KANGHUI
medical

Minimally Invasive Stabilization System(MIS)

SURGICAL TECHNIQUE(FEMUR)

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INTRODUCTION

Introduction

The Minimally Invasive Stabilization (MIS) System is an extramedullary, internal fixation system that has been developed to incorporate these technical innovations and surgical techniques. Its main features are an atraumatic insertion technique, minimal bone contact, and a locked, fixed-angle construct.

MIS system offers a locking internal fixator construct for use in the distal femur. In addition, the availability of an Insertion Guide allows percutaneous targeting of screws through stab incisions. The Insertion Guide also ensures that all screws will be properly inserted and locked to the plate.

Anatomic shape of the plate and locked construct makes intraoperative contouring unnecessary. Percutaneous, submuscular insertion of the plate does not disrupt the cortical blood supply.

Preoperative Planning

In general, MIS plate length and screw positions are selected similarly to external fixator determinations. At least four (4) screws should be placed in the intact shaft proximal to the fracture. The selected MIS plate should be longer than a traditional plate.

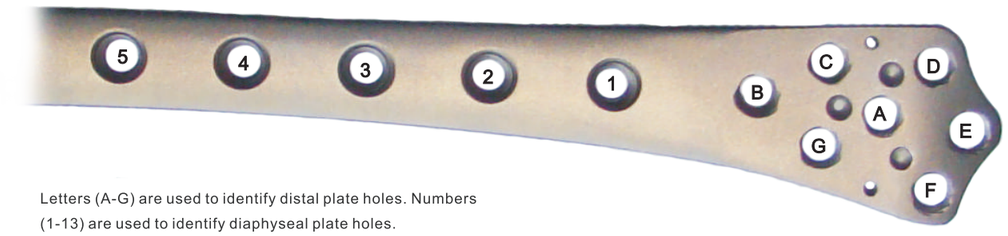
Screw Hole Inserts

To prevent tissue in-growth and facilitate implant removal, Spacer, 5.0mm [31454007] may be used to fill plate holes that will not be used. Spacer, 5.0mm should be placed prior to plate insertion and the corresponding Insertion Guide [899001 or 899002] holes marked with Stoppers [899005]. If a screw must replace a screw hole insert intra operatively, the insert can easily be removed through a Drill Sleeve [899006].

PLANNING

Screw Selection

Plate shape, and screw angles and lengths were developed from Computerized Tomography (CT) of cadaver bones. As a result, a reference measurement guide for distal screws, below , was developed. Alternately, screw lengths may be determined by measurement over a Kirschner wire or direct measurement from X-ray.



Letters (A-G) are used to identify distal plate holes. Numbers (1-13) are used to identify diaphyseal plate holes.

Determining distal screw lengths (alpha holes A-G)

Measure the maximum condyle width in AP projection of the uninjured limb. This can be measured directly from an X-ray or using a Kirschner Wire 2.0mm With threaded tip [899016] through the Centering Sleeve for Kirschner Wire [899008] and the Measuring Device for Kirschner Wires 2.0 [899014]. If injured femoral condyles are not intact, a measurement can be obtained from the contralateral femur.

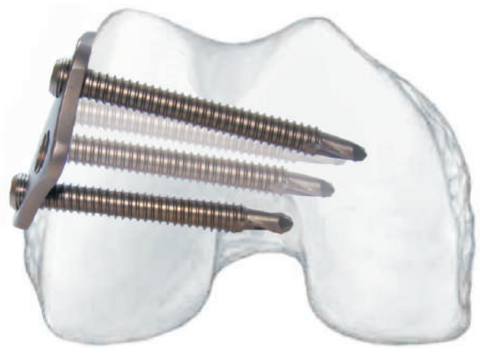
Alternate: Use the additionally available X-Ray Calibrator [899018] to determin magnification factor. The X-Ray Calibrator is 50 mm wide and can be used as a reference measurement to determine X-ray magnification. With the calculated magnification factor, a measurement from an X-ray can be used more accurately to calculate the actual width of the condyles.

Select condylar screw lengths (A-G) from the chart below.

