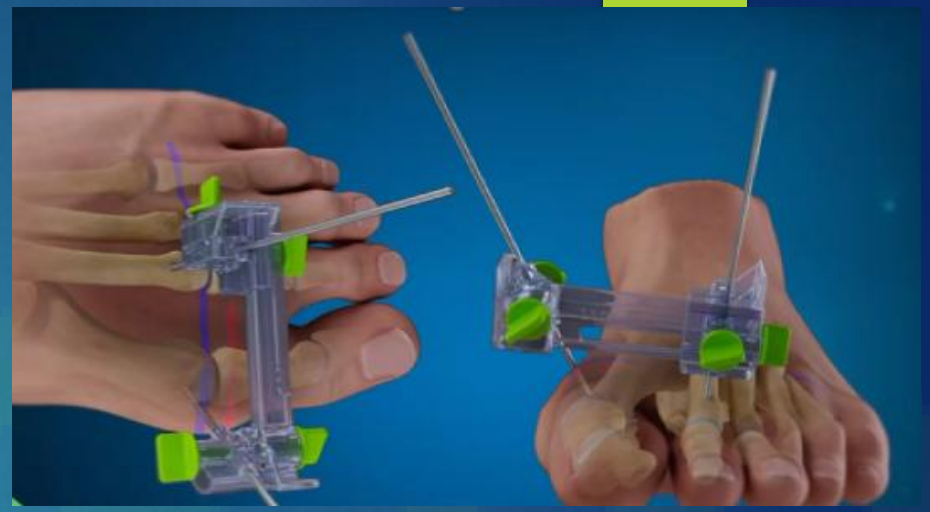
RELJA INNOVATIONS

Innovative Designs
Simplified Surgical Techniques

LAPIDUS IN A BOX TECHNIQUE

Lapidus in a Box:



Items Included:

RI-LAP-LSK: Lapidus Screw Kit

- Joint Prep Drill
- The RELJA Clamp (Left and Right)
- 4.0 Headless Compression Screw (37.5 + 45mm)
- Instrumentation

RI-NTS-18:

- 18mm x 18mm Nitinol Staple Kit

RI-NTS-15:

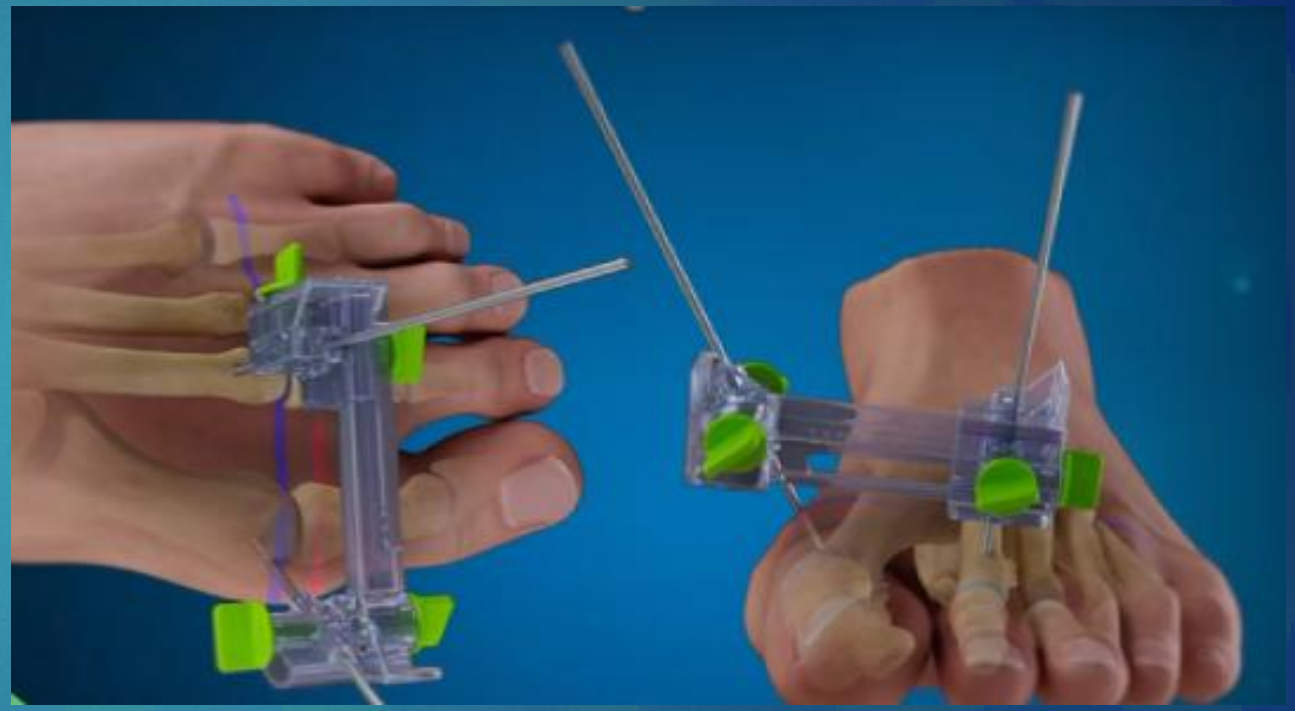
- 15mm x 12mm Nitinol Staple Kit

(RI-LAP-LSK, RI-NTS-18, and RI-NTS-15 stickers would be placed on the surgical implant sheet)

