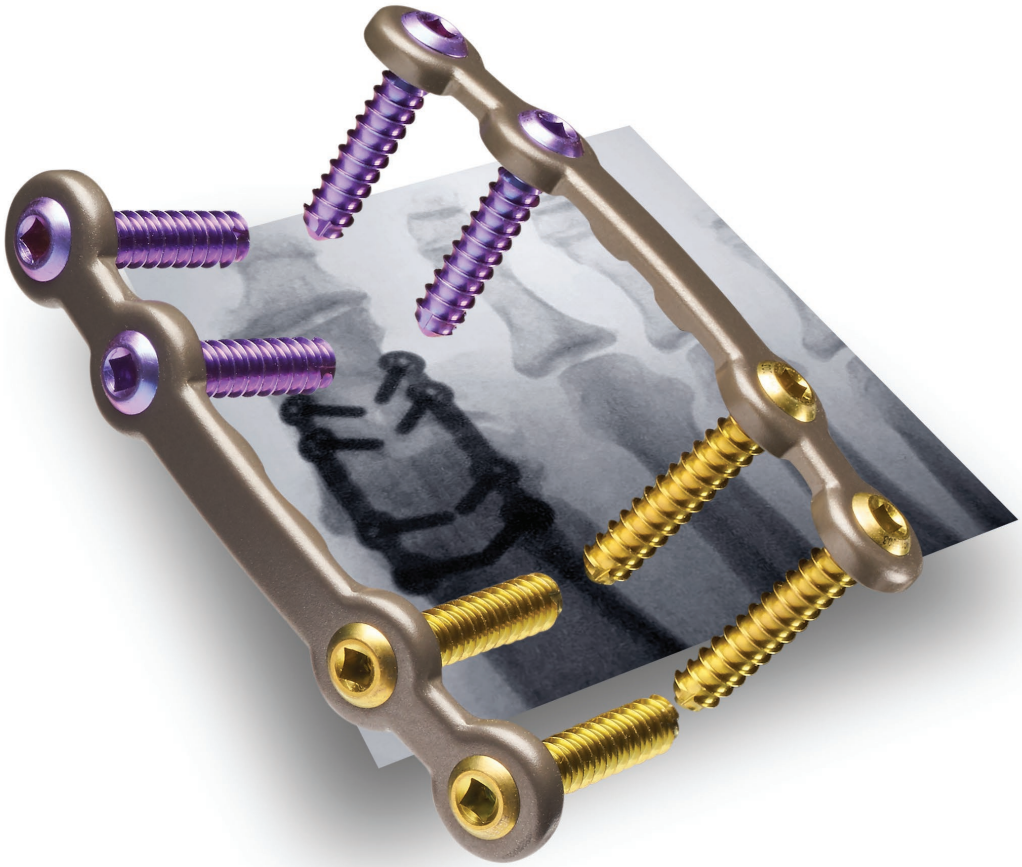
Lapiplasty® System

Anatomic Biplanar™ Implants



1st MTP Fusion Surgical Technique

TREACE®
Medical Concepts, Inc.

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1st MTP Fusion Surgical Technique

For use with:
Lapiplasty® System Anatomic Biplanar™ Implants

1 Surgical Approach

1.1 Perform a longitudinal incision beginning just proximal to the interphalangeal joint and extending over the 1st metatarsophalangeal (MTP) joint, medial to the extensor hallucis longus (**Fig.1A**). Take care to identify and protect any neurovascular structures. Deepen the incision through the fascial layers to the capsule of the MTP joint. Dissection is then carried deep to the capsule and periosteum of the phalanx and 1st metatarsal using sharp sub-periosteal dissection to minimize disruption of the blood supply to the periosteal and capsular layers (**Fig.1B**).

