



INNOVATIVE DESIGNS

SIMPLIFIED SURGICAL TECHNIQUES

THE RELJA CLAMP

The RELJA Clamp

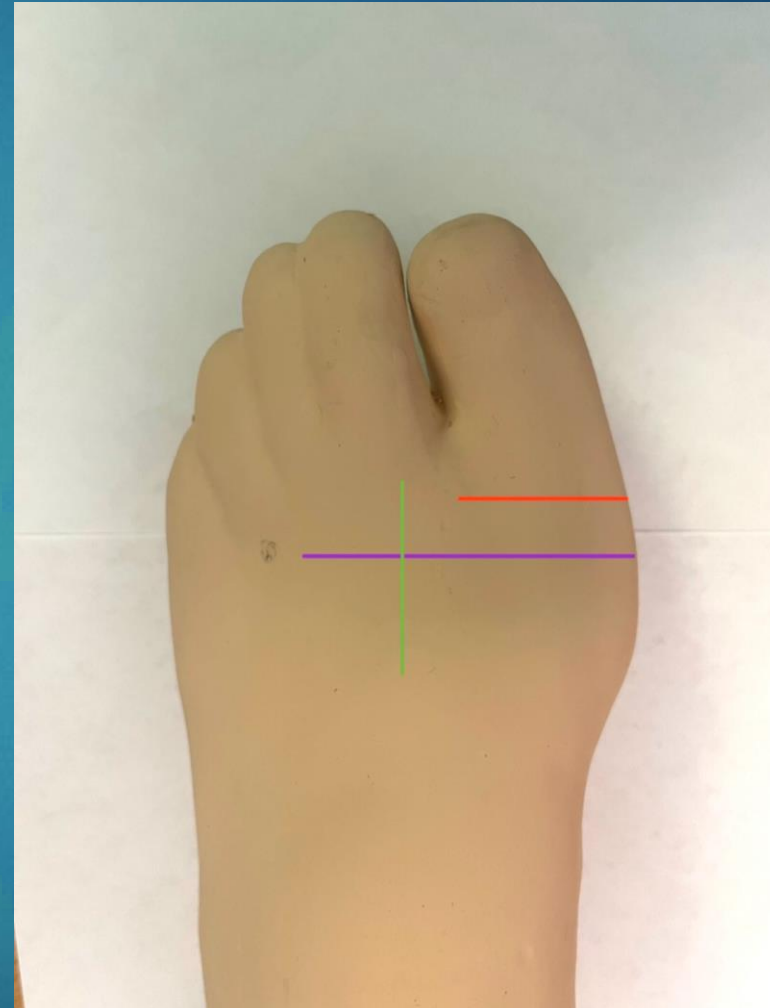
- ▶ Features for Lapidus Procedure:
 - ▶ Reduction of 1st IM Angle
 - ▶ Reduction of frontal plane deformity of the 1st Ray (supinate 1st ray)
 - ▶ Plantarflexion or dorsiflexion of the 1st metatarsal in relationship to the 2nd metatarsal
 - ▶ Compression of the 1st TMT fusion site by providing 4D correction of the 1st ray deformity.
 - ▶ Compression across the 1st TMT fusion site by the clamp rotating on the Steinmann pin in the 2nd metatarsal