RELJA INNOVATIONS

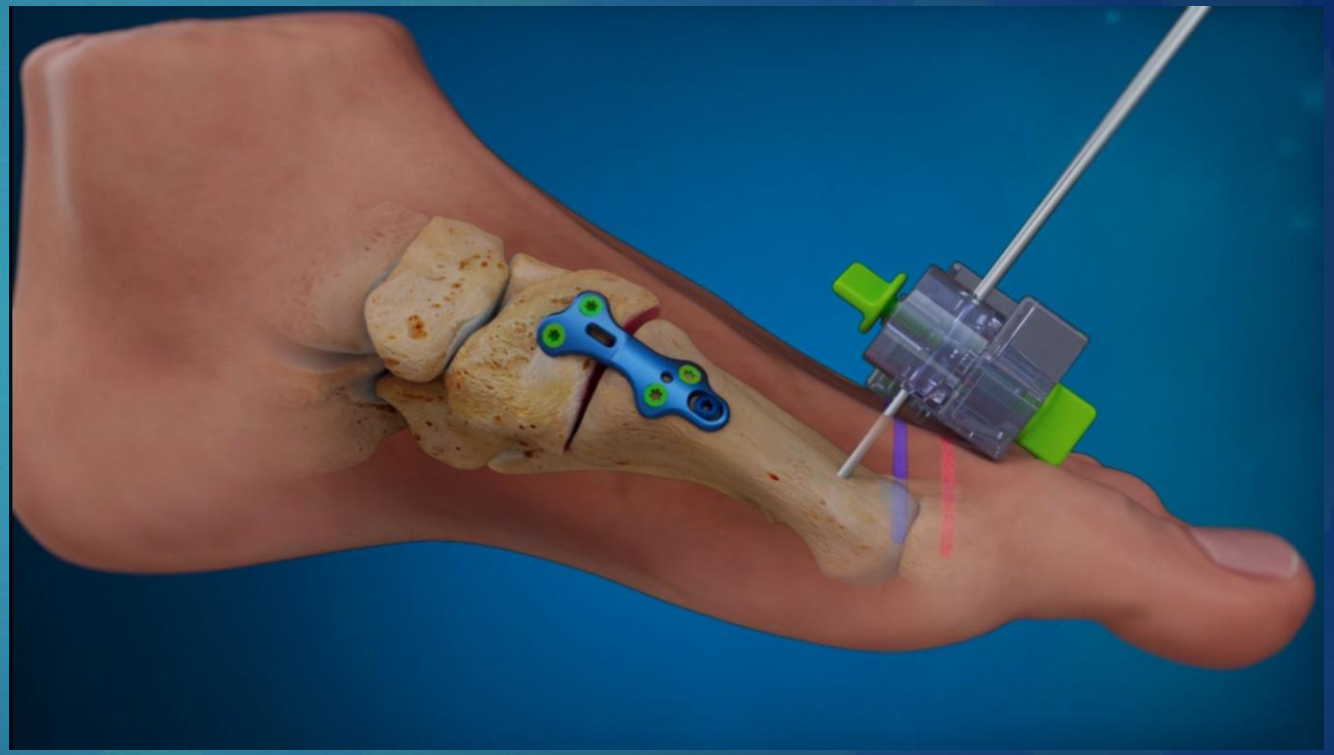
The RELJA Clamp

- Features for Lapidus Procedure:
  - Radiolucent
  - No incisions
  - Quick and easy to apply
  - Correction in all three planes
  - Allows compression across the fusion site
  - Out of the way for hardware placement
  - Sterile packaged



RELJA INNOVATIONS

The RELJA Clamp



RELJA INNOVATIONS

Technique:

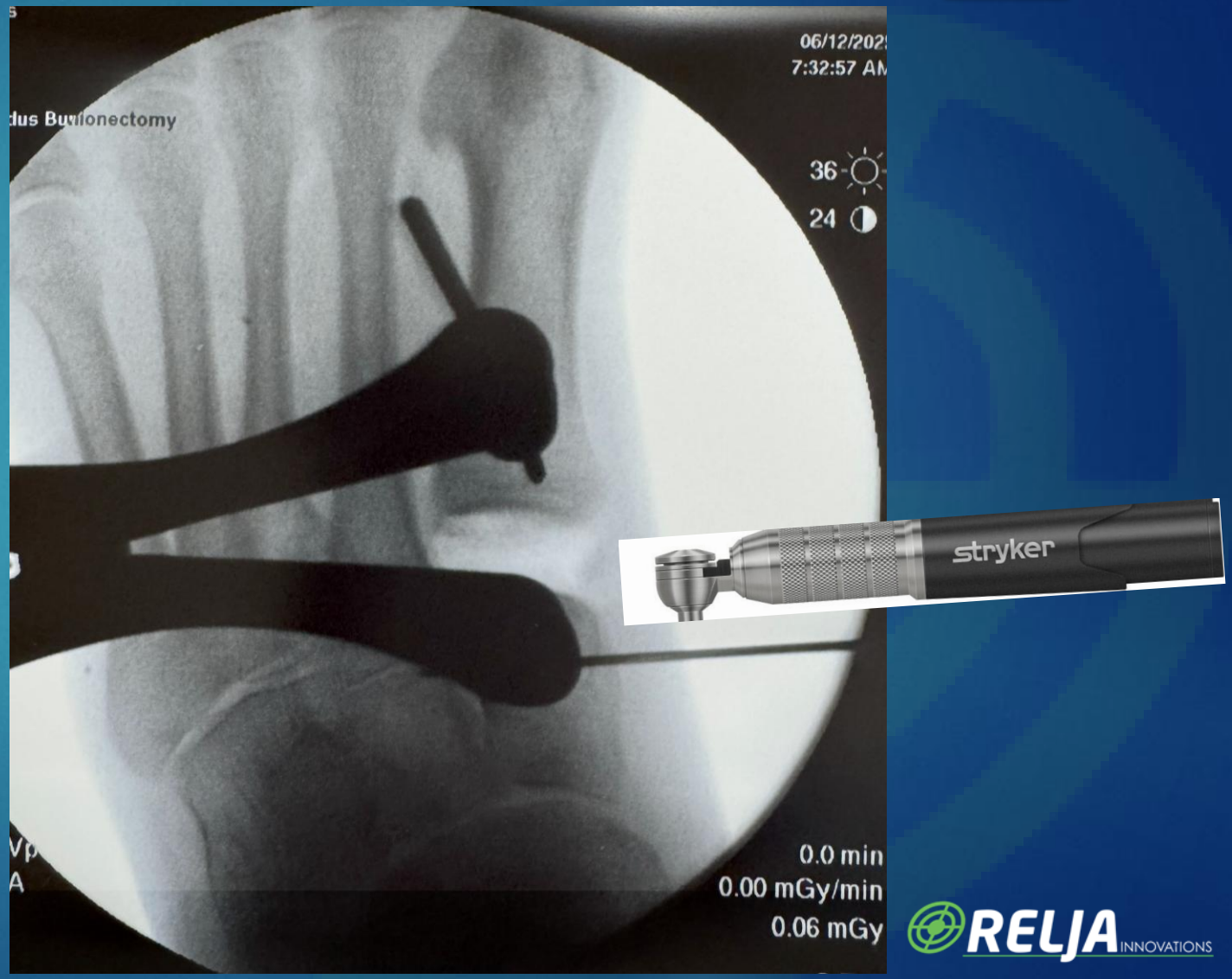
Joint Prep:

- Perform a mini-incision 1st MTP lateral release.
- Release the soft tissues of the 1st TMT prior to applying the clamp.
- Utilize an osteotome to free the plantar ligament of the 1st TMT

RELJA INNOVATIONS

Joint Prep

- Place a K wire in the central area of the medial cuneiform (perpendicular to the 2nd metatarsal, yellow below).
- Remove the obliquity of the Cuneiform utilizing a sagittal saw (saw will stay parallel to the K wire)



