Smith+Nephew

TIBIAXYS◊

Ankle Fusion and Distal Tibial/ Fibular Osteotomy

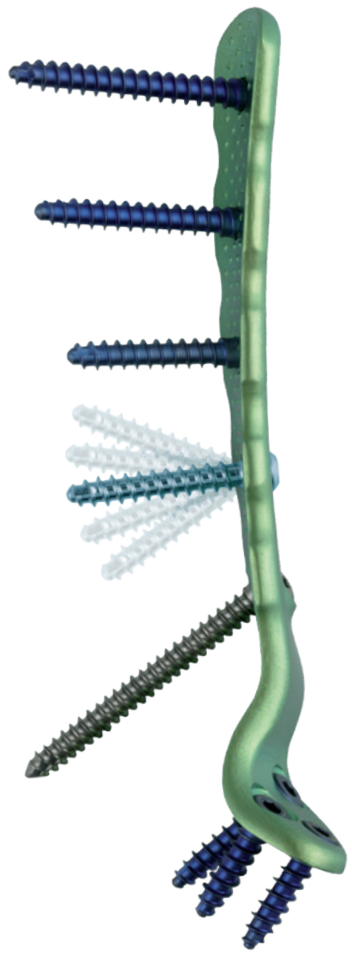
Surgical Technique

Table of contents

Nota Bena:

The following technique is for informational and educational purposes only. It is not intended to serve as medical advice. It is the responsibility of treating physicians to determine and utilize the appropriate products and techniques according to their own clinical judgment for each of their patients. For more information on the product, including its indications for use, contraindications, and product safety information, please refer to the product's label and the Instructions for Use packaged with the product.

System Description



The TIBIAXYS◊ Ankle Fusion and Distal Tibial/ Fibular Osteotomy plating system is designed for arthrodesis of the ankle (tibiotalar joint) and internal fixation after osteotomies of distal tibia and/or fibula.

Versatile and adaptive system

- All implants and instruments are contained in a single, two-tier sterilization tray

Anatomically contoured plates

- The plates are designed to approximate the patient's bony and soft tissue anatomy
- The plates design is intended to make positioning easier and more reproducible

Universal plate locking mechanism

- Fixed and Variable Angle SURFIX◊ screws can be used in the same locking hole
- Allows surgeon to vary the screw position prior to locking

Rigid Fixation

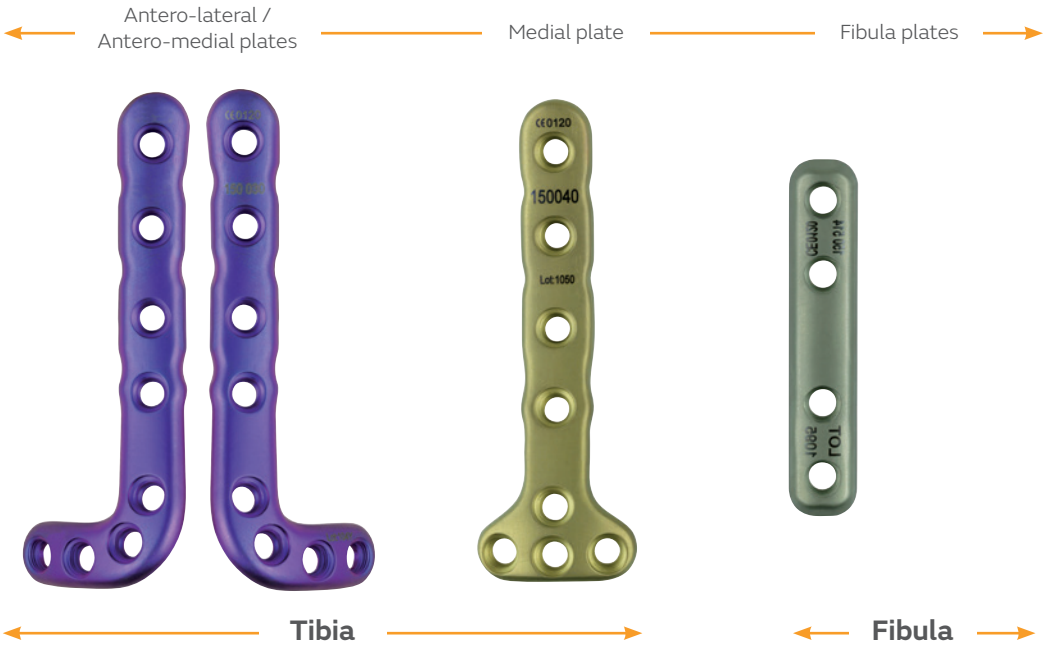
- Designed for demanding procedures such as revision ankle arthrodesis or failed total ankle arthrodesis

SURFIX locking system

- Fixed and variable angle SURFIX locking screws
- Provides a monobloc construction (screw / plate / bone)

Ankle Fusion Plates

Distal Tibial/Fibular Osteotomy Plates



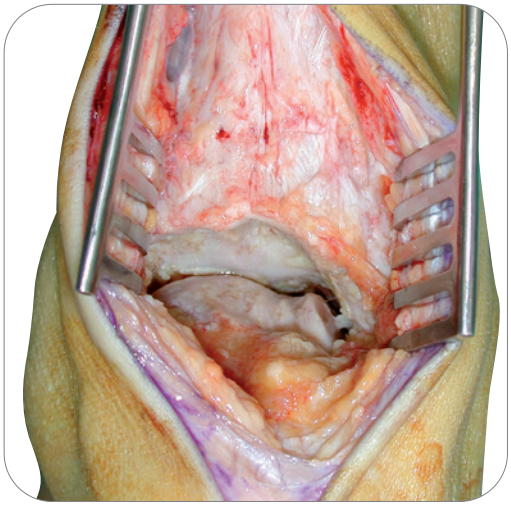


Figure 2-1

TIBIAXYS◊ Ankle Fusion surgical technique

Step 1 ▪ Patient positioning

1-1 The patient is placed in a supine position on a radiolucent operating table.

The ipsilateral pelvis should be supported to control external rotation of the leg, so that the patella is directed upward to facilitate the operation.

A tourniquet is applied at the thigh.

Step 2 ▪ Exposure

2-1 A 10 to 12cm anterior longitudinal incision is performed directly lateral to the anterior tibial tendon.

Divide subcutaneous tissues to the extensor retinaculum paying attention to the medial branches of the superficial peroneal nerve and the veins.

Longitudinally dissect the extensor retinaculum along the lateral border of anterior tibial tendon.

Expose the distal tibia beneath with the anterior tibial tendon retracted medially with a small blunt retractor, and expose subperiosteal distal tibia using 2 small Hohmann retractors.

Arthrotomy of the ankle joint is performed and any scarred capsule or loose bodies are removed.

Expose the neck of the talus.

Position a self-retaining retractor using caution to not apply tension to the skin.

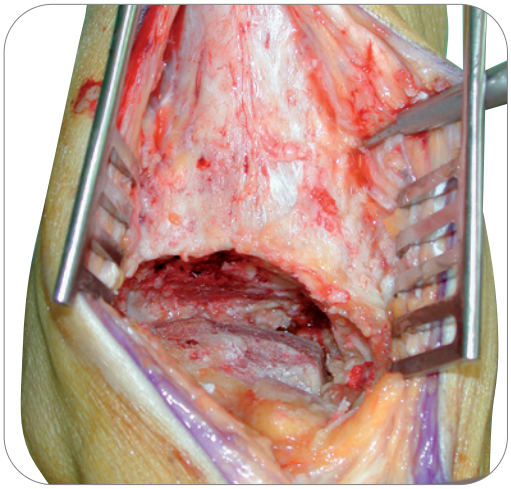


Figure 3-1

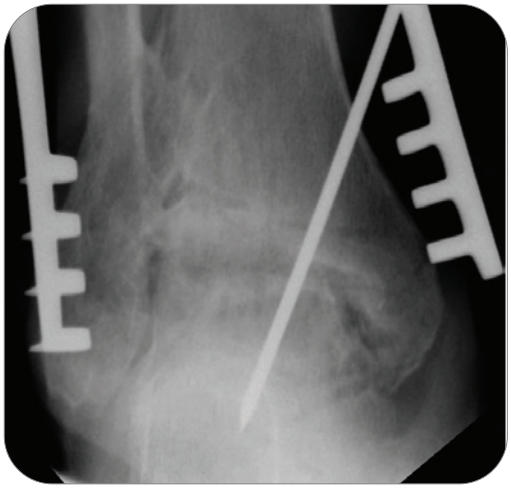


Figure 4-1

Step 3 ▪ Preparation of the joint

3-1 Smith+Nephew Distraction Forceps may be used to aid in exposure of the ankle joint.