The RELJA Clamp



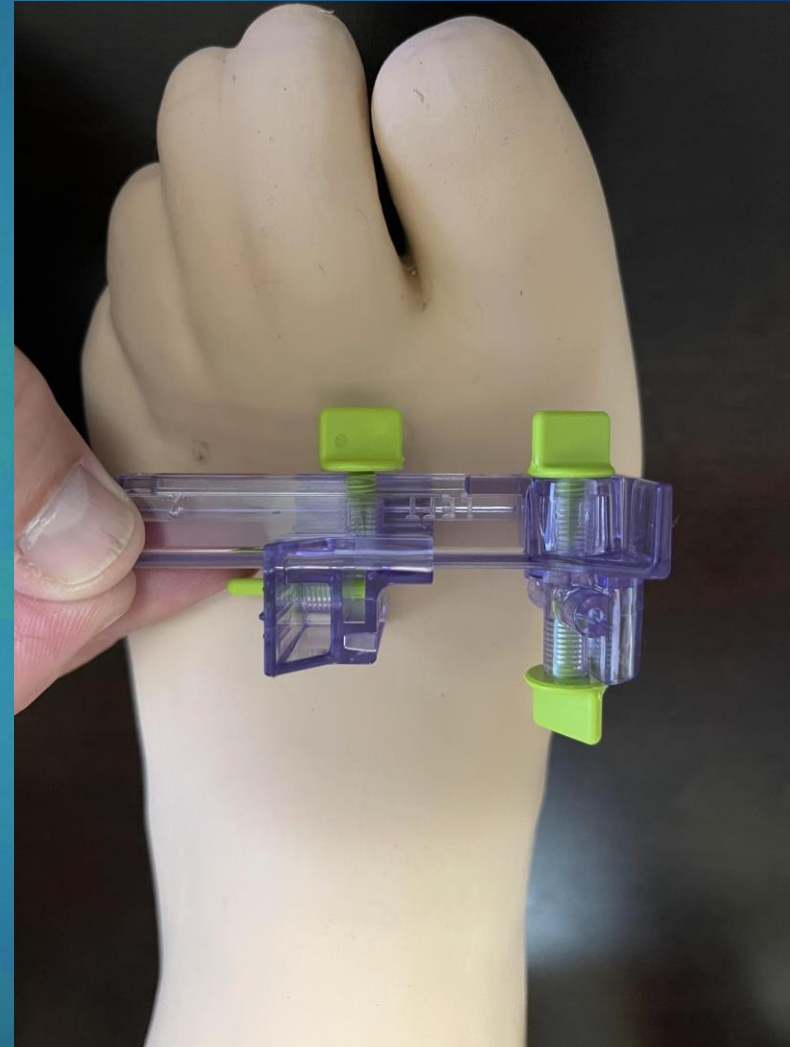
The RELJA Clamp Technique

- ▶ Release the soft tissues and perform standard joint prep of the 1st TMT prior to applying the clamp.
- ▶ 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)



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)



