

INTRAMEDULLARY NAIL

TELESCOPIC NAIL



ADVANCED PROXIMAL LOCKING

Table of Contents

	Introduction
2	Indications
2	Features
3	Implants
4	Surgical Technique
	Instruments
11	Implants
13	Implants
15	Instruments
17	Radiographic Samples

PRESERVING GROWTH PLATE



ISO 9001:2008
ISO 13485:2003

Introduction

Indications

- Indicated for osteogenesis imperfecta diagnosed children who are 18 months and older aged.
- Used for Children's long bone deformity corrections.
- Fracture stabilization
- Prevent of fracture and also for lengthening associated with external fixators.
- In osteoporotic bone.

Features

It is made of medical stainless steel.

Consists of 3 parts; one D profile Bar (male nail), suitable D profile tube (female nail) and an end cap which is connected to the proximal part of the tube.

The male and the female and the angled female nails have five different diameter choices. The male nail has for each diameter one length choice because during the surgery it could be cut. The female nails have 5 different choices for each diameter and the angled female nails have 3 different length choices for each diameter.

During the growing of the child's bone, due to the engagement (telescopic) of the male and female nails, the nails also grow without any hindering.

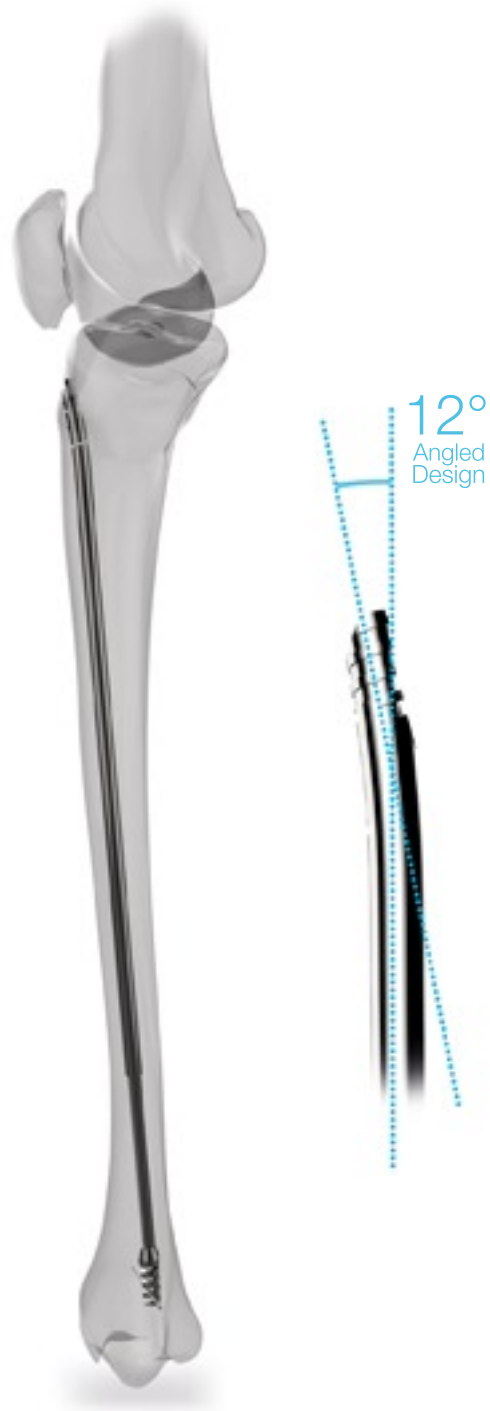
There is a special designed corkscrew end on the distal part of the male nails which gives a minimal damage to the growth plate and also holds the bone very well.

The end cap fixes, with a hexagonal screwdriver, the female nails with its self tapping threads to the bone. There are grooves on the side of the end cap on which Kirschner wires can be send to prevent sliding back of the screw and to strengthen the fixation.

In this way the male and the female nails are fixed behind the distal and proximal bone growth plate into the epiphysis part of the bone.

There is a female D profile nail with 12 degree Angled proximal part which is [Designed For Tibia](#). The angled part has a gap (opening) on which the male nail can go through out. Two slots and a hole, on which Kirschner wire can be used for fixing, are on the angled proximal part. The threads on the proximal part allows to screw the end cap and for not to exceed the bone there is a cut on the top of the nail.

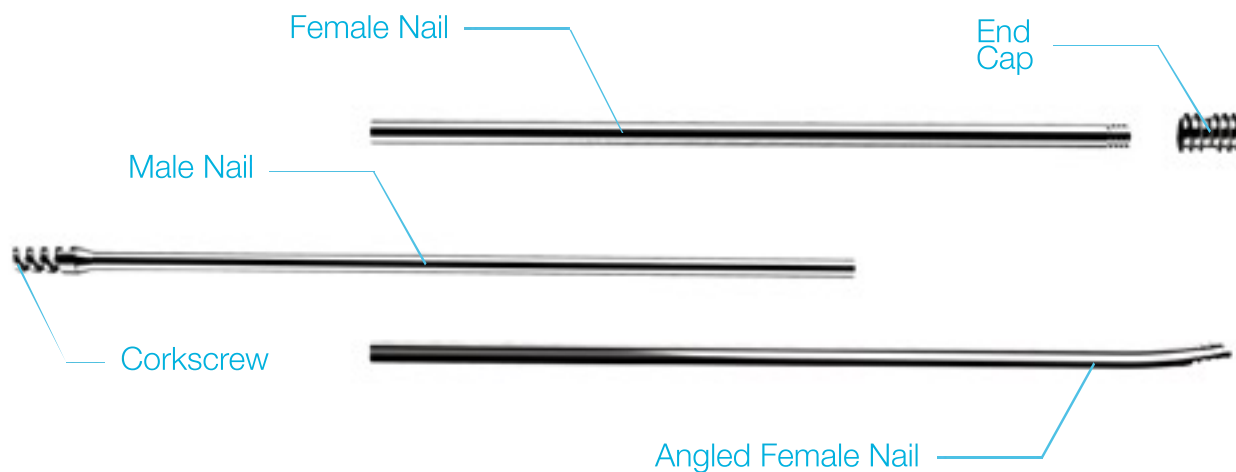
The application of the nail for tibia and humerus is from the proximal part and for femur is from proximal and distal part of the bones.



Special Angled Design
For Tibia.

