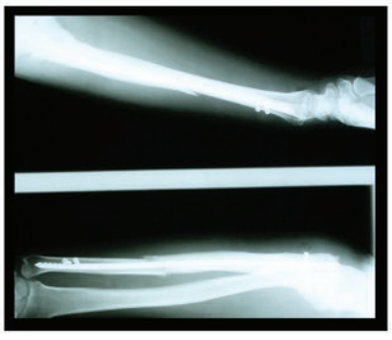
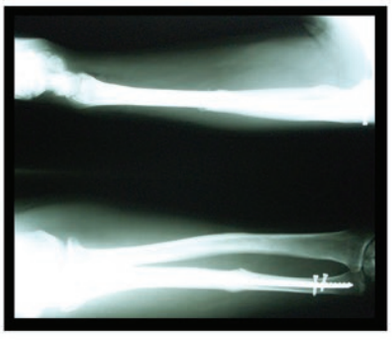


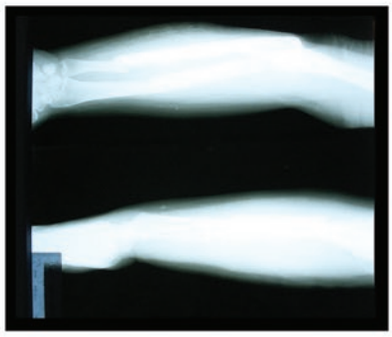
X-Rays

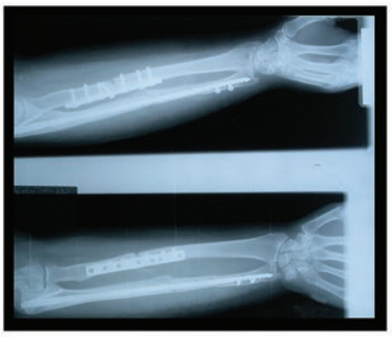
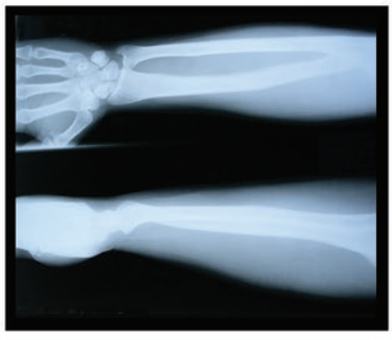
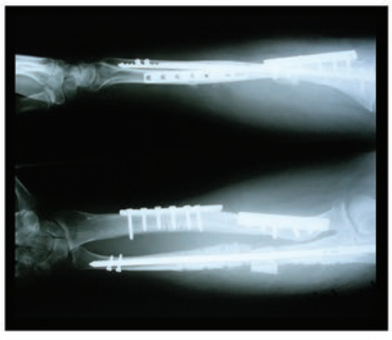
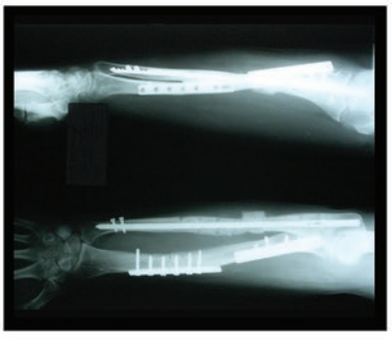




