3.5 mm LCP Posteromedial Proximal Tibia Plate. Part of the Synthes locking compression plate (LCP) system.
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**IMPORTANT:** This device has not been evaluated for safety and compatibility in the MR environment. This device has not been tested for heating or migration in the MR environment.
The 3.5 mm LCP Posteromedial Proximal Tibia Plate is part of the Synthes LCP system that merges locking screw technology with conventional plating techniques.

The 3.5 mm LCP Posteromedial Proximal Tibia Plate is available in stainless steel or titanium and has a limited-contact shaft profile. The head and neck portions of the plate accept 3.5 mm locking, conical and cortex screws or 4.0 mm cancellous bone screws.

**Screw divergence**
The two proximal screw holes have 10° divergent trajectories. (Each diverges 5° from the plate midline).
Features
- Plate tapers from 3.4 mm to 1.9 mm thick
- Available with 1, 2, 4, 6, 8, or 10 holes in the plate shaft
- Available in implant-quality 316L stainless steel or titanium alloy*

* Ti-6Al-7Nb
AO Principles

In 1958, the AO formulated four basic principles, which have become the guidelines for internal fixation. Those principles, as applied to the 3.5 mm LCP Posteromedial Proximal Tibia Plate, are:

**Anatomic reduction**
Restoration of the bone by exact screw placement using threaded drill sleeves.

**Stable fixation**
Locking screws create a fixed-angle construct, providing angular stability.

**Preservation of blood supply**
Tapered end for submuscular plate insertion. Limited-contact shaft profile reduces plate-to-bone contact and minimizes vascular trauma.

**Early, active mobilization**
Plate features combined with AO technique create an environment for bone healing, expediting a return to optimal function.

Indications

The Synthes 3.5 mm LCP Posteromedial Proximal Tibia Plate is indicated for internal fixation of posteromedial proximal tibia fractures including buttressing of fractures of the proximal, distal, and metaphyseal areas of the tibia.
Preoperative Planning

Use the AO preoperative planning template for the 3.5 mm LCP posteromedial proximal tibia plate.

Complete the radiographic assessment and prepare the preoperative plan. Determine plate length and instruments to be used.

**Important:** Determine proximal screw placement and screw lengths to ensure proper screw placement in the metaphysis.
## Preparation

### Required set

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>105.434/</td>
<td>Small Fragment LCP Instrument and Implant Set, with self-tapping screws</td>
</tr>
<tr>
<td>145.434</td>
<td>(stainless steel or titanium)</td>
</tr>
</tbody>
</table>

### Optional sets

<table>
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<tr>
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<th>Description</th>
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<tr>
<td>01.120.442/</td>
<td>3.5 mm LCP Medial Proximal Tibia Plate Implant Set (stainless steel or titanium)</td>
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<td>01.120.444</td>
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</tr>
<tr>
<td>105.242/</td>
<td>3.5 mm LCP Proximal Tibia Plate Implant Set (stainless steel or titanium)</td>
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<tr>
<td>145.242</td>
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</tr>
<tr>
<td>105.90</td>
<td>Bone Forceps Set</td>
</tr>
<tr>
<td>105.954</td>
<td>Small Battery Drive Set</td>
</tr>
</tbody>
</table>

### Optional instruments

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>394.35 or</td>
<td>Large Distractor</td>
</tr>
<tr>
<td>115.720</td>
<td>Large External Fixator Set, with self-drilling Schanz screws</td>
</tr>
</tbody>
</table>

**Note:** For information on fixation principles using conventional and locked plating techniques, please refer to the Synthes Small Fragment Locking Compression Plate (LCP) System Technique Guide.
1

**Position patient**

Position the patient on a radiolucent operating table.

Visualization of the proximal tibia under fluoroscopy in both the lateral and AP views is necessary.

If the patient’s hip is normal, position the patient supine, abduct and externally rotate the leg and put it in a figure of four position. A bump under the contralateral hip may help.

If the hip is stiff, position the patient in a lateral decubitus with the involved limb down.

---

2

**Make incision**

With the knee in slight flexion, make a straight or slightly curved incision running from the medial epicondyle toward the posteromedial edge of the tibia. The incision can be extended as needed both proximally and distally.
3
**Identify and expose pes anserinus**

After opening the fascia, identify and expose the pes anserinus.