Width of Condyles	60-80 mm	81-87 mm	88-95mm	96-110 mm
Screw Selection for	Screw Length (mm)			
Hole A	65	75	75	85
Hole B	40	40	55	65
Hole C	40	55	65	75
Hole D	55	65	65	75
Hole E	65	75	75	75
Hole F	65	75	75	85
Hole G	55	65	75	85

Screw Selection (continued)

The recommended distal screw lengths and angles ensure that screws do not penetrate the far cortex or the intercondylar notch when the plate is placed properly. The screw lengths may be adjusted as necessary based on plate position and patient anatomy.



Proper placement of the MIS plate on the lateral condyle is essential for correct length and position of locking screws.

In the diaphysis, 26 mm screws are generally used. If the plate is off the bone by more than a few millimeters, 40 mm screws may be necessary. Very thick or dense cortical bone, you should look for additional screw insertion.

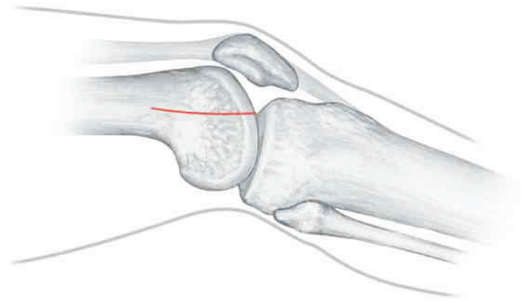
Patient Positioning

Place the patient in supine position on a radiolucent table. Adequately support the knee, but allow the leg to move freely. It may be helpful to place a small bump under the patients buttock on the injured side. It is also important to ensure a true lateral fluoroscopy of the femur can be obtained in this position.

Avoid strong traction and a fully extended knee because forces of the gastrocnemius muscle will create recurvatum of the distal fragment. To reduce the muscle forces of the gastrocnemius, flex the leg approximately 20-40° .

Incision

Lateral Incision



Incision can be extended distally if necessary.

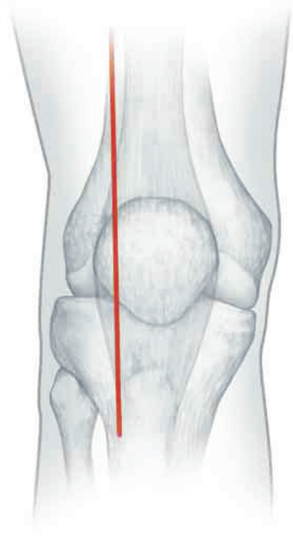
A lateral incision is recommended when a simple articular (AO classification 33-C1) or extra-articular fracture (AO classification 32 or 33A) is present. Skin incision strats at Gerdys tubercle and extends about 80mm in a proximal direction.

Lateral Parapatellar Incision

In the presence of a complex intra-articular fracture (AO classifications 33-C2 or C3), perform a lateral parapatellar approach. Perfor arthrotomy to expose joint for reduction. Evert the patella and extend incision for adequate exposure of the joint for reduction and anatomic fixation.

Split the iliotibial band in line with the fibers. Define the distal margin of the vastus lateralis muscle. Open the space between the vastus lateralis and the periosteum. The plate is inserted into the virtual space between the periosteum and the muscle.

Note: In rare instances, it may be determined that a closed insertion procedure is not appropriate. The MIS plate may be applied in an open procedure to take advantage of the low-contact plate and fixed-angle construct. This is also a useful technique when reduction cannot be achieved otherwise.



Reduction

Articular fracture reduction must be complete prior to placement of the MIS plate. Lag screws are used to reduce the articular surface. Screw placement should take the preoperative plan for MIS plate and locking screw locations into account. The figure below shows possible sites for lag screws placed around the MIS plate. (These screws may also be placed medially to laterally.)

Possible sites of lag screw fixation indicated in blue.

