



# Treace Medical Concepts Compression Implant System

Surgical Technique  
Lapidus, Lesser TMT, and 1<sup>st</sup> MTP Fusion

# Lapidus Fusion

The Treace Medical Concepts (TMC) Compression Implant System is composed of a variety of implant designs and sizes. The correct implant selection for the procedure is extremely important, and preoperative consideration of the proper fixation option will increase the potential for surgical success.

## *Surgical Approach*

1. Perform a longitudinal incision dorsally over the 1st tarsometatarsal (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 cutting device, remove the cartilage and small amount of subchondral bone from the base of the metatarsal and remove the excised material. Make a cut to the face of the cuneiform and remove cut cartilage/bone fragment. Use the appropriate size drill to expose bleeding bone on both cut surfaces to maximize fusion potential.
2. Provisionally fixate and pre-compress the 1st metatarsal and cuneiform bones together in proper alignment using threaded olive wire(s) and/or straight K-wire(s) as surgeon desires. Olive wires should be placed distal-dorsal to proximal plantar across the joint.

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

## *Preparation for Implantation*

3. Select the appropriate two- or four-legged compression implant for the Lapidus fusion procedure that meets the specific needs associated with the patient's anatomy and surgical goals.
4. Select the appropriately sized drill guide and place it on the bone surface dorsally or dorsal-medially in such a way that drill guide spans the fusion site, ensuring that there is adequate room for the implant on either side of the fusion.

Note: Provisional fixation can be used to stabilize the drill guide on the bone.

5. Confirm drill guide position with fluoroscopy. If the trajectory is deemed unacceptable, the surgeon may reposition the drill guide.

Note: The underside of the drill guide should be in contact with bone, which may require contouring of the bone surface to properly seat the drill guide.

6. Once location and trajectory are deemed acceptable, drill holes to the proper size and depth using drills and/or pins. Leave drills or pins in place for stability as needed.

7. Remove the drills and/or pins from the drill guide. Then remove the drill guide.

### *Implant Insertion*

8. Select the appropriate TMC compression implant and check that the pre-installed inserter arms are fully installed.

Caution: Use care to not squeeze the threaded rods unless the rods are fully installed and secured onto the implant, as this can result in deformation of the threaded rods.

9. While manually squeezing the inserter arms to a parallel position, insert the inserter arms into the corresponding holes of the inserter cap to hold the implant in a pre-loaded configuration.

Caution: Use care to not squeeze the inserter arms past a parallel position, as this can result in permanent deformation of the implant.

10. Insert the legs of the TMC implant into the pre-drilled holes in the bone. Light tapping on the inserter cap may be helpful in advancing the implant. When properly installed, the bottom surface of the implant should sit flush against the surface of the bone.

Caution: Avoid excessive force or impaction when inserting the implant into the bone.

11. While lightly squeezing the inserter arms, remove the inserter cap to release the pre-loaded TMC compression implant. Remove the inserter arms from the implant manually. If required, use the appropriate instrumentation to aid with removal of the arms. Proper implant placement can be confirmed on fluoroscopy.

12. Align the end of the inserter cap with the bridge of the implant and tamp as needed to completely seat the implant.

13. A second TMC compression implant may be used in the procedure as deemed necessary by the surgeon. In the Lapidus fusion procedure, it would be advised to place the second implant at approximately a 90-degree circumferential offset (medial or medial-plantar position) to the first dorsally-located implant. Install second implant following same steps as described for the first implant. Care should be taken to avoid extensive dissection or periosteal stripping if using a second compression implant.

14. Remove any remaining instrumentation and/or provisional fixation.

## *Implant Removal*

15. To remove the implant, utilize the inserter arms and/or use general orthopedic instrumentation to remove the implant. Where utilizing the inserter arms, attach the inserter arms into the threaded holes in the implant and fully tighten using the appropriate instrumentation. Gently squeeze the inserter arms and insert them into the inserter cap. Use general orthopedic instrumentation such as an osteotome or elevator to remove the implant.