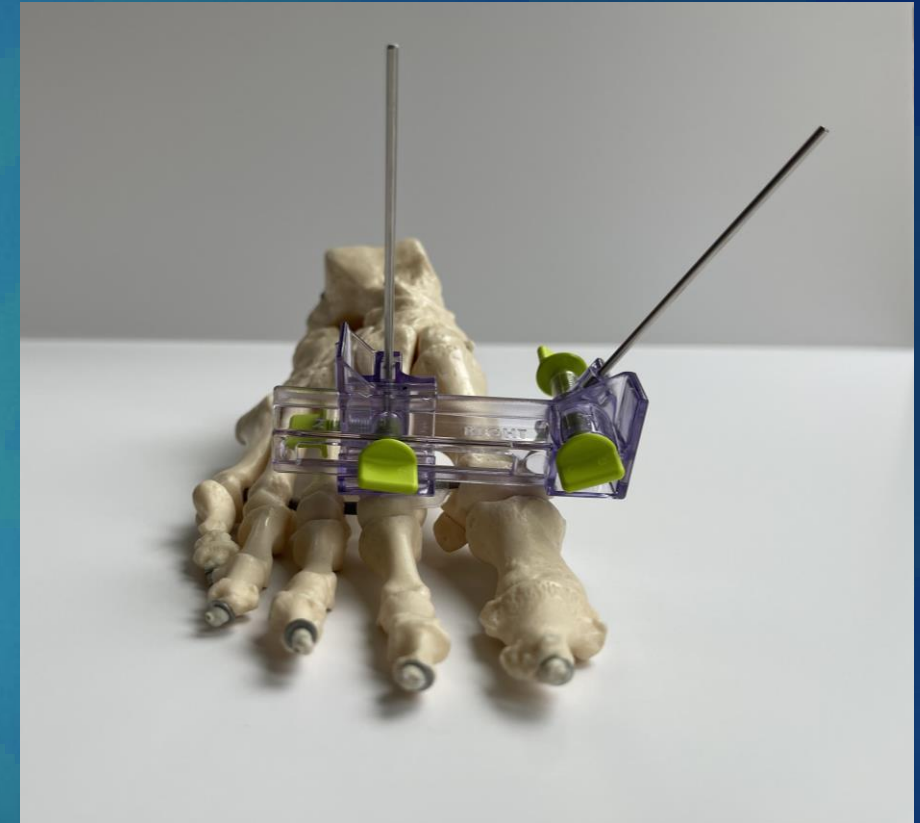
The RELJA Clamp

- ▶ Insert Steinmann Pin bicortical into the 2nd metatarsal at the skin marking lines (Steinmann pin should be straight vertical)
 - ▶ 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)