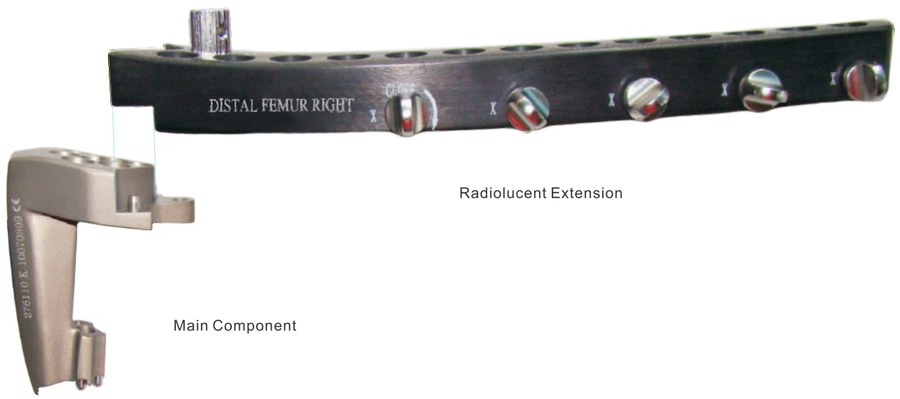
Before locking screws are placed in each main fragment, length, rotation, varus-valgus and recurvatum correction should be achieved. Extra-articular reduction is accomplished by indirect means (e.g., external fixator, distractor, traction, joysticks, bumps, etc.). The metaphyseal/diaphyseal component of the fracture can be aligned by manual traction, a knee-bridging fixator, or a distractor. Anteromedial insertion of a Schanz screw can help manipulate the distal fragment as a e of two Schanz screws will prevent fragment rotation.) The Tension Device [899010] is available to aid in minor varusvalgus and translation corrections prior to screw placement.

Perform reduction under C-arm guidance and assess in both the AP and lateral views. Confirm reduction prior to plate insertion. Because of the gastrocnemius muscle may be in hyperextension on the lateral projection. If distal fragment orientation is not confirmed, the fixation may be inadvertently malpositioned. Bumps placed under the distal femur are useful in counteracting this hyperextension deformity.

An external fixator can serve as preliminary fixation. This will not only make operative reduction easier, but the fixator can also be used as a tool intraoperatively.

Instrument Assembly for Insertion

1 Assemble Distal Femur MIS Insertion Guide [899001]left, or [899002] right, main component and radiolucent extension.



Radiolucent Extension

Main Component

2 Insert the Fixation Bolt for MIS Insertion Guide [899015] through hole A of Insertion Guide by advancing the knurled nut on the Fixation Bolt fully against the knurled head of the bolt.

Note: Letters (A-G) are used to identify distal plate holes and numbers (1-13) are used to identify diaphyseal plate holes.

3 Align the three points of the Insertion Guide with the corresponding three points on the plate.

4 Screw the Fixation Bolt into the MIS plate using top segment of bolt. Final tightening is completed with a quarter turn of the Guide Wrench [899019].

5 Screw the nut on the Fixation Bolt toward the Insertion Guide to stabilize the attachment between guide and MIS plate. Final tightening is completed with a quarter turn of the Guide Wrench.

6 If desired, insert a Stabilization Bolt [899009] with Drill Sleeve [899006] into an adjacent alpha (B-G) hole for a more stable attachment of plate to Insertion Guide. This offers greater stability if there is resistance from soft tissue or fracture fragments during insertion.

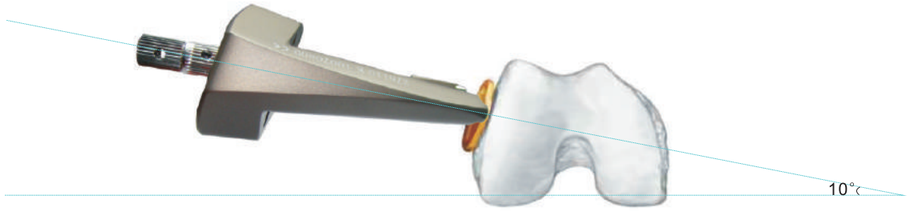
SURGICAL TECHNIQUE

Plate Insertion

1 Insert the plate

Insert the plate between vastus lateralis muscle and periosteum. Keep the proximal end of plate in constant contact with bone during insertion. Place the distal end of the plate against lateral condyle.

The Insertion Guide may interfere with the soft tissues when using a 5-hole plate or in large patients. In such cases, remove the proximal, radiolucent portion of the guide to aid insertion.



2 Check plate orientation

Due to its weight, the Insertion Guide has a tendency to tilt toward the floor (i.e., externally rotate). When the Insertion Guide is positioned properly on the lateral condyle, the guide will be internally rotated approximately 10° to the femoral shaft.