Note: If there is tissue growth within the implant that prevents removal, the tissue may be removed with a generally available surgical instrument.

Note: If the implant is recessed, use an elevator to lift the implant bridge and then use another general instrument such as an osteotome or elevator to remove the implant. If solidly connected, implants can be removed by either cutting the bridge of the implant or cutting the leg of the implant near the bridge and removing the remnants with an osteotome or elevator.

# Lesser TMT Fusion

The Treace Medical Concepts (TMC) Compression Implant System is composed of a variety of implant designs and sizes. The correct implant selection for the procedure is extremely important, and preoperative consideration of the proper fixation option will increase the potential for surgical success.

## *Surgical Approach*

1. Perform a longitudinal dorsal incision over the selected lesser tarsometatarsal (TMT) joint. Expose the joint and use a cutting device to remove the articular cartilage from the joint surfaces. Use the 2mm drill to expose bleeding bone on both cut surfaces to maximize fusion potential.
2. Provisionally fixate and pre-compress the metatarsal and cuneiform bones together in proper alignment using threaded olive wire(s) and/or straight K-wire(s) as surgeon desires.

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

## *Preparation for Implantation*

3. Select the appropriate two- or four-legged compression implant for the lesser TMT fusion procedure that meets the specific needs associated with the patient's anatomy and surgical goals.
4. Select the appropriately sized drill guide and place it on the bone surface dorsally in such a way that drill guide spans the fusion site, ensuring that there is adequate room for the implant on either side of the fusion.

Note: Provisional fixation can be used to stabilize the drill guide on the bone.

5. Confirm drill guide position with fluoroscopy. If trajectory is deemed unacceptable, the surgeon may reposition the drill guide.

Note: The underside of the drill guide should be in contact with bone, which may require contouring of the bone surface to properly seat the drill guide.

6. Once location and trajectory are deemed acceptable, drill holes to the proper size and depth using drills and/or pins. Leave the drills or pins in place for stability as needed.
7. Remove the drills and/or pins from the drill guide. Then remove the drill guide.

## *Implant Insertion*

8. Select the appropriate TMC compression implant and check that the pre-installed inserter arms are fully installed.

Caution: Use care to not squeeze the threaded rods unless the rods are fully installed and secured onto the implant, as this can result in deformation of the threaded rods.

9. While manually squeezing the inserter arms to a parallel position, insert the inserter arms into the corresponding holes of the inserter cap to hold the implant in a pre-loaded configuration.

Caution: Use care to not squeeze the inserter arms past a parallel position, as this can result in permanent deformation of the implant.

10. Insert the legs of the implant into the pre-drilled holes in the bone. Light tapping on the inserter cap may be helpful in advancing the implant. When properly installed, the bottom surface of the implant should sit flush against the surface of the bone.

Caution: Avoid excessive force or impaction when inserting the implant into the bone.

11. While lightly squeezing the inserter arms, remove the inserter cap to release the pre-loaded TMC compression implant. Remove the inserter arms from the implant manually. Proper implant placement can be confirmed on fluoroscopy.
12. Align the end of the inserter cap with the bridge of the implant and use as needed to completely seat the implant.
13. Remove any remaining instrumentation and/or provisional fixation.

## *Implant Removal*

14. To remove the implant, utilize the inserter arms and/or use general orthopedic instrumentation to remove the implant. When utilizing the inserter arms, attach the inserter arms into the threaded holes in the implant and fully tighten using the appropriate instrumentation. Gently squeeze the inserter arms and insert them into the inserter cap. Use general orthopedic instrumentation such as an osteotome or elevator to remove the implant.

Note: If there is tissue growth within the implant that prevents removal, the tissue may be removed with a generally available surgical instrument.

Note: If the implant is recessed, use an elevator to lift the implant bridge and then use another general instrument such as an osteotome or elevator to remove the Implant. If solidly connected, implants can be removed by either cutting the bridge of the implant or cutting the leg of the implant near the bridge and removing the remnants with an osteotome or elevator.