4
**Access tibial plateau**

Retract the pes anteriorly and the gastrocnemius posteriorly and distally. Identify the medial edge of the tibial plateau.

Identify the meniscus and incise the capsule between the meniscus and the edge of the tibial plateau, gaining access to the knee joint.

**Note:** For further visualization of the knee joint, the pes tendons may be retracted posteriorly and a subminiscal arthrotomy to the MCL may be performed.
The posteromedial side can be approached without exposing and dissecting the neurovascular structures. This approach allows repair of avulsion fractures of the posterior cruciate and tangential fractures of the proximal tibial head.

1  
**Make incision**

With the patient in a prone position, make a lazy S-shaped incision in the popliteal fossa.

The incision should extend about 8 cm proximally and distally from the joint line.

2  
**Open crural fascia**

Open the crural fascia. Identify and save the short saphenous vein and the medial sural cutaneous nerve.
3
Retract semimembranosus muscle

Identify the semimembranosus muscle and retract it medially. The insertion of the medial head of gastrocnemius becomes visible.

4
Expose

Identify the anterior edge of the gastrocnemius and retract the muscle laterally. The muscle will protect the important neurovascular bundle.

Option:
Transection of the gastrocnemius close to its insertion may allow easier retraction and protection of the neurovascular bundle.

The posteromedial capsule comes into view. It can be incised where necessary to expose the fracture lines.

Alternative technique
Alternatively, a Lobenhoffer approach may be used.²

Reduce Fracture

1

Reduce fracture

Instruments

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>394.35</td>
<td>Large Distractor</td>
</tr>
<tr>
<td></td>
<td>Kirschner Wires</td>
</tr>
</tbody>
</table>

**Technique tip:** Before reduction, application of an external fixator or large distractor may facilitate visualization and reduction of the joint.

Reduce the fracture fragments and confirm reduction using image intensification. Fragments may be reduced using independent Kirschner wires.

The locking screws do not provide interfragment or plate-to-bone compression; therefore, any desired compression must be achieved with 3.5 mm conical screws in the plate or independent lag screws.

**Technique tip:** To verify that independent lag screws will not interfere with plate placement, hold the plate to the bone.
Position Plate and Insert Cortex Screws

2

Position plate and insert cortex screws

Instruments

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>310.25</td>
<td>2.5 mm Drill bit</td>
</tr>
<tr>
<td>314.02</td>
<td>Small Hexagonal Screwdriver with Holding Sleeve</td>
</tr>
<tr>
<td>314.03</td>
<td>Small Hexagonal Screwdriver Shaft</td>
</tr>
<tr>
<td>319.01</td>
<td>Depth Gauge, for small screws, measures up to 60 mm</td>
</tr>
<tr>
<td>323.36</td>
<td>3.5 mm Universal Drill Guide</td>
</tr>
</tbody>
</table>

Alternative instrument

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>319.09</td>
<td>Depth Gauge, measures up to 110 mm</td>
</tr>
</tbody>
</table>

Using anatomic landmarks and fluoroscopy, mount the plate on the bone.

Place the 3.5 mm universal drill guide into the nonlocking portion of an elongated plate hole. Use the 2.5 mm drill bit to drill into the bone.

The plate may be temporarily held in place by a 3.5 mm cortex screw or 4.0 mm cancellous bone screw.

Notes:

When used as a buttress plate, cortex screws placed through the plate below the fracture can be used to assist with indirect reduction of the fragment. Placing a nonlocking screw in an elongated LCP hole below the fragment allows easy adjustment of plate positioning before inserting screws into Combi holes in the shaft or plate head.

It is not recommended to drill through both cortices as the posteromedial position of the plate may direct the drill bit into the anterior soft tissues. The tibial tubercle is a suggested aiming point.
2. Position plate and insert cortex screws continued

Measure for screw length with the depth gauge.

Insert a screw with a small hexagonal screwdriver manually or under power. Determine the final position of the plate before tightening completely.

Insert additional cortex screws in Combi holes as necessary using the above technique.

For the neutral position within a Combi hole, press the drill guide down in the nthreaded portion of the hole. To obtain compression, place the drill guide at the end of the nthreaded hole away from the fracture. Do not apply downward pressure on the drill guide's spring-loaded tip.