3 Adjust plate position if necessary

To find proximal-distal plate placement, slide the plate proximally and then distally. Tactile feedback will indicate proper plate placement on the flange of the lateral condyle.

4 Insert K-wire through fixation bolt

Iinsert a Kirschner Wire 2.0mm With threaded tip [899016] through the cannula of the Fixation Bolt to provide preliminary fixation of plate.

Notes: A K-wire placed through the Fixation Bolt will be parallel to the joint in AP view when the fracture is reduced. Due to the type of fixation, if the wire is not parallel, the implant will not affect the existing reduction. A K-wire placed through hole E can be used to check proximal-distal location of plate in relation to condylar notch.

5 Confirm plate position

Confirm proper position of the proximal end of plate with a lateral X-ray. The diaphyseal screws must be positioned through the center of the intramedullary canal; therefore the proximal end of the plate should be centered on the shaft in a lateral view.

Alternate: Direct palpation through a slightly elongated proximal incision or probing with a K-wire can also be used to check plate location.

6 Make incision at most proximal hole

Once the plate has been inserted and positioned properly, with reduction reconfirmed, an incision is necessary at the most proximal plate hole. This location is marked using an Drill Sleeve [899006] with Trocar [899007] in hole 5, 7,9, 11, or 13. Make an incision at this location.

Plate Insertion (continued)

7 Replace insertion sleeve and trocar

Through this stab incision, replace the Insertion Sleeve and trocar. Ensure that the Insertion Sleeve is fully seated in guide to avoid interposed soft tissue, which can keep the bolt from engaging with the plate. Secure the sleeve by tightening the nut on side of guide.

8 Remove trocar; tighten stabilization bolt

Remove trocar and close plate insertion frame by threading the Stabilization Bolt into the proximal plate hole. Final tightening of the Stabilization Bolt is completed with a quarter turn of the Guide Wrench.

9 Insert K-wire through stabilization bolt

Insert a 2.0 mm K-wire through the cannula of the Stabilization Bolt. Check position of the plate andreduction of injured limb. Complete Reduction and confirm plate position prior to placing initial screws.

Note: If a supplementary Stabilization Bolt was inserted in a distal hole, it may now be removed.

Use of Tension Device

Additional varus-valgus correction can be completed prior to placement of locking screws in both main fracture fragments. The Tension Device [899010] with quick coupling, is placed through guide and plate holes to pull or push bone fragments in relation to plate. This instrument can be used for:

- Minor varus-valgus adjustment (approximately 2-4°)
- Translational adjustments
- Stabilization of plate-bone orientation during insertion of the first screws
- Alignment of segmental fragments
- Predrill dense or thick cortical bone before placing a 5.0 mm locking screw to prevent screw drilling flutes from filling before the screw is fully inserted.

The Stabilization Bolt [899009] must be used with an Insertion Sleeve, and one must be reserved for locking screw insertion. If more than one Tension Device is used, insert the reduction instrument without the nut attached. The sleeve can be removed for use elsewhere, and the nut placed to tighten against guide.

1 Create a stab incision

Place the Insertion Sleeve and Trocar in the Insertion Guide. Mark the location with skin impression. Remove the sleeve and trocar to create a stab incision.

2 Reinsert sleeve with trocar

Reinsert the sleeve with trocar until it is fully seated to ensure that no soft tissue is interposed. Remove the trocar.

Use of Tension Device (continued)

3 Insert tension device through sleeve

When the Tension Device has been attached to a power tool（quick coupling）, place it in desired position through sleeve.

With the nut in highest position possible, begin power insertion of the Pull Reduction Instrument. Stop insertion before end of threaded portion meets plate surface. (Attempting to advance beyond this point may cause threads to strip in bone.)

4 Remove power tool

Remove the power tool and begin tightening the nut toward the sleeve (or guide) while monitoring progress under C-arm.

5 Reduce the fracture

Stop when desired reduction is achieved. The Tension Device is 4.0 mm in diameter to allow later placement of a 5.0 mm locking screw in the same hole.

Tension Device
[899010]

Insertion of Locking Screws

Proper screw placement depends upon fracture type. Choose screw sites in accordance with biomechanical principles for external fixation: screws should be placed close to and away from the fracture. A minimum of four screws is recommended in each main fracture fragment. (More screws may be appropriate in osteopenic bone.)

