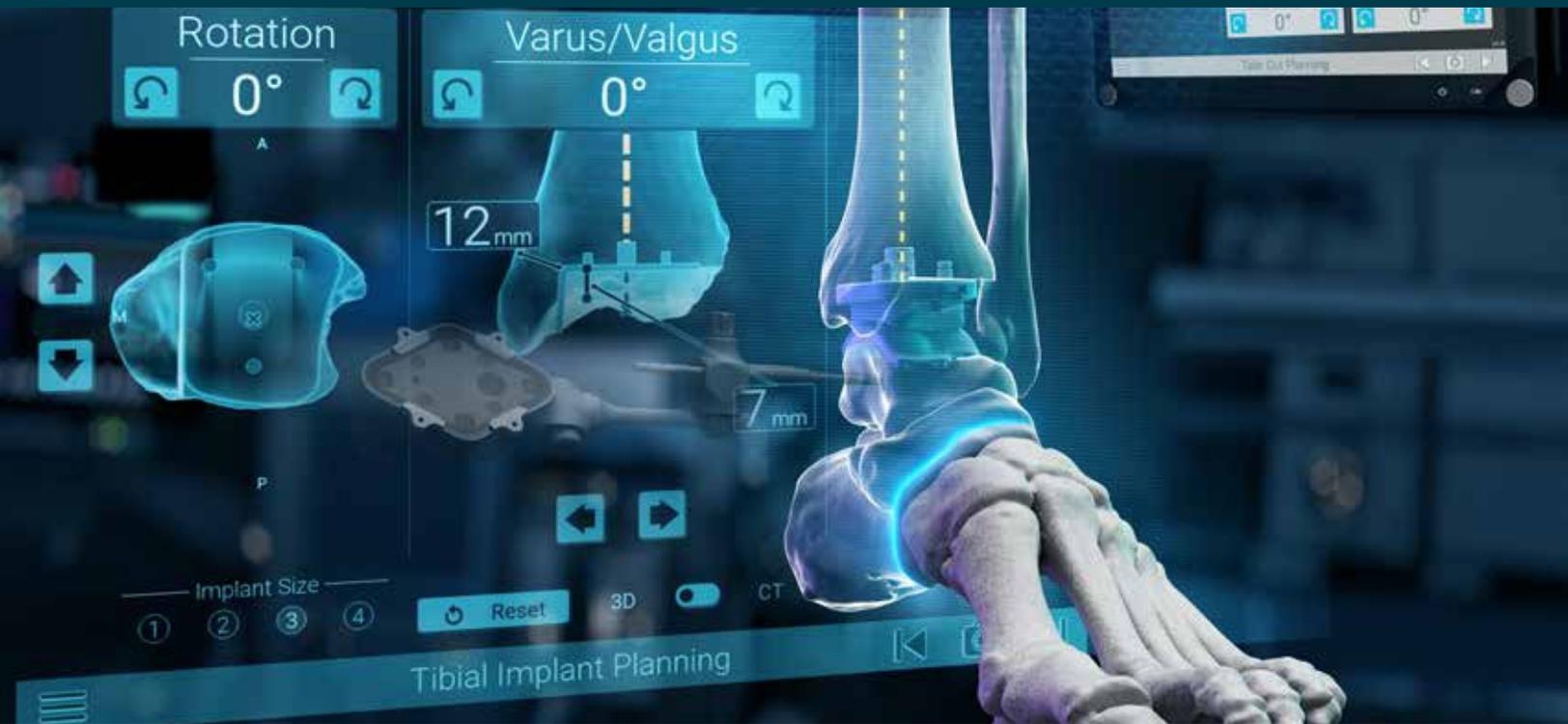


ANKLE

Operative Technique



ai | GPS Ankle Application
with the Vantage® Total
Ankle System

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Figure 1
GPS Station Welcome Screen



Figure 2
GPS TAA Application Welcome Screen

Plug in the station's power cord turn on the GPS® station and insert a **Passkey**. When prompted, select the GPS TAA application (*Figure 1*).

Note: *In a cold room or climate, start the station 30-45 minutes in advance to ensure proper tracker/camera visibility. When plugging in the station, first screw the power cable into the back of the station, then plug the other end of the power cable into the wall, and finally turn on the unit.*

Welcome Screen: Click the forward arrow located in the bottom right portion of the screen to proceed (*Figure 2*).

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Figure 3
Implant and Case Selection Screen



Figure 4
Case Verification Screen

Case and Implant Selection: On the case and implant selection screen, select “Import Case” to import a case from the USB (Figure 3).