Fig.1A

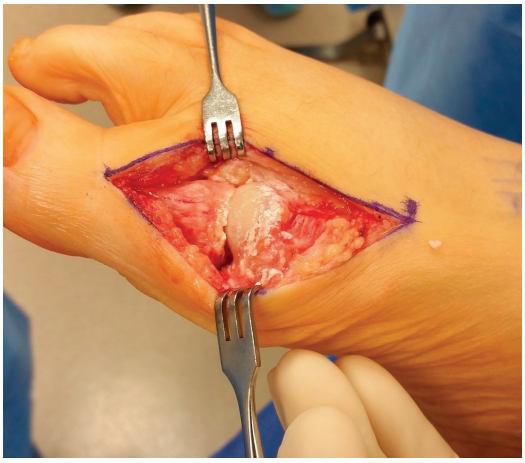

Fig.1B

1.2 Use a curved McGlamry elevator or other similar instrument to perform a complete release of the sesamoids (**Fig.1C**).

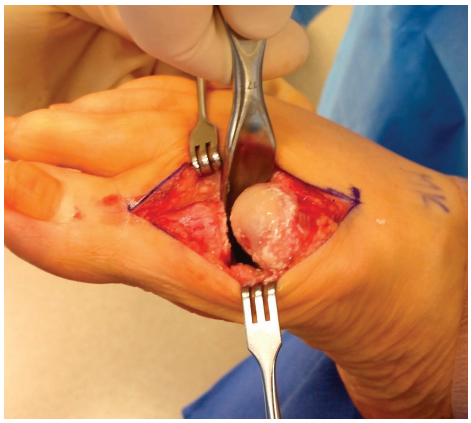

Fig.1C

2 1st MTP Joint Preparation & Provisional Fixation

2.1 Denude all cartilage surfaces with a rongeur or using your preferred alternative method (**Figs.2A & 2B**). Ensure that all articular cartilage is removed from the distal phalanx and proximal metatarsal head, until healthy bleeding subchondral bone is exposed with conforming bone surfaces.

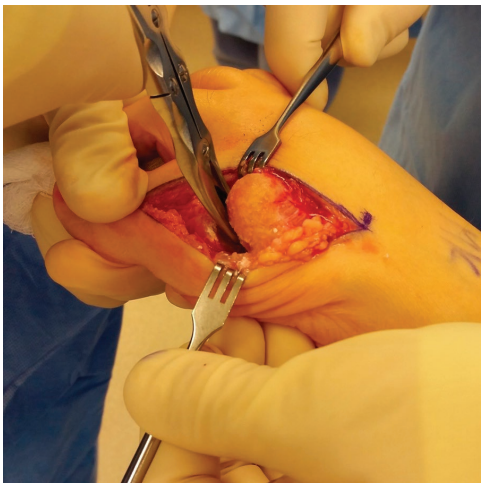

Fig.2A

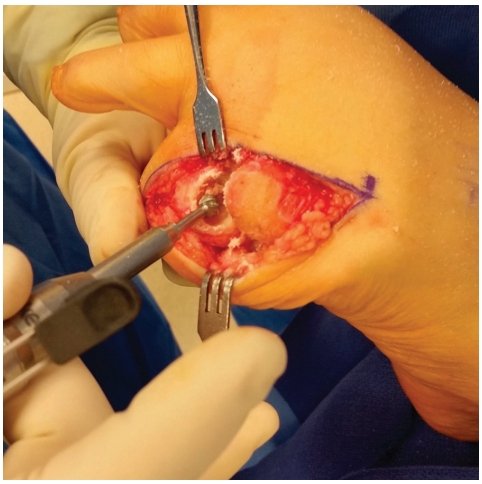

Fig.2B

2.2 Following joint preparation, manually compress the phalanx and 1st metatarsal in the desired anatomic alignment. Provisionally fixate the joint at the desired alignment with 1.6mm straight k-wire(s) or 2mm threaded olive(s) (40mm sub-olive length) (**Figs.2C & 2D**).