**Important:** All of the cortex or cancellous bone screws must be inserted before insertion of 3.5 mm locking screws.
### Insert locking screws

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>310.288</td>
<td>2.8 mm Drill Bit</td>
</tr>
<tr>
<td>312.648</td>
<td>2.8 mm Threaded Drill Guide</td>
</tr>
<tr>
<td>314.115</td>
<td>StarDrive Screwdriver, T15</td>
</tr>
<tr>
<td>314.116</td>
<td>StarDrive Screwdriver Shaft, T15</td>
</tr>
<tr>
<td>319.01</td>
<td>Depth Gauge, for small screws, measures up to 60 mm</td>
</tr>
<tr>
<td>511.770*</td>
<td>Torque Limiting Attachment (TLA), 1.5 Nm</td>
</tr>
<tr>
<td>511.773</td>
<td>Torque Limiting Attachment (TLA), 1.5 Nm, quick coupling</td>
</tr>
</tbody>
</table>

* Also available

Thread the 2.8 mm threaded drill guide into an appropriate locking hole.

Use the 2.8 mm drill bit to drill into the bone.
3. Insert locking screws continued

Remove the threaded drill guide and measure with the depth gauge.

Insert the appropriate length locking screw using a StarDrive screwdriver.

**Note:** If longer screws (65 mm–95 mm) are used, alternative instruments may be needed.

**Alternative instruments**

- 03.122.001* 2.8 mm LCP Drill Guide, long (for use with 03.122.002)
- 03.122.002* 2.8 mm Drill Bit, 95 mm calibration (for use with 03.122.001)
- 319.09 Depth Gauge, for small screws, measures up to 110 mm
- 324.214 2.8 mm Percutaneous Drill Bit, 100 mm calibration (for use with 312.648)

**Notes:**

Ensure proper reduction before inserting the first locking screw. Once the locking screws are inserted, further reduction is not possible without loosening the locking screws.

Always use a torque limiting attachment when using power to insert locking screws. Final tightening should be performed by hand.

* Also available
Alternative Technique

1 Screw placement verification (optional)

Instruments

<table>
<thead>
<tr>
<th>Code</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>292.71</td>
<td>1.6 mm Kirschner Wire with Thread</td>
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<tr>
<td>310.288</td>
<td>2.8 mm Drill Bit</td>
</tr>
<tr>
<td>312.648</td>
<td>2.8 mm Threaded Drill Guide</td>
</tr>
<tr>
<td>323.023</td>
<td>1.6 mm Wire Sleeve</td>
</tr>
<tr>
<td>511.770*</td>
<td>Torque Limiting Attachment (TLA), 1.5 Nm</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>511.773</td>
<td>Torque Limiting Attachment (TLA), 1.5 Nm, quick coupling</td>
</tr>
<tr>
<td>532.010</td>
<td>Small Battery Drive</td>
</tr>
<tr>
<td>532.022</td>
<td>Quick Coupling for K-Wires</td>
</tr>
</tbody>
</table>

With a 2.8 mm threaded drill guide attached to the plate, insert a 1.6 mm wire sleeve into the threaded guide.

Insert a threaded 1.6 mm Kirschner wire through the wire sleeve and drill to the desired depth.

Verify K-wire placement under image intensification to determine if final screw placement is acceptable.

**Important:** The K-wire position represents the final position of the locking screw. Confirm that the K-wire does not enter or interfere with the joint or other screws.

* Also available
2

Insert locking screws

**Instruments**

<table>
<thead>
<tr>
<th>Code</th>
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</tr>
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<tbody>
<tr>
<td>314.115</td>
<td>StarDrive Screwdriver, T15</td>
</tr>
<tr>
<td>314.116</td>
<td>StarDrive Screwdriver Shaft, T15</td>
</tr>
<tr>
<td>323.025</td>
<td>Direct Measuring Device</td>
</tr>
</tbody>
</table>

Measurement may be taken by sliding the tapered end of the direct measuring device over the K-wire and down to the wire sleeve.

Remove the direct measuring device, K-wire and 1.6 mm wire sleeve, leaving the threaded drill guide in place.