Implants

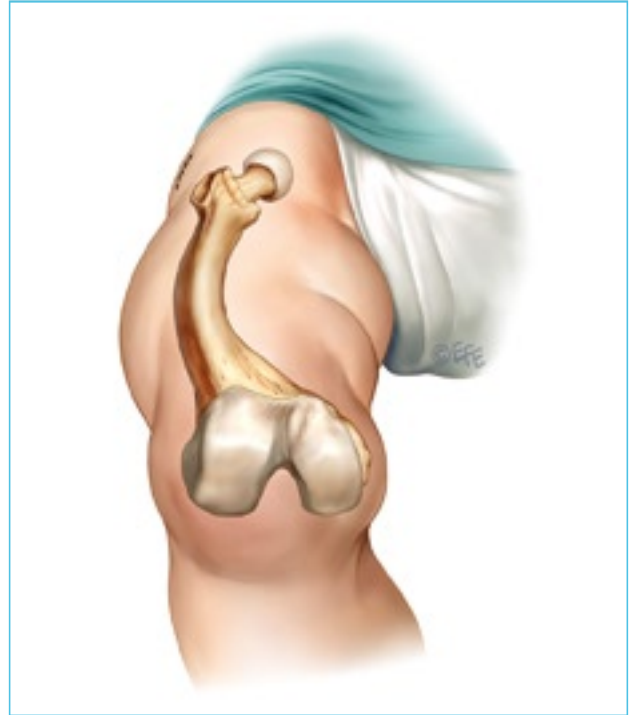
FEMALE NAIL DIAMETER	FEMALE NAIL LENGTH CHOICE	ANGLED FEMALE NAIL LENGTH CHOICE	MALE NAIL	END CAP
3.5 mm	110 mm 120 mm 130 mm 140 mm 150 mm	110 mm 130 mm 150 mm	2x180 mm	7 mm
4.0 mm	150 mm 170 mm 180 mm 190 mm 200 mm	150 mm 180 mm 200 mm	2.5x250 mm	8 mm
5.0 mm	150 mm 200 mm 210 mm 230 mm 250 mm	150 mm 210 mm 250 mm	3.5x300 mm	9.5 mm
6.0 mm	250 mm 270 mm 280 mm 290 mm 300 mm	150 mm 210 mm 250 mm	4x350 mm	10.5 mm
6.5 mm	190 mm 200 mm 250 mm 280 mm 300 mm	150 mm 210 mm 250 mm	5x350 mm	11.5 mm



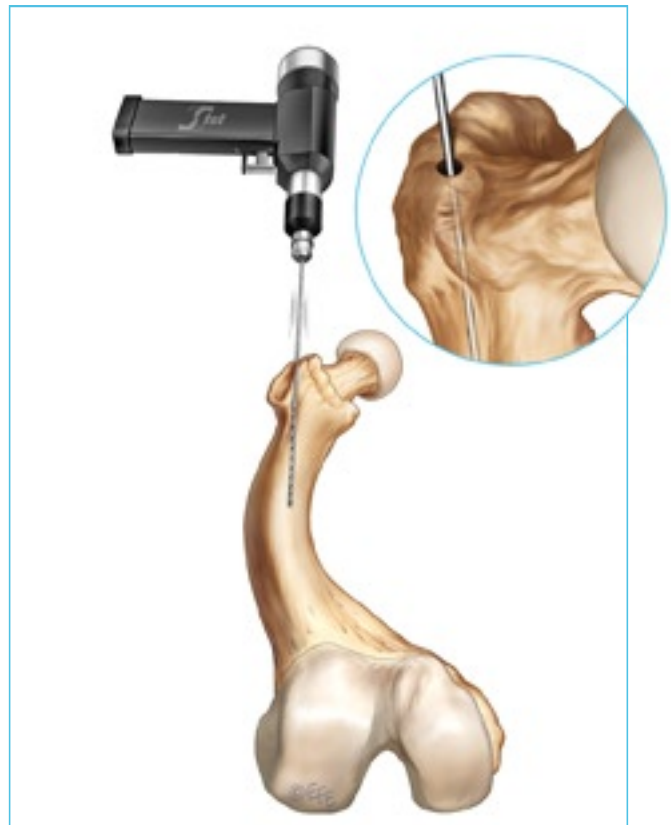
Surgical Technique

1.1 ANTEGRADE TECHNIQUE

A ENTRY POINT: From the tip of the trochanter major at the proximal femur, approximately 2 cm incision is performed.



B GUIDE WIRE INSERTION: From the tip of the trochanter major at the proximal femur a guide wire is advanced into the medullary canal.





C ORTEOTOMY: The osteotomy is applied at the center of rotation and angulation (CORA) of deformity (the point where the guide wire tap cortex) then the guide wire is advanced distally.

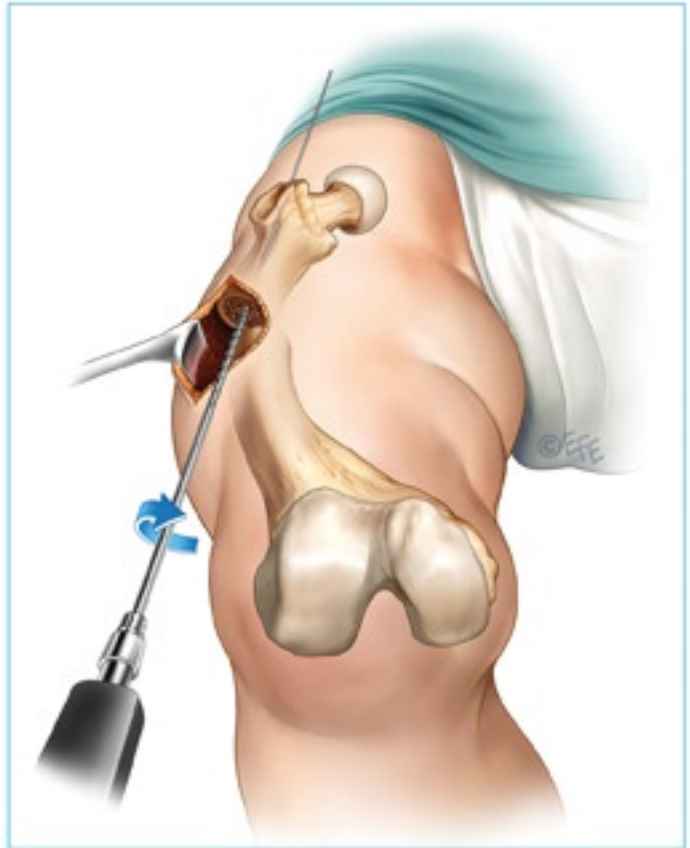


D DISTAL GUIDE WIRE INSERTION: The guide wire is advanced to distal segment until the epiphyseal bone.

