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# Distal Femoral Locking Plate

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## Warning

This publication describes the recommended procedures for using Double Engine devices and instruments. It offers guidance that you should pay attention to. But as with any such technical guide, the guide alone does not provide sufficient background for direct use of the instrument set, each surgeon should also consider the particular needs of each patient and make appropriate adjustments when required. Instruction by experienced surgeon is still highly recommended.

All non-sterile devices must be cleaned and sterilized before use. Multi-component instruments must be disassembled for cleaning. Please follow the instructions provided in our *Reprocessing, Care and Maintenance Guide* (*RCMG*-2012).

Please refer to *Package Insert* for a complete list of potential adverse effects, contraindications, warnings and precautions. The surgeon must discuss all relevant risks, including the finite lifetime of the device, with the patient, when necessary.

### Caution

The implants are designed for temporary fixation of fractured bone fragments until the bone heals. Therefore, if bone does not heal or bone consolidation is delayed or not sufficient, the system may break. Post-operative care under the guidance of the surgeon is also very important and it must be to ensure the promotion of bone consolidation.



# Surgical Technique

### Indications

- Distal femoral diaphyseal fractures
- Distal femoral supracondylar fractures
- Distal femoral intra-articular fractures

### **Patient Position**

Position the patient supine on a radiolucent table. Ensure that the affected leg can move freely and support the knee sufficiently. The contralateral unaffected leg can be fixed in a leg brace of the operation table. To obtain an optimal position and true AP and lateral intraoperative view, it is highly recommended to place a small bump under the patient's buttock on the injured side.



1.3 Insert the drill sleeve for locking screws, small and thread the 4.3 mm drill sleeve into the last insertion guide hole and lock it. Repeat the same step as mentioned above to check the rest holes as desired.



### STEP 1 INSTRUMENT ASSEMBLY FOR INSERTION

110101100Insertion Guide for Distal Femur, left110100600Drill Sleeve for Locking Screws, small110100700Drill Sleeve for Locking Screws, large110100800Fixation Locking Bolt110100300Drill Sleeve,  $\phi 4.3$ 110101200Insertion Guide for Distal Femur, right110101400Wrench for Locking Bolts

1.1 Insert the fixation bolt through hole A of insertion guide by advancing the knurled nut on the fixation bolt fully against the knurled head of the bolt.

1.2 Align the three points of insertion guide with the matching three points on the plate. Use the top segment of the bolt to screw the fixation bolt into the LISS plate along the insertion guide and lightly tighten it by wrench.



STEP 3 SURGICAL APPROACH

The approach for extra-articular and intra-articular fractures is different.

For simple articular or extra-articular fractures, a lateral incision is recommended. Make a skin incision starts at lateral tibial tubercle and extends about 80 mm to proximal direction. Separate the iliotibial band along bone fibres and open the gap between the vastus lateralis muscle and periosteum.

### **Distal Femoral Locking Plate**



### STEP 2 REDUCE FRACTURE

For intra-articular fractures, reduce the fractures and fix the whole joints. The lag screw may be used for bone fragment compression. The blue spots indicate possible sites of lag screw fixation.

For complex intra-articular fractures, perform a lateral parapatellar approach. Perform arthrotomy to expose joint for reduction. Ensure a sufficient exposure of the joint for anatomical fixation and reduction by everting the patella and extending incision where the internal fixator and lag screw could be implanted.





### STEP 4 **INSERT LISS PLATE**

4.1 Insert Locking Plate

110101100 Insertion Guide for Distal Femur, left 110100800 Fixation Locking Bolt 110100300 Drill Sleeve, φ4.3

Insert the plate between vastus lateralis muscle and periosteum to the proximal direction. Ensure that the proximal end of plate is in constant contact with bone during insertion. The distal end of the plate is positioned against lateral condyle.



