

# PediLoc® Extension Osteotomy Plate (PLEO)



Left PLEO Plates  
Sizes: 6, 8 and 10 hole plates



Right PLEO Plates  
Sizes: 6, 8 and 10 hole plates

# PediLoc® Extension Osteotomy Plate

The technique description herein is made available to the healthcare professional to illustrate the author’s suggested treatment for the uncomplicated procedure. In the final analysis, the preferred treatment is that which addresses the needs of the specific patient.

## PediLoc® Extension Osteotomy Plating System Surgical Guide

### Introduction

PediLoc® Extension Osteotomy Plate .....	2
Indications .....	2
Background .....	3

### Surgical Technique

Preparation .....	4
Patient Positioning .....	4
Surgical Approach .....	5
Position Implant .....	5
Position Implant .....	6
Provisional Plate Fixation .....	6
Perform Osteotomy .....	7
Attach Plate .....	7

The PediLoc® Extension Osteotomy Plate is part of the OrthoPediatics™ PediLoc® system. The PediLoc® Extension Osteotomy Plate consists of 3.5mm and 4.5mm plates, left and right side specific. The PediLoc® Extension Osteotomy Plate is designed to fit the anatomy of the distal femur in children and adolescents, above the distal femoral physis. The distal section of the plate is designed so that three locking screws can be placed in the distal bone segment at an angle parallel to the distal femoral physis. The proximal portion of the plate is designed to accept locking or non-locking screws.

- Plates are pre-contoured to minimize intra-operative plate bending and contouring
- Plates are available in left and right
- The undersurface of the plates are scalloped to be periosteal sparing
- The plates are low profile to reduce damage to surrounding soft tissues

## Indications

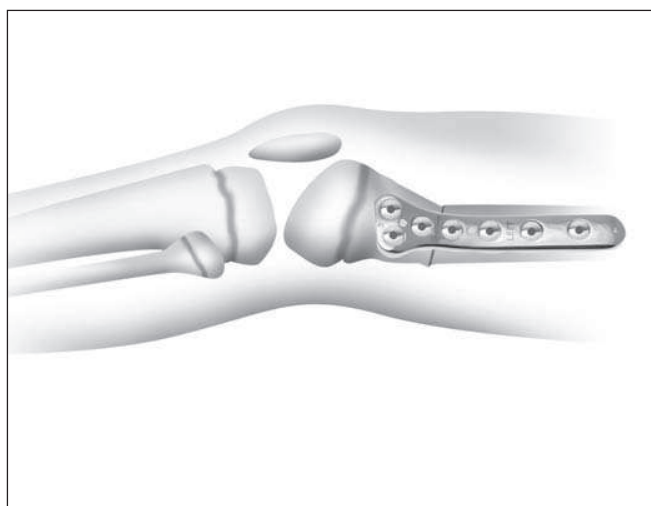
The PediLoc® Extension Osteotomy Plate is indicated for:

- Opening wedge and closing wedge osteotomies of the proximal and distal femur
- Proximal, distal and mid-shaft fractures of the femur
- Mal-unions and non-unions of the femur

## Background

Severe knee flexion contractures in children remain a difficult treatment problem. This technique will be used primarily for patients with persistent knee flexion contracture during the stance phase of gait, most of whom have cerebral palsy. Residual static knee flexion contracture is treated by a compensatory osteotomy of the distal femur of the exact same degree as the knee flexion contracture.