Joint Prep

- Joint prep drill included to fenestrate the fusion site
- Confirm with WB AP view on fluoroscopy that the obliquity of the cuneiform has been removed perpendicular to the 2nd metatarsal

RELJA INNOVATIONS

The RELJA Clamp Technique:

- Mark the 1st MTP with a horizontal line (shown in red).
- Next, make a parallel line 5mm proximal to this across the 1st and 2nd metatarsals (shown in purple)
- Palpate and mark the 2nd metatarsal (shown in green)

RELJA INNOVATIONS

The RELJA Clamp

- Loosen all four thumb screws of the correct clamp (left or right)
- Lay the correct clamp flat on top of the foot in line with the contour of the foot.
- Next, position the 2nd metatarsal SLOT over the center of the 2nd metatarsal (as show in the photo)
- The Steinmann pin should enter at the bisection of the previously marked purple and green lines.
  - (Feel the sides of the 2nd metatarsal with the Steinmann pin to confirm the Steinmann pin enters the CENTER of the 2nd metatarsal)

RELJA INNOVATIONS

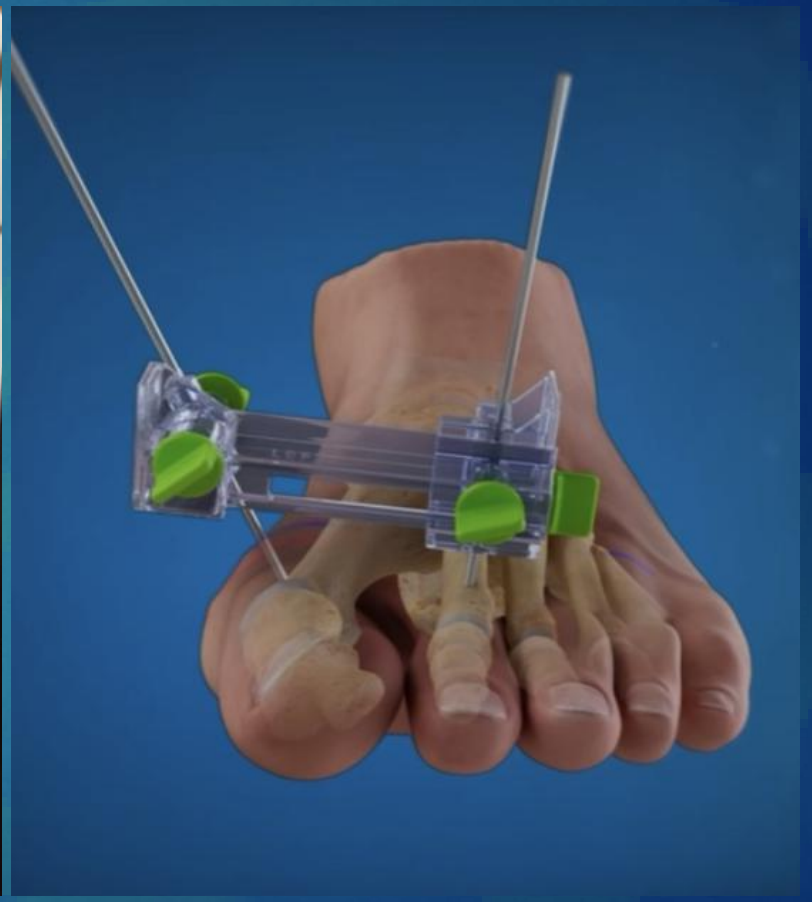
The RELJA Clamp

- Insert a Steinmann Pin bicortical into the 2nd metatarsal at the skin marking lines (Steinmann pin should be straight vertical). Insert while standing over the leg facing the foot.
  - A 0.062-inch K wire can be substituted on a small foot.
- The Steinmann pin should be inserted against distal portion of the slot of the 2nd metatarsal adjuster of the clamp as shown (this will allow the ability to plantarflex the 1st ray later as needed)

RELJA INNOVATIONS

The RELJA Clamp

- Insert a Steinmann pin in the 1st metatarsal at the skin marking line
  - Enter the dorsal medial aspect of the 1st metatarsal head. Stop short of the plantar cortex of the 1st metatarsal head (shown in red in photo). Simulate WB for this step if possible.
  - This should be angled at least 30 degrees from vertical as shown
  - DO NOT ENTER the 1st MTP and sesamoid apparatus (this will limit frontal plane correction of the deformity)



RELJA INNOVATIONS

The RELJA Clamp

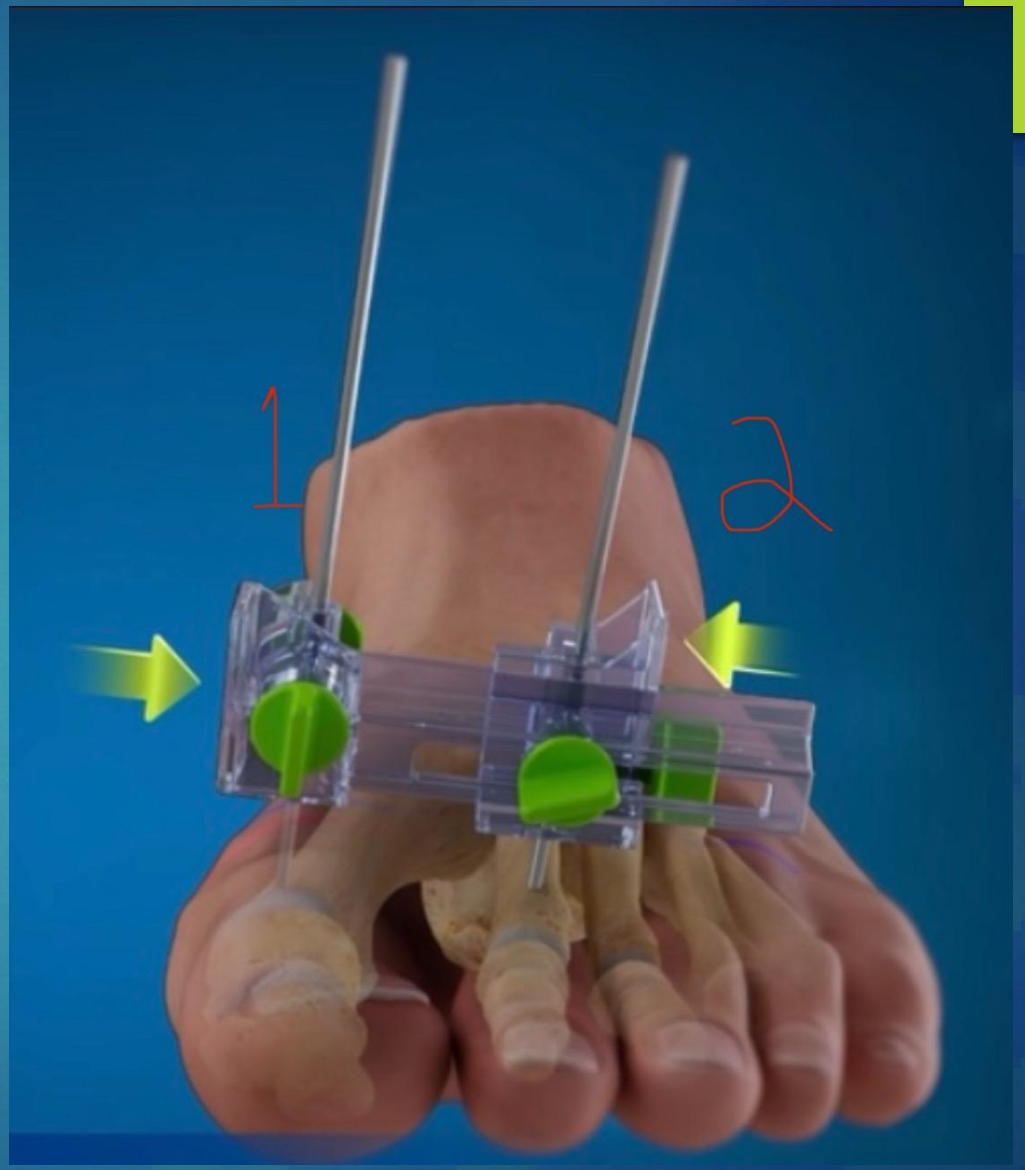
- Reduce the frontal plane deformity by rotating the 1st Steinmann pin until proper position achieved.