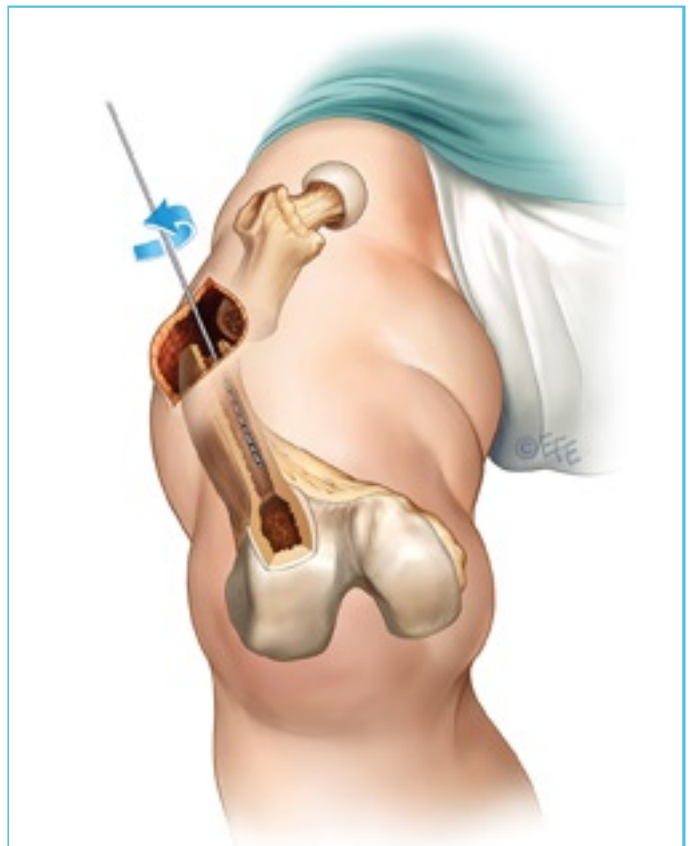
1.2 RETROGRADE TECHNIQUE

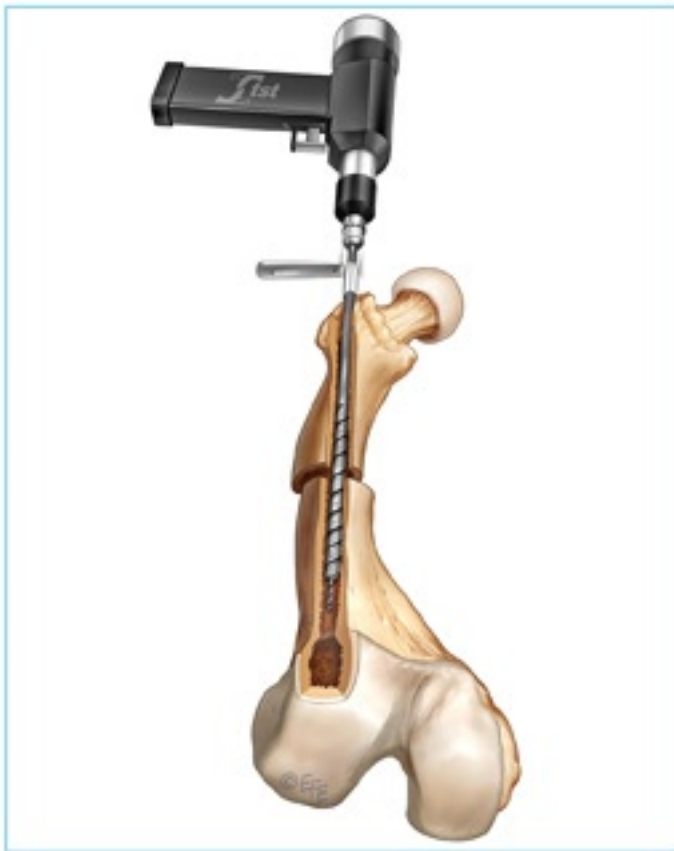
A GUIDE WIRE INSERTION:

Procedure is began with osteotomy that is applied to center of the deformity rotation and angulation (CORA). After the osteotomy the guide wire is entered from the center point of the osteotomy line and advanced to the proximal. After fluoroscopic control the canal is opened with an appropriate reamer.



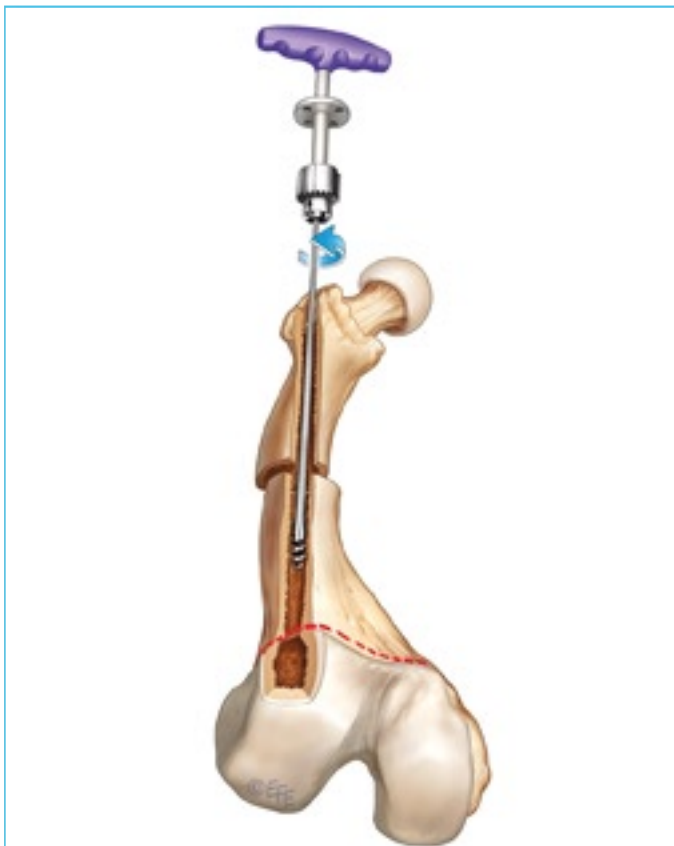
B The guide wire is send from the distal to the medullary canal. The wire end must reach the distal epiphysis. If the wire contact the cortex or remove because of the bone curve, a second osteotomy is done and the wire is orientated to the center of the bone.





2 REAMERIZATION

Reaming is began with the smallest cannulated reamer over the wire. Reaming process is done until metaphysis, do not perforate to epiphysis.

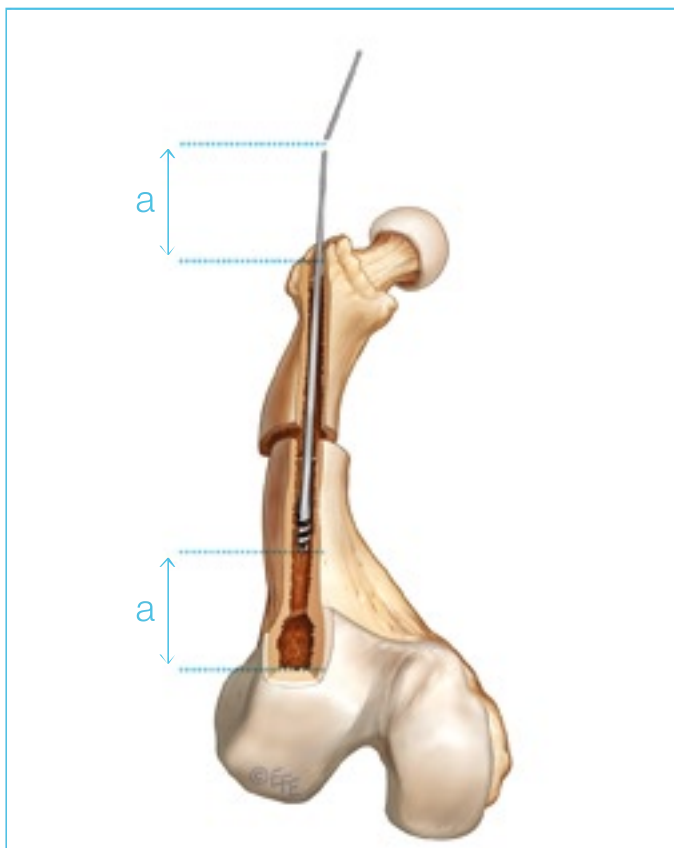
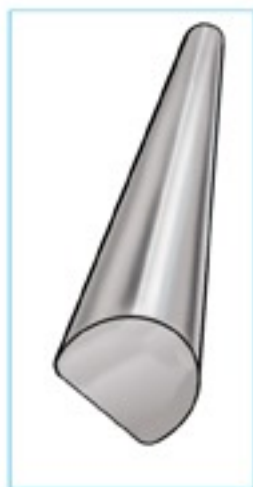


3 PLACEMENT MALE NAIL

The male nail is forwarded by turning clockwise through to the distal segment.