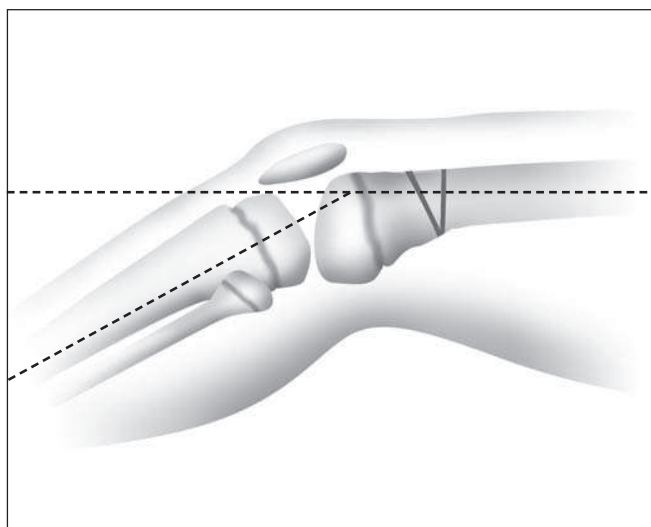
- In many cases this procedure is either preceded, or accompanied by, a hamstring lengthening.
- In most cases the procedure should be accompanied by a patellar tendon shortening.
- Because the osteotomy is proximal to the site of the deformity some translatory deformity will occur. To some degree this can be accounted for by translation of the distal fragment.
- If the femur is not shortened during the osteotomy a relative lengthening of the posterior neurovascular structures will occur. In many cases the shortening should be performed to minimize complications associated with this lengthening.
- The PediLoc® Extension Osteotomy Plate is designed to be very distal on the lateral aspect of the femur. When using the plate for distal femoral extension osteotomy the plate may need to be contoured to avoid excess valgus.



## Surgical Procedure

### Preparation

Determine the extent of distal femoral extension desired. The degree of distal femoral extension is determined from clinical examination and a lateral x-ray of the knee in maximum extension. Measure the tibio-femoral angle on the lateral projection.



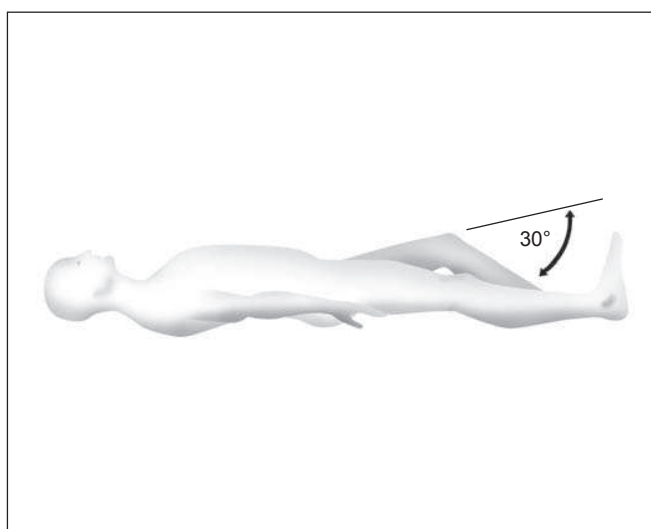
### Patient Positioning

Position the patient supine on a radiolucent operating table. Visualization of the hip, knee and ankle joint with the image intensifier is necessary.

Prep and drape the affected lower extremity up to the hip. Drape to allow maximal exposure of the hip as well the lower extremity.

If a sterile tourniquet will fit, apply sterile tourniquet to the upper thigh.

Give antibiotics per usual protocol. Exsanguinate the leg, and inflate the tourniquet.



## Surgical Approach

Using fluoroscopy, mark out the level of the distal femoral physis. Make a standard lateral approach to the distal femur. If planning a concomitant patellar tendon shortening then curve the distal portion of the incision anteriorly over the patellar tendon.

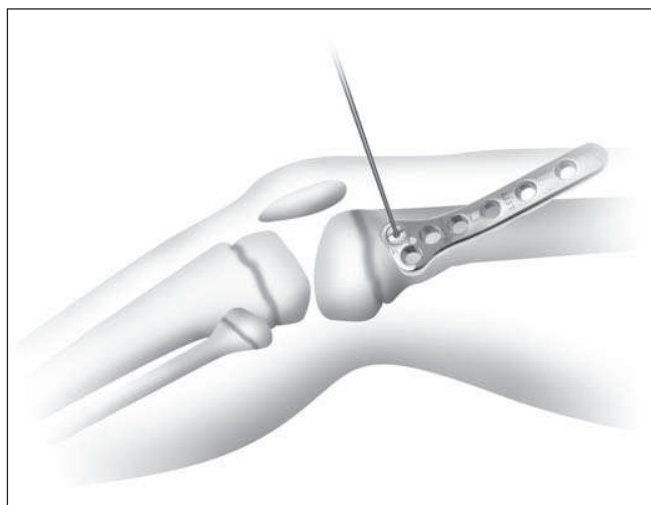
Perform a standard lateral approach to the distal femur. Superficial dissection may extend distal to the level of the physis to allow the deeper dissection to extend just proximal to the physis.