After the case is imported, click the box with the drop down and select the patient ID. Ensure the patient information displayed matches the patient in the O.R.

Select the tibial implant type (Vantage® Ankle or Vantage Ankle 3D) and desired instrumentation type (coupled or decoupled). Click the forward arrow to proceed.

Case Verification: Patient information and patient anatomy are displayed on the “Case Verification” screen (Figure 4). The tibial mechanical axis is shown in orange on the tibia on the left; the gutter bisection is shown on the tibia on the axial view. A pink dot identifies the apex of the tibial plafond; it is used as the cut height reference point. A blue dot identifies the talar cut height reference point.

Click the forward arrow to proceed.

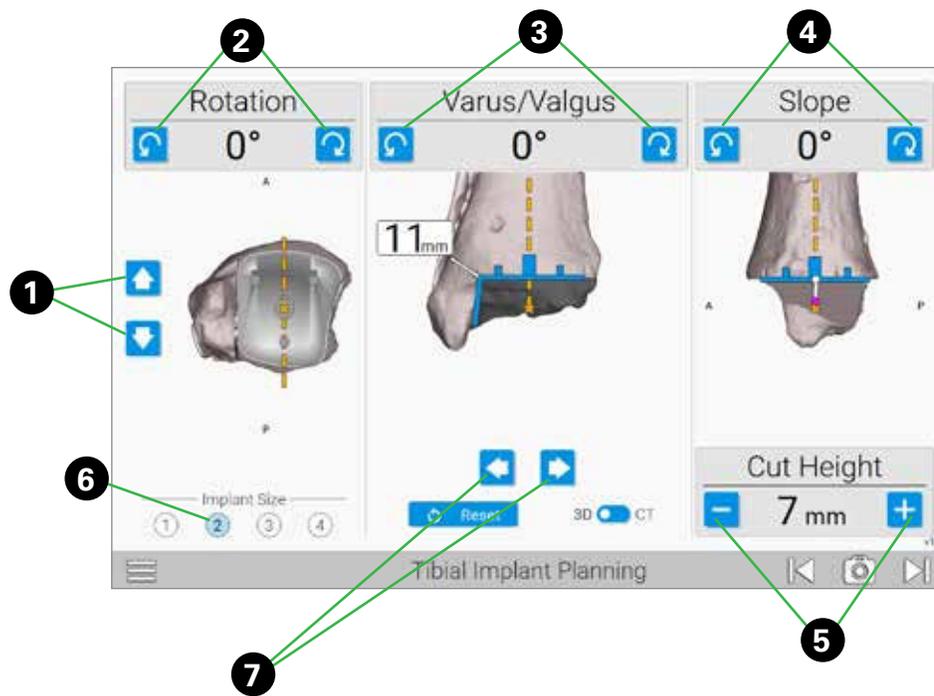


Figure 5
Tibial Implant Planning

Tibial Implant Planning (3D): The “Tibial Implant Planning” screen shows an axial, frontal and lateral view of the tibia. The axial view shows the gutter bisection (orange dotted line) (Figure 5). The frontal view shows the medial malleolus thickness and the cut height from the apex of the tibial plafond (pink dot). The tibial mechanical axis is shown in the frontal and axial views (orange dotted line). Peg and cage location are displayed in all views.

The implant selection, position and orientation can be adjusted using the following buttons shown in Figure 5:

1. Anterior/posterior position
2. Internal/external rotation
3. Varus/valgus rotation
4. Slope
5. Cut height
6. Implant size
7. Medial/lateral position

For cases using the Vantage Ankle 3D/3D+ tibial implants, you can also adjust cage height on the screen. The tibial implant outline turns red when the tibial implant overhangs in the medial/lateral direction by any amount, or when the tibial implant overhangs in the anterior/posterior direction by more than 2mm. The medial malleolus value box will turn red when the displayed thickness is 8mm or below.

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Tibial Implant Planning (CT): Toggle the “3D/CT” button to enter a CT view. In the CT view, the implant selection, position, and orientation can be adjusted as above. Tap the arrow buttons under each view (axial, frontal, lateral) to progress through individual CT slices (Figure 6).

Patient and Station Positioning

Position the GPS Station at the patient’s knee with the screen over the patient, pointing toward the ankle. To maximize visibility, the screen should be at the surgeon’s chest level or higher. Take the Sterile Drape by the two tabs and place it on the GPS Station from the top, with the transparent sheet on the screen side. Unroll the drape down over the screen and mounting arm. Position the transparent sheet in front of the screen, it will position itself automatically. Remove the protective film from the camera and dispose immediately.