- After correcting frontal plane deformity, tighten thumb screw #1

RELJA INNOVATIONS

The RELJA Clamp

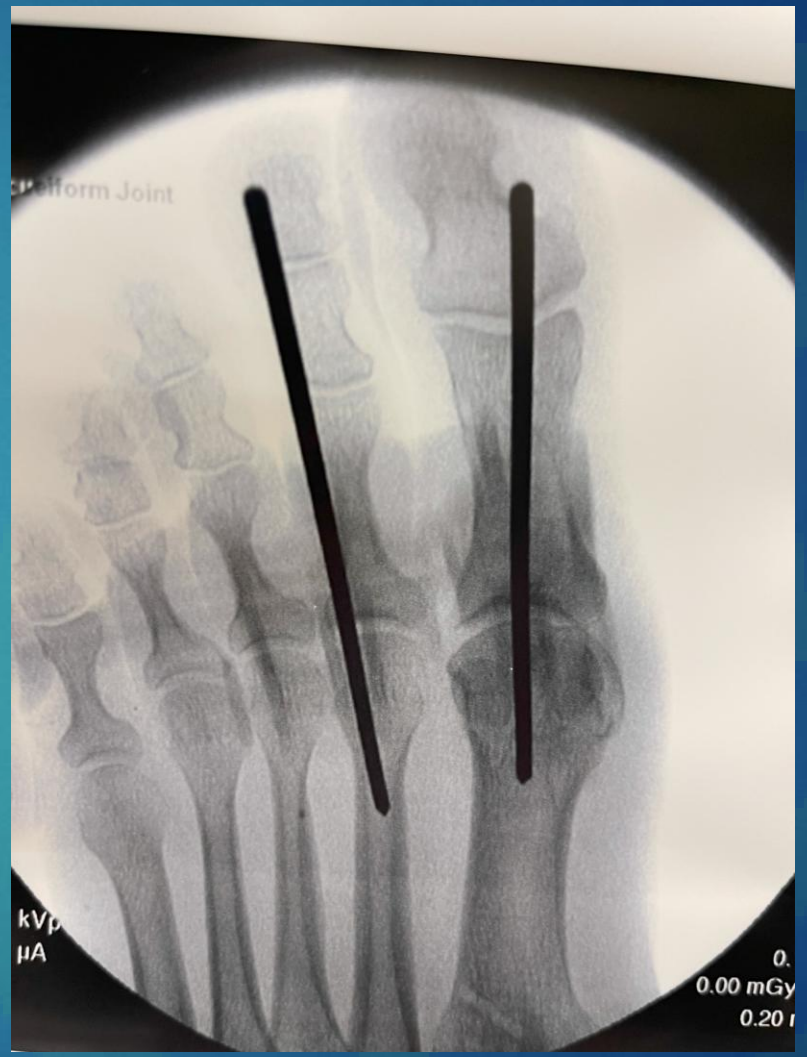
- Reduce the 1st Intermetatarsal angle by squeezing on the tabs as shown on the right.
- Tighten thumb screw #2