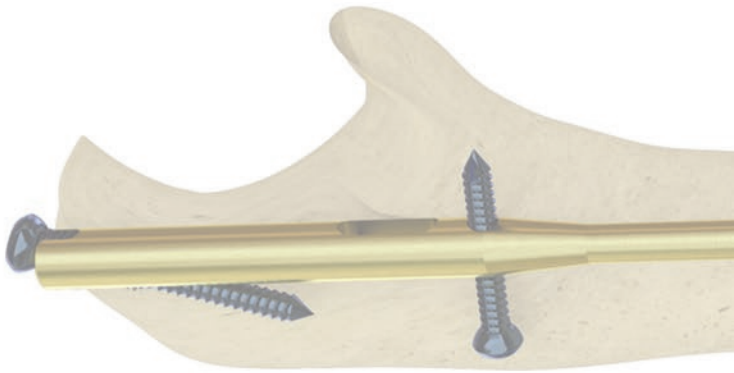




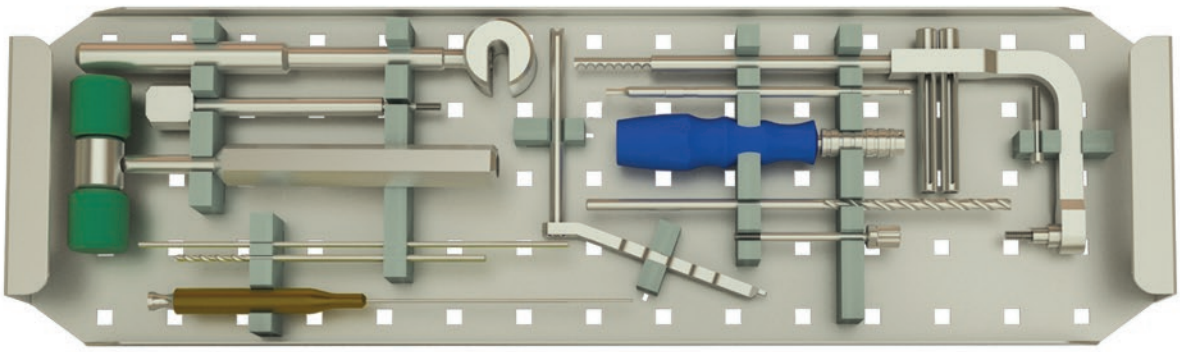


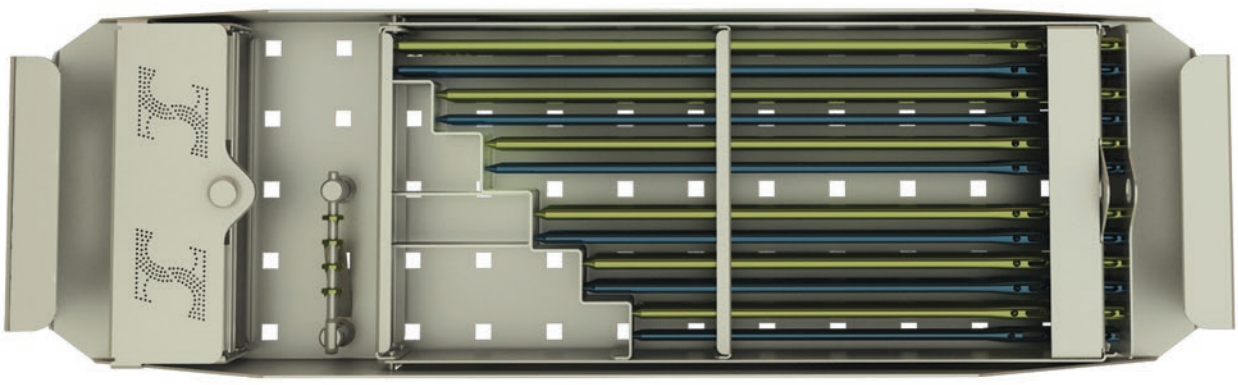





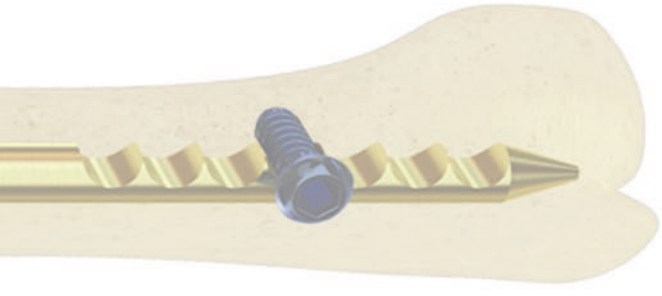
Literature

- Akpinar F, Aydinlioglu A, Tosun N, Tuncay I : **Morphologic evaluation of the ulna.** Acta Orthop Scand. 2003 Aug; 74(4): 415-9
- Windisch G, Clement H, Grechenig W, Tesch NP, Pichler W : **A morphometrical study of the medullary cavity of the ulna referred to intramedullary nailing.** Surg Radiol Anat. 2007 Feb;29(1):47-53. Epub 2006 Dec 19
- Weckbach A, Blattert TR, Weisser Ch; **Interlocking nailing of forearm fractures.** Arch Orthop Trauma Surg. 2006 Jul;126(5): 309-15. Epub 2006 Mar 9
- Gao H, Luo CF, Zhang CQ, Shi HP, Fan CY, Zen BF. **Internal fixation of diaphyseal fractures of the forearm by interlocking intramedullary nail: short-term results in eighteen patients.** J Orthop Trauma. 2005 Jul;19(6):384-91
- Visna P, Kalvach J, Valcha M, Beitl E, Vlcek M **Treatment of diaphyseal forearm fractures with locking intramedullary nail.** Rozhl Chir. 2006 Dec;85(12):631-6.
- Walz M, Kolbow B, Möllenhoff G. **Fracture of the distal ulna accompanying fracture of the distal radius. Minimally invasive treatment with elastic stable intramedullary nailing (ESIN)** Unfallchirurg. 2006 Dec; 109(12): 1058-63
- Gehr J, Friedl W. **Intramedullary locking compression nail for the treatment of an olecranon fracture**. Oper Orthop Traumatol. 2006 Sep; 18(3): 199-213.









www.tstsan.com

REV01/26.03.2012