Click the forward arrow to proceed. Insert batteries (positive end first) into the **Probe (P) Tracker, Foot (F) Tracker, Tibia (T) Tracker, and Guide (G) Tracker** (Figure 7).

Caution: Inserting the negative side first or in reverse polarity may cause permanent damage to the tracker. Insert batteries positive side first. **Note:** Use only the dedicated sterile batteries provided. Do not reuse or sterilize the batteries.

Connecting Trackers: To pair the trackers to the station, place them face up on the table in clear view of the camera. Once the battery is installed and the tracker is visible to the camera, the status LED on each tracker will illuminate solid red/orange and begin to blink green. After positioning the trackers with the LEDs facing the camera, the trackers will display on the screen and a green check mark will appear to verify connection and visibility (Figure 8).



Figure 6
Tibial Implant Planning CT View



Figure 7
Insert Batteries Into Trackers

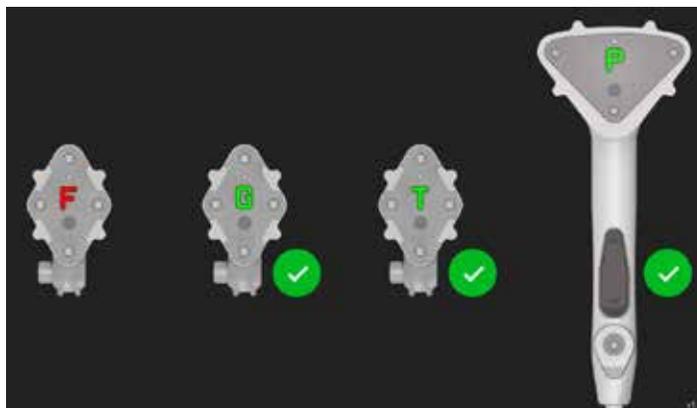


Figure 8
Pair the Trackers to the Station

Colored LED		
No Battery Inserted, or battery empty		No Color
Not connected	● ● ●	Green, Blinking, Slow
Connection in progress	● ● ● ● ●	Green, blinking, fast
Connected, not required by the application	—————	Orange, continuous
Connected, required by the application, not visible	—————	Orange, continuous
Connected, required by the application, visible	—————	Green, continuous
Battery low (less than 15min battery life)	● ● ●	Orange, blinking, slow
After that, the LED may have an erratic behavior		

Table 1
Tracker LED Colors

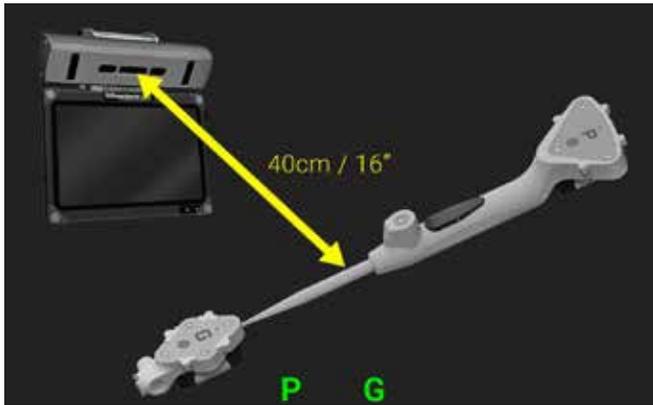


Figure 9
Calibrate the Trackers



Figure 10
Place Pins in Medial-Anterior Tibia

One-Step Calibration: Place the tip of the **Probe Tracker (P)** into the dimple at the top of the **G Tracker**. Hold both together at a distance no greater than 40 cm/16 inches from the display unit, ensuring the tracker faces are visible to the camera. When positioned correctly, both G and P will show as green on the screen (*Figure 9*).

At this time, press and release the forward button on the **Probe Tracker**. The progress bar will fill and an audible tone will indicate successful calibration. The system will automatically advance to the next screen.

All trackers have a colored LED on the front face. The color and pattern indicate different states according to the *Table 1*.

Use the **Pin Guide** to place two **2.4mm Threaded Pins** bicortically in the medial anterior tibia approximately 13cm from the joint line (*Figure 10*). Each pin should be placed perpendicular to the tibial mechanical axis and parallel to the table surface. Use only the specified pins. Use fluoroscopy to ensure the pins are placed bicortically.