Note: It is critical to position the MTP joint in the desired anatomic alignment in all three planes, paying close attention to the dorsiflexion of the great toe, before provisional fixation. The BIPLANAR™ Plates are designed to have the flexibility to be fit to the patient's corrected anatomy – they are not manufactured with a pre-contoured shape that dictates a specific amount of dorsiflexion or other anatomic alignment.

Fig.2C

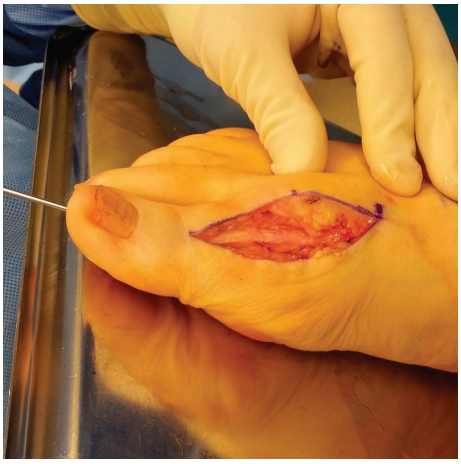

Fig.2D

3 Application of BIPLANAR™ Plates

3.1 Select a 4-hole BIPLANAR™ Plate. Be sure to inspect the plate to ensure that all four pre-installed drill guides are fully installed into the plate. If bending of the plate is required to match the bony anatomy, insert bending instruments into the pre-assembled drill guides on the plate and make adjustments to the plate prior to fixating the plate to the bone (**Fig.3A**). A small amount of twist can be achieved to assure that the fixed angle screws will be executed in desirable direction into the bone segments.

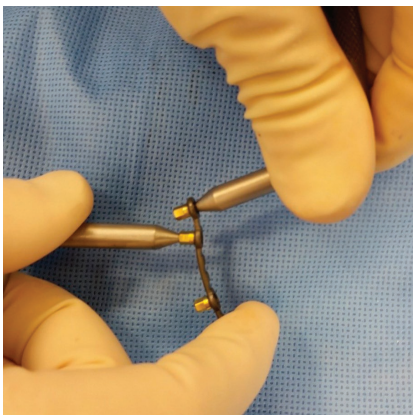

Fig.3A

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.

3.2 Apply the plate to the bone surface 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. Provisionally tack down the plate with a 2mm short olive wire through the drill guides to both stabilize the plate on the bone and to predict locking screw trajectory (**Fig.3B**). If plate position or screw trajectory is deemed unacceptable, the surgeon may remove the plate and either reposition and/or re-bend the plate to adjust final screw trajectory .

3.3 Using the 2mm olive wire with drill tip, drill through the drill guide/plate construct for the holes located on the metatarsal and phalanx sides (**Fig.3C**). Now remove the drill guide assemblies with the square driver and remove the guide assemblies from the surgical site.