First, insert 5.0 mm Titanium Locking Screws distally, recheck reduction, and then place proximal screws. As with conventional distal femur plate fixation, check to ensure that the initial locking screws in the condyles (B-G) are parallel to the joint as seen in AP view. After final fracture alignment is confirmed, proceed with inserting the remaining locking screws as planned.

1 Make a stab incision

Place the insertion sleeve and trocar into the Insertion Guide. Mark location with skin impression. Remove the sleeve and trocar to create a stab incision.

2 Reinsert sleeve with trocar

Reinsert the sleeve with trocar to ensure that no soft tissue is interposed between the locking screw and plate hole. Remove the trocar.

3 Attach 5.0 mm locking screw

Attach a 5.0 mm locking screw to the Screwdriver shaft 3.5 [899011] until it snaps securely into place.

4 Insert 5.0 mm locking screw

Insert a 5.0 mm locking screw with high-speed power and limited axial pressure.

Note: Do not lock screws with power tools. Threaded plate-screw connections should be completed by hand.

899011

The shoulder of the screwdriver shaft indicates the distance of the screw head from the plate. Stop power insertion before screw locks to plate.

5 Final tightening

For final tightening, use the Torque-limiting Screwdriver [899017] to ensure torque applied reaches the minimum level necessary for locking. Screw heads should be flush with the plate surface.

Insertion of Locking Screws (continued)

6 Insert diaphyseal screws

Place diaphyseal screws so that the drill tip passes through the center of intramedullary canal. (See page 20 for more information). It may be necessary to use the Tension Device to maintain plate-bone distance (see page 12). In dense bone, drilling action of initial screw will push bone away from plate.

7 Use stoppers to mark screw locations

Mark each screw location in guide using a Stopper [899005] for reference as screw insertion proceeds as planned preoperatively.

Measuring for distal screw length

Screw lengths may be confirmed using a Kirschner Wire 2.0mm With threaded tip [899016]. The wire should be inserted through the Centering Sleeve for Kirschner Wire [899008] and measured with the Measuring Device for Kirschner Wires 2.0 [899014]. Wire is placed a minimum of 5 mm short of the medial cortex to ensure that the screw tip will not protrude.

Insertion of Locking Screws (continued)

Insertion of screws at locations of fixation or Stabilization Bolt

If preoperative planning determined that the proximal end hole or hole A requires a locking screw, follow instructions below. These steps ensure that the Insertion Guide remains aligned with the MIS plate for final screw insertion. When used, hole A must always be the last hole filled with a locking screw.

If a locking screw is not planned for hole A, it is recommended that a Spacer,5.0mm [31454007] be inserted. This ensures that the guide can be reattached for implant removal.

Screw placed in most proximal hole

- The Stabilization Bolt is used in the proximal hole to stabilize the Insertion Guide and plate. Removal of the Stabilization Bolt disrupts orientation with remaining plate holes; therefore, this should be the last screw placed in the diaphysis.
- To insert the screw, remove the K-wire and then Stabilization Bolt with the Insertion Sleeve remaining. Without applying pressure to the Insertion Guide, insert a 5.0 mm locking screw. (For 9- or 13-hole plates, the Stabilization Bolt and insertion sleeve may be placed in holes 5 and 9 to stabilize the frame, if these holes are free of screws.)

Screw placed in hole A (always inserted last)

- The Fixation Bolt is the most important connection in stabilizing the Insertion Guide and plate. Once removed, it is difficult to reattach the guide to the plate and, therefore, orientation between plate and guide is lost. As a result, insert this screw last.
- Before removing the Fixation Bolt, place Stabilization Bolts with Insertion Sleeves in two (2) adjacent, open holes (B-G). Remove the K-wire and Fixation Bolt. Place the insertion sleeve and then locking screw.

It is also possible to insert this screw freehand, but only insertion through the handle ensures that the screw and plate are aligned, to provide a locked construct.

Postoperative Treatment

Postoperative treatment with MIS does not differ from conventional internal fixation procedures. Range of motion of the knee joint and partial weight bearing to at least 10 kg is appropriate. Restrictions may be appropriate in special cases. The presence of callus formation on X-ray indicates indirect or secondary bone healing.

