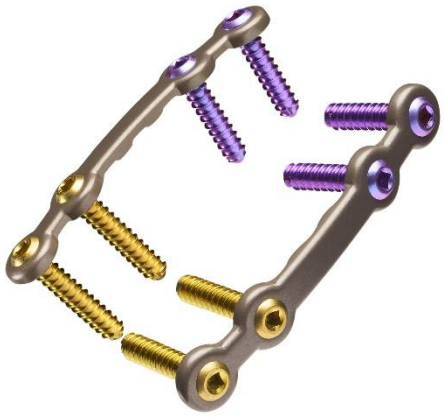
Treace Medical Concepts Plating System

Multiplanar Fixation System



Surgical Technique

Lapidus and 1st MTP Fusion

Lapidus Fusion

Surgical Approach

1. Perform a longitudinal incision dorsally over the 1st metatarsocuneiform (TMT) joint medial to the extensor hallucis longus. Release the plantar ligaments with an osteotome to allow for mobilization of the metatarsal. Make frontal (rotation), sagittal, and transverse plane adjustments to position the metatarsal in corrected alignment. Use a k-wire placed from the 1st metatarsal through the 2nd metatarsal to temporarily hold the correction in place. With a sagittal saw, remove the cartilage and small amount of subchondral bone from the base of the metatarsal and remove the excised material. Using the saw, make a cut to the face of the cuneiform and remove cut cartilage/bone fragment. Use the 2mm drill to expose bleeding bone on both cut surfaces to maximize fusion potential.

   Note: Autograft or allograft may be utilized as needed to enhance fusion potential.

Provisional Fixation and Compression of the TMT Joint

2. Provisionally fixate and pre-compress the 1st metatarsal and cuneiform bones together in proper alignment using 2mm threaded olive wire(s) (40mm sub-olive length) and/or straight k-wire(s) as surgeon desires. Olive wires should be placed distal-dorsal to proximal plantar across the joint.

3. Select the Treace Medical Concepts (TMC) 4-hole curved plate for the Lapidus fusion procedure that meets the specific needs associated with the patient's anatomy and surgical goals. Inspect the plate to ensure all four pre-installed drill guides are fully installed.

4. If bending of the plate is required to match bony anatomy, insert the bending devices into pre-assembled drill guides on the plate and make contour adjustments to the plate prior to fixating the plate to the bone.

   Caution: Bending should only be performed with the bending devices inserted into drill guides installed on the plate. Do not bend the plate without all the drill guides installed.

   Caution: Each bend should be in one direction only; reverse or repeated bending may weaken or cause the plate to break.

   Caution: TMC plates are not designed to be cut.

5. Apply plate to bone surface dorsally or dorsal-medially in such a way that the solid mid-section of the plate spans the fusion site, ensuring that there is adequate room for two screws to be placed on either side of the fusion.

Provisional Plate Fixation

Note: Provisional fixation with short olive wires through the drill guides may be used to both stabilize the plate on the bone and to predict locking screw trajectory on fluoroscopy. If trajectory is deemed unacceptable, the surgeon may remove the plate and either reposition, and/or rebend the plate to adjust final screw trajectory.

6. Using the olive wire with drill tip, drill through the drill guide/plate construct to desired depth for the hole located on the cuneiform side. Now remove the drill guide assembly with driver and remove the guide assembly from surgical site.

   Note: To facilitate screw insertion, make multiple passes with the drill.

   Note: The 1.3/1.6 square driver is for use with the LAPIPLASTY® System and the non-cannulated hexalobular #8 driver is for use with LAPIPLASTY® System 2.

Screw Insertion

7. Using hand pressure, insert a 14mm locking screw head into the driver tip securely to provide solid retention of the screw on the driver tip.

   Note: If using the LAPIPLASTY® System 2, the TMC 2.7mm x 16mm and 18mm locking screws can be used in place of the described 12mm and 14mm locking screws as deemed necessary by the surgeon.

8. Insert the screw centered vertically into the plate hole that has just been drilled per step #6 until the tip of the screw engages the pre-drilled path in the underlying bone. Advance the screw into the plate to the point where locking threads under the head of the screw engage into the receiving threads in the plate. Continue advancing the screw into the bone until a firm stop is achieved signifying the complete lock of the screw head into the plate. When properly installed, the head of the screw should sit flush with the top surface of the plate.

   Caution: Use care to not cross threads while inserting the screw head into the plate.

   Caution: Use care to not over-tighten once the screw head locks into the plate, as this can result in stripping of the screw head or deforming the driver tip.

9. Insert a 12mm locking screw into the metatarsal-side hole following steps 6-8.

10. Remove the short olive wires used for provisional fixation of the plate to the bone, and insert a 12mm and 14mm screw into the remaining metatarsal and cuneiform holes respectively, following steps 6-8.

    Caution: Be sure to remove all drill guides from the surgical site prior to closing.