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

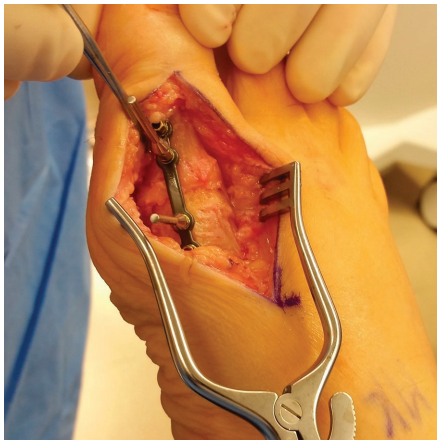

Fig.3B

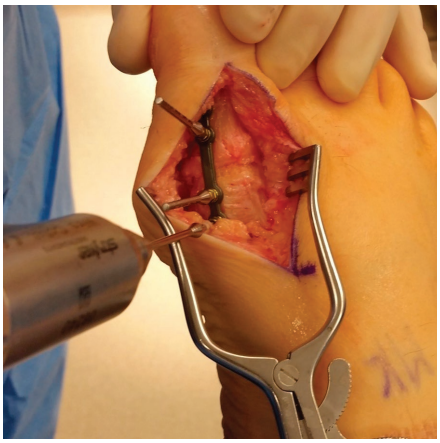

Fig.3C

4 Insertion of Screws into BIPLANAR™ Plates

4.1 Using hand pressure, insert a 14mm (gold) locking screw head onto the square driver tip securely to provide solid retention of the screw on the driver tip. Insert the screw centered vertically into the pre-drilled metatarsal plate hole until the tip of the screw engages the pre-drilled path in the underlying bone (**Fig.4A**). 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 the head is flush with the plate and a firm stop is achieved signifying the complete locking of the screw head into the plate. When properly installed, the head of the screw should sit completely flush with the top surface of the plate.

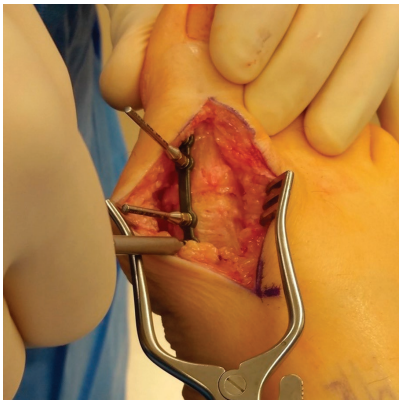
Fig.4A

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.

4.2 Insert an additional 12mm locking screw (magenta) into the pre-drilled phalanx plate hole following the step above (**Fig.4B**).

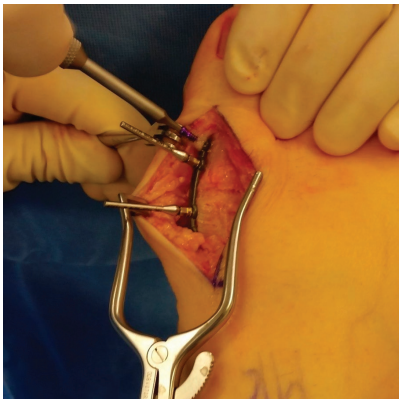
Fig.4B

4.3 Remove the 2mm short olive wires from the plate holes. Insert the additional two locking screws, making sure to remove all drill guides from the surgical site prior to closing. The 14mm screws (gold) should be placed in the proximal plate holes and the 12mm screws (magenta) should be placed in the distal plate holes.

4.4 Select a second 4-hole BIPLANAR™ Plate and place it dorsal-laterally, approximately at a 90° angle to the first dorsal-medial plate (**Fig 4C**). Placing the plates with the screw angles too close to parallel may result in a construct that is less stable. 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.

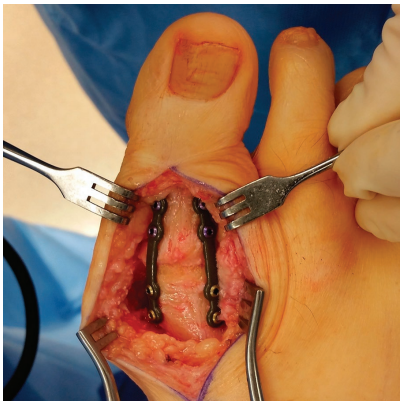
Fig.4C

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

Note: Visually perform a final inspection of all the screws to confirm that they are locked into the plates with the screw heads flush - tighten any proud screw heads until they are firmly locked into the plate.

4.5 Remove the 1.6mm straight k-wire(s) or 2mm threaded olive wire(s) used for provisional fixation. Check the final clinical alignment of the MTP joint, particularly the dorsiflexion angle of the great toe (**Fig.4D**). Use fluoroscopy to confirm the final correction (**Fig.4E**).


Fig.4E


Fig.4D

Ordering Information

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See surgical technique (LBL 1405-9001) and instructions for use (LBL 1405-9005) on www.treace.com for complete indications, contraindications, warnings, and precautions.

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LBL 1405-9089 Rev. A 11/17