Remaining cartilage is removed from the talar dome, the tibial plafond and the medial gutter using a chisel and curettes. Caution should be used to preserve the anatomic configuration of surfaces.

After denuding the subchondral bone, a 2.5mm drill or a burr is used to break sclerotic bone areas.

Cysts are cleaned and filled with cancellous bone graft or bone matrix.

- **Preservation of the convexity of the talar dome and concavity of the distal tibia may increase residual stability after internal fixation, particularly against rotational forces. In any case, anterior and posterior rims of the distal tibia should be preserved to get high contact stress at the anterior and posterior aspects of arthrodesis which will increase intrinsic stability of the arthrodesis.**
- **The lateral gutter does not need to be cleaned.**
- **In very sclerotic cases or talus necrosis, opening the tourniquet during operation may help evaluation of the vitality of the bone.**
- **Using a sharp curved chisel allows easier removal of the cartilage and preserves anatomic shape of the bones.**

Step 4 ▪ Fixation with the Plates

4-1 It is crucial to the success of the surgery to obtain the correct alignment and positioning prior to the application of internal fixation. The optimal position must be achieved in all planes.

The use of X-rays or fluoroscopy is highly recommended to check and ensure the correct anatomic alignment and positioning of the plates and screws.

Appropriate Alignment Is Critical

Once the desired reduction is obtained, a 2.5mm K-wire (115 225ND) is inserted through the joint, from distal tibia into the talus **(Figure 4-1)**.

Optimally, the K-wire should be placed in the center of the tibia in the sagittal plane. This helps to reduce the chance of interference when the plates are implanted later in the surgery.

The K-wire temporarily maintains the position of the talus against the tibia while the plates are positioned and fixated.

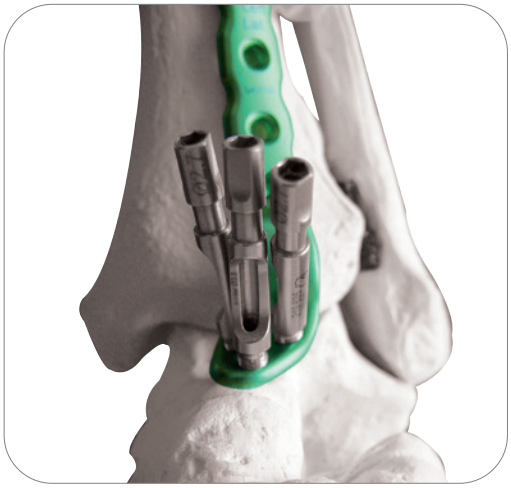


Figure 4-2

Plate Positioning and Fixation

Both the antero-lateral and the antero-medial plates are first fixed to the distal talus. This fixation is achieved using 3.5mm SURFIX◊ fixed angle (standard) locking screws and not the SURFIX-Alpha (variable angle) locking screws. The holes in the distal portion of the plates are set at a specific orientation and the use of variable angle screws is not recommended.

Compression is applied using the compression forceps prior to proximal fixation of the plates in the distal tibia. Proximal fixation can be achieved using either the 3.5mm SURFIX fixed angle or 3.5mm SURFIX-Alpha locking screws.

Finally, a 4mm cortical screw is placed through the most distal tibial hole in each plate and then through the ankle joint.

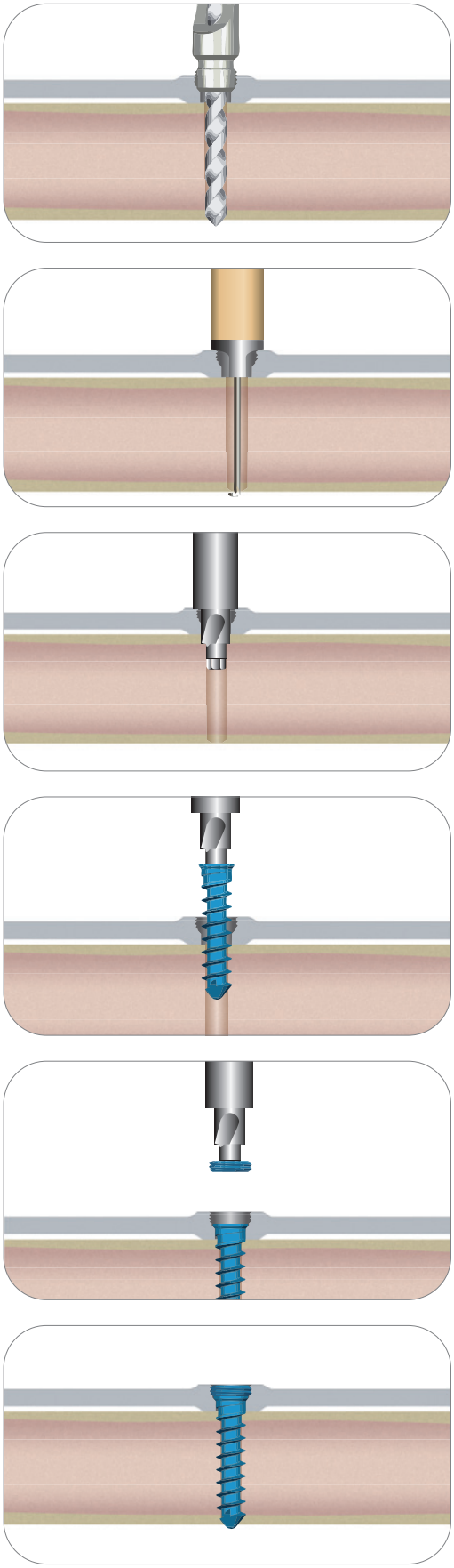
Antero-Lateral Plate

The antero-lateral plate (150 120SND or 150 020SND, depending on the operative side) is fixed first.

Any residual osteophytes that prevent correct plate placement should be removed prior to final plate positioning.

4-2 The distal portion of the antero-lateral plate is fixed with 3 SURFIX fixed angle (standard) locking screws to the lateral aspect of the talar neck **(Figure 4-2)**. Positioning of one or several wedges (159 103ND, 159 106ND, 159 109ND) into the tibial holes can help position the plate on the talus independently from the tibial side.

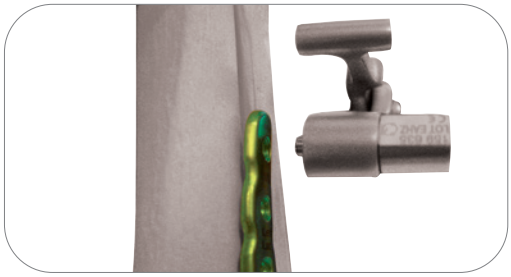
Drilling guides (219 635ND) are fixed to the plate on the 3 most distal threaded holes using the screwdriver (219 835ND).

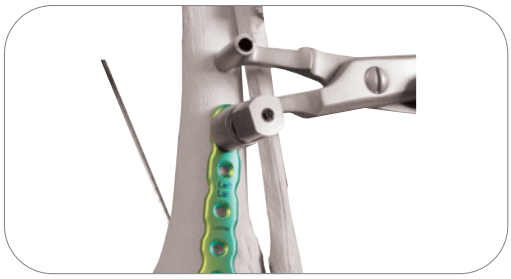


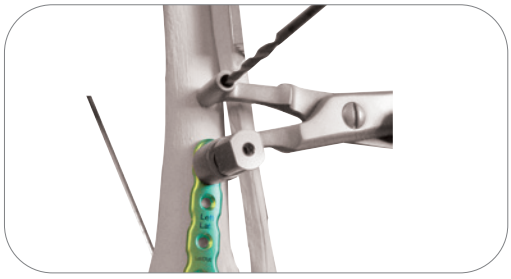
Standard SURFIX◊ Locking Screw Insertion

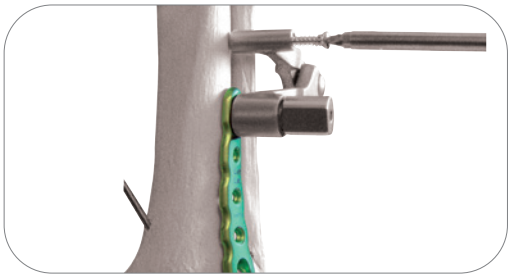
1. Prepare holes with the 2.7mm drill (219 535ND) through the drilling guide (219 635ND). The screw length can be determined from the calibrated scale on the drill. The depth is determined from the top side of the drilling guide.
2. Alternately, measure the necessary screw length using the depth gauge (219 335ND), after having removed the drilling guide.
3. Chamfer the drill hole with the screwdriver (219 835ND). Ensure that the threaded hole is not damaged when performing the chamfering.
4. Using the Hex screwdriver (219 835ND, 219 435ND), insert the screw into the prepared hole until the plate is at the desired position relative to the bone. The screw should be fully seated in the plate. Clean the threaded hole before and after introducing the screw. Maintain coaxiality between the screw and the threaded hole.
5. Assemble the lock-screw to the appropriate screwdriver (219 835ND). The lock-screw should be inserted after each screw, and before preparation and insertion of the subsequent screw. This prevents potential damage to the thread.
6. Locking: Fully seat the lock-screw with the screwdriver. The lock-screw should be flush with the top of the plate when it is fully inserted.

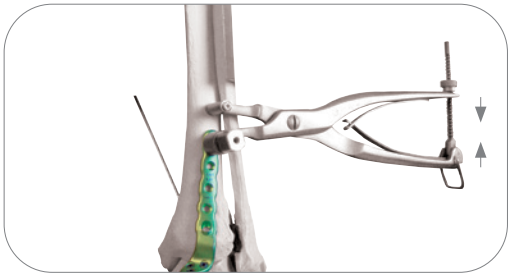
Caution: Steps 1 to 6 should be completed for each screw before starting preparation of the subsequent screw(s). If not, the axis of the screw and the prepared hole may be misaligned.











Compression of the Joint

Compression of the ankle joint and the medial malleolus is achieved using the compression forceps (219 960ND).

1. Place the compression guide (159 635ND) through the hole in the compression forceps (219 960ND) and screw the guide in the most proximal threaded hole in the plate.

Alternately, the second most proximal threaded hole may be used if the skin incision does not allow assembly of the compression forceps to the proximal most hole.

Note: Steps 1 to 6 should be completed for each screw before starting preparation of the subsequent screw(s). If not, the axis of the screw and the prepared hole may be misaligned.

2. Position the upper arm of the compression forceps on the tibia diaphysis while maintaining the axis of the plate along the long axis of the tibia. The distance between the arms of the compression forceps should be about 2cm to allow sufficient compression.
3. Prepare the compression screw insertion (159 740ND, 159 755ND or 159 760ND) using the 3mm drill (219 545ND) through the hole in the upper arm of the compression forceps.
4. Insert the compression screw (159 740ND, 159 755ND or 159 760ND) into the tibia through the hole in the upper arm of the compression forceps (219 960ND) using the screwdriver (219 845ND / 219 445ND). The compression forceps is fixed, in an open position, to the plate and the tibia.
5. Compression is applied with the compression forceps as shown in the adjacent figure.

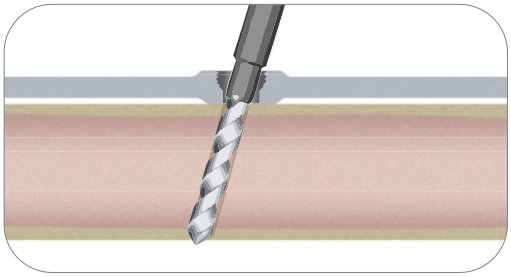
Tibial Fixation

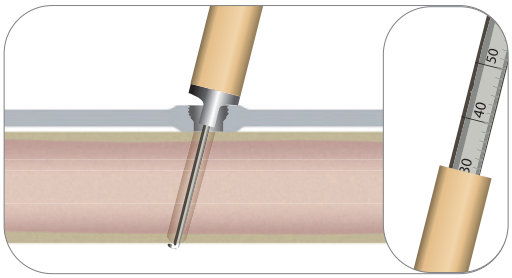
While maintaining compression with the forceps, the tibial portion of the lateral plate is fixed bicortically with either four SURFIX◊ or SURFIX-Alpha locking screws. The choice of fixed angle (standard) SURFIX or SURFIX-Alpha locking screws depends on the need to vary the orientation of the screws. If SURFIX-Alpha locking screws are used, an equal number of fixed angle SURFIX and SURFIX-Alpha locking screws is recommended. It is also recommended that a standard SURFIX locking screw be used in the most proximal threaded hole.

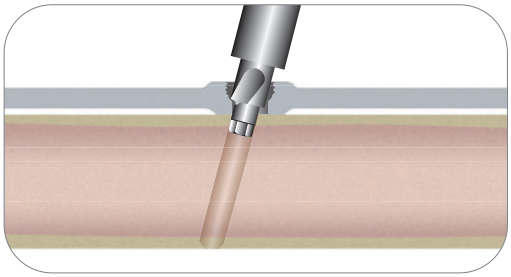
For the standard SURFIX locking screw insertion, refer to the **Standard SURFIX Locking Screw Insertion** section of the surgical technique on page 16. The insertion of SURFIX Alpha screw is performed as follows:

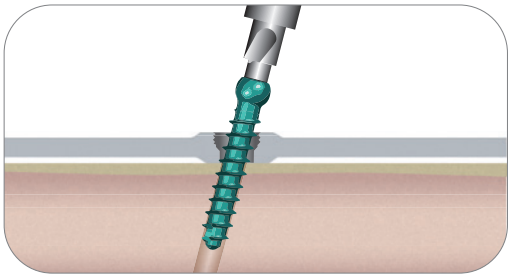
The variable angle drilling guide allows 15 degrees of variable placement in any direction.

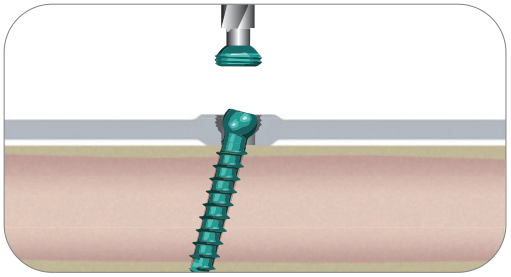
If the surgeon tries to angle the screw beyond 15 degrees (less than 75° or more than 105° between the plate and screws), the drilling guide will come out of the plate.

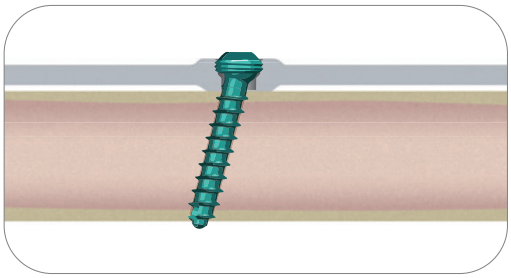












SURFIX° Alpha Locking Screw Insertion

1. Prepare holes with the 2.7mm drill (219 535ND) through the drilling guide. The screw length can be determined from the calibrated scale on the drill. The depth is determined from the top side of the drilling guide.
2. Alternately, measure the necessary screw length using the depth gauge (219 335ND).
3. Chamfer the drill hole with the screwdriver (219 835ND). Ensure that the threaded hole is not damaged when performing the chamfering.
4. Insert the screw with the screwdriver (219 835ND, 219 435ND) into the prepared hole until the plate is at the desired position relative to the bone. The screw should be fully seated in the plate. Clean the threaded hole before and after introducing the screw.
5. Assemble the lock-screw to the torx screwdriver (219 35ND). The lock-screw should be inserted after each screw, and before preparation and insertion of the subsequent screw. This prevents potential damage to the thread. Note that this spherical shaped lock-screw has to be inserted perpendicularly to the plate in order to be screwed properly.
6. Locking: Fully seat the lock-screw with the screwdriver. The correct orientation of the lock-screw is concave surface down, interfacing with the screw head to fully seat. Note that this spherical shaped lock-screw has to be inserted perpendicularly to the plate in order to be screwed properly.

Caution: Steps 1 to 6 should be completed for each screw before starting preparation of the subsequent screw(s). If not, the axes of the screw and the prepared hole may be misaligned.

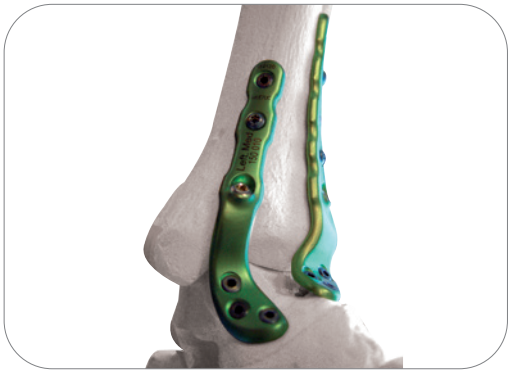


Figure 4-3

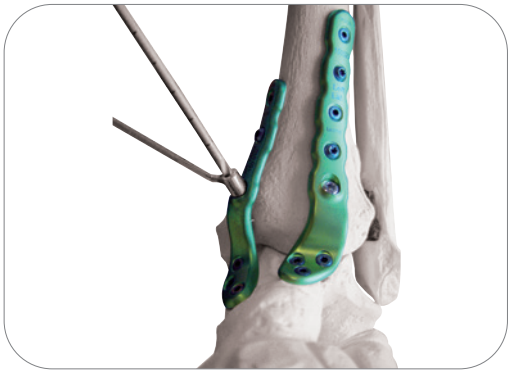


Figure 4-4

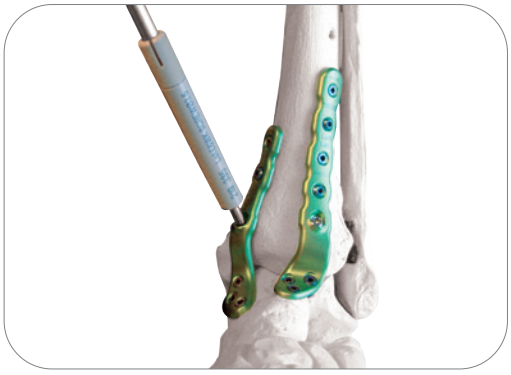


Figure 4-5

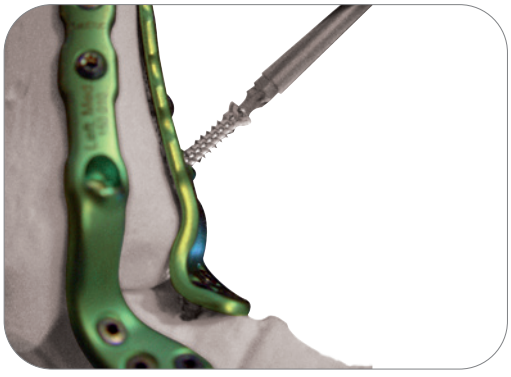


Figure 4-6

Antero-Medial Plate

4-3 The antero-medial plate (150 010SND or 150 110SND depending on the operative side) is fixed after the antero-lateral plate **(Figure 4-3)**.

Positioning and fixation of this plate is performed following a similar technique used to place the antero-lateral plate

Locking of the Joint

Additional 4mm cortical screws are placed across the ankle joint to provide additional compression. The screws are placed through the tibia across to the dorsal part of the talus. This provides additional stabilization of the joint with more posterior fixation, and can also be used to fixate structural bone graft used to fill defects between the tibia and talus.

The drilling guide (159 130ND) is inserted into the most distal tibial hole (non threaded). The guide should be oriented from the tibia toward the posterior side of the talus.

4-4 Prepare the insertion of the screw using the 3mm drill (219 545ND) through the drilling guide **(Figure 4-4)**. The drill should not be inserted beyond the posterior talar cortex as it will violate the sub-talar joint. Use of X-ray or fluoroscopy is recommended to ensure correct positioning of the drill.

4-5 Measure the necessary screw length using the depth gauge (159 400ND) **(Figure 4-5)**.

4-6 Insert the screw into the prepared hole using the screwdriver (219 445ND or 219 845ND) **(Figure 4-6)**.

Step 5 ▪ Closure and end of the procedure

5-1 A final check is performed using fluoroscopy.

The longitudinal incision of the extensor retinaculum is closed by continuous absorbable O suture.

The skin is closed with interrupted non-absorbable 3-O sutures.

A drain is not used routinely.

A thick compressive dressing is applied and the foot placed in a reusable prefab splint.

The tourniquet is deflated.

Step 6 ▪ Postoperative care

6-1 On the second postoperative day, the compressive dressings and prefabricated splint are replaced by a removable cast. This allows the use of an inflatable footpump in case of substantial postoperative swelling.

After subsidence of the swelling (mostly between day 6 and 14 days postop), a below-knee walking cast is applied and left in place until the eighth postoperative week.

Removal of the stitches should not be done before the 14th postoperative day. Once the walking cast is applied, weight-bearing is allowed as tolerated; usually full weight-bearing is achieved after 10 to 14 days postoperatively.

At eight weeks, the cast is removed and standard radiographs are taken. If bony fusion is considered not to be sufficient, a removable walking cast is applied for another 4 to 6 weeks. If the fusion is considered to be sufficient, the patient is allowed free ambulation on custom shoes.

Low molecular heparin or oral anticoagulants should be given, as long as the walking cast is in place or free full weight bearing is not granted.

Postoperative care is individualized and is determined by the physician based on the patient's symptoms, injury pattern, unique patient anatomy, patient medical history, and individual treatment requirements. Not all patients will have the same surgical procedure or timelines for rehabilitation.

Figure 2-1

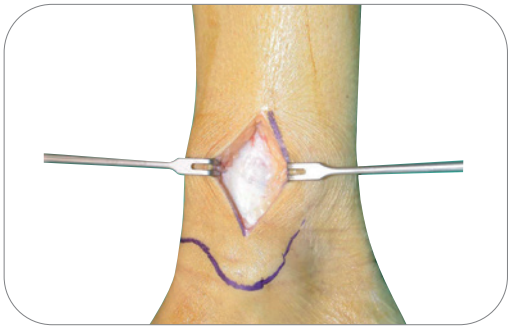


Figure 2-2

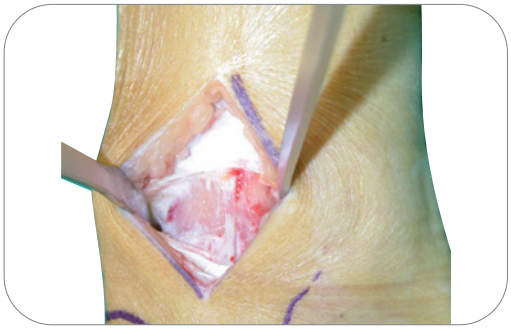


Figure 2-3

TIBIAXYS◊ Tibial Osteotomy surgical technique

Step 1 ▪ Patient positioning

1-1 The patient is in a supine position on a radiolucent operating table.

Tourniquet at the thigh.

Pad under lower leg for elevation.

Heel flush with the operating table.

Step 2 ▪ Exposure

2-1 For tibial osteotomy, a medial skin incision (length 7-8cm) is performed directly over the distal tibial metaphysis.

2-2 The saphenous vein and nerve run posteromedially to the incision and usually do not hinder a direct bone approach.

2-3 Soft tissues are retracted en bloc with a retractor.

Step 3 ▪ Ankle Arthroscopy

3-1 Assessment of cartilage, ligaments and instability pattern.

Scarred and inflammatory soft tissues causing soft tissue impingement are removed.

Osteophytes are debrided to eliminate impingement or restricted range of motion.

Microfracturing in case of circumscribed confined chondral lesions.

Figure 4-1

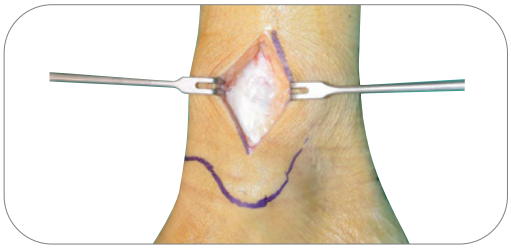


Figure 4-2

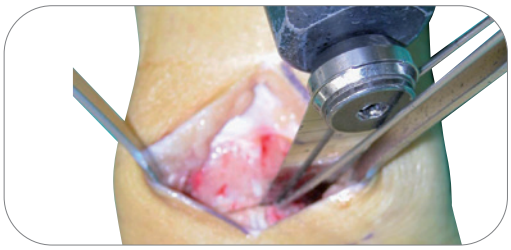


Figure 4-3

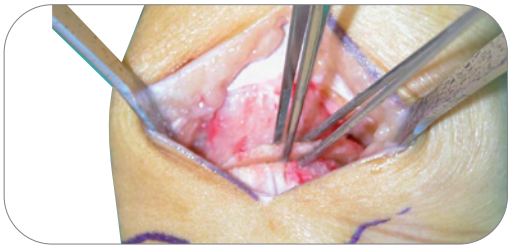


Figure 4-4

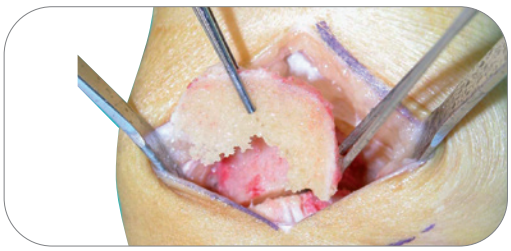


Figure 4-5

Step 4 ▪ Tibial Osteotomy

4-1 The use of fluoroscopy is highly recommended to check the correct position of the K-wires, bones, plates and screws.

Preparation of the osteotomy

4-2 Two K-wires (115 225ND) are inserted under fluoroscopy to guide the saw blade. Their direction is perpendicular to the cortical bone, thus running typically slightly distal **(Figure 4-1 & 4-2)**, aiming directly toward the medial cortex after the osteomy is closed. A goniometer may be used.

Performing the osteotomy

4-3 The osteotomy is performed by following the K-wires with the saw blade **(Figure 4-3)**. The bone wedge is mobilized **(Figure 4-4)** and removed **(Figure 4-5)**.

Demineralized bone matrix or alternate bone graft substitute may be used to improve bone healing.

4-4 The lateral cortex at the tip of the wedge is preserved to enhance stability of fixation and is used as a hinge to translate the heel contact point to the convex side of the deformity. The osteotomy is slowly closed by manual compression.

In closing the wedge tibial osteotomy, if the base of the wedge is more than 10mm in thickness, closing the osteotomy may cause a relevant zigzag deformity of the distal tibia. In this case the lateral cortex is cut to allow adjustment by translation of the distal tibial fragment. Usually, translation is not necessary in wedges with a base smaller than 10mm.

Positioning and fixation with the medial plate

4-5 The plate is first fixed to the distal part of the tibia (distal to the osteotomy cut) with 3.5mm fixed angle (standard) SURFIX◊ locking screws.

Compression can then be applied using the compression forceps from the instrument set prior to fixation of the proximal portion of the plate to the tibial diaphysis.

Proximal fixation of the plate in the tibial diaphysis is achieved using either 3.5mm fixed angle SURFIX or 3.5mm SURFIX-Alpha (variable angle) locking screws.

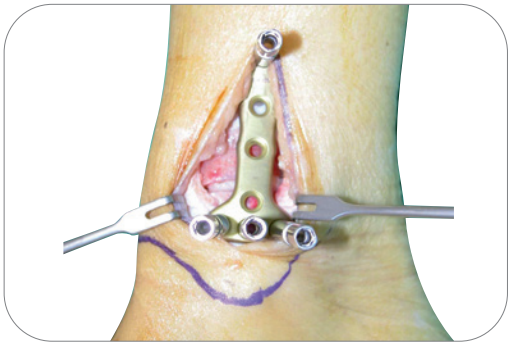


Figure 4-6

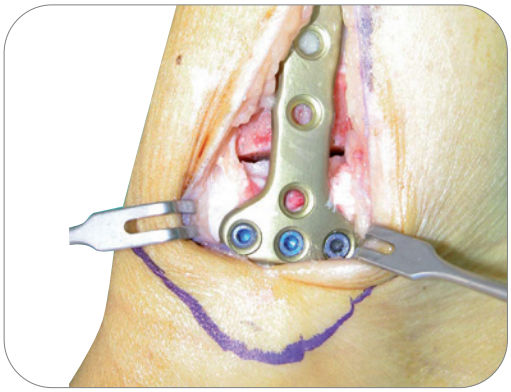


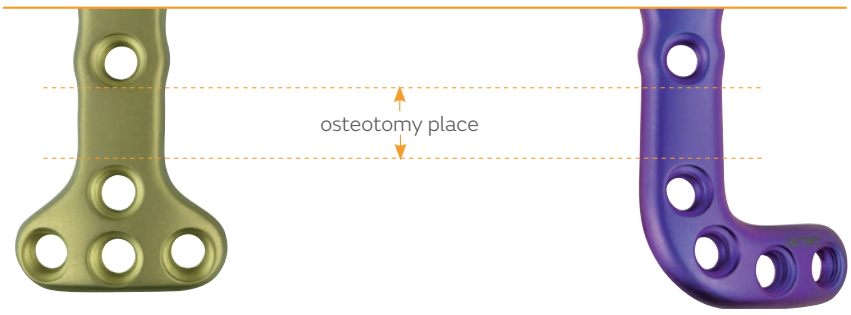
Figure 4-7

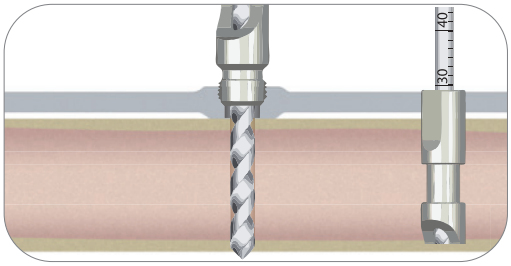
Distal fixation

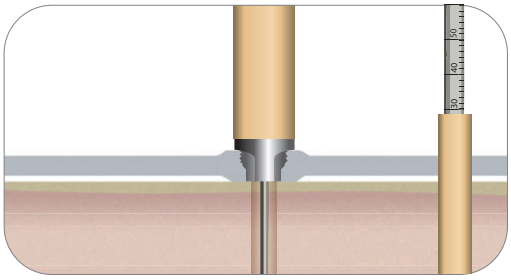
4-6 The medial plate is positioned **(Figure 4-6)** and the distal portion of the osteotomy is fixed **(Figure 4-7)**.

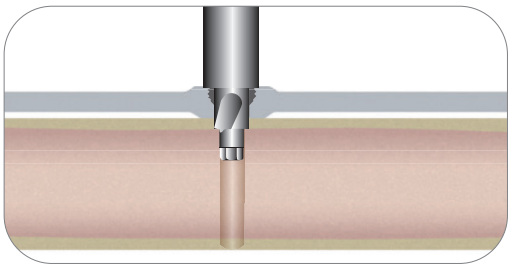
Positioning of the plate relative to the osteotomy site:

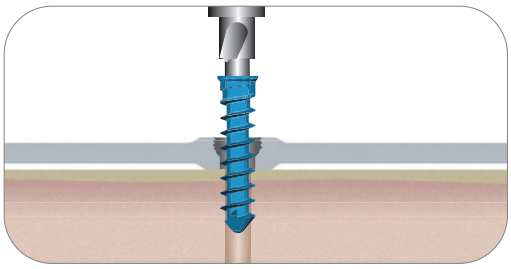
The distance between the 2 holes that are designed to straddle the osteotomy site are spaced farther apart than the other holes on the plate. This provides a visual reference to guide the positioning of the plate over the osteotomy site.

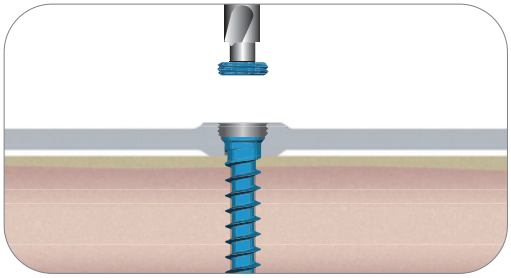


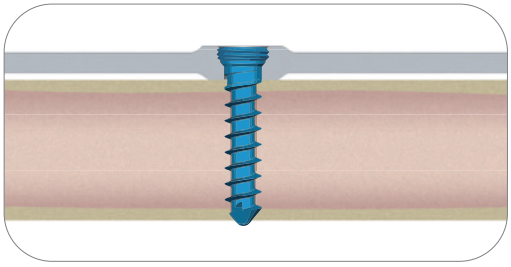








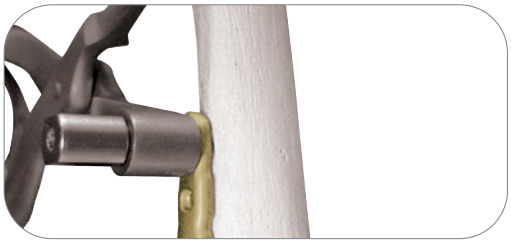


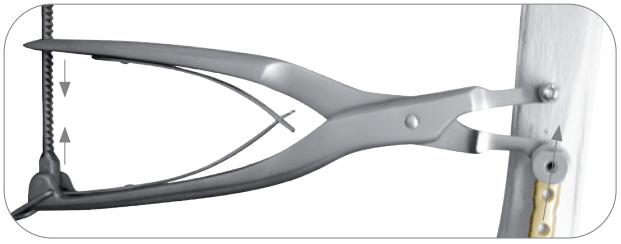


Standard SURFIX° Locking Screw Insertion

1. Prepare holes with the 2.7mm drill (219 535ND) through the drilling guide (219 635ND). The screw length can be determined from the calibrated scale on the drill. The depth is determined from the top side of the drilling guide.
2. Alternately, measure the necessary screw length using the depth gauge (219 335ND), after having removed the drilling guide.
3. Chamfer the drill hole with the screwdriver (219 835ND). Ensure that the threaded hole is not damaged when performing the chamfering.
4. Using the Hex screwdriver (219 835ND, 219 435ND), insert the screw into the prepared hole until the plate is at the desired position relative to the bone. The screw should be fully seated in the plate. Clean the threaded hole before and after introducing the screw.
   Maintain coaxiality between the screw and the threaded hole.
5. Assemble the lock-screw to the appropriate screwdriver (219 835ND). The lock-screw should be inserted after each screw, and before preparation and insertion of the subsequent screw. This prevents potential damage to the thread.
6. Locking: Fully seat the lock-screw with the screwdriver. The lock-screw should be flush with the top of the plate when it is fully inserted.

Caution: Steps 1 to 6 should be completed for each screw before starting preparation of the subsequent screw(s). If not, the axis of the screw and the prepared hole may be misaligned.





Compression / Closing the Osteotomy

The osteotomy is closed by applying varus force to the foot and/or using the compression forceps fixed to the proximal side of the plate.

1. Place the compression guide (159 635ND) through the hole in the compression forceps (219 960ND) and screw the guide in the most proximal threaded hole in the plate.

Alternately, the second most proximal threaded hole may be used if the skin incision does not allow assembly of the compression forceps to the proximal most hole.

Note: Ensure Compression Guide is fully threaded and seated properly into the plate prior to applying compression.

2. Position the upper arm of the compression forceps on the tibial diaphysis while maintaining the axis of the plate along the long axis of the tibia. The distance between the arms of the compression forceps should be about 2cm apart to allow sufficient compression.
3. Prepare the compression screw insertion (159 740ND / 159 755ND / 159 760ND) using the 3mm drill (219 545ND) through the hole of the upper arm of the compression forceps.
4. Insert the compression screw (159 740ND / 159 755ND / 159 760ND) into the tibia through the hole in the upper arm of the compression forceps (219 960ND) using screwdriver (219 845ND / 219 445ND). The compression forceps is fixed, in an open position, to the plate and the tibia.
5. Compression is applied with the compression forceps, as shown in the adjacent figure.

Fixation to the tibial diaphysis

While maintaining compression with the compression forceps, the tibial portion of the medial plate is bicortically fixed to the medial aspect of the tibial diaphysis using either four SURFIX◊ or SURFIX-Alpha locking screws.

The choice of fixed angle (standard) SURFIX or SURFIX-Alpha (variable angle) locking screws depends on the need to vary the orientation of the screws. If SURFIX-Alpha locking screws are used, an equal number of fixed angle SURFIX and SURFIX-Alpha locking screws is recommended. It is also recommended that a standard SURFIX locking screw be used in the most proximal threaded hole.

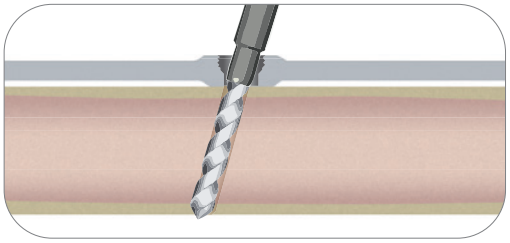
For preparation and insertion of standard SURFIX locking screw, refer back to the Standard SURFIX Locking Screw Insertion section on page 17.crew should be flush with the top of the plate when it is fully inserted.

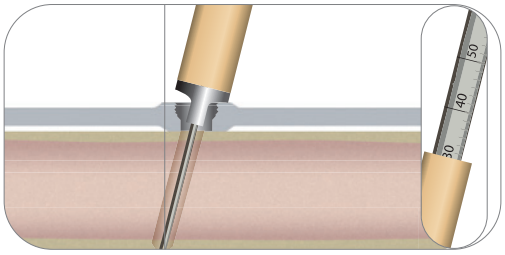
Oblique screw insertion into the tibial diaphysis may provide additional compression to the closed osteotomy.

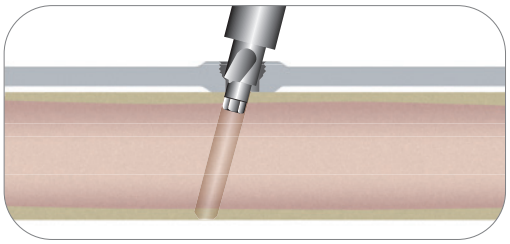
Preparation and insertion of SURFIX Alpha screws is performed as follows:

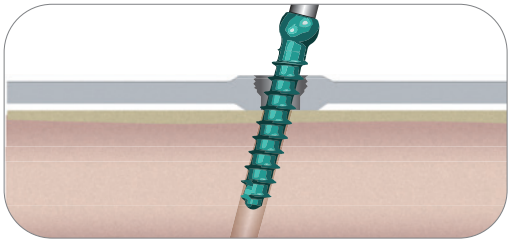
The variable angle drilling guide (219 035ND) is inserted into the chosen threaded hole to obtain a variable placement (+/- 15°) between the plate and the screw.

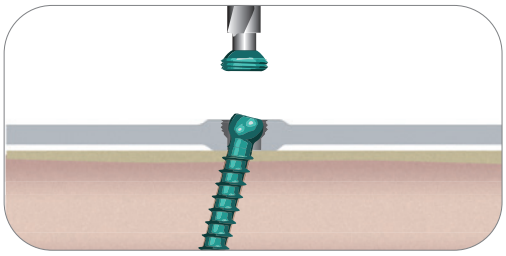
If the angle is less than 75° or more than 105°, the drilling guide will not fit into the hole.

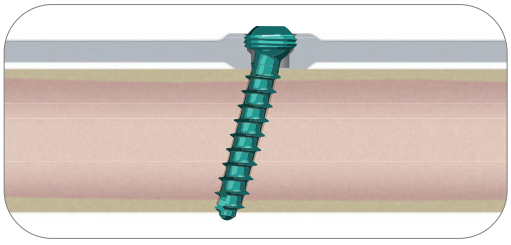












SURFIX◊ Alpha Locking Screw Insertion

1. Prepare holes with the 2.7mm drill (219 535ND) through the drilling guide. The screw length can be determined from the calibrated scale on the drill. The depth is determined from the top side of the drilling guide.
2. Alternately, measure the necessary screw length using the depth gauge (219 335ND).
3. Chamfer the drill hole with the screwdriver (219 835ND). Ensure that the threaded hole is not damaged when performing the chamfering.
4. Insert the screw with the screwdriver (219 835ND / 219 435ND) into the prepared hole until the plate is at the desired position relative to the bone. The screw should be fully seated in the plate. Clean the threaded hole before and after introducing the screw.
5. Assemble the lock-screw to the torx screwdriver (219 135ND). The lock-screw should be inserted after each screw, and before preparation and insertion of the subsequent screw. This prevents potential damage to thread. Note that this spherical shaped lock-screw has to be inserted perpendicularly to the plate in order to be screwed properly.
6. Locking: Fully seat the lock-screw with the screwdriver. The lock-screw should close in a curved manner the hole of the plate onto the screw head.

Caution: Steps 1 to 6 should be completed for each screw before starting preparation of the subsequent screw(s). If not, the axis of the screw and the prepared hole may be misaligned.

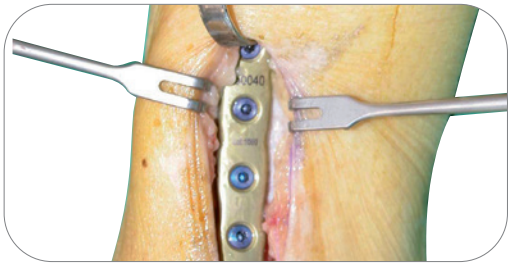


Figure 4-8

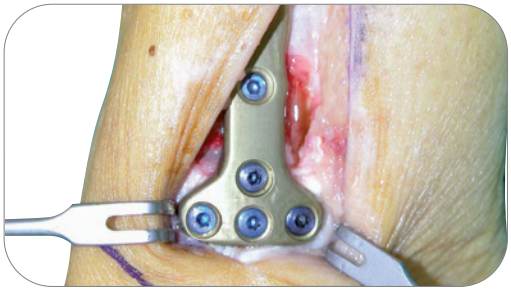


Figure 4-9

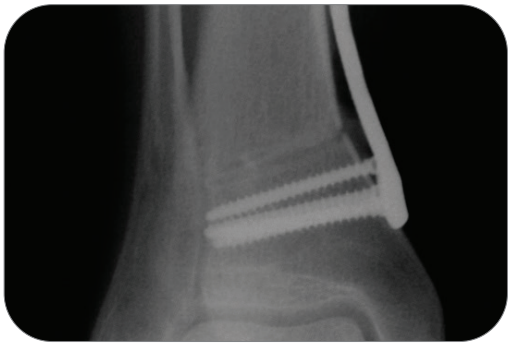


Figure 4-10

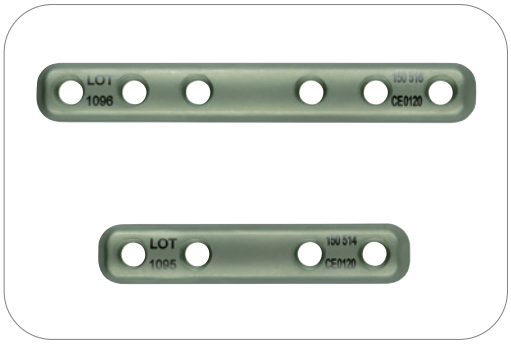


Figure 5-1

4-7 Insert a first screw into the tibia to fix the plate in the correct position; this will be enough to maintain the compression.

4-8 X-ray is then done to check overall position of osteotomy and implant **(Figure 4-8)** before further insertion of the screws into the tibial diaphysis.

4-8 The internal fixation is finished when all the screws have been inserted into the plate holes **(Figure 4-9 & 4-10)**.

- **The intact fibula does not hinder isolated tibial correction**
- **A collapsed lateral malleolar gutter is usually decompressed by closing the medial tibial wedge**
- **Sagittal plane deformity of the distal tibial joint surface can be addressed by adding anterior closing wedge to correct the flexion deformity and a posterior closing wedge to correct the extension deformity. The rotational center of the ankle in lateral view should be in line with the mid-diaphyseal axis of the tibia. Otherwise translational adjustment has to be done.**

Step 5 ▪ Fibular Osteotomy

5-1 An additional distal fibular osteotomy may be needed after the distal tibial osteotomy. This can be performed with a lateral approach and use of the fibular plate for the stabilization of the osteotomy

Exposure

The fibula is approached with a longitudinal lateral skin incision. Potential branches of the superficial peroneal nerve are retracted. The distal tibia is exposed by further preparation anteriorly to the fibula.

Preparation and performing of the osteotomy

To lengthen the fibula, two K-wires are inserted to mark the horizontal cuts of the Z-shaped osteotomy of fibula.

The distal horizontal cut is performed anteriorly whereas the proximal horizontal cut is done posteriorly.

The vertical cut is usually 2cm longer than the planned lengthening to assure a 2cm overlap.

To rotate the fibula, an oblique cut from the dorsal-proximal point to the anterior-distal one is done, which allows to rotate, shorten or lengthen the distal fibula.

The fixation of the plate is performed in the same way as for the tibial plates.

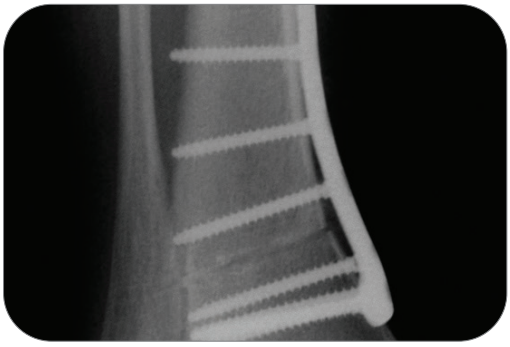


Figure 6-1

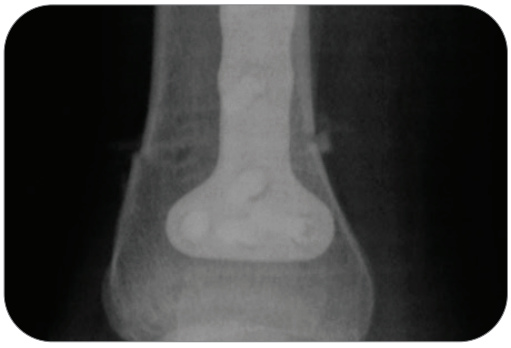


Figure 6-1a

Figure 6-2

Step 6 ▪ Closure and end of the procedure

6-1 Final check by fluoroscopy **(Figure 6-1 & 6-1a)**.

6-2 The skin is closed with interrupted non-absorbable 3-O sutures **(Figure 6-2)**.

A drain is not used routinely.

A thick compressive dressing is applied and the foot placed in a reusable prefab splint.

The tourniquet is deflated

Step 7 ▪ Postoperative care

7-1 The foot is protected by a removable short leg cast in neutral foot position for 6 to 8 weeks.

Mobilization on crutches with partial weight-bearing of 15 to 20 kg.

Rehabilitation program starts immediately postoperatively, depending on achieved wound healing. It includes:

- Passive continuous motion
- Active motion without weight-bearing

Once bone healing is achieved, usually after 8 weeks, free weight-bearing as tolerated is allowed.

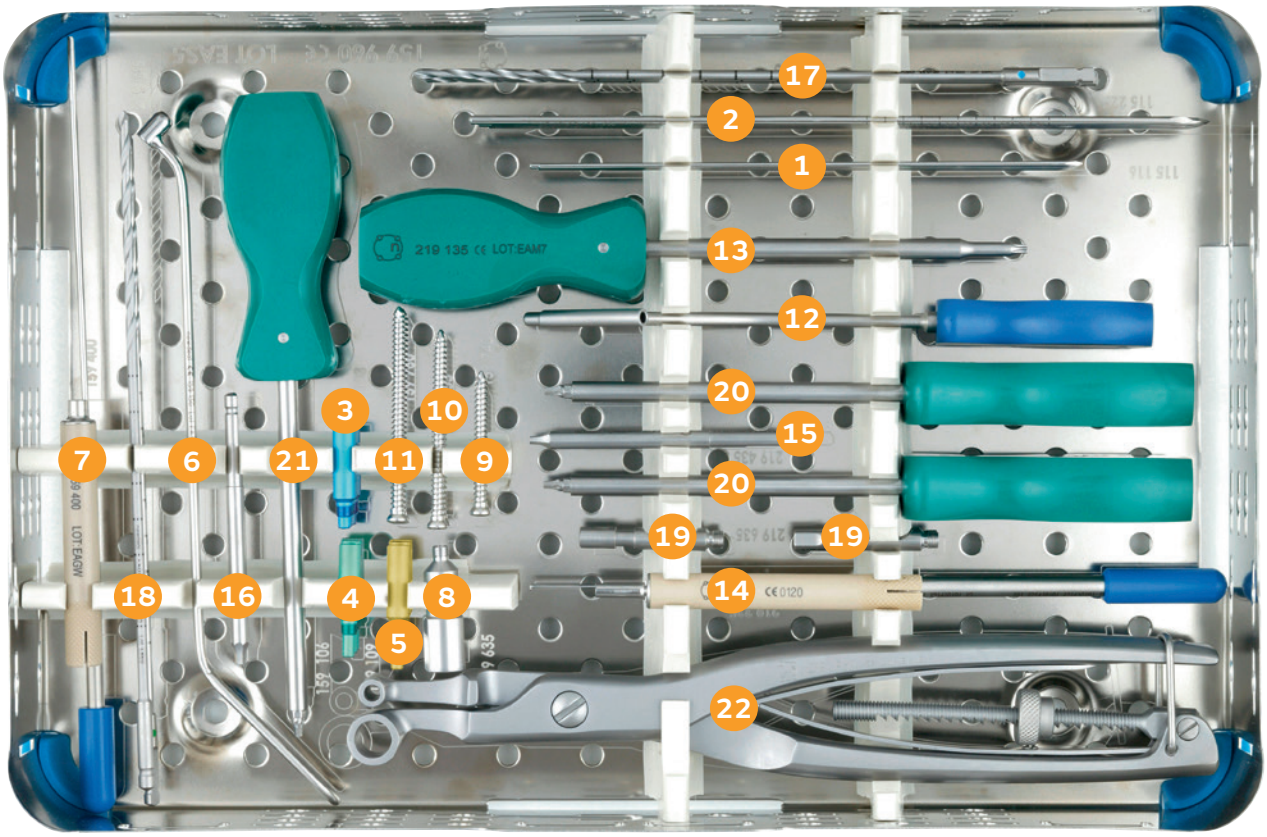
Thereafter, a walker or stabilizing shoe may be recommended to be used during other 4 to 8 weeks for walks on uneven ground and for professional work outside.

Athletes should anticipate to return to sport in 8 to 12 months after their reconstruction.

- **Removal of hardware is not recommended earlier than 8 months after surgery.**
- **Under correction of the valgus deformity is corrected by revision realignment surgery. Over correction is unlikely.**
- **Progressive ankle arthritis may need further surgical treatment. However, total ankle arthroplasty and ankle fusion are facilitated in the well aligned arthritic ankle.**

Postoperative care is individualized and is determined by the physician based on the patient's symptoms, injury pattern, unique patient anatomy, patient medical history, and individual treatment requirements. Not all patients will have the same surgical procedure or timelines for rehabilitation.

Instrumentation



1. K-wire - diam. 1.6mm - L. 150mm
2. K-wire - diam. 2.5mm - L. 200mm
3. Wedge thickness 3mm
4. Wedge thickness 6mm
5. Wedge thickness 9mm
6. Drilling guide - diam. 3.0mm
7. Cannulated Drill
8. Depth gauge - diam. 4.0mm screws
9. Screw for compression forceps diam. 4mm - L. 40mm
10. Screw for compression forceps diam. 4mm - L. 55mm
11. Screw for compression forceps diam. 4mm - L. 60mm
12. Drilling guide - variable angle screw
13. Screwdriver torx T10
14. Depth gauge diam. 3.5mm screws
15. AO Screwdriver - diam. 2.0mm - L. 76mm - HEX
16. AO Screwdriver - diam. 2.5mm - L. 76mm - HEX
17. AO Drill - diam. 2.7mm - L. 125mm
18. AO Drill - diam. 3.0mm - L. 190mm
19. Drilling guide - diam. 2.7mm
20. Screwdriver - diam. 2.0mm - L. 180mm - HEX
21. Screwdriver diam. 2.5 - L. 191mm - HEX
22. Compression forceps - L. 260mm

Ordering information

Ankle Arthrodesis Plates

Catalog Number	Description
150 010SND	L. medial anterior plate
150 020SND	L. lateral anterior plate
150 110SND	R. medial anterior plate
150 120SND	R. lateral anterior plate

Fibula Plates

Catalog Number	Description
150 514SND	4 hole fibula plate
150 516SND	6 hole fibula plate

Osteotomy Plates

Catalog Number	Description
150 130SND	Medial right / Lateral left
150 030SND	Lateral right / Medial left
150 040SND	Medial

SURFIX® Standard Screw Diam 3.5mm + Lock Screw

Catalog Number	Description
285 310SND	10mm
285 312SND	12mm
285 314SND	14mm
285 316SND	16mm
285 318SND	18mm
285 320SND	20mm
285 322SND	22mm
285 324SND	24mm
285 326SND	26mm
285 328SND	28mm
285 330SND	30mm
285 332SND	32mm
285 334SND	34mm
285 336SND	36mm
285 338SND	38mm
285 340SND	40mm
285 344SND	44mm
285 348SND	48mm
285 350SND	50mm

Cortical Screw Diam 4.0mm + Diam 6.0 Head

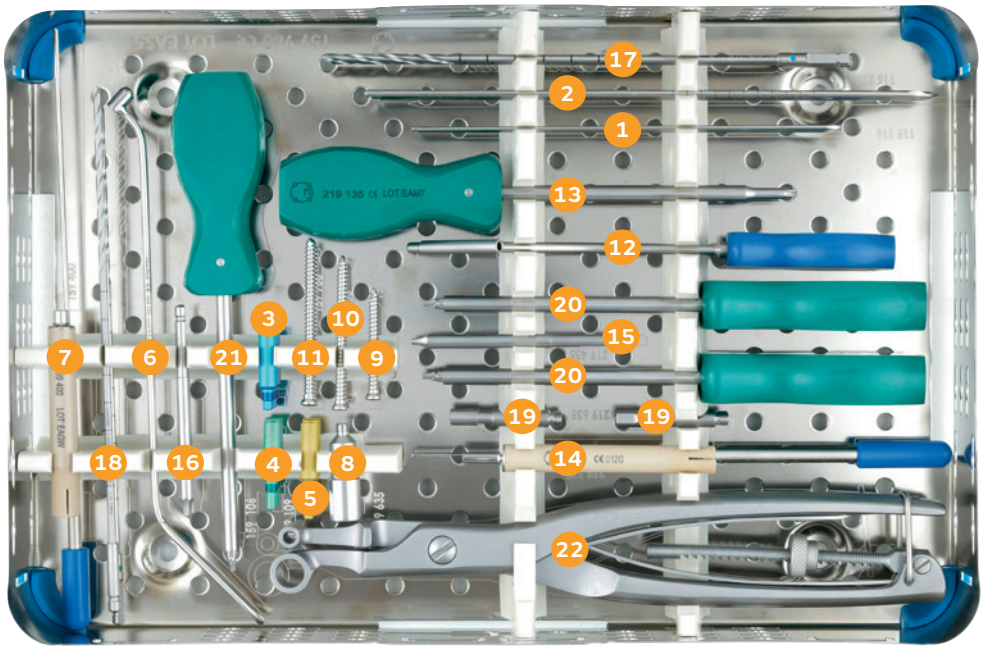
Catalog Number	Description
150 240SND	40mm
150 242SND	42mm
150 246SND	46mm
150 250SND	50mm
150 255SND	55mm
150 260SND	60mm
150 265SND	65mm
150 270SND	70mm
150 275SND	75mm
150 280SND	80mm
150 285SND	85mm
150 290SND	90mm
150 200SND	100mm

Container

Catalog Number	Description
159 991ND	Complete Set, composed of:
159 960ND	Base
996 200ND	Lid
119 909ND	Silicone wedge

SURFIX Alpha Screw Diam 3.5mm + Lock Screw

Catalog Number	Description
295 310SND	10mm
295 312SND	12mm
295 314SND	14mm
295 316SND	16mm
295 318SND	18mm
295 320SND	20mm
295 322SND	22mm
295 324SND	24mm
295 326SND	26mm
295 328SND	28mm
295 330SND	30mm
295 332SND	32mm
295 334SND	34mm
295 336SND	36mm
295 338SND	38mm
295 340SND	40mm
295 344SND	44mm
295 348SND	48mm
295 350SND	50mm



S+N TIBIAXYS Instrumentation Set

	Catalog Number	Description
1.	115 116ND	K-wire - diam. 1.6mm - L. 150mm
2.	115 225ND	K-wire - diam. 2.5mm - L. 200mm
3.	159 103ND	Wedge thickness 3mm
4.	159 106ND	Wedge thickness 6mm
5.	159 109ND	Wedge thickness 9mm
6.	159 130ND	Drilling guide - diam. 3.0mm
7.	159 400ND	Depth gauge - diam. 4.0mm screws
8.	159 635ND	Compression guide
9.	159 740ND	Screw for compression forceps diam. 4mm - L. 40mm
10.	159 755ND	Screw for compression forceps diam. 4mm - L. 55mm
11.	159 760ND	Screw for compression forceps diam. 4mm - L. 60mm
12.	219 035ND	Drilling guide - variable angle screw
13.	219 135ND	Screwdriver torx T10
14.	219 335ND	Depth gauge diam. 3.5mm screws
15.	219 435ND	AO Screwdriver - diam. 2.0mm - L. 76mm - HEX
16.	219 445ND	AO Screwdriver - diam. 2.5mm - L. 76mm - HEX
17.	219 535 ND	AO Drill - diam. 2.7mm - L. 125mm
18.	219 545ND	AO Drill - diam. 3.0mm - L. 190mm
19.	219 635ND	Drilling guide - diam. 2.7mm
20.	219 835ND	Screwdriver - diam. 2.0mm - L. 180mm - HEX
21.	219 845ND	Screwdriver diam. 2.5 - L. 191mm - HEX
22.	219 960ND	Compression forceps - L. 260mm

Products may not be available in all markets because product availability is subject to the regulatory and/or medical practices in individual markets. Please contact your Smith+Nephew representative or distributor if you have questions about the availability of Smith+Nephew products in your area.

Smith & Nephew, Inc.
1450 Brooks Road
Memphis, Tennessee 38116
USA

www.smith-nephew.com
T: 1-901-396-2121
Orders and Inquiries:
1-800-238-7538

33365 V2 LC-04-4250-0001 REVB 11/22

Manufactured by:
Newdeal SAS
Immeuble Sequoia 2
97 allee Alexandre Borodine
Parc technologique de la Porte des Alpes
69800 Saint Priest | France
Phone: +33 (0) 800 111 220
Fax: +33 (0)4 37 47 51 53

Smith & Nephew, Inc.
1450 Brooks Road
Memphis, Tennessee 38116 | USA