Note: To avoid bending, do not drive the **2.4mm Threaded Pin** with the driver tilted off-axis from the pin's main axis. Never drive the **2.4mm Threaded Pin** without guidance through the **Pin Guide** or **Bone Fixator**.

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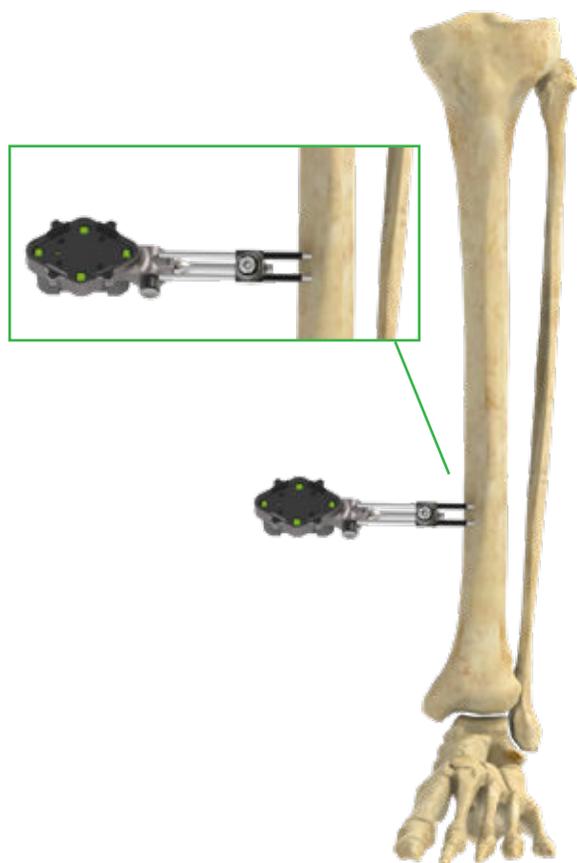


Figure 11

Attach the Bone Fixator and T Tracker to the Tibia



Figure 12

Expose the Ankle Joint and Place Pins Into the Talus

Attach the **Bone Fixator** to the pins and slide it down to the skin. Attach the **T Tracker** to the **Bone Fixator**, ensuring the wedge on the fixator fully enters the wedge on the tracker (*Figure 11*). Position the tracker by rotating the arm on the **Bone Fixator**. Position the **T Tracker** parallel to the table, angled slightly towards the camera. When the **T Tracker** is visible to the camera, the "T" icon on the screen will turn green. Ensure that the **T Tracker** is visible to the camera when the leg is positioned as it will be positioned during surgery. Lightly tighten the fixator using the **Hex Driver**.

Note: If the **Bone Fixator** cannot slide over the pins or the arm cannot be adjusted, it may need to be loosened by using the **Hex Driver** to turn the hex counter-clockwise.

Expose the ankle joint per the Vantage Ankle operative technique (721-00-30). Use the **Pin Guide** to place two

2.4mm Threaded Pins bicortically in the talus' medial neck while the foot is in neutral (*Figure 12*). Each pin should be placed perpendicular to the tibial mechanical axis and parallel to the table surface. Use only the authorized pins listed below. Use fluoroscopy to ensure the pins are placed bicortically and neither pin impinges on the talonavicular joint or medial malleolus. The talar dome from its apex to the talar neck will be resected or rasped during the procedure, so take care to avoid placing pins in this area.

Note: It is recommended that the distal pin be placed first, proximal to the talonavicular joint and crossing the talar neck. Both pins may be placed under fluoroscopy to improve accuracy.