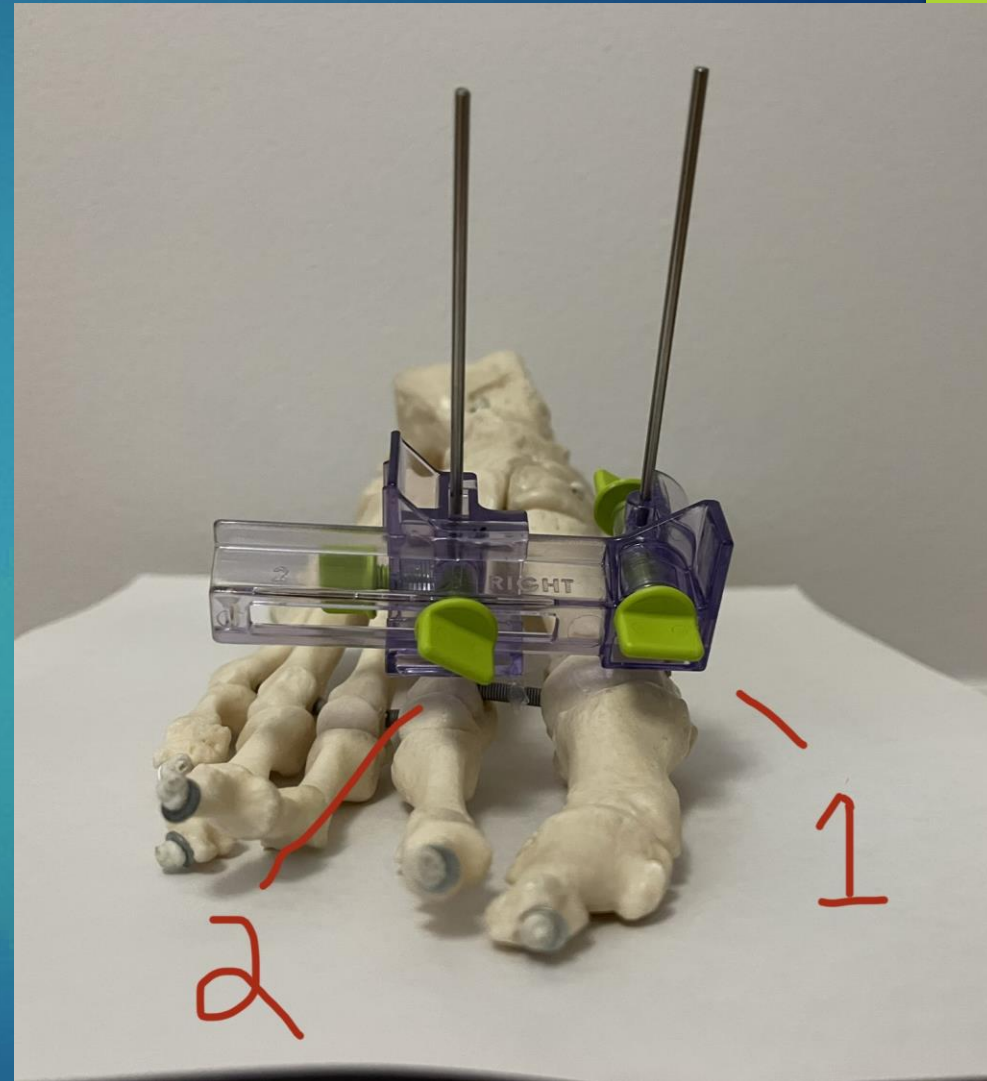
The RELJA Clamp

- ▶ 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)
 - ▶ This should be angled 15-30 degrees from vertical as shown