Implant Removal

Remove the implant only after complete consolidation of the fracture and remodeling of the medullary canal. Remove the implant in reverse order to implantation. First, make the incision to fit the Insertion Guide. Make stab incisions and use the Torque-limiting Screwdriver to remove the screws by hand. After explantation of all screws, remove the plate. If the plate is still not easily removed, detach the Insertion Guide and use only the Fixation Bolt. Loosen the plate by applying reciprocating movements to the Fixation Bolt.

Note: Use the additionally available Cleaning Instruments [899012 and 899013], as necessary, to remove tissue from the socket of the screw head to facilitate removal.

Troubleshooting

If screw head is not flush with the plate level:

- The screw may not be fully locked. Use the Torque-limiting Screwdriver , turning until it clicks.

If the power screwdriver jams in the screw head at insertion, the driver may be off center in the sleeve:

- Release the quick coupling from the driver and loosen or remove drill sleeve.
- Back up the screw slightly and perform final tightening by hand with the Torque-limiting Screwdriver.
- If other options do not work, hold onto the chuck end with pliers to pull the screwdriver shaft out.

If the locking screw is difficult to insert or stops advancing prior to locking to the plate:

- The screw should be removed and the flutes cleaned with a K-wire. The screw can be reused if its socket is undamaged. This condition may be caused by unusually dense or thick cortical bone.

Tips and Tricks

Reduction and Fixation

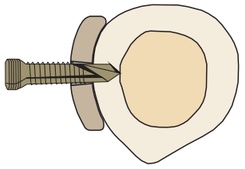
- To avoid interfering with placement of the MIS plate on the lateral side, lag screws can be placed percutaneously from the medial side.
- If an extension table is used, careful traction should be applied to prevent the gastrocnemius muscle from pulling the distal fragment posteriorly or into hyperflexion. Posterior support of the distal fragment could facilitate reduction.
- Flexion-extension reduction of the distal fragment may be facilitated using a Schanz screw in the femoral condyle as a joystick. Insertion of a Schanz screw or tension device [899010] into the proximal fragment may also be helpful. Should it still be impossible to achieve fracture reduction, extend incision to improve access.
- Bumps made of 8, 10, 12, or 15 towels can be used under the distal metaphyseal area to help reduce the fracture in the lateral view. These help to counteract the forces of the gastrocnemius. Small adjustments in these bumps can make marked changes in the reduction.
- Varus-valgus can be checked using C-arm and a cautery cord from the femoral head to the center of the ankle joint on an AP view. Use C-arm at the knee to check that the cord passes 10 mm medially to the center of the knee joint. Adjustment to varus-valgus reduction can be performed with the pull reduction instrument prior to locking screw placement in the malaligned fragment, or with manual pressure on the insertion guide opposed by pressure on the medial aspect of the distal femur.
- A distractor or large external fixator is a useful tool in gaining reduction. Proximal Schanz screw(s) should be placed anteriorly, and distal Schanz screws placed anteromedially and anterolaterally.
- Two distractors may also be used to gain reduction. One is applied medially and the second anterolaterally to minimize malreduction due to uneven distraction.
- Fractures not treated acutely should be placed in a spanning external fixator to maintain length until MIS fixation can be performed. This frame can also be used intraoperatively to assist in fracture reduction.
- For articular visualization, a Hohmann retractor can be used over the medial femoral condyle from a lateral incision. Flexion of the knee also offers visualization of a Hoffa fracture.

Tips and Tricks (continued)

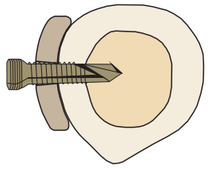
Plate Placement

Should the plate be positioned too far anteriorly or posteriorly, the screws may not be centered on the bone. This position is not sufficient to ensure a stable fixation and can cause loss of fixation.