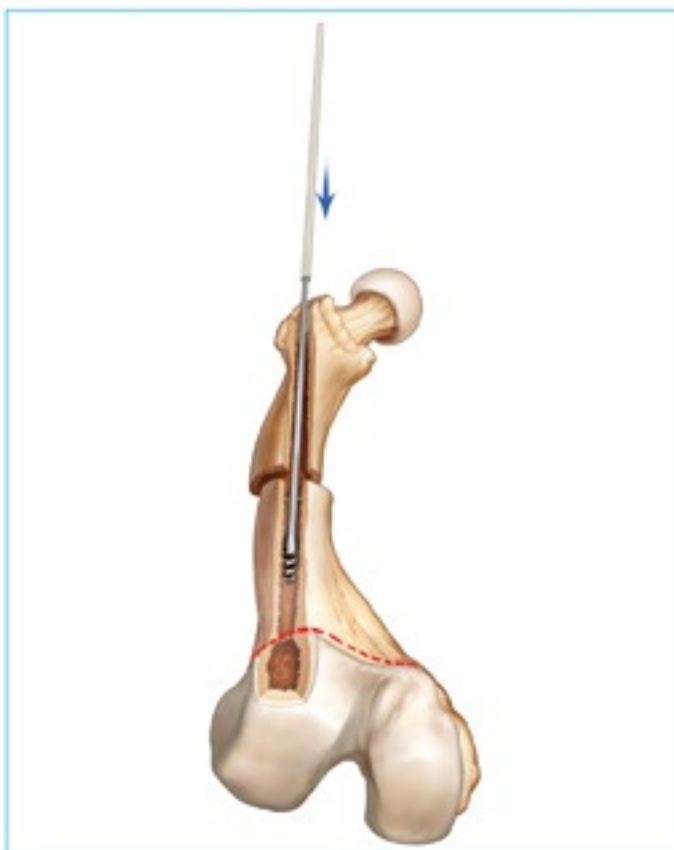
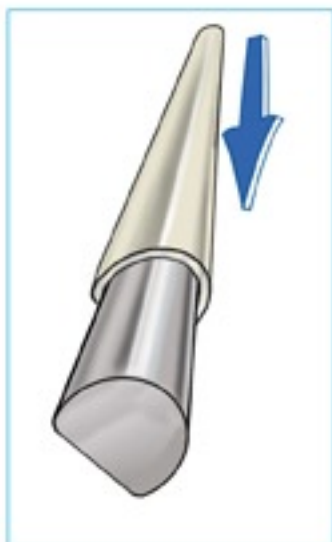
4 CUTTING MALE NAIL

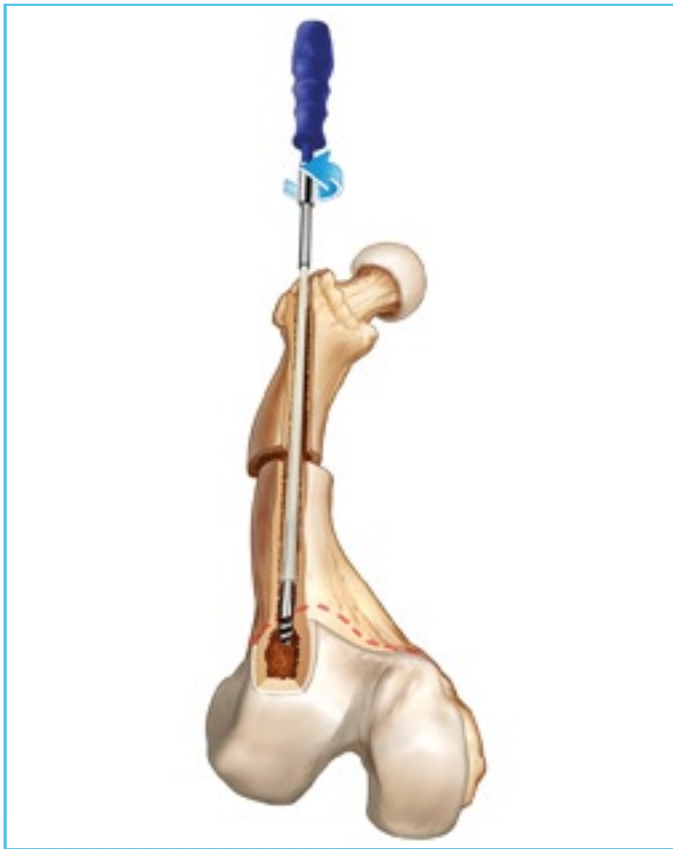
The length of the outer part of the male nail the level of fossa trochanterica is controlled by fluoroscopy. The distance between the tip of the male nail and the joint surface which was measured at the previous step is left and the exceeding part is cut.



5 PLACEMENT FEMALE NAIL

Appropriate size of the Female Nail of the telescopic nail is chosen and entered into the proximal femur by sliding over the male nail.





6 POSITIONING OF TELESCOPIC NAIL

By turning the female nail holder which is mounted to the threads at the proximal part of the female nail, the male nail is advanced through the medullary canal. The corkscrew tip is placed to the distal metaphysis under the control of fluoroscopy.



7 END CAP PLACEMENT

The end cap is placed on the proximal part of the female nail while the proximal part is outside.

8 LOCKING PROXIMAL END CAP

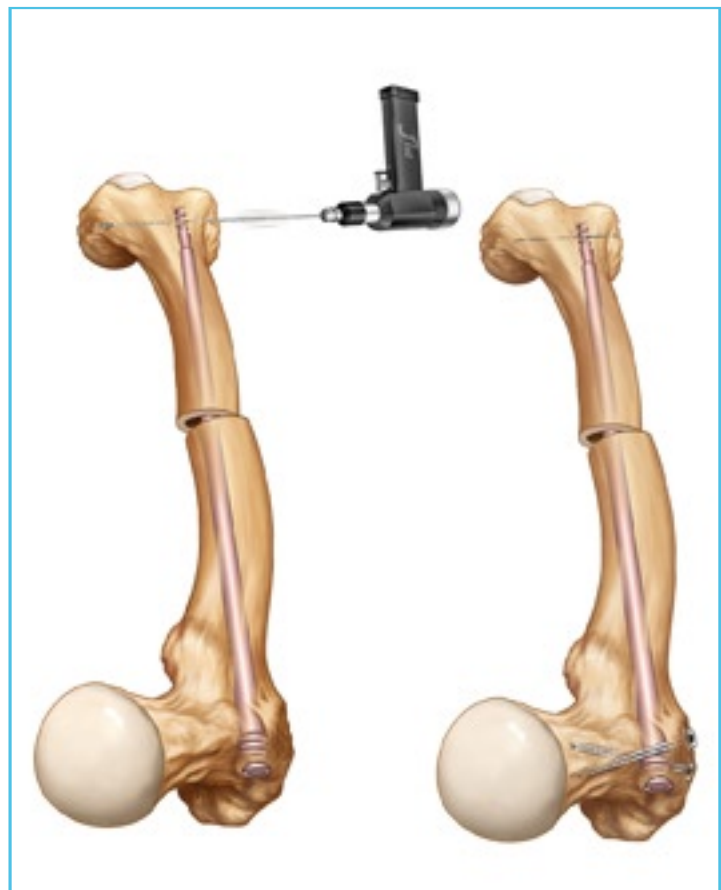
The female nail should be sent without turning until the screw part touches the bone. The turning process is began when the end cap insert the trochanteric fossa to enter the screw into the bone and to provide passing of the corkscrew through the growth plate.

In this stage the placement of the tip of the male nail to the distal epiphysis should be controlled.



9 DISTAL LOCKING

The fixation to the distal epiphysis is increased by sending two threaded Kirschner wire into the corkscrew tip.