 - ▶ DO NOT ENTER the 1st MTP and sesamoid apparatus (this will limit frontal plane correction of the deformity)



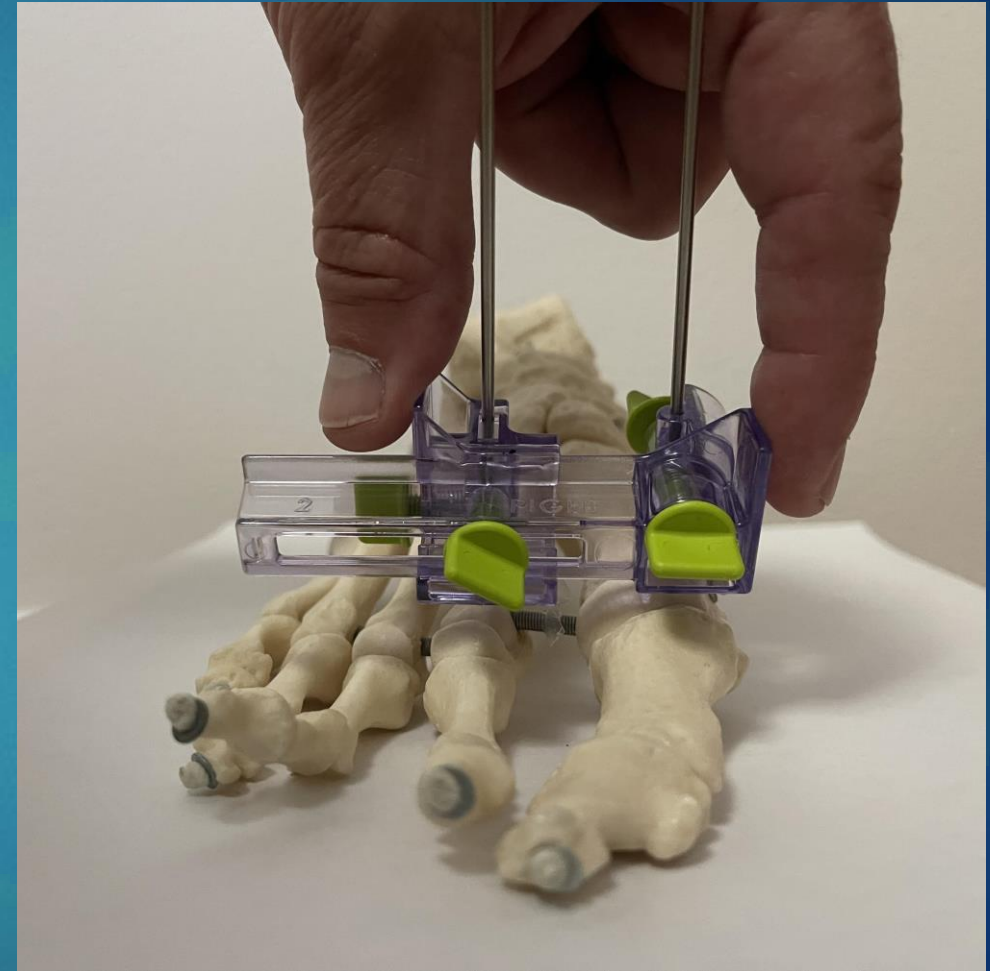
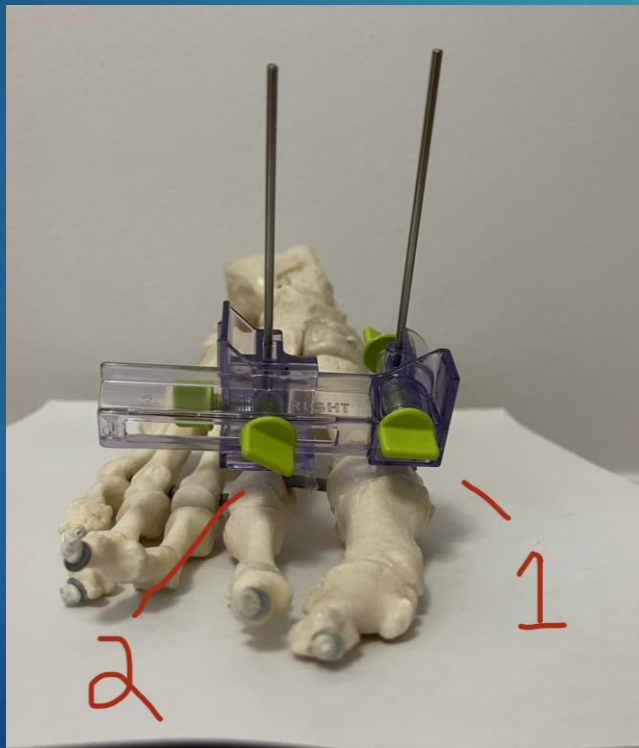
The RELJA Clamp