Authorized Pins for Use:
351-90-05 2.4mm Threaded Pin

Figure 13
Attach the Bone
Fixator and F Tracker
to the Foot

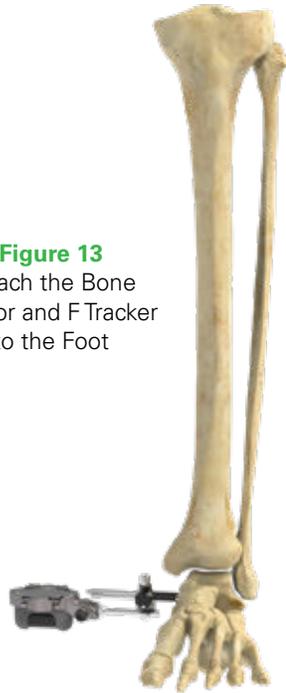


Figure 14
Confirm Tracker and Bone Fixator Positions

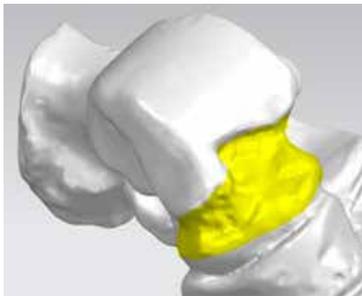


Figure 15
Remove Soft Tissue

Attach the second **Bone Fixator** and the **F Tracker** to the pins (*Figure 13*). Position the tracker by rotating the arm on the **Bone Fixator**. While the foot is in neutral, position the **F Tracker** at 45° to horizontal, pointing towards the camera. When the **F Tracker** is visible to the camera, the “F” icon on the screen will turn green. Ensure that the **F Tracker** is visible through the foot’s full range of motion. Lightly tighten the fixator using the **Hex Driver**.

Tracker Fixation: Firmly tighten both Bone Fixators using the Hex Driver. Verify that (*Figure 14*):

- Both trackers remain visible to the camera when the foot is moved through a full range of motion.
- Neither tracker will contact the table during the operation.
- Neither tracker can move on the Bone Fixator or be pulled off without pressing the button.
- The pins are rigidly fixed within the bone.
- Neither Bone Fixator can slide on the pins.

Remove soft tissue that may prohibit contact between the probe tip and bone in the areas shown in *Figure 15*.

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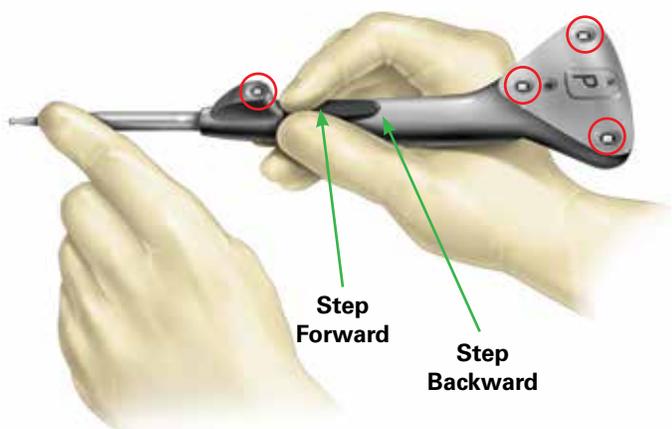


Figure 16
Stabilize Probe Tracker



Figure 17a
Tibial Crest Superior Point



Figure 17b
Tibial Crest Inferior Point

Clear soft tissue from each acquisition area prior to probing. Remove cartilage from acquisition areas. Remaining cartilage may cause acquisition inaccuracies. Do not trim any osteophytes before taking acquisitions, even if they are within the acquisition area. Removing osteophytes before acquisition will lead to acquisition inaccuracies.

If there is hardware (screws, plates, etc.) in the designated acquisition area, take the acquisitions on the hardware and the bone. Do not remove hardware before taking acquisitions.

Hold the **Probe Tracker** with the index finger on the forward button. Place the other index finger on the probe tip to stabilize it against the bone. Ensure the four IR LEDs on both the **Probe Tracker** and the bone tracker are visible to the camera during acquisition (*Figure 16*).

For point acquisitions, place the probe tip on the anatomic landmark, then press and release the forward button on the probe. Where necessary, points can be taken on the skin.

For patch acquisitions, place the probe tip on the anatomic landmark noted by the arrow, press and release the forward button ensuring the probe is touching bone, and then “paint” the anatomic reference according to the figure displayed on the screen (*Figure 17*).

Do not hold the button down during acquisition.

After sufficient points are taken, the system will automatically progress to the next screen.

Note: To return to the previous step or redo an acquisition, rapidly double click the back button on the probe.



Figure 17c
Antero Lateral Point



Figure 17d
Medial Malleolus Point

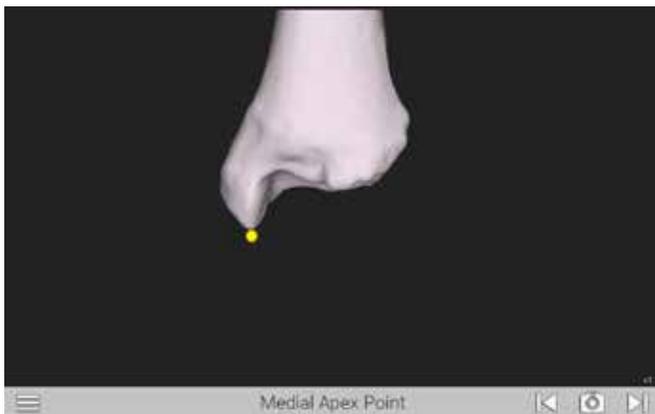


Figure 17e
Medial Apex Point



Figure 17f
Lateral Line on Anterior Tibia Surface



Figure 17g
Medio-lateral Line on Anterior Tibia Surface



Figure 17h
Center Line on Anterior Tibia Surface

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Figure 17i
Articular Crest Line



