



Treace Medical Concepts Compression Screw System

Surgical Technique

Lapidus Fusion and Akin Osteotomy

Lapidus Fusion

The Treace Medical Concepts (TMC) Compression Screw System is composed of a variety of diameter screws in headed and headless versions. The correct screw selection for the procedure is extremely important, and preoperative consideration of the proper screw size and design will increase the potential for surgical success. For illustrative purposes, the following surgical technique describes a Lapidus fusion using 3.0mm and/or 3.5mm headed screws.

Note: Though the TMC compression screws are designed as permanent implants, they may be removed intra or post-operatively as deemed necessary by the physician using the appropriate size hexalobular screw driver.

Surgical Approach

1. Perform a longitudinal skin incision over the 1st metatarsocuneiform (TMT) joint. Release the plantar ligaments and prepare the joint surfaces for fusion by removing the cartilage and subchondral bone until bleeding subchondral bone is visualized.

K-wire Placement

2. Position the metatarsal in corrected alignment and provisionally fixate the TMT joint using threaded olive wire(s) and/or straight k-wire(s).
3. Using power, insert the 1.1mm k-wire in the desired trajectory across the fusion site from the distal-dorsal to proximal-plantar direction, until the desired depth is reached. Confirm the k-wire positioning using fluoroscopy.

Caution: Care must be taken to ensure the k-wire is placed a sufficient distance from the TMT joint to avoid fracturing the bone.

Countersinking

Note: Countersinking is an optional step and can be performed before or after drilling.

4. To ensure complete seating of the headed screws, the 5.0mm (or appropriate size) countersink may be used. Slide the countersink over the k-wire, and advance the countersink in a clockwise motion to penetrate the cortex of the bone.

Caution: Removing too much bone with the countersink can cause loss of screw head purchase and diminish the compression effect of the screw.

Drilling

Note: The TMC Compression Screw System has been designed to be self-drilling and self-tapping. However, in some situations such as hard cortical bone, or when an oblique approach is desired, drilling may be necessary.

5. Select the 2.0mm (or appropriate size) cannulated drill and slide the drill over the k-wire. Under power, advance the drill until the desired screw depth is achieved.

Screw Length Determination

6. Determine the desired screw length by referencing the depth markings on the drill and/or the k-wire.

Screw Insertion

7. Advance the 3.0mm screw (or appropriate size) over the k-wire using a cannulated #15 hexalobular screwdriver until the head of the screw is completely seated in the bone. Verify final position via fluoroscopy. Remove the k-wire.
8. A second screw may be placed across the TMT joint as deemed necessary by the surgeon. It is recommended to place the screw from a proximal-dorsal to distal-plantar direction. Implant the second screw following same steps as described for the first screw.

Caution: Care must be taken to ensure the second screw is placed a sufficient distance from the first screw to avoid creating a stress riser.

Transverse Screw Insertion

9. If additional transverse-plane stabilization is desired, a 3.5mm (or appropriate size) screw may be placed from the medial cuneiform to intermediate cuneiform or 2nd metatarsal; or from the base of the 1st metatarsal to 2nd metatarsal. Implant the transverse screw following same steps as described for the first screw.

Akin Osteotomy

The TMC Compression Screw System is composed of a variety of diameter screws in headed and headless versions. The correct screw selection for the procedure is extremely important, and preoperative consideration of the proper screw size and design will increase the potential for surgical success. For illustrative purposes, the following surgical technique describes an Akin osteotomy using 2.5mm headless screws.

Note: Though the TMC compression screws are designed as permanent implants, they may be removed intra or post-operatively as deemed necessary by the physician using the appropriate size hexalobular screw driver.

Surgical Approach

1. Perform a longitudinal skin incision medially over the proximal phalanx. Using a powered saw, perform a closing wedge osteotomy in the phalanx for a transverse-plane correction of the phalanx alignment.

K-wire Placement

2. Manually reduce the osteotomy site, and under power, insert the 0.9mm k-wire across the osteotomy site from the proximal-medial to distal-lateral direction until the desired depth is reached. Confirm the k-wire positioning using fluoroscopy.

Countersinking

Note: Countersinking is an optional step.

3. To ensure complete seating of the headless screws, the 2.5mm countersink may be used. Slide the countersink over the k-wire, and advance the countersink in a clockwise motion to penetrate the cortex of the bone. Advance the countersink in a clockwise motion to penetrate the cortex of the bone.

Caution: Removing too much bone with the countersink can cause loss of screw head purchase and diminish the compression effect of the screw.

Screw Length Determination

4. Determine the desired screw length by referencing the depth markings on the k-wire.

Screw Insertion

5. Advance the 2.5mm (or appropriate size) screw over the k-wire using a cannulated #8 hexalobular screwdriver until the head of the screw is completely seated in the bone. Verify final position via fluoroscopy. Remove the k-wire.



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