# 1st Metatarsophalangeal (MTP) Fusion

## Compression Implant Without Mating Locking Screws

The Treace Medical Concepts (TMC) Compression Implant System is composed of a variety of implant designs and sizes. The correct implant selection for the procedure is extremely important, and preoperative consideration of the proper fixation option will increase the potential for surgical success.

### *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.
2. Provisionally fixate and pre-compress the metatarsal and phalanx bones together in proper alignment using threaded olive wire(s) and/or straight K-wire(s) as surgeon desires.

Note: Autograft or allograft may be utilized as needed to enhance fusion potential. Where desired, additional screw fixation with a preferred, cleared screw as indicated for a 1<sup>st</sup> MTP fusion procedures and per the respective surgical technique may be applied prior to the placement of the TMC compression implants.

### *Preparation for Implantation*

3. Select the appropriate two- or four-legged compression implant for the MTP fusion procedure that meets the specific needs associated with the patient's anatomy and surgical goals.
4. Select the appropriately sized drill guide and place it on the bone surface dorsal-laterally in such a way that drill guide spans the fusion site, ensuring that there is adequate room for the implant on either side of the fusion.

Note: Provisional fixation can be used to stabilize the drill guide on the bone.

5. Confirm drill guide position with fluoroscopy. If trajectory is deemed unacceptable, the surgeon may reposition the drill guide.

Note: The underside of the drill guide should be in contact with bone, which may require contouring of the bone surface to properly seat the drill guide.

6. Once location and trajectory are deemed acceptable, drill holes to the proper size and depth using drills and/or pins. Leave the drills or pins in place for stability as needed.

7. Remove the drills and/or pins from the drill guide. Then remove the drill guide.

### *Implant Insertion*

8. Select the appropriate TMC compression implant and check that the pre-installed inserter arms are fully installed.

Caution: Use care to not squeeze the threaded rods unless the rods are fully installed and secured onto the implant, as this can result in deformation of the threaded rods.

9. While manually squeezing the inserter arms to a parallel position, insert the inserter arms into the corresponding holes of the inserter cap to hold the implant in a pre-loaded configuration.

Caution: Use care to not squeeze the inserter arms past a parallel position, as this can result in permanent deformation of the implant.

10. Insert the legs of the TMC implant into the pre-drilled holes in the bone. Light tapping on the impactor cap may be helpful in advancing the implant. When properly installed, the bottom surface of the implant should sit flush against the surface of the bone.

Caution: Avoid excessive force or impaction when inserting the implant into the bone.

11. While lightly squeezing the inserter arms, remove the inserter cap to release the pre-loaded TMC compression implant. Remove the inserter arms from the implant manually. Proper implant placement can be confirmed on fluoroscopy.
12. Align the end of the inserter cap with the bridge of the implant and tamp as needed to completely seat the implant.
13. A second implant 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 implant at approximately a 90-degree circumferential offset (medial or dorsal-medial position) to the first dorsal-lateral located implant. Install second implant following same steps as described for the first implant. Care should be taken to avoid extensive dissection or periosteal stripping if using a second compression implant.
14. Remove any remaining instrumentation and/or provisional fixation.

### *Implant Removal*

To remove the implant, utilize the appropriate inserter arms and/or use general orthopedic instrumentation to remove the implant. When utilizing the inserter arms, attach the inserter arms into the threaded holes in the implant and fully tighten using the appropriate instrumentation. Gently



squeeze the inserter arms and insert them into the inserter cap. Use general orthopedic instrumentation such as an osteotome or elevator to remove the implant.

Note: If there is tissue growth within the implant that prevents removal, the tissue may be removed with a generally available surgical instrument.

Note: If the implant is recessed, use an elevator to lift the implant bridge and then use another general instrument such as an osteotome or elevator to remove the implant. If solidly connected, implants can be removed by either cutting the bridge of the implant or cutting the leg of the implant near the bridge and removing the remnants with an osteotome or elevator.