Split the iliotibial band and expose the vastus lateralis. Separate the vastus lateralis from the lateral intermuscular septum and expose the distal femur subperiosteally.

Dissect as far distally as possible approaching the physis. Beware not to injure the perichondrial ring.

## Position Implant

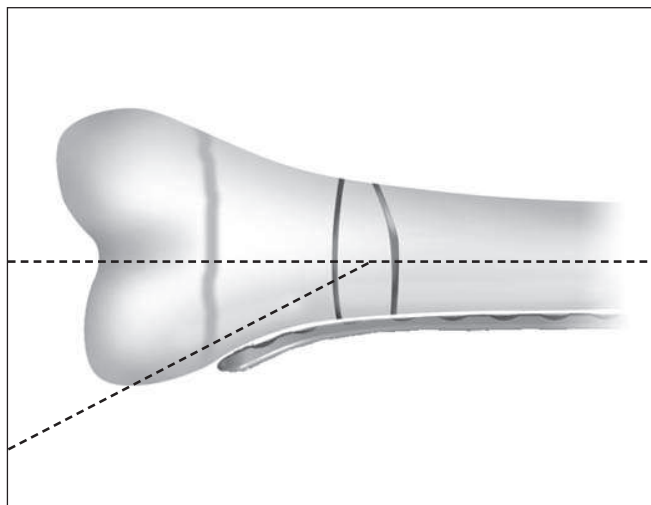
Place a guide wire (2mm k-wire) parallel to and just proximal to the distal femoral physis, slightly anterior to the midpoint of the femur. This will help later with translation. Slide the plate over the guide wire to ensure that all the screw holes in the distal flared portion of the plate will engage bone. The shaft of the plate should be in line with the tibia, not the femoral shaft. This will account for the extension created after osteotomy. If needed, readjust the guide wire to position slightly anterior to the mid axis of the distal femur and just proximal to the physis to ensure that all the distal locking screw holes will engage bone in the angled position.



## Surgical Procedure

### Position Implant

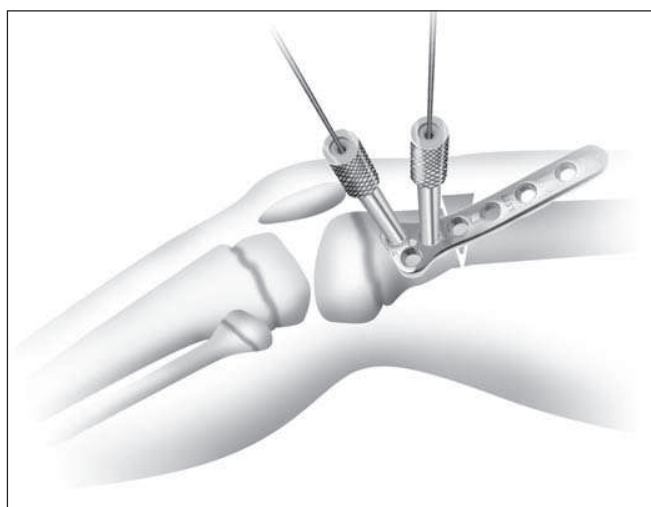
Using fluoroscopy, hold the plate against the shaft of the distal lateral femur. Sometimes the plate will need to be contoured to prevent excess valgus following osteotomy. Utilize the threaded drill guides in the distal holes while contouring to prevent damage to the internal threads.



### Provisional Plate Fixation

Place the knee in the maximally extended position. Using the distal targeting guide with handle, align the plate with the long axis of the tibia. Or, alternatively, use the plate as your guide and align the plate to the long axis of the tibia. In the appropriately angled position, insert the three distal locking screws in the plate for provisional fixation. Hold the plate during the first screw to ensure the plate does not rotate.

- If using the 3.5mm plate, use the 2.5mm drill bit for 3.5mm locking screws
- If using the 4.5mm plate, use the 3.5mm drill bit for the 4.5mm locking screws



Mark the level of the osteotomy proximal to the flare on the plate and remove the plate. Score the lateral femur to prevent malrotation when fixing the osteotomy. Or, alternatively, place k-wires such that after the osteotomy you may rotate the femur to accomplish de-rotation at the same time as extension.