11. A second plate may be used in the procedure as deemed necessary by the surgeon. To aide in the selection of a second plate, the appropriate-sided PLANTAR PYTHON® Trial can be applied across the TMT joint to assess the potential fit of the PLANTAR PYTHON® Plate. Select the appropriate TMC 4-hole curved plate or the PLANTAR PYTHON® Plate for the appropriate surgical side. In the Lapidus fusion procedure, it would be advised to place the second plate at approximately a 90 degree circumferential offset (medial or medial-plantar position) to the first dorsally-located plate. Install second plate following same steps as described for the first plate. Care should be taken to avoid extensive dissection or periosteal stripping if using a second plate.

    Caution: Do not implant the PLANTAR PYTHON® Trial.

    Note: The respective "L" or "R" marking on the PLANTAR PYTHON® Trials indicates the appropriate surgical side and designates the proximal end of the trial.

    Note: The blue-colored drill guide on the PLANTAR PYTHON® Plate indicates the proximal end of the plate.

    Note: There is not a PLANTAR PYTHON® Trial at this time for LAPIPLASTY® System 2.

1st Metatarsophalangeal (MTP) Fusion

Surgical Approach

1. Perform a longitudinal incision beginning just proximal to the interphalangeal joint and extending over the 1st MTP joint medial to the extensor hallucis longus. Expose the proximal phalanx and metatarsal head and release the sesamoids. Denude all cartilage surfaces with a rongeur or using your preferred method until bleeding subchondral bone is exposed.

Following joint preparation, provisionally fixate the joint at the desired angle with straight k-wire(s) and/or a 2mm threaded olive (40mm sub-olive length).

Plate placement

2. Select the TMC 4-hole curved plate for the MTP fusion procedure that meets the specific needs associated with the patient's anatomy and surgical goals. Inspect the plate to ensure that all four pre-installed drill guides are fully installed.

3. If bending of the plate is required to match the bony anatomy, insert bending devices into the pre-assembled drill guides on the plate and make adjustments to the plate prior to fixating the plate to the bone.

   Caution: Bending should only be performed with the bending devices inserted into drill guides installed on the plate. Do not bend the plate without all the drill guides installed.

   Caution: Each bend should be in one direction only; reverse or repeated bending may weaken the plate or cause the plate to break.

   Caution: TMC plates are not designed to be cut.

4. Apply the plate to the bone surface dorsal-laterally in such a way that the solid mid-section of the plate spans the fusion site, ensuring that there is adequate room for two screws to be placed on either side of the fusion.

Provisional Plate Fixation

Note: Provisional fixation with short olive wires through the drill guides may be used to both stabilize the plate on the bone and to predict locking screw trajectory on fluoroscopy. If the trajectory is deemed unacceptable, the surgeon may remove the plate and either reposition, and/or rebend the plate to adjust the trajectory.

5. Using the olive wire with drill tip, drill through the drill guide/plate construct to the desired depth for the hole located on the metatarsal side. Now remove the drill guide assembly with the driver and remove the guide assembly from the surgical site.

   Note: To facilitate screw insertion, make multiple passes with the drill.

   Note: The 1.3/1.6 square driver is for use with LAPIPLASTY® System and the non-cannulated hexalobular #8 driver is for use with LAPIPLASTY® System 2.

Screw Insertion

6. Using hand pressure, insert a 14mm locking screw head into the driver tip securely to provide solid retention of the screw on the driver tip.

   Note: If using the LAPIPLASTY® System 2, the TMC 2.7mm x 16mm and 18mm locking screws can be used in place of the described 12mm and 14mm locking screws as deemed necessary by the surgeon.

7. Insert the screw centered vertically into the most proximal metatarsal plate hole (that has just been drilled per step #5) until the tip of the screw engages the pre-drilled path in the underlying bone. Advance the screw into the plate to the point where the locking threads under the head of the screw engage into the receiving threads in the plate. Continue advancing the screw into the bone until a firm stop is achieved signifying the complete lock of the screw head into the plate. When properly installed, the head of the screw should sit flush with the top surface of the plate.

   Caution: Use care to not cross threads while inserting the screw head into the plate.

   Caution: Use care to not over-tighten once the screw head locks into the plate, as this can result in stripping of the screw head or deforming the driver tip.

8. Insert a 12mm locking screw into the phalanx-side hole following steps 5-7.

9. Remove the short olive wires used for provisional fixation of the plate to the bone, and insert a 12mm and 14mm locking screw into the remaining phalanx and metatarsal holes respectively, following steps 5-7.

   Caution: Be sure to remove all drill guides from the surgical site prior to closing.

10. Since two TMC 4-hole curved plates are available in the kit, a second plate may be used in the procedure as deemed necessary by the surgeon. In the MTP fusion procedure, it would be advised to place the second plate at approximately a 90 degree circumferential offset (dorsal-medial position) to the initial dorsal-lateral positioned plate. Install the second plate following the same steps as described for the first plate. Care should be taken to avoid extensive dissection or periosteal stripping if using a second plate.

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