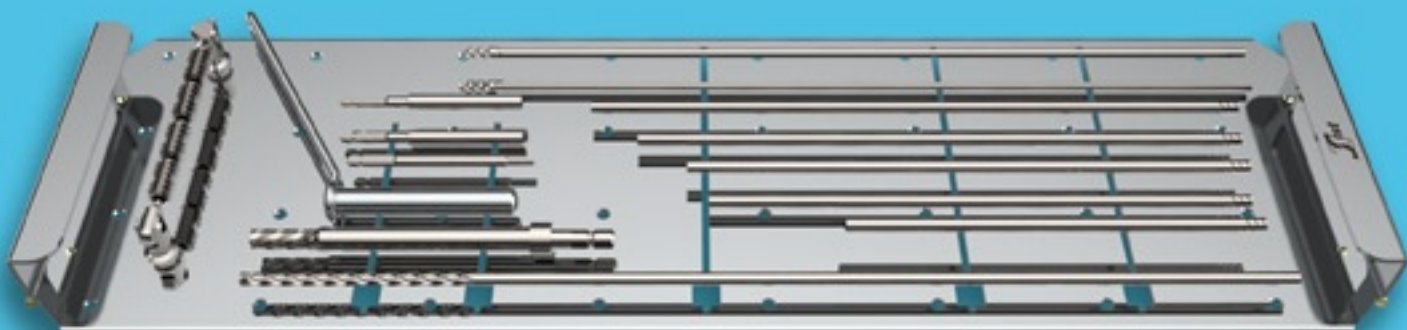
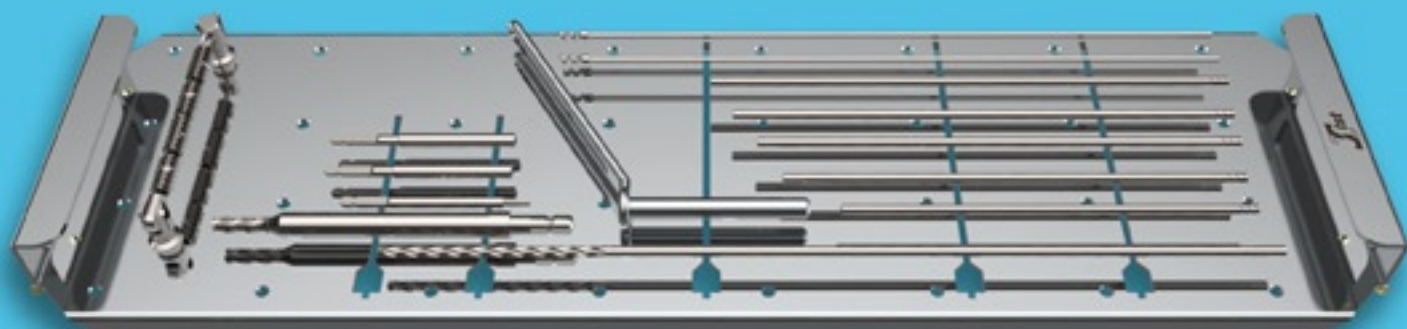
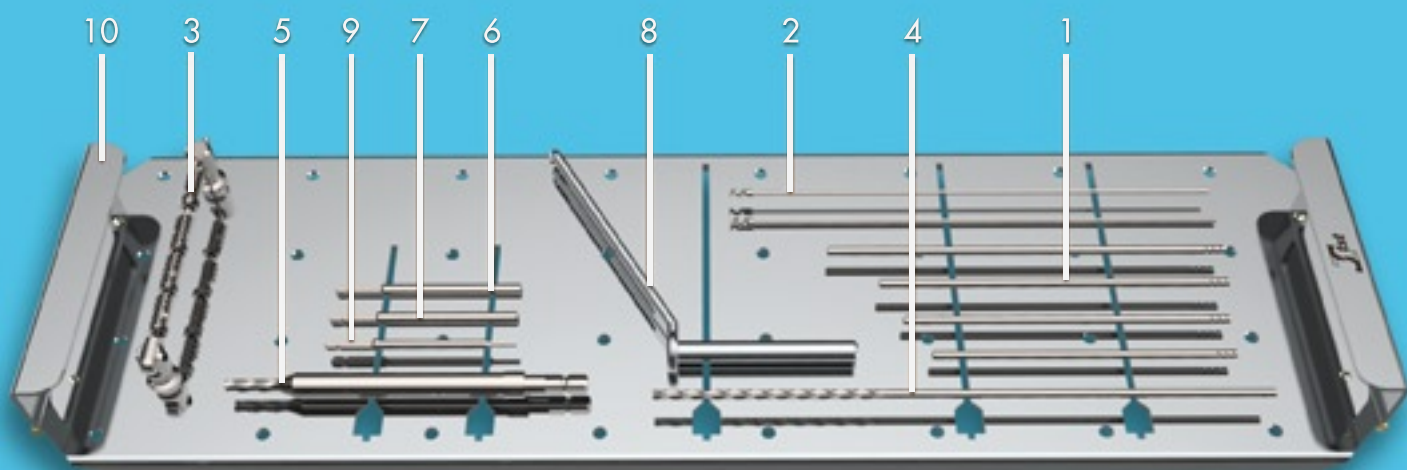
10 PROXIMAL LOCKING

Extra locking screws from the notch on the proximal locking screws can be applied to increase stability.