Figure 17j
Medial Patch on Anterior Tibia Surface



Figure 17k
Anterior Apex Surface



Figure 17l
Medial Malleolus Line

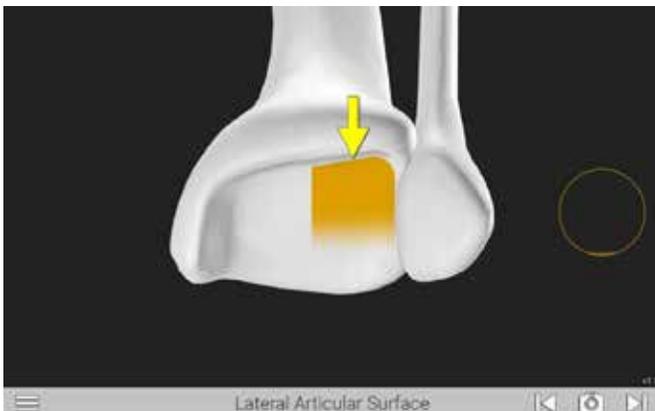


Figure 17m
Lateral Articular Surface

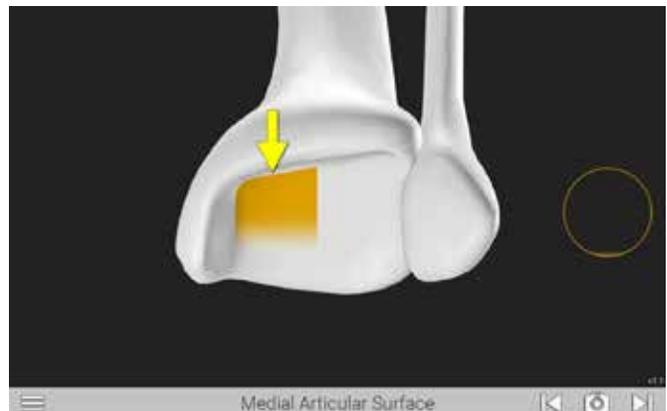


Figure 17n
Medial Articular Surface



Figure 17o
Medial Gutter Line

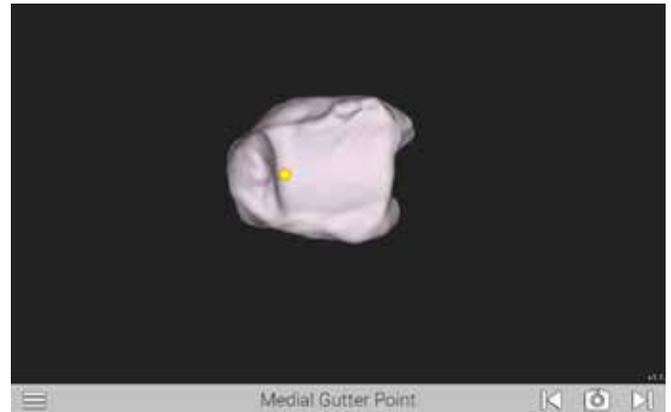


Figure 17p
Medial Gutter Point

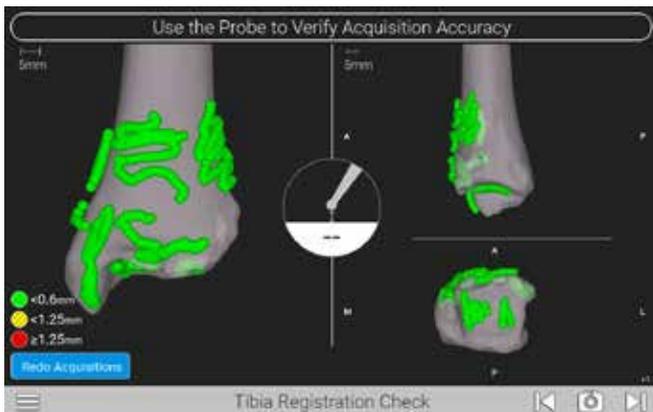


Figure 18
Tibia Registration Check



Figure 19a
Redo Tibial Acquisitions

Tibia Registration Check: The system will digitize the acquisitions and generate a color map of the points for verification (Figure 18).