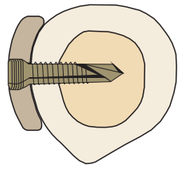
Correct plate placement



Drill

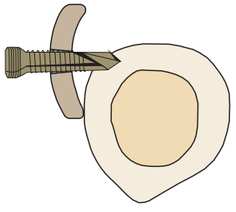


Tap

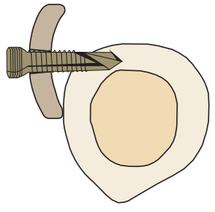


Screw locks plate to bone

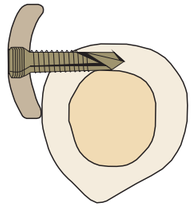
Incorrect plate placement



Drill



Threads strip
and do not tap



Screw locks to plate but has
inadequate purchase in bone

To ensure proper plate placement, these techniques may be used:

- Direct palpation through a slightly elongated incision for the stabilization bolt can be used to confirm the position of the proximal end of the plate.
- The insertion guide holes may be aligned with the plate holes under C-arm to confirm central location of the plate on the femoral shaft.

To check the position of the most distal screw, hole E, place a K-wire with the guide wire sleeve and check the position relative to the intercondylar notch.

Irrigation and Cooling

- The MIS insertion sleeve has a side port to allow irrigation. This is useful in cooling self-drilling locking screws or the Tension Device during drilling. It is important to prevent thermal necrosis during the drilling step.
- Use standard IV tubing and a 60 cc syringe filled with sterile, physiologic saline solution. Attach the Luer lock to the syringe and cut the opposite end of the tubing. Slide the cut end of the tubing onto the port of the insertion sleeve.

Tips and Tricks (continued)

Screw Insertion

- Use power tools for screw insertion to ensure adequate performance of the self-drilling screw tip. The ease with which the screws advance into the bone will depend on several factors, such as bone density and power output of the tools. The screws should be advanced into the bone until the screw head locks in the plate.
- The screw's drilling tip has been dimensioned according to an average cortex thickness. If during preoperative planning, it is determined that the cortex is 7 mm thick or more, predrill the cortex using the Tension Device, which is 4. 0 mm in diameter.
- If a standard locking screw is inserted and the drill tip flutes fill with bone chips, the screw will stop advancing. In this case, the screw should be removed and the flutes cleaned with a K-wire. The screw can be reused if its socket is undamaged.
- The Torque-limiting screwdriver is equipped with a self-retaining mechanism. Slight pressure should be used to ensure that the screwdriver shaft penetrates the socket of the screw head on pick-up. This retaining feature is key during a closed implant insertion.
- In the presence of a fracture around a prosthesis or IM nail, 4.5 mm cortex screws may be used, with the screws angled past the shaft of the prosthesis or nail.

Implant Removal

If the additionally available Cleaning Instruments [899012 and 899013] are employed during implant removal, it should be used through the Insertion Guide. Inspect the Cleaning Instruments after every use.

Plate Contouring

The fixator's stability is not dependent an the plate matching the contour of the bone exactly, as in standard compression plating.

Bending and twisting of the MIS plate is not recommended because it results in misalignment of the holes of the Insertion Guide and corresponding plate holes. This will make locking screws to the plate difficult or impossible.

SPECIAL TECHNIQUES

Temporary Fixation with Kirschner Wires

The system offers the ability to maintain central alignment of the plate on the femoral shaft while still allowing adjustment proximally or distally. This can be useful if length reduction adjustment is necessary after placement of locking screws in the distal femur, but before diaphyseal screws are placed.

1 Insert K-wires to mark screw locations

Place the Aiming Device for kirschner Wires [899023] into the desired hole in the Insertion Guide (holes 3 through 13 can be used). Insert Centering Sleeve for Kirschner Wire [899008] to mark locations.

2 Make stab incision(s)

Remove sleeves and make stab incision(s) at these locations. The stab incision must be large enough to accommodate adjustment in reduction.

3 Reinsert sleeves and insert K-wires

Reinsert sleeves and place K-wires in each. Note that the distance between bone and plate should be kept to a minimum because the wires converge as they are inserted. After insertion of K-wires, the distance between plate and bone can no longer be reduced.

4 Remove sleeves

Remove sleeves and then the aiming attachment. Additional length reduction may now be achieved.

Kirschner Wire Positioning

The lateral K-wires prevent the plate from migrating in the AP plane while still allowing for proximal/distal displacement and adjustment. When correct position is determined, the plate can be temporarily locked with a K-wire through the Fixation Bolt.