Instruments

Implants

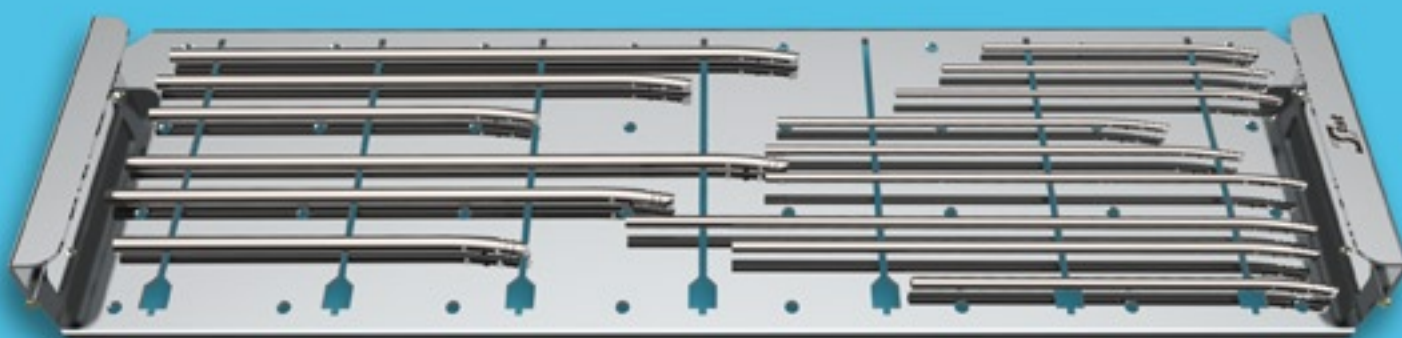
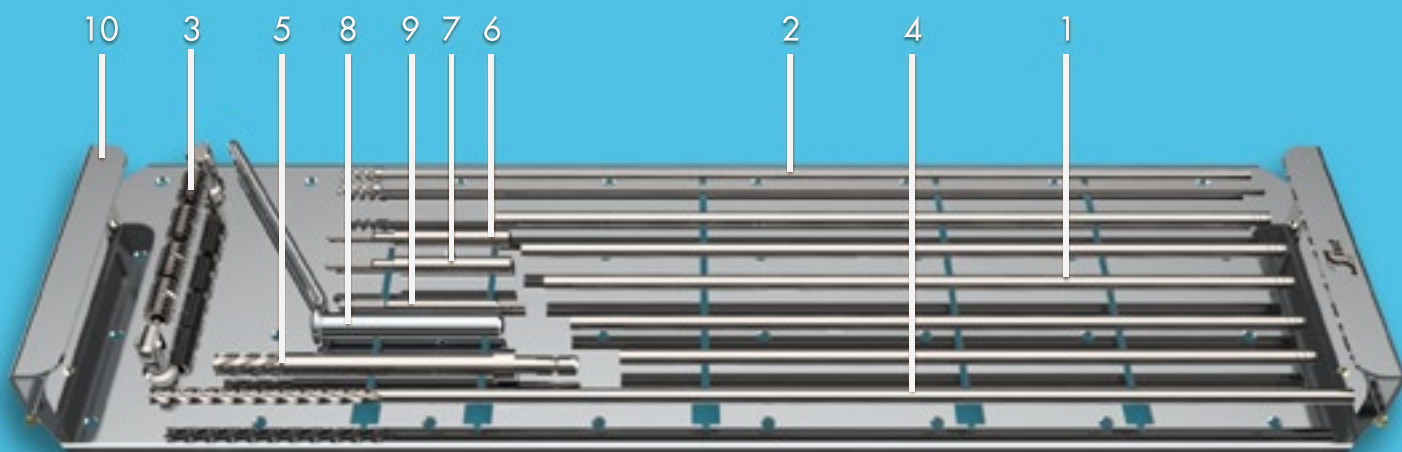
NO	CATALOG NO	UBB NO	DESCRIPTION	QTY
1	80710350110	8699931033076	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø3.5X110 MM	1
	80710350120	8680858405558	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø3.5X120 MM	1
	80710350130	8699931033083	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø3.5X130 MM	1
	80710350140	8680858405565	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø3.5X140 MM	1
	80710350150	8699931033090	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø3.5X150 MM	1
2	80711200180	8699931033229	TELESCOPIC INTRAMED. NAIL-MALE SS Ø2.0X180 MM	4
3	80710000035	8699931033328	TELESCOPIC I.M. NAIL END CAP SS 3.5 MM	4
4	02010000350	8680858400065	CANNULATED DRILL FOR Ø3.5 MM NAIL	2
5	04010000035	8680858400157	DRILL FOR END CAP Ø3.5 MM	1
6	08750000035	8699931033373	SPECIAL FEMALE NAIL DRIVER 3.5 MM	1
7	00760000020	8680858406463	SPECIAL MALE NAIL DRIVER 2.0 MM	1
8	02010030035	8680858408887	Ø 3.5 MM DRILL GUIDE (TELES)	1
9	02010003035	8680858408894	Ø 3.5 MM FEMALE NAIL TURNING TIP	1
10	801001		TELESCOPIC NAIL DESIGN TRAY 1 (480x145x33)	1
1	80710400150	8699931033106	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø4.0X150 MM	1
	80710400170	8680858405572	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø4.0X170 MM	1
	80710400180	8699931033113	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø4.0X180 MM	1
	80710400190	8680858405589	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø4.0X190 MM	1
	80710400200	8699931033120	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø4.0X200 MM	1
2	80711250250	8699931033236	TELESCOPIC INTRAMED. NAIL-MALE SS Ø2.5X250 MM	4
3	80710000040	8699931033335	TELESCOPIC I.M. NAIL END CAP SS 4.0 MM	4
4	02010000040	8680858400072	CANNULATED DRILL FOR Ø4.0 MM NAIL	2
5	04010000040	8680858400164	DRILL FOR END CAP Ø4.0 MM	1
6	08750000040	8699931033380	SPECIAL FEMALE NAIL DRIVER 4.0 MM	1
7	00760000025	8680858406470	SPECIAL MALE NAIL DRIVER 2.5 MM	1
8	02010040040	8680858408900	Ø 4 MM DRILL GUIDE (TELES)	1
9	02010003040	8680858408917	Ø 4 MM FEMALE NAIL TURNING TIP	1
10	801002		TELESCOPIC NAIL DESIGN TRAY 2 (480x145x33)	1
1	80710500150	8680858406432	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø5.0X150 MM	1
	80710500200	8699931033137	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø5.0X200 MM	1
	80710500210	8680858405596	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø5.0X210 MM	1
	80710500230	8699931033144	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø5.0X230 MM	1
	80710500250	8699931033151	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø5.0X250 MM	1
2	80711350300	8699931033243	TELESCOPIC INTRAMED. NAIL-MALE SS Ø3.5X300 MM	4
3	80710000050	8699931033342	TELESCOPIC I.M. NAIL END CAP SS 5.0 MM	4
4	02010000050	8680858400089	CANNULATED DRILL FOR Ø5.0 MM NAIL	2
5	04010000050	8680858400171	DRILL FOR END CAP Ø5.0 MM	1
6	08750000050	8699931033397	SPECIAL FEMALE NAIL DRIVER 5.0 MM	1
7	00760000035	8680858406487	SPECIAL MALE NAIL DRIVER 3.5 MM	1
8	02010050050	8680858408924	Ø 5 MM DRILL GUIDE (TELES)	1
9	02010003050	8680858408931	Ø 5 MM FEMALE NAIL TURNING TIP	1
10	801003		TELESCOPIC NAIL DESIGN TRAY 3 (480x145x33)	1