## Perform Osteotomy

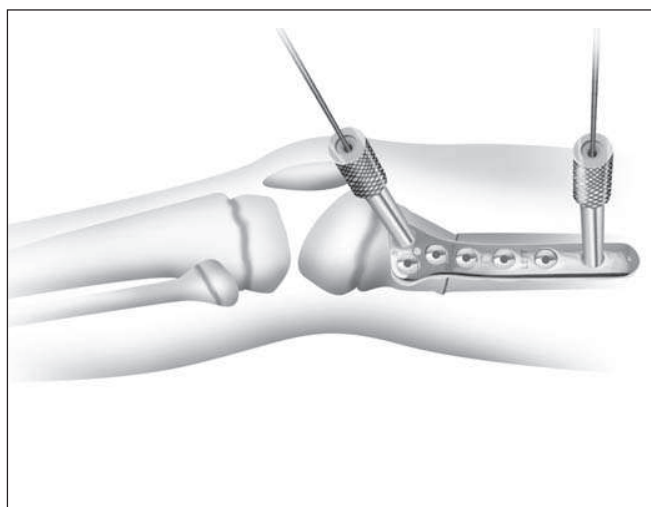
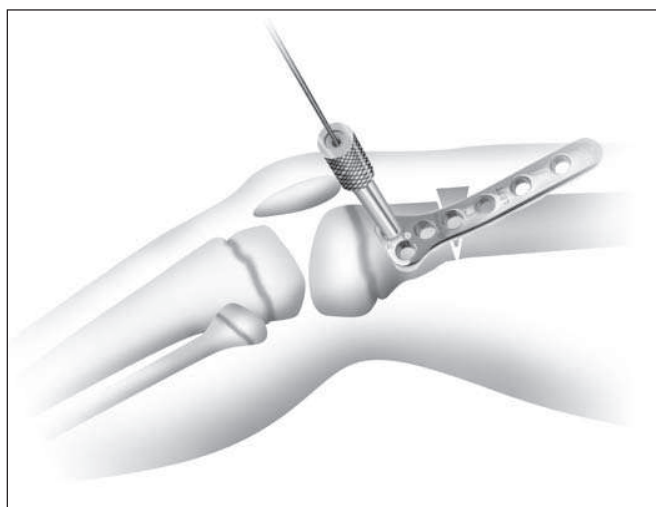
Using an oscillating saw, cut the femur perpendicular to the long axis of the femur. Make a second cut to match the angle of correction desired and remove the wedge of bone. Once the osteotomy is completed, perform a trial reduction. Pay careful attention to the tension created posteriorly and also to translation. The distal fragment should be translated posteriorly to minimize the anterior bump.

*Note: If you are performing the procedure bilaterally, shortening the femur should be strongly considered. Taking a wedge of bone out will make subsequent reduction easier and prevent lengthening the path of the neurovascular structures. If performing the osteotomy unilaterally, shortening is usually not necessary. Overall, consider shortening if tension on the neurovascular structures is significant. (If there is too much tension posteriorly, shorten the femur initially by a hemi-wedge anteriorly on the distal fragment or shaving the distal anterior prominence to allow a better match between the angulated distal fragment and the proximal femoral shaft.)*

## Attach Plate

At this point the femora-tibial angle should be 0 degrees with the former flexion angle now shifted to the osteotomy site. Once trial reduction looks satisfactory, apply the plate with a single locking screw distally. Align the plate and observe the coronal plate alignment watching for excess valgus. If needed, contour the plate further to resist valgus. Attach the plate distally and proximally. Use locking screws distally and locking or standard screws proximally.

- If using the 3.5mm plate, use the 2.5mm drill bit for locking and non-locking screws
- If using the 4.5mm plate, use the 3.5mm drill bit for locking and non-locking screws.



**CAUTION:** Federal law restricts this device to sale by or on the order of a Physician.

**CAUTION:** Devices are supplied Non-Sterile. Clean and sterilize before use according to instructions.

**CAUTION:** Implant components are single-use. Do not reuse.

**CAUTION:** This device is not approved for screw attachment or fixation to the posterior elements (pedicles) of the cervical, thoracic or lumbar spine.

**NOTE:** *This technique has been provided by one of our medical advisors only as guidance and it is not intended to limit the methods used by trained and experienced surgeons.*

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