## Compression Implant With Mating Locking Screws

The Treace Medical Concepts (TMC) Compression Implant System is composed of a variety of implant designs and sizes. The correct implant selection for the procedure is extremely important, and preoperative consideration of the proper fixation option will increase the potential for surgical success.

### *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.
2. Provisionally fixate and pre-compress the metatarsal and phalanx bones together in proper alignment using threaded olive wire(s) and/or straight K-wire(s) as surgeon desires.

Note: Autograft or allograft may be utilized as needed to enhance fusion potential. Where desired, additional screw fixation with a preferred, cleared screw as indicated for a 1<sup>st</sup> MTP fusion procedures and per the respective surgical technique may be applied prior to the placement of the TMC compression implants.

### *Preparation for Implantation*

3. Select the appropriate compression implant for the MTP fusion procedure that meets the specific needs associated with the patient's anatomy and surgical goals.
4. Select the appropriately sized drill guide and place it on the bone surface dorsally in such a way that drill guide spans the fusion site, ensuring that there is adequate room for the implant on either side of the fusion. Tack the drill guide in place using two temporary tacks through the drill guide. Confirm drill guide position with fluoroscopy. If trajectory is deemed unacceptable, the surgeon may reposition the drill guide.

Note: The underside of the drill guide should be in contact with bone, which may require contouring of the bone surface to properly seat the drill guide.

5. Drill dorsal holes to the proper size and depth using the appropriate drill(s).
6. Remove any remaining drills and tacks, then remove the drill guide.

### *Implant Insertion*

7. Select the appropriate TMC compression implant and check that the pre-installed threaded rods are fully installed.

Caution: Use care to not squeeze the threaded rods unless the rods are fully installed and secured onto the implant, as this can result in deformation of the threaded rods.

8. While manually squeezing the threaded rods to a parallel position, insert the threaded rods into the corresponding holes of the inserter cap to hold the implant in a pre-loaded configuration.

Caution: Use care to not squeeze the threaded rods past a parallel position, as this can result in permanent deformation of the implant.

9. Insert the legs of the implant into the pre-drilled holes in the bone. Light tapping on the inserter cap may be helpful in advancing the implant. When properly installed, the bottom surface of the implant should sit flush against the surface of the bone.

Caution: Avoid excessive force or impaction when inserting the implant into the bone.

10. Drill the screw holes, then remove drill guides. Insert the appropriate length screw into each screw hole. Advance the screws into the compression implant to the point where locking threads under the head of the screw engage into the receiving threads in the implant. Continue advancing the screws into the bone until a firm stop is achieved signifying the complete lock of the screw head into the implant. When properly installed, the head of the screws should sit flush with the top surface of the implant.

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

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

11. While lightly squeezing the threaded rods, manually remove the inserter cap to release the pre-loaded TMC compression implant. Remove the threaded rods from the implant manually. If required, use the appropriate instrumentation to aid with removal of the threaded rods. Proper implant placement can be confirmed on fluoroscopy.

12. Align the end of the inserter cap with the bridge of the implant and tamp as needed to completely seat the implant.
13. Remove any remaining instrumentation and/or provisional fixation.

#### *Implant Removal*

14. To remove the implant, remove the screws by utilizing an appropriate screwdriver instrument, then utilize the appropriate threaded rods and/or use general orthopedic instrumentation to remove the implant. Where utilizing the threaded rods, attach the threaded rods into the threaded holes in the implant and fully tighten using the appropriate instrumentation. Gently squeeze the threaded rods and insert them into the inserter cap. Use general orthopedic instrumentation such as an osteotome or elevator to leverage the bridge of the implant to remove in line with the axis of the threaded rods.

Note: If there is tissue growth within the implant that prevents removal, the tissue may be removed with a generally available surgical instrument.

Note: If the implant is recessed, use an elevator to lift the implant bridge and then use another general instrument such as an osteotome or elevator to remove the implant. If solidly connected, implants can be removed by either cutting the bridge of the implant or cutting the leg of the implant near the bridge and removing the remnants with an osteotome or elevator.



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