Instruments

Implants

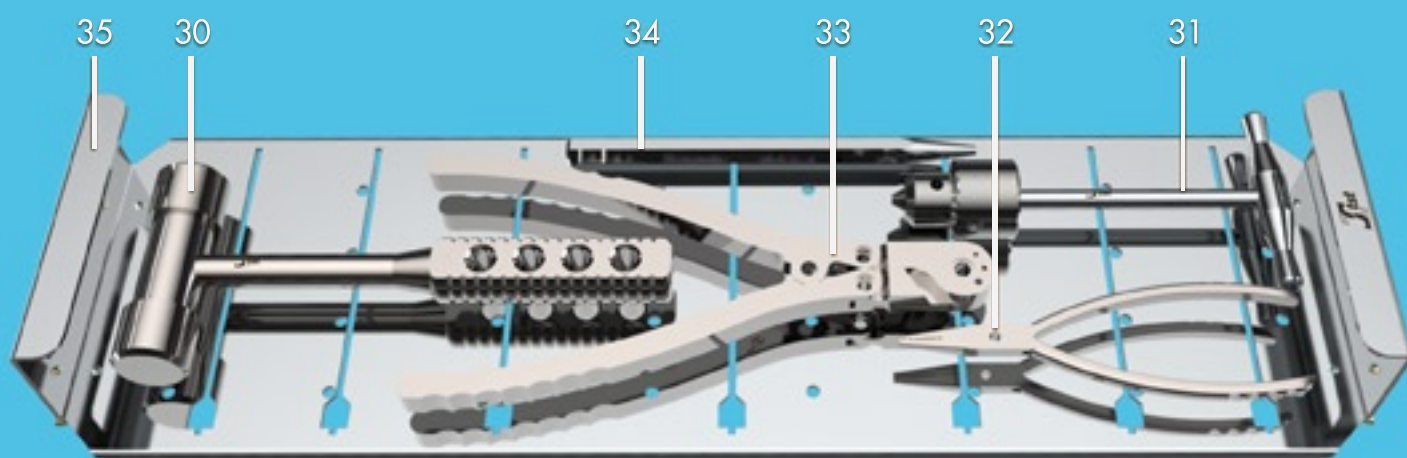
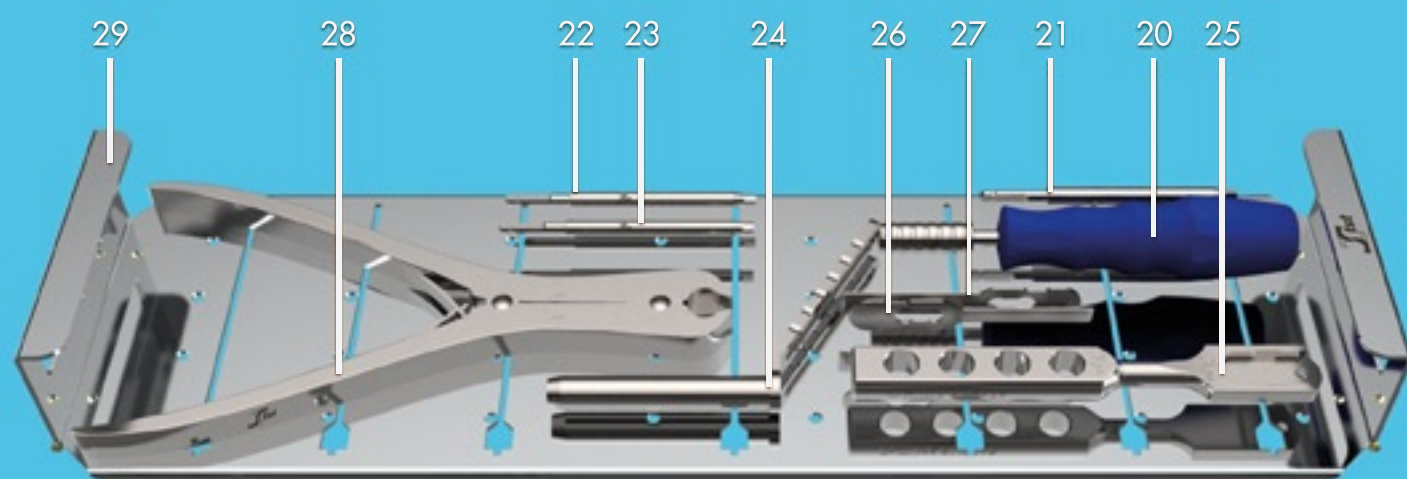
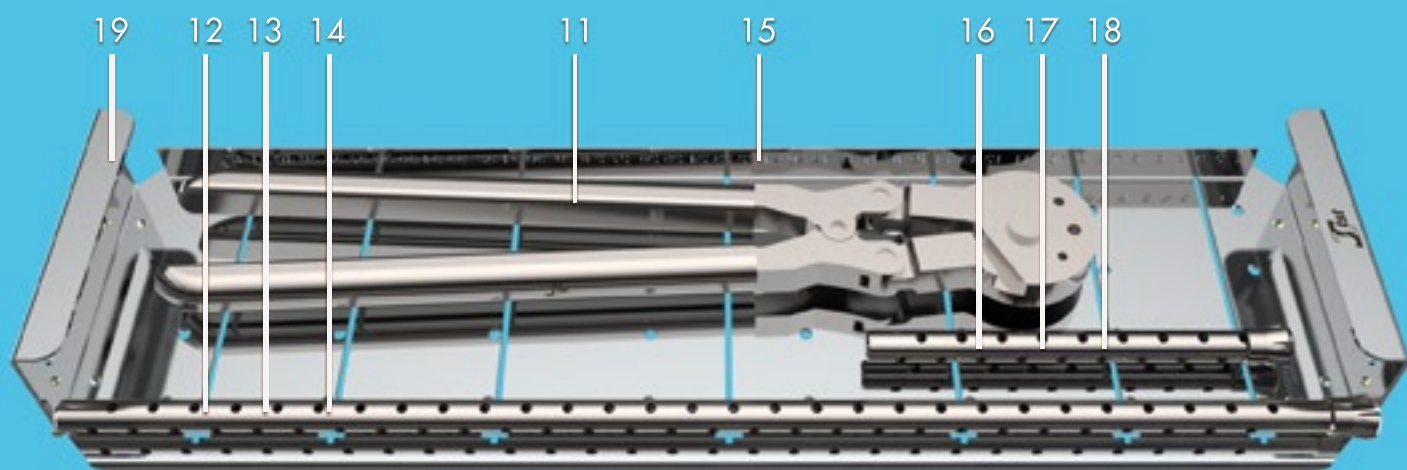
NO	CATALOG NO	UBB NO	DESCRIPTION	QTY
1	80710600250	8699931033168	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø6.0X250 MM	1
	80710600270	8680858405619	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø6.0X270 MM	1
	80710600280	8699931033175	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø6.0X280 MM	1
	80710600290	8680858405626	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø6.0X290 MM	1
	80710600300	8699931033182	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø6.0X300 MM	1
2	80711400350	8699931033250	TELESCOPIC INTRAMED. NAIL-MALE SS Ø4.0X350 MM	4
3	80710000060	8699931033359	TELESCOPIC I.M. NAIL END CAP SS 6.0 MM	4
4	02010000060	8680858400096	CANNULATED DRILL FOR Ø6.0 MM NAIL	2
5	04010000060	8680858400188	DRILL FOR END CAP Ø6.0 MM	1
6	08750000060	8699931033403	SPECIAL FEMALE NAIL DRIVER 6.0 MM	1
7	00760000040	8680858406494	SPECIAL MALE NAIL DRIVER 4.0 MM	1
8	02010060060	8680858408948	Ø 6 MM DRILL GUIDE (TELES)	1
9	02010003060	8680858408955	Ø 6 MM FEMAIL NAIL TURNING TIP	1
10	801004		TELESCOPIC NAIL DESIGN TRAY 4 (480x145x33)	1
1	80710650190	8680858406449	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø6.5X190 MM	1
	80710650200	8680858406456	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø6.5X200 MM	1
	80710650250	8699931033199	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø6.5X250 MM	1
	80710650280	8699931033205	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø6.5X280 MM	1
	80710650300	8699931033212	TELESCOPIC INTRAMED. NAIL-FEMALE SS Ø6.5X300 MM	1
2	80711500350	8699931033267	TELESCOPIC INTRAMED. NAIL-MALE SS Ø5.0X350 MM	4
3	80710000065	8699931033366	TELESCOPIC I.M. NAIL END CAP SS 6.5 MM	4
4	02010000065	8680858400102	CANNULATED DRILL FOR Ø6.5 MM NAIL	2
5	04010000065	8680858400195	DRILL FOR END CAP Ø6.5 MM	1
6	08750000065	8699931033410	SPECIAL FEMALE NAIL DRIVER 6.5 MM	1
7	00760000050	8680858406500	SPECIAL MALE NAIL DRIVER 5.0 MM	1
8	02010060065	8680858408962	Ø 6.5 MM DRILL GUIDE (TELES)	1
9	02010003065	8680858408979	Ø 6.5 MM FEMAIL NAIL TURNING TIP	1
10	801005		TELESCOPIC NAIL DESIGN TRAY 5 (480x145x33)	1
	80510350110	8680858408726	TELESCOPIC INTRAMED.ANGLED NAIL-FEMALE SSØ3.5X110M	1
	80510350130	8680858408733	TELESCOPIC INTRAMED.ANGLED NAIL-FEMALE SSØ3.5X130M	1
	80510350150	8680858408740	TELESCOPIC INTRAMED.ANGLED NAIL-FEMALE SSØ3.5X150M	1
	80510400150	8680858408757	TELESCOPIC INTRAMED.ANGLED NAIL-FEMALE SSØ4.0X150M	1
	80510400180	8680858408764	TELESCOPIC INTRAMED.ANGLED NAIL-FEMALE SSØ4.0X180M	1
	80510400200	8680858408771	TELESCOPIC INTRAMED.ANGLED NAIL-FEMALE SSØ4.0X200M	1
	80510500150	8680858408788	TELESCOPIC INTRAMED.ANGLED NAIL-FEMALE SSØ5.0X150M	1
	80510500210	8680858408795	TELESCOPIC INTRAMED.ANGLED NAIL-FEMALE SSØ5.0X210M	1
	80510500250	8680858408801	TELESCOPIC INTRAMED.ANGLED NAIL-FEMALE SSØ5.0X250M	1
	80510600150	8680858408818	TELESCOPIC INTRAMED.ANGLED NAIL-FEMALE SSØ6.0X150M	1
	80510600210	8680858408825	TELESCOPIC INTRAMED.ANGLED NAIL-FEMALE SSØ6.0X210M	1
	80510600250	8680858408832	TELESCOPIC INTRAMED.ANGLED NAIL-FEMALE SSØ6.0X250M	1
	80510650250	8680858408849	TELESCOPIC INTRAMED.ANGLED NAIL-FEMALE SSØ6.5X250M	1
	80510650150	8680858408856	TELESCOPIC INTRAMED.ANGLED NAIL-FEMALE SSØ6.5X150M	1
	80510650210	8680858408863	TELESCOPIC INTRAMED.ANGLED NAIL-FEMALE SSØ6.5X210M	1
	801009		TELESCOPIC NAIL DESIGN TRAY 9 (480x145x33)	1