Use the 2.8 mm drill bit to drill the near cortex. Remove the threaded drill guide. Insert the appropriate length locking screw.
Insert additional locking screws as necessary.
Screws Used with the 3.5 mm LCP Posteromedial Proximal Tibia Plate
Stainless Steel and Titanium

**4.0 mm Cancellous Bone Screws** *
- May be used in the DCU portion of the Combi holes, in the plate shaft or in round locking holes
- Compress the plate to the bone or create axial compression
- Fully or partially threaded shaft
- Available in stainless steel or titanium

**3.7 mm Cannulated Locking Screws, self-tapping** **
- Create a locked, fixed-angle screw plate construct
- Threaded conical head
- Fully threaded shaft
- Self-drilling
- Available in stainless steel or titanium alloy

**3.7 mm Cannulated Conical Screws, self-tapping** **
- Compress the plate to the bone and provides interfragment compression
- Smooth conical head
- Fully or partially threaded shaft
- Self-drilling
- Available in stainless steel or titanium alloy

**3.5 mm Locking Screws, self-tapping** *
- May be used in the DCU portion of the Combi holes in the plate shaft or in round locking holes
- Available in stainless steel or titanium alloy

Screws are available in the following materials:
Implant-quality 316L stainless steel, commercially pure titanium, and titanium alloy (Ti-6Al-7Nb)

* Found in the Small Fragment Set (105.434 or 145.434)
** Found in the 3.7 mm Cannulated Locking and Conical Screw Set (01.240.016)
Screws are available in the following materials:
Implant-quality 316L stainless steel, commercially pure titanium, and titanium alloy (Ti-6Al-7Nb)

* Found in the Small Fragment Set (105.434 or 145.434)
*** Also available

3.5 mm Conical Screw, self-tapping ***
- May be used in the DCU portion of the Combi holes in the plate shaft or in round locking holes
- Fully or partially threaded shaft
- Available in stainless steel or titanium alloy

3.5 mm Cortex Screws, self-tapping *
- May be used in the DCU portion of the Combi holes in the plate shaft or in round locking holes
- Compress the plate to the bone or create axial compression
- Available in stainless steel or titanium
Plates are available in implant-quality 316L stainless steel or titanium alloy (Ti-6Al-7Nb)

◊ Available nonsterile or sterile-packed.
Add “S” to catalog number to order sterile product.
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>319.09</td>
<td>Depth Gauge, for small screws, measures up to 110 mm</td>
</tr>
<tr>
<td>324.214</td>
<td>2.8 mm Percutaneous Drill Bit, quick coupling, 200 mm, 100 mm calibration</td>
</tr>
</tbody>
</table>
### Implants

**3.5 mm LCP Posteromedial Proximal Tibia Plates, sterile**

<table>
<thead>
<tr>
<th>Length (mm)</th>
<th>Stainless Steel</th>
<th>Titanium</th>
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</thead>
<tbody>
<tr>
<td>69</td>
<td>02.120.701S</td>
<td>04.120.701S</td>
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<td>79</td>
<td>02.120.702S</td>
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</tr>
<tr>
<td>183</td>
<td>02.120.710S</td>
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</tr>
</tbody>
</table>

### Also Available

- **01.120.700** 3.5 mm LCP Posteromedial Proximal Tibia Plate Set, without case
  - (1 ea. stainless steel plate)

- **01.120.710** 3.5 mm Titanium LCP Posteromedial Proximal Tibia Plate Set, without case
  - (1 ea. titanium plate)

- **01.240.016** 3.7 mm Cannulated Locking and Conical Screw Set

- **03.122.001** 2.8 mm LCP Drill Guide, long
  - (for use with 03.122.002)

- **03.122.002** 2.8 mm Drill bit, 95 mm calibration
  - (for use with 03.122.001)

- **511.770** Torque Limiting Attachment (TLA), 1.5 Nm

### Required Set

- **105.434/** Small Fragment LCP Instrument and Implant
- **145.434** Set, with self-tapping screws (stainless steel or titanium)

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**Note:** For additional information, please refer to package insert.

For detailed cleaning and sterilization instructions, please refer to http://us.synthes.com/Medical+Community/Cleaning+and+Sterilization.htm or to the below listed inserts, which will be included in the shipping container:

- Processing Synthes Reusable Medical Devices—Instruments, Instrument Trays and Graphic Cases—DJ1305
- Processing Non-sterile Synthes Implants—DJ1304

◊ Available nonsterile or sterile-packed.

Delete “S” from catalog number to order nonsterile product.