RELJA INNOVATIONS

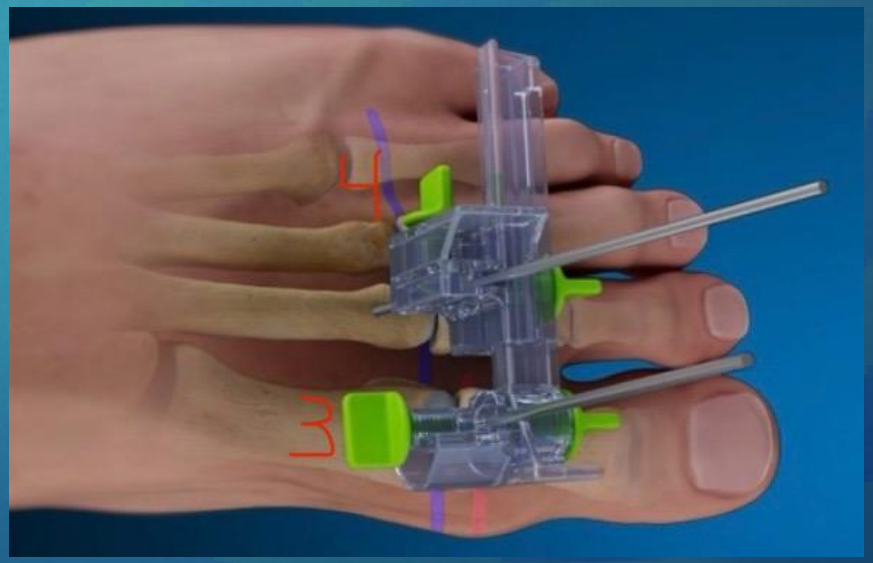
The RELJA Clamp

- Confirm position with fluoroscopy



The RELJA Clamp

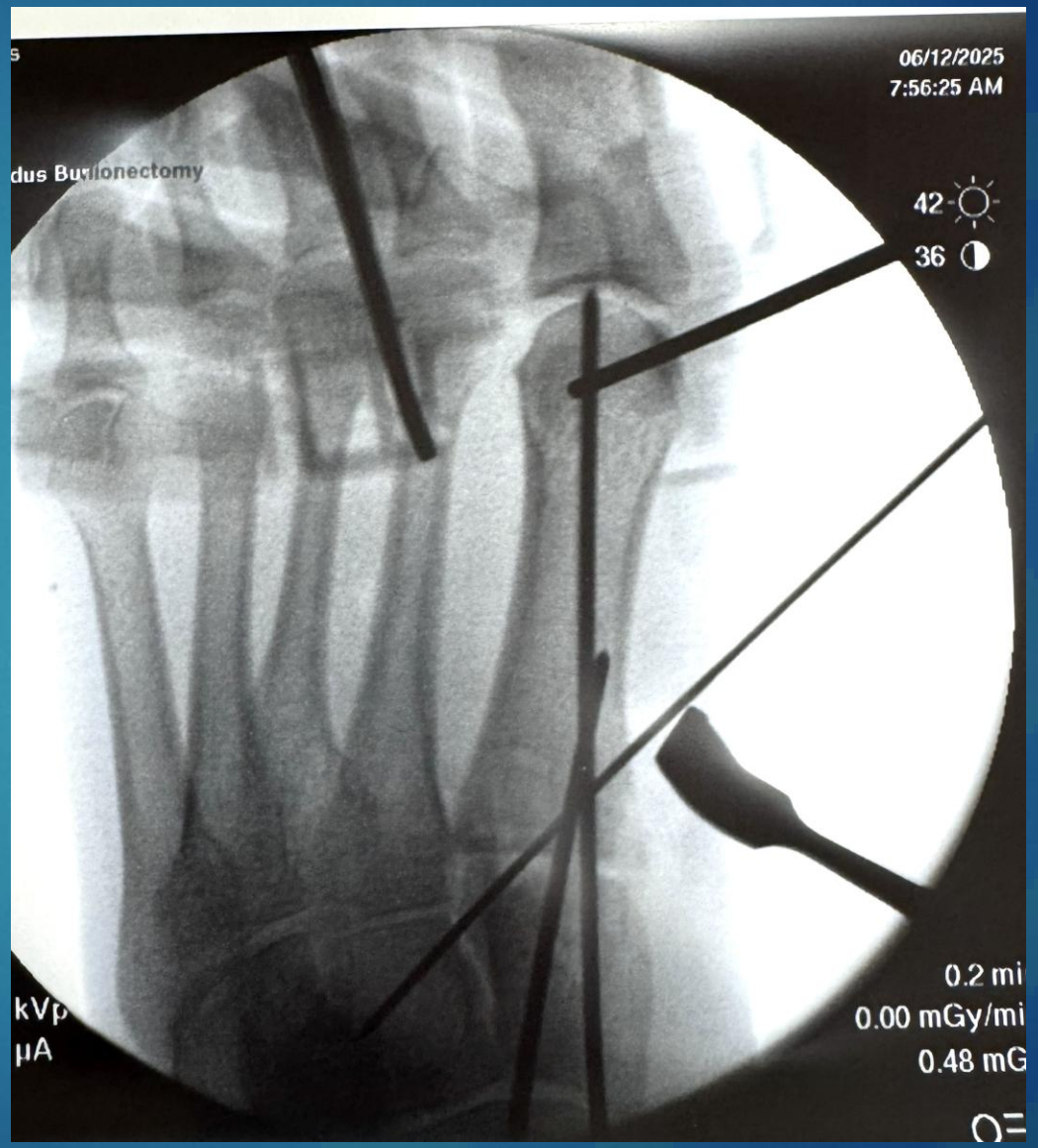
- Plantarflex the 1st metatarsal as needed to achieve proper position. The slot in the 2nd metatarsal adjuster on the clamp allows plantar flexion. Once proper position is achieved, tighten thumb screws 3 and 4.
- Instead of the above a surgeon may translate the 1st metatarsal as needed in the sagittal plane and then tighten thumb screws 3 and 4 . This will hold the clamp tightly on the Steinmann pins



RELJA INNOVATIONS

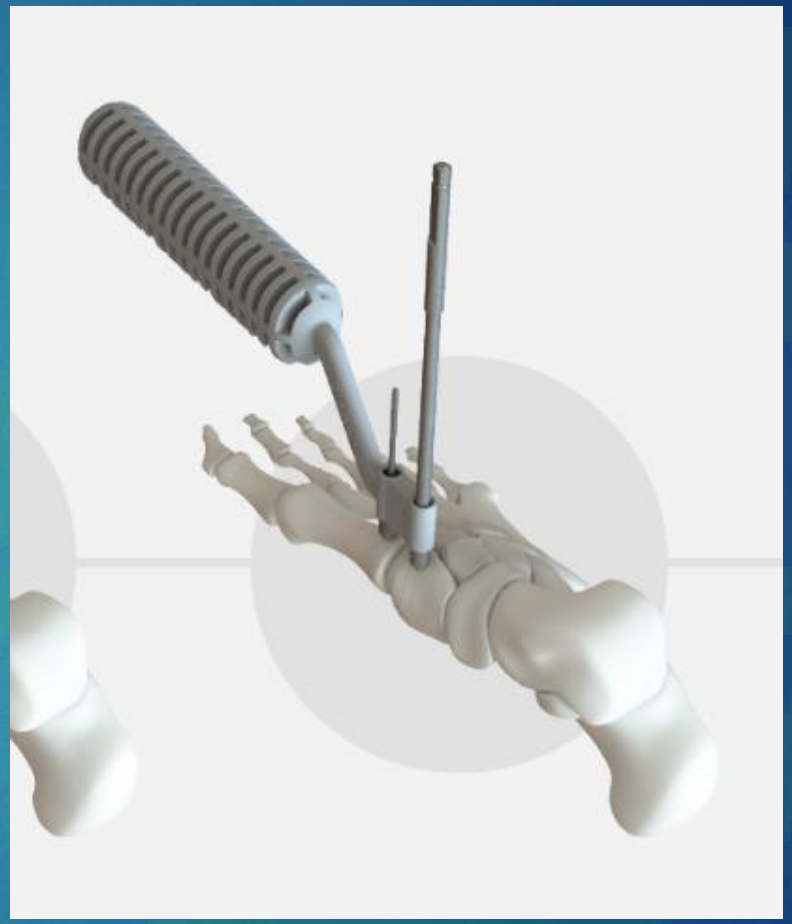
The RELJA Clamp

- Place temporary Fixation and the guide wire:



Insert 18mm Nitinol Staple

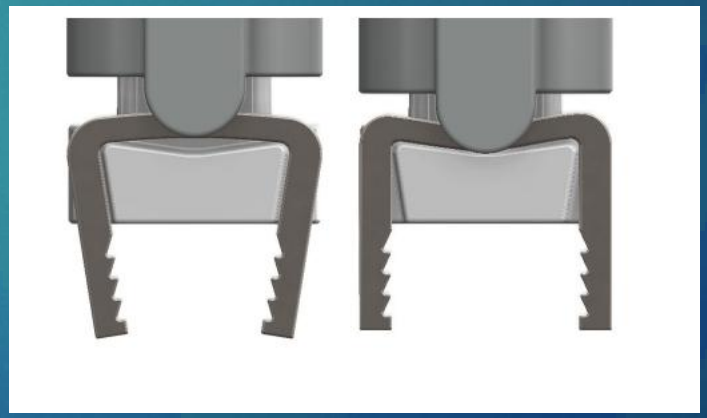
- Place the drill guide over the Dorsal aspect of the 1st TMT fusion site
- Drill each side of the drill guide until the positive stop is reached.
  - Place a guide post into the first prepared hole if desired.



RELJA INNOVATIONS

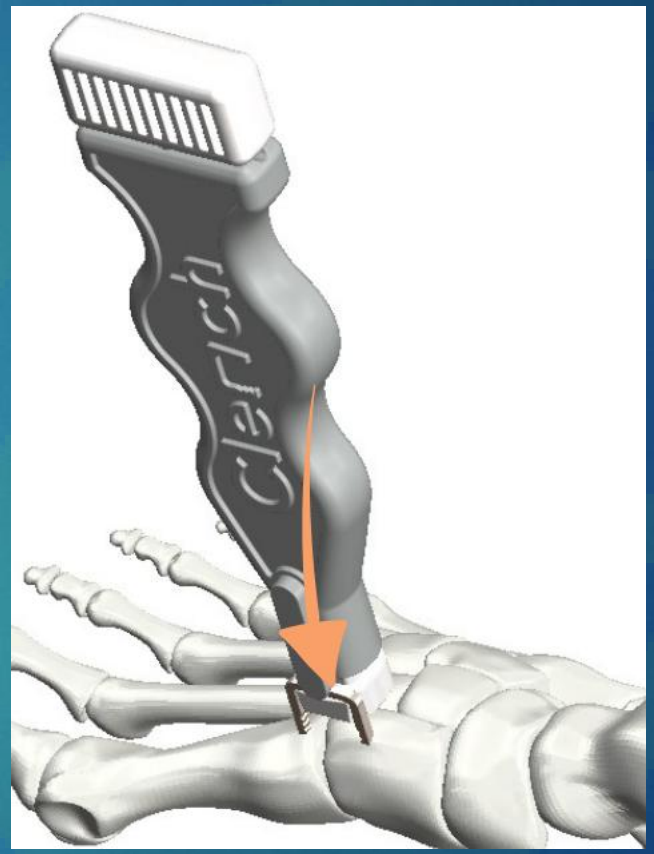
Insert 18mm Nitinol Staple

- Rotate the proximal inserter knob ¼ to ½ a turn clockwise to expand the legs until parallel.



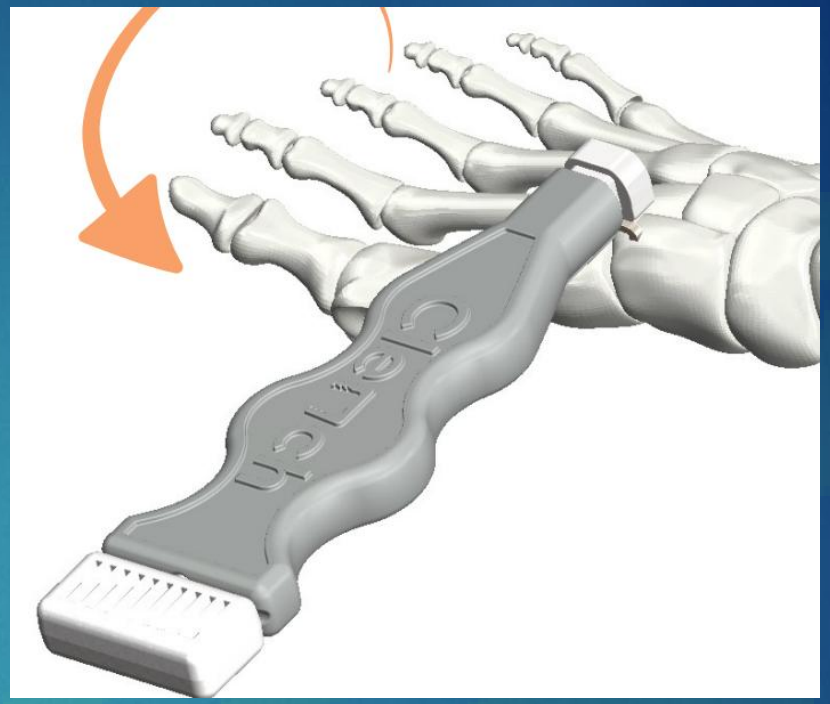
Insert 18mm Nitinol Staple

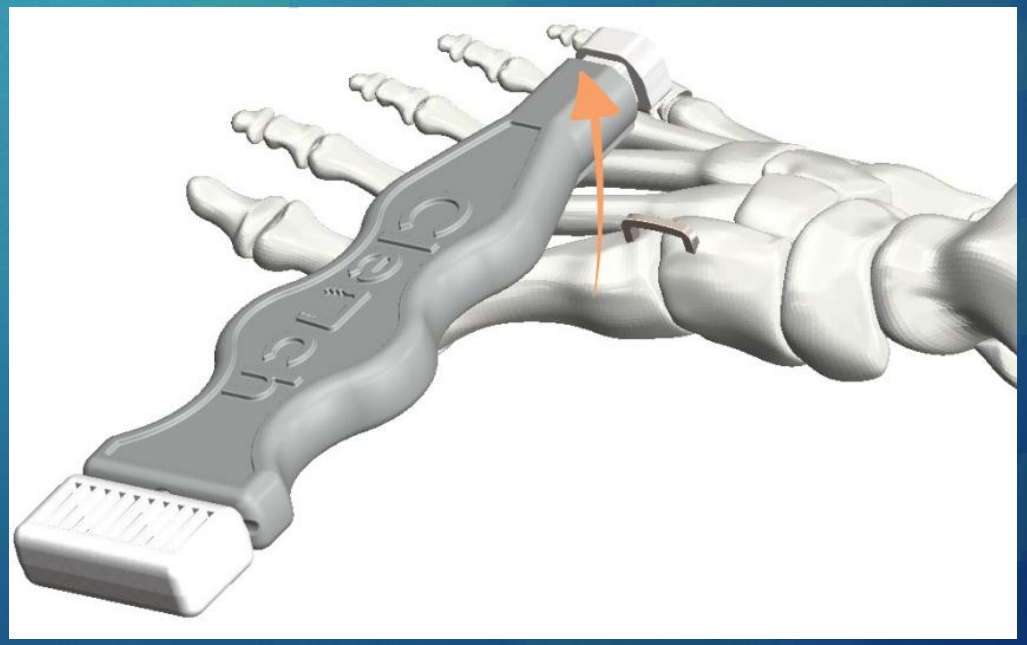
- Insert the staple into the prepared drill holes.
- Rotate the inserter knob at least one full turn counterclockwise to disengage the implant.