- ▶ Reduce the frontal plane deformity by rotating the 1st Steinmann pin until proper position achieved.
- ▶ After correcting frontal plane deformity, tighten thumb screw #1



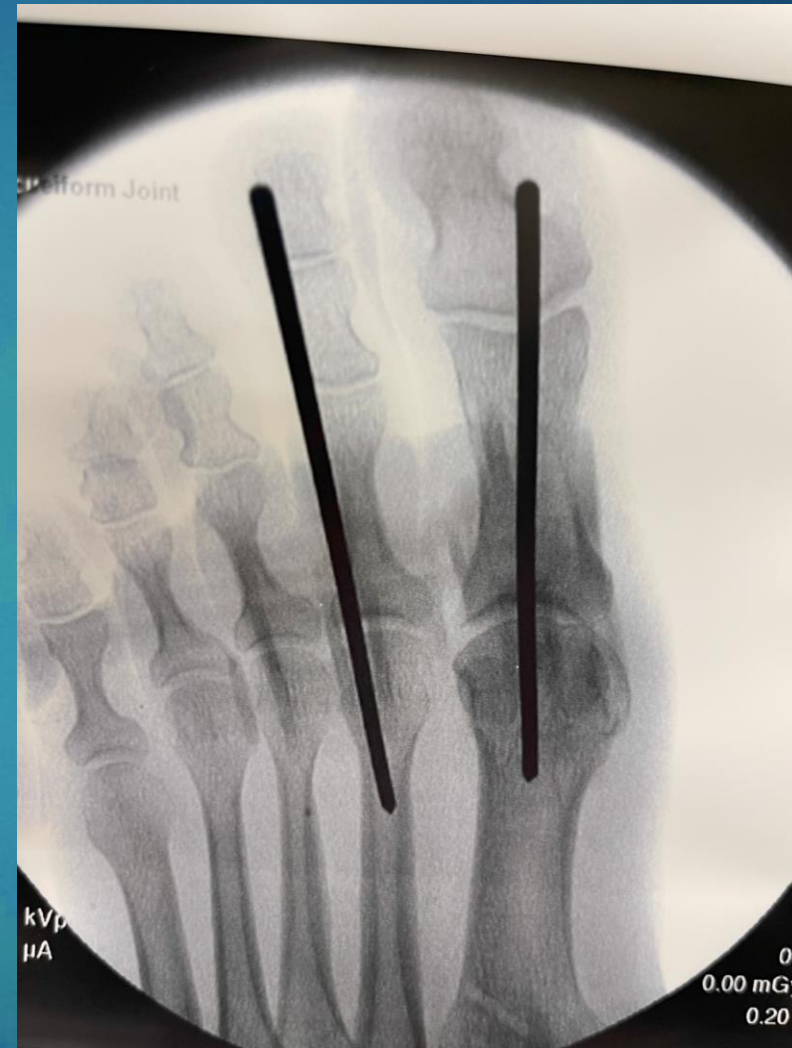
The RELJA Clamp

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