SYSTEM COMPONENT OVERVIEW

MIS Instruments Set [899000]

Instruments

Code	Product Description	Qty
899000	MIS Instrument Set	1
	MIS Instrument Set (empty)	1
	MIS Instrument Case	1
	MIS Instrument Tray	1
899001	MIS Insertion Guide for Distal Femur, left	1
899002	MIS Insertion Guide for Distal Femur, right	1
899003	MIS Insertion Guide for Proximal Tibia, left	1
899004	MIS Insertion Guide for Proximal Tibia, right	1
899005	Stopper	10
899006	Drill Sleeve	2
899007	Trocar	1
899008	Centering Sleeve for Kirschner Wire	1
899009	Stabilization Bolt	1
899010	Tension Device	1
899011	Screwdriver shaft 3.5	1
899012	Cleaning Driver	1
899013	Cleaning Sleeve	1
899014	Measuring Device for Kirschner Wires 2.0	1
899015	Fixation Bolt for MIS Insertion Guide	1
899016	Kirschner Wire 2.0mm With threaded tip	3
899017	Touque-limiting Screwdriver T25	1
899018	X-ray Calibrator	1
899019	Φ4.5 Guide Wrench	1

Optional Instrument

Code	Product Description	Qty
899020	Drill Bit Φ4.1mm	1
899021	Drill Sleeve Φ4.1mm	1
899022	Centering Sleeve for Kirschner Wire	2
899023	Aiming Device for kirschner Wire	1

Implants

MIS Plates

Code	Product Description
22541205	MIS Distal Femoral Plate L, 5H
22541207	MIS Distal Femoral Plate L, 7H
22541209	MIS Distal Femoral Plate L, 9H
22541211	MIS Distal Femoral Plate L, 11H
22541213	MIS Distal Femoral Plate L, 13H
22541105	MIS Distal Femoral Plate R, 5H
22541107	MIS Distal Femoral Plate R, 7H
22541109	MIS Distal Femoral Plate R, 9H
22541111	MIS Distal Femoral Plate R, 11H
22541113	MIS Distal Femoral Plate R, 13H

MIS Screws

Code	Product Description
39783014	5.0mm Locking head screws,Self Tapping, Self Drilling,14mm
39783016	5.0mm Locking head screws,Self Tapping, Self Drilling,16mm
39783018	5.0mm Locking head screws,Self Tapping, Self Drilling,18mm
39783020	5.0mm Locking head screws,Self Tapping, Self Drilling,20mm
39783022	5.0mm Locking head screws,Self Tapping, Self Drilling,22mm
39783024	5.0mm Locking head screws,Self Tapping, Self Drilling,24mm
39783026	5.0mm Locking head screws,Self Tapping, Self Drilling,26mm
39783028	5.0mm Locking head screws,Self Tapping, Self Drilling,28mm
39783030	5.0mm Locking head screws,Self Tapping, Self Drilling,30mm
39783032	5.0mm Locking head screws,Self Tapping, Self Drilling,32mm
39783034	5.0mm Locking head screws,Self Tapping, Self Drilling,34mm
39783036	5.0mm Locking head screws,Self Tapping, Self Drilling,36mm
39783038	5.0mm Locking head screws,Self Tapping, Self Drilling,38mm
39783040	5.0mm Locking head screws,Self Tapping, Self Drilling,40mm
39783042	5.0mm Locking head screws,Self Tapping, Self Drilling,42mm
39783044	5.0mm Locking head screws,Self Tapping, Self Drilling,44mm
39783046	5.0mm Locking head screws,Self Tapping, Self Drilling,46mm
39783048	5.0mm Locking head screws,Self Tapping, Self Drilling,48mm
39783050	5.0mm Locking head screws,Self Tapping, Self Drilling,50mm
39783055	5.0mm Locking head screws,Self Tapping, Self Drilling,55mm
39783060	5.0mm Locking head screws,Self Tapping, Self Drilling,60mm
39783065	5.0mm Locking head screws,Self Tapping, Self Drilling,65mm
39783070	5.0mm Locking head screws,Self Tapping, Self Drilling,70mm
39783075	5.0mm Locking head screws,Self Tapping, Self Drilling,75mm
39783080	5.0mm Locking head screws,Self Tapping, Self Drilling,80mm
39783085	5.0mm Locking head screws,Self Tapping, Self Drilling,85mm

Spacer

Code	Product Description
31454007	Spacer, 5.0mm, 2mm Length