- Green points signify that the acquired points vary by less than 0.6mm from the digital reconstruction
- Yellow points signify that the acquired points vary by 0.6mm to 1.25mm from the digital reconstruction
- Red points signify that the acquired points vary by more than 1.25mm from the digital reconstruction

To check that the registration was accurate, put the probe tip in contact with an area on the bone where no points were acquired. Verify that the white dot displayed on the screen corresponds accurately to the probe tip's true position.

To better visualize the acquired points, click on one of the colored dots in the legend to display only those points.

If the tibial acquisitions are not adequate, select "Redo Acquisitions" and select the acquisitions that need to be redone. Retake the selected acquisitions as before (Figure 19).

Note: If bony osteophytes limit access to the Intra Articular Patches, the osteophytes may be removed. However, it is critical that they only be removed after the Extra Articular Patches and Initialization Points are acquired and deemed acceptable. These two acquisitions will be inaccurate if taken after osteophytes are removed.

GPS ANKLE APPLICATION

SURGICAL TECHNIQUE



Figure 19b
Talus Anterior Point

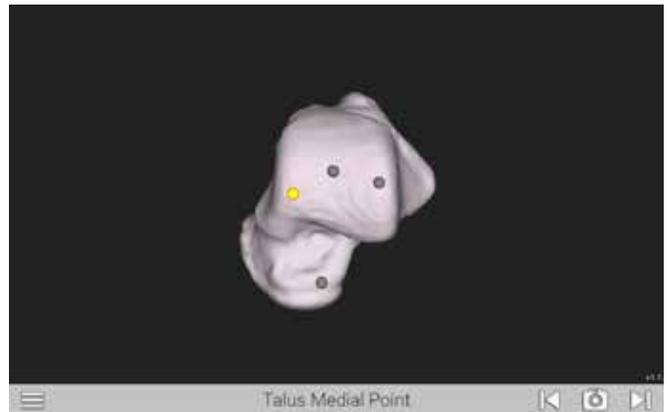


Figure 19c
Talus Medial Point

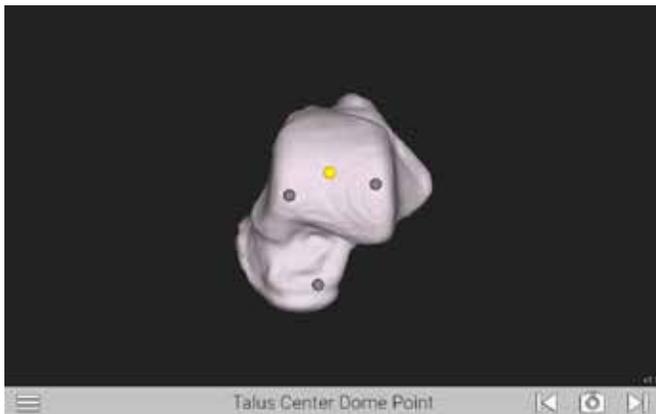


Figure 19d
Talus Center Dome Point

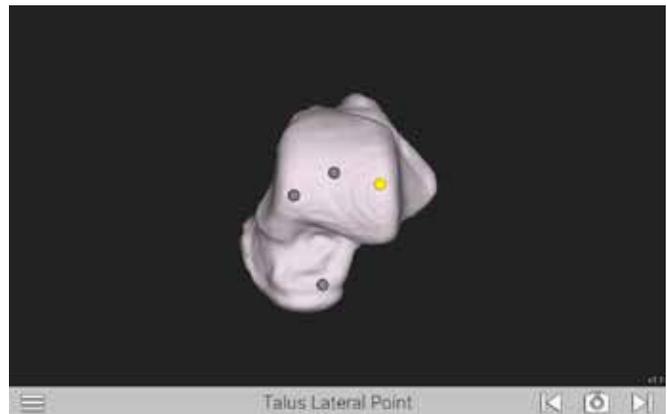


Figure 19e
Talus Lateral Point

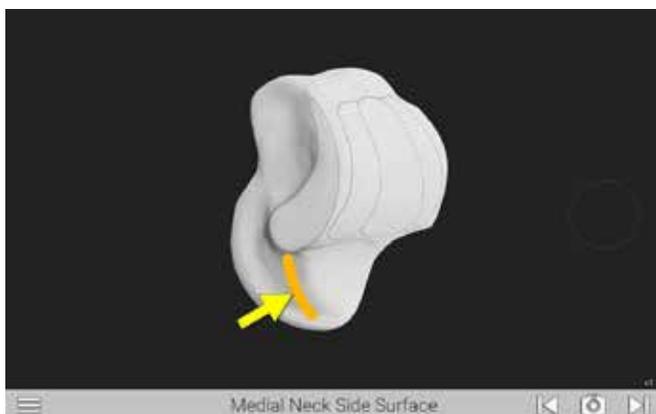


Figure 19f
Medial Neck Side Surface

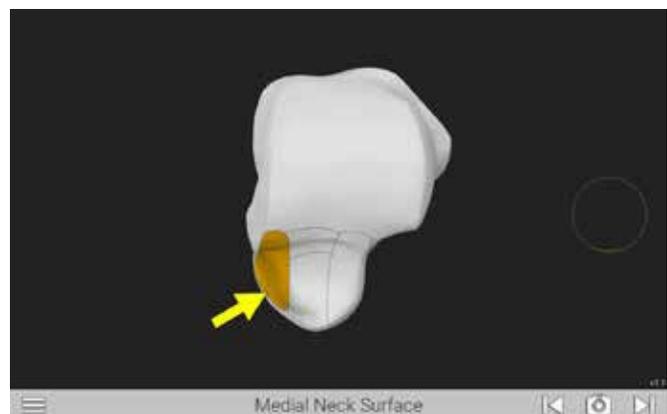


Figure 19g
Medial Neck Surface

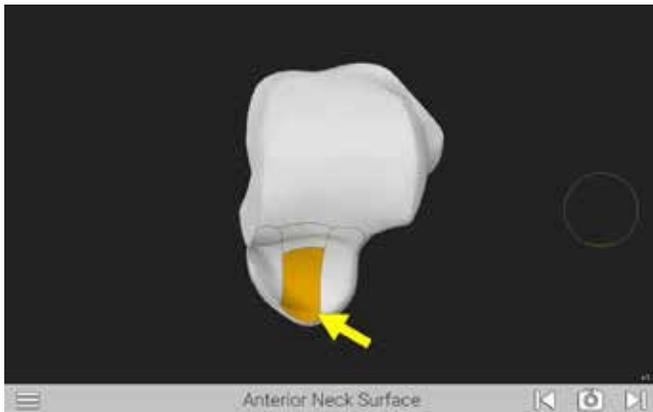


Figure 19h
Anterior Neck Surface



Figure 19i
Lateral Neck Surface

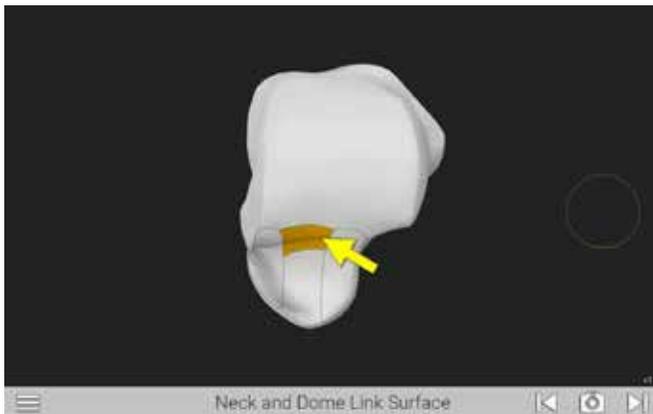


Figure 19j
Neck and Dome Link Surface

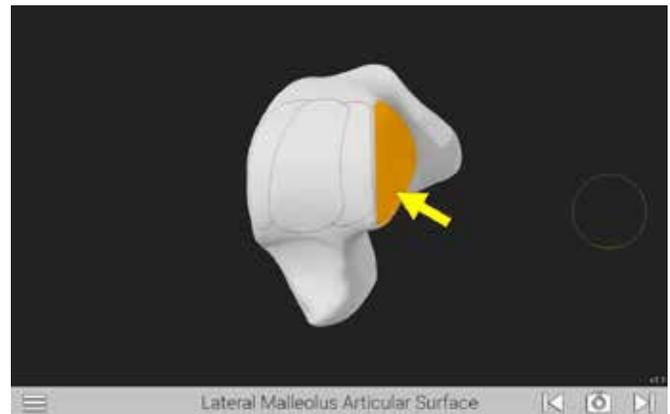


Figure 19k
Lateral Malleolus Articular Surface