Note: When the patient is positioned supine and the insertion guide is parallel with the ground plane, the insertion guide presents an external-rotation. The plate will not fit well to the lateral condyle. Keep the fixation bolt parallel with the knee-joint. Make a 10° internal rotation of the insertion guide.

4.2 Fix Distal End Temporarily

110100100 Guide Wire, φ2.5, length 250mm

Insert the 2.5 mm guide wire through the fixation bolt at hole A. Confirm the plate position and ensure the guide wire is parallel with the articular surface.



4.3 Fix Proximal End Temporarily

110100100	Guide Wire, φ2.5, length 250mm
110100200	Drill Sleeve for Guide Wire, $\phi 2.5$
110100700	Drill Sleeve for Locking Screws, large
110101300	Trocar

Insert the trocar through the large locking drill sleeve at the most proximal locking hole of the LISS plate and make a small incision. Advance the large locking drill sleeve and trocar to the plate. Remove the trocar and screw the centering sleeve into the plate hole. Drill the 2.5 mm guide wire and check the plate position and reduction condition by AP-View and lateral view under image intensifier.



STEP 5 USE TENSION DEVICE

110100300 Drill Sleeve, φ4.3 110100900 Tension Device 110100600 Drill Sleeve for Locking Screws, small 110100500 Fixation Sleeve for Drill Bits 110100700 Drill Sleeve for Locking Screws, large

110101300 Trocar



If the shaft fracture reduction is not adequate, insert the large locking drill sleeve and trocar into the corresponding insertion guide holes for the distal locking screw holes of fractured site. Make a small incision and advance the locking drill sleeve and trocar to the plate. Remove the trocar and thread the 4.3 mm drill sleeve into the plate hole. Use power tool to insert the tension device through the 4.3 mm drill sleeve. Perform the reduction of fracture fragments by tightening the fixation nut on the tension device under image intensifier as required until a successful reduction is obtained.



Drill through the 4.3 mm drill sleeve using the drill bit,  $\varphi$ 4.3. Remove STEP 7 the drill sleeve and drill bit. Measure the screw length with depth MARK gauge and select screw of appropriate length. Insert the screw using hexagonal screwdriver or power tool connecting with hexagonal As it is a closing surgical operation, it is recommended to mark by screwdriver shaft. Perform the final locking by torque indicating placing sterile medical plastic plugs into each individual insertion screwdriver and stop screwing when hear an audible "click". The guide holes for locking screws as needed. maximum torque value has been reached and the insertion is complete.

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### STEP 6 **INSERT LOCKING SCREWS**

10070100	Drill Bit, φ4.3
10070800	Screwdriver, hexagonal, φ3.5
10101000	Depth Gauge
10071600	Screwdriver Shaft, hexagonal, q3.5
10070700	Torque Indicating Screwdriver, 4.0Nm

Insert at least four 5.0 mm locking screws at each individual fractured site. The tension device can be removed only after 2-3 locking screws have been inserted at the other side of the fractured site





# Instruments 110640000

110100100	Guide Wire, φ2.5, length 250mm		110100900	Tension Device
110100200	Drill Sleeve for Guide Wire, φ2.5	0	110101000	Depth Gauge
110100300	Drill Sleeve, φ4.3		110101100	Insertion Guide for Distal Femur, left
110100400	Wrench for Fixation Sleeve		110101200	Insertion Guido for Distal Fomur right
110100500	Fixation Sleeve for Drill Bits		110101200	Insertion Guide for Distar Femul, righ
110100600	Drill Sleeve for Locking Screws, small		110101300	Trocar
110100700	Drill Sleeve for Locking Screws, large		110101400	Wrench for Locking Bolts
110100800	Fixation Locking Bolt		110640001	Instrument Case

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Instruments	110610000	
110070100	Drill Bit, φ4.3	
110070700	Torque Indicating Screwdriver, 4.0Nm	
110070800	Screwdriver, hexagonal, φ3.5	
110071600	Screwdriver Shaft, hexagonal, φ3.5	

SW3.5

# Distal Femoral Locking Plate