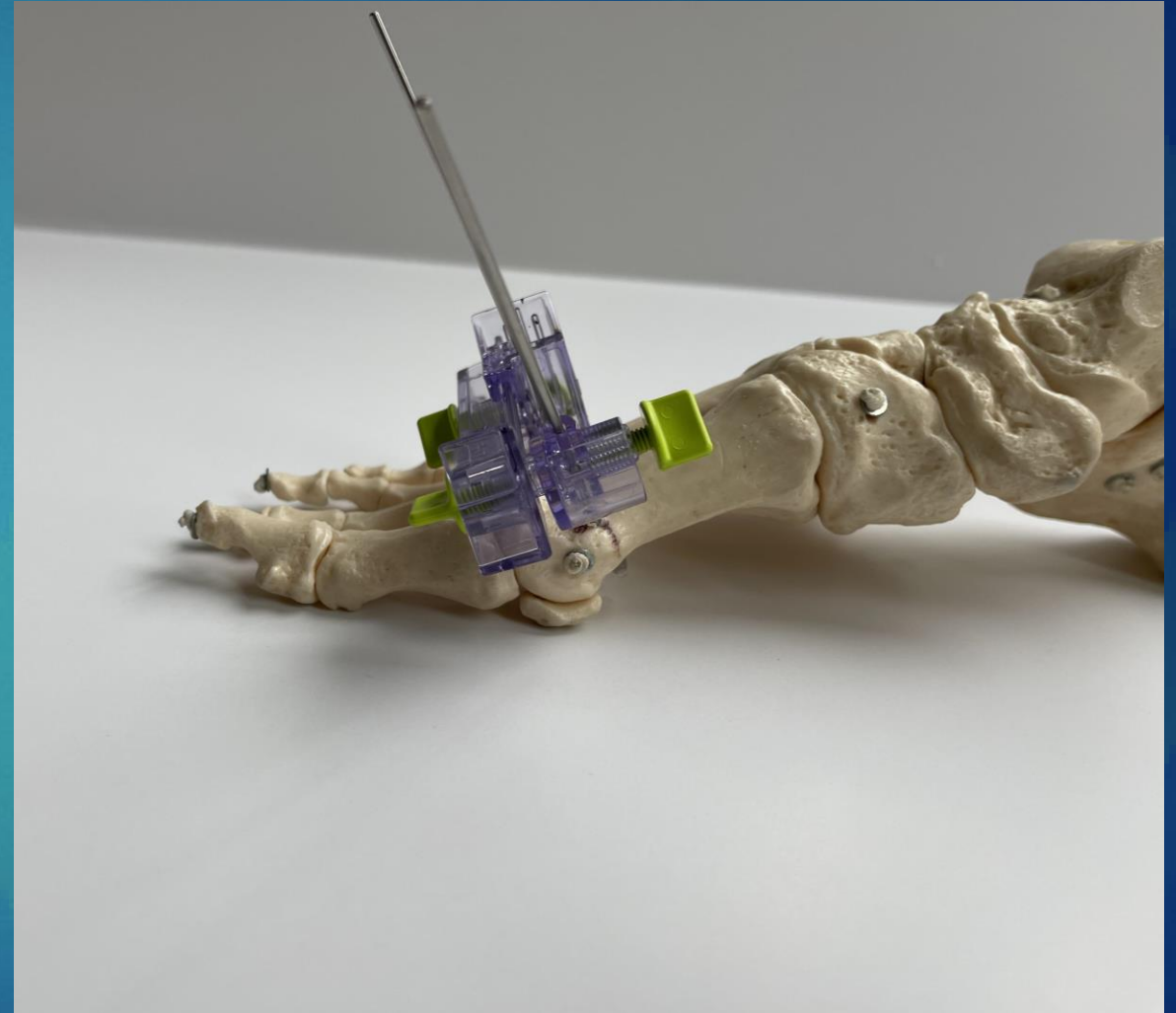
The RELJA Clamp

- ▶ Confirm position with fluoroscopy



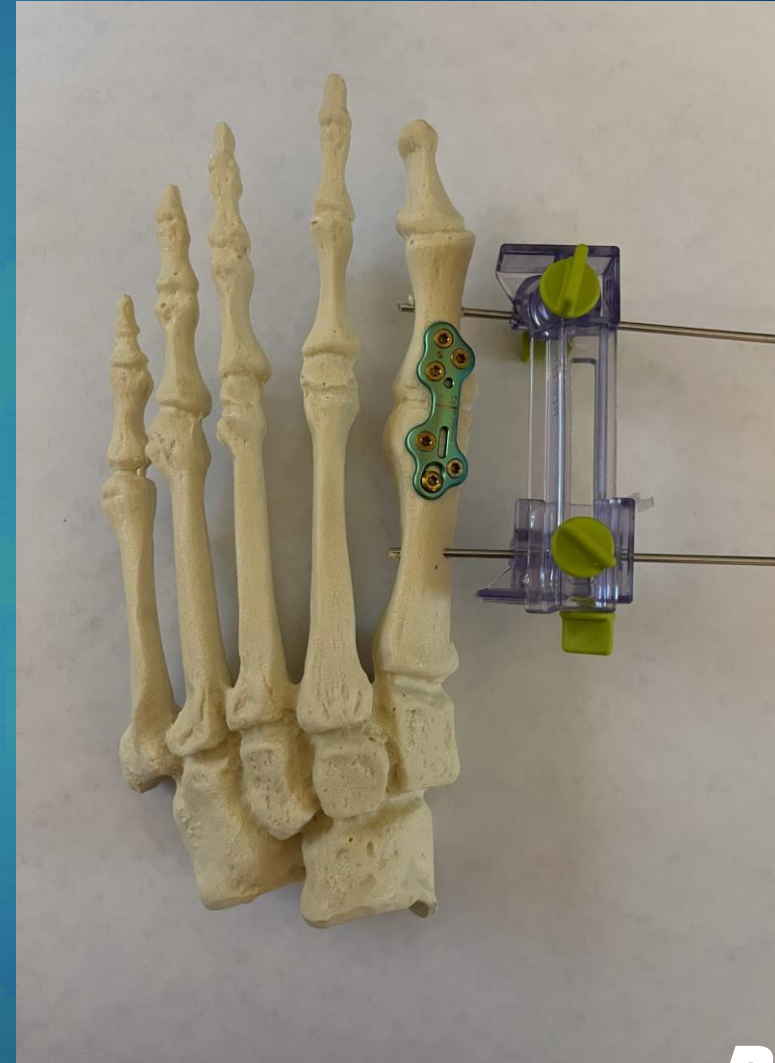
The RELJA Clamp

- ▶ 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
- ▶ Place temporary fixation and all hardware, THEN remove the clamp.



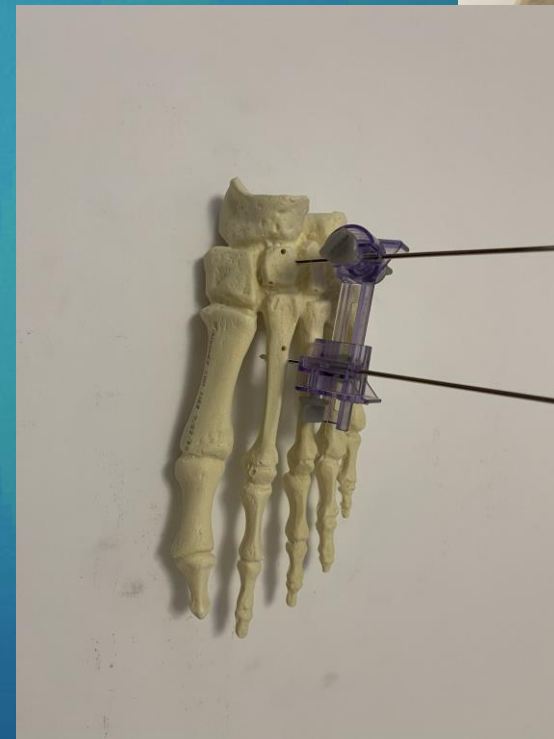
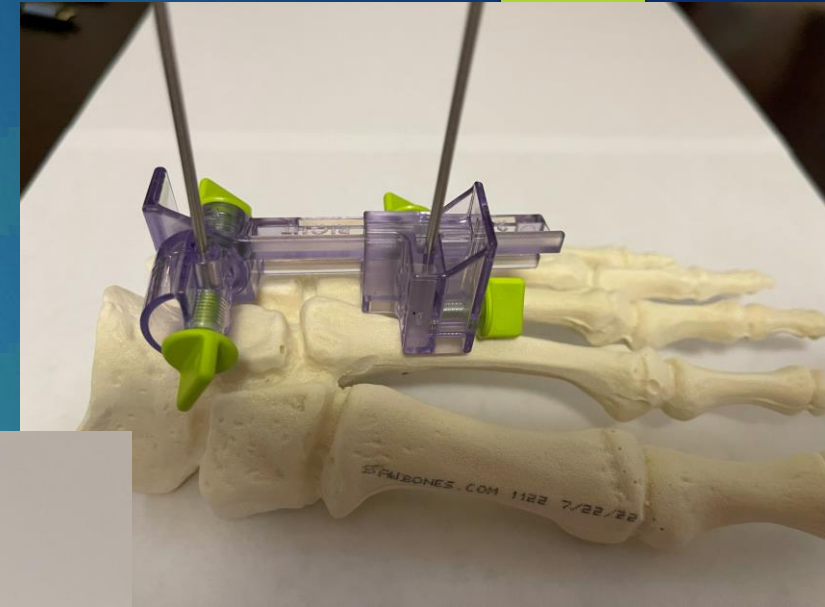
The RELJA Clamp for 1st MTP Fusion

- ▶ After joint preparation and temporary fixation, apply The RELJA Clamp with one Steinmann pin on each side of the fusion site as shown.
- ▶ Squeeze the tabs together on the clamp to provide axial compression across the fusion site.
- ▶ Tighten the proximal thumb screw to hold the compression.



The RELJA Clamp for Midfoot Fusions

- ▶ After joint preparation and temporary fixation, apply The RELJA Clamp with one Steinmann pin on each side of the fusion site as shown.
- ▶ Squeeze the tabs together on the clamp to provide axial compression across the fusion site.
- ▶ Tighten the proximal thumb screw to hold the compression.



The RELJA Clamp for Lisfranc Fracture / Dislocations

- ▶ Place a Steinmann pin across the fracture dislocation (as shown) and squeeze the tabs to together to reduce the deformity.
- ▶ Next tighten the thumb screws to hold correction.
- ▶ Confirm position on fluoroscopy
- ▶ Place hardware
- ▶ Remove the clamp