Insert 18mm Nitinol Staple

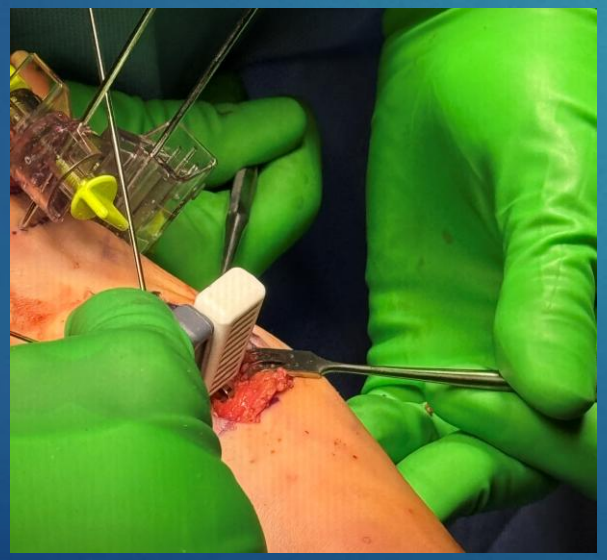
- Pivot the inserter to the staple to compress to its natural state.
- Lift the inserter as shown to release the staple from the inserter

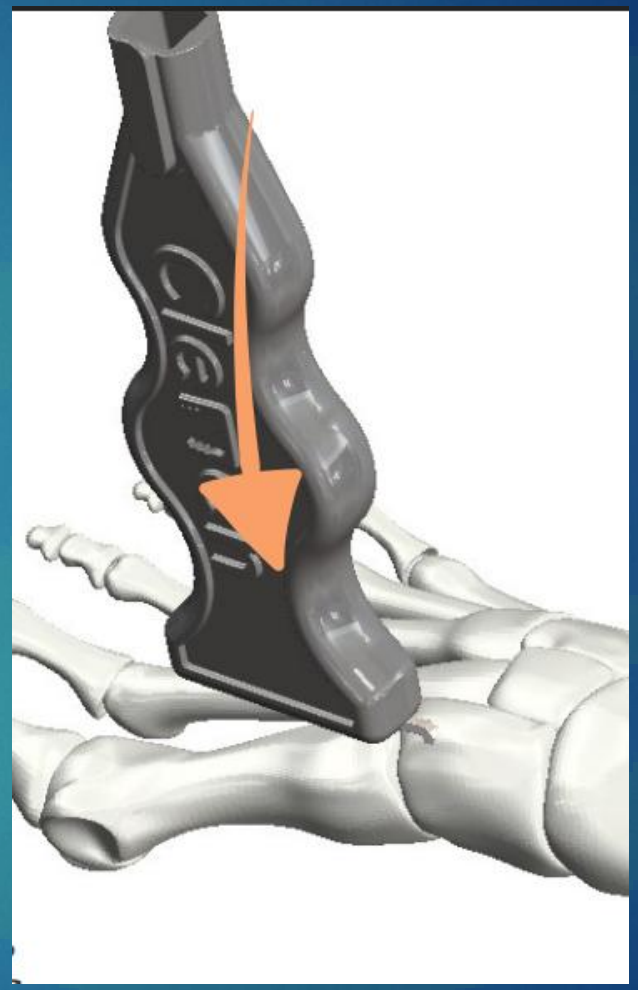




Insert 18mm Nitinol Staple

- Disassemble the inserter to use the proximal end of the handle tamp the staple into final position.
- Alternatively rotate the inserter 90 degrees and utilize the inserter knob to tamp the staple in place (below).

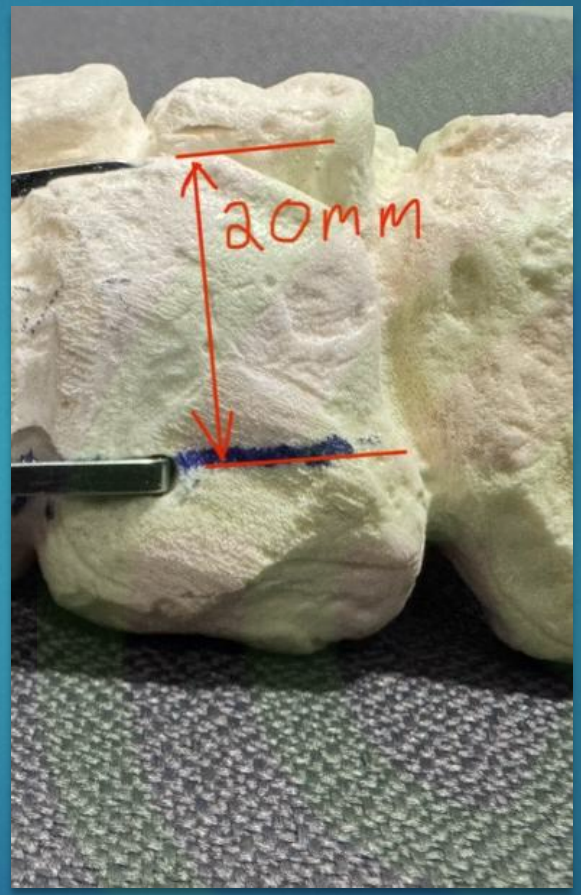




RELJA INNOVATIONS

Insert the 15mm x 12mm Nitinol Staple:

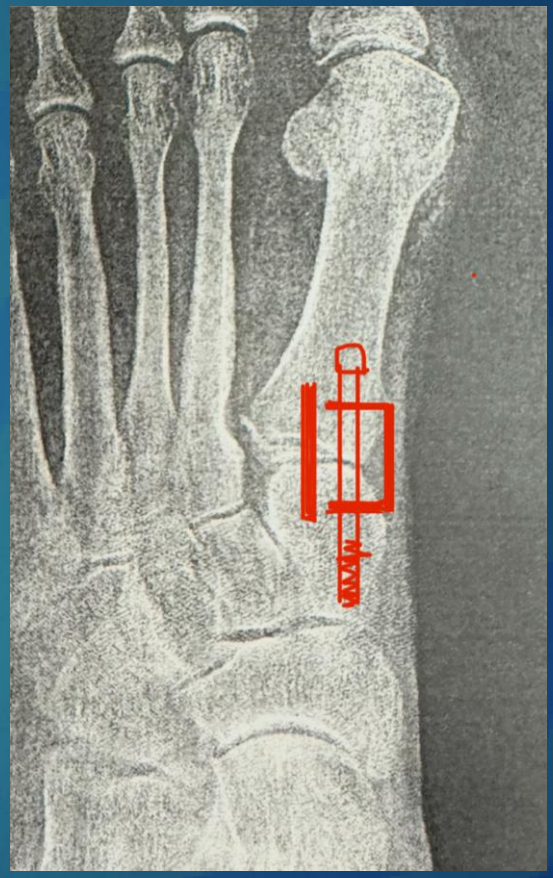
- The 15 mm Nitinol staple will be inserted on the plantar medial aspect of the 1st TMT fusion site.
  - Measure approximately 20 mm from the dorsal aspect of the 18mm Staple (as shown).
  - Insert the 15mm staple in this position utilizing the same steps as performed to insert the 18mm staple.



RELJA INNOVATIONS

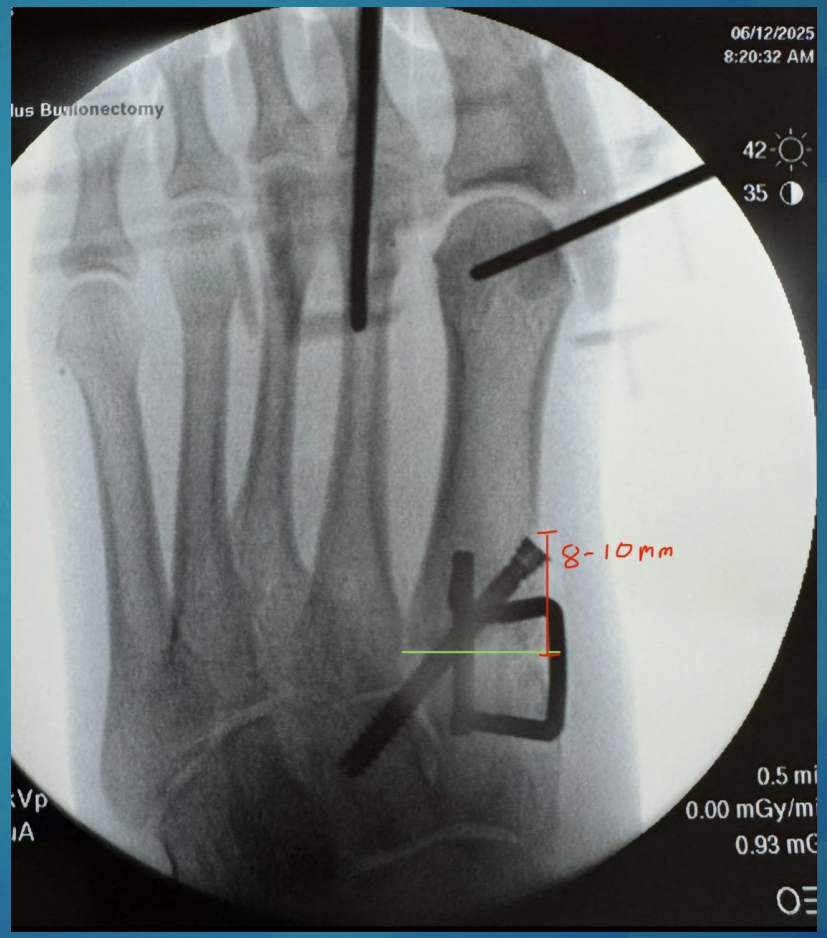
Insert the cannulated Screw:

- First, choose the location you wish to insert the cannulated screw
  - M1 to C2 (left photo)
  - M1 to C1 (right photo)



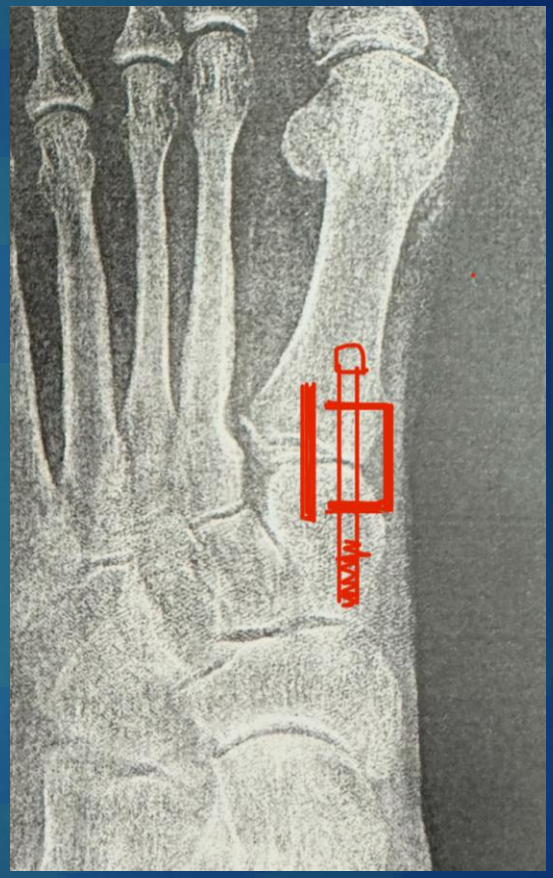
Insert the cannulated Screw:

- Technique tip for inserting the screw M1to C2.
  - Start the guide wire 8-10 mm proximal to the fusion site
  - Be sure the guide wire enters midline from dorsal to plantar



Insert the cannulated Screw:

- Insert the guide wire to the appropriate depth
- Utilize the depth gauge to measure the length at the laser line
  - For M1 to C2 the screw length is 37.5mm. If the measurement is less than 37.5 then reposition the guide wire with an entry site farther from the fusion site.
  - For M1 to C1 the screw length is 45mm. If the measurement is less than 45mm then reposition the guide wire with an entry site farther from the fusion site.



RELJA INNOVATIONS

Insert the cannulated Screw:

- Utilize the 3.0 cannulated drill to drill to the appropriate depth
- Countersink with 4.0 countersink
  - Collar on the countersink (red line) is a visual indicator of the maximum depth
- Insert the predetermined 4.0 cannulated screw.

RELJA INNOVATIONS

Case 1

Surgical Photos

RELJA INNOVATIONS