Instruments

Implants

NO	CATALOG NO	UBB NO	DESCRIPTION	QTY
11	03210004050		SPECIAL ROD CUTTER FOR Ø 4.0,5.0 MM	1
12	23410450115	8698673457935	KIRSCHNER WIRE TROCAR POINT 1.5X450 MM	6
13	23410450120	8698673457928	KIRSCHNER WIRE TROCAR POINT 2X450 MM	6
14	04551008460	8699931029796	K-WIRE TUBE Ø10XØ8X460 MM	1
15	08050000011	8698673496507	RADIOGRAPHIC RULER 400 MM	1
16	04551006160	8699931029796	K-WIRE TUBE Ø10XØ6X160 MM	1
17	23412125015	8698673452619	KIRSCHNER WIRE TREADED POINT 1.5X125 MM	4
18	23410120150	8698673452978	KIRSCHNER WIRE TROCAR POINT 1.5X120 MM	2
19	801006		TELESCOPIC NAIL DESIGN TRAY 6 (480x145x33)	1
20	02010101002	8698673493308	SOFT SCREW DRIVER QUICK (TORNAVIDA) LARGE	1
21	02010010050	8680858400140	SCREW DRIVER QUICK TIP HEGZAGONAL Ø5.0x100 MM	1
22	02010010035	8680858400126	SCREW DRIVER QUICK TIP HEGZAGONAL Ø3.5x100 MM	1
23	02010010040	8680858400133	SCREW DRIVER QUICK TIP HEGZAGONAL Ø4.0x100 MM	1
24	08750009010	0087500090106	PROTECTION SLEEVE (END CUP DRILL)	1
25	03381000001	8699931023770	CHISEL HANDLE	1
26	03381016030	8699931023800	CHISEL BLADE 16x30mm Straight	1
27	03381011030	8699931023794	CHISEL BLADE 11x30mm Straight	1
28	02345020000	8698673493506	PLATE WIRE CUTTER UP TO 3MM	1
29	801007		TELESCOPIC NAIL DESIGN TRAY 7 (480x145x33)	1
30	01193003009	8699931028133	BONE HAMMER SMALL (HAFIF CEKIC)	1
31	08050000100	8680858409174	T-HANDLE FOR CANNULATED DRILL	1
32	08201000004	8698673495036	LOCKING PLIERS (KILITLI CIKARMA PENSESİ)	1
33	03210202535	8680858408986	SPECIAL ROD CUTTER FOR Ø 2.0,2.5,3.5 MM	1
34	02271000003		PIN IMPACTOR	1
35	801008		TELESCOPIC NAIL DESIGN TRAY 8 (480x145x33)	1

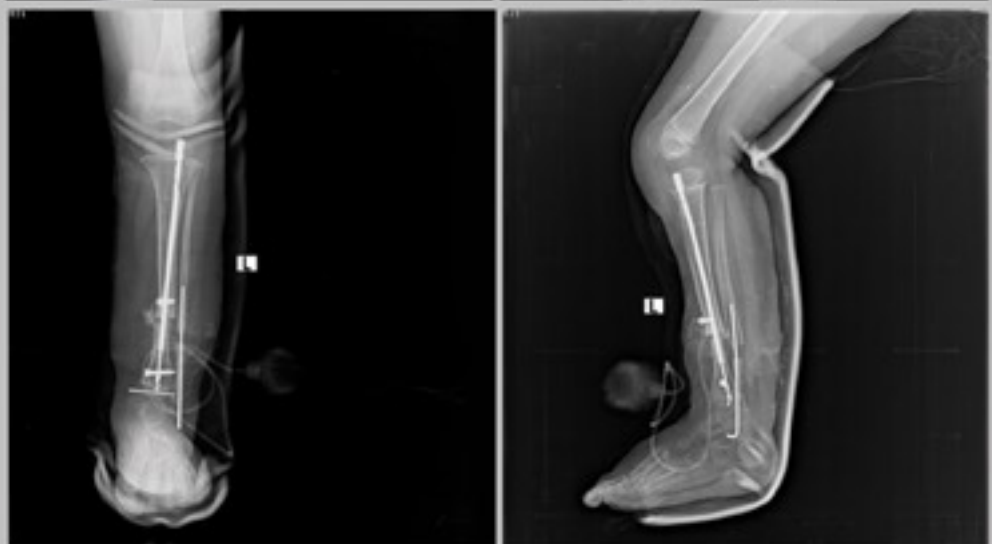


Radiographic Samples

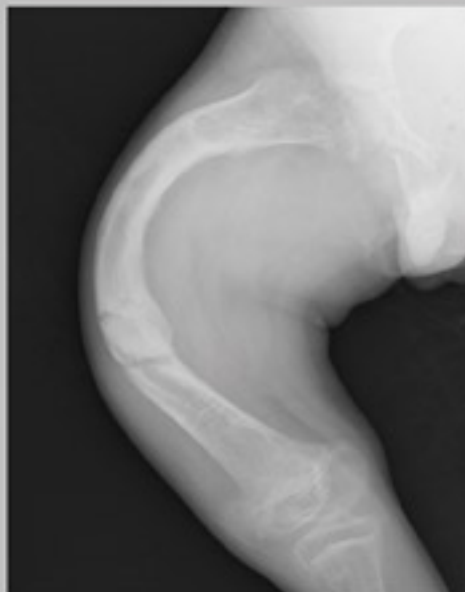
pre op



post op



pre op



post op





pre op



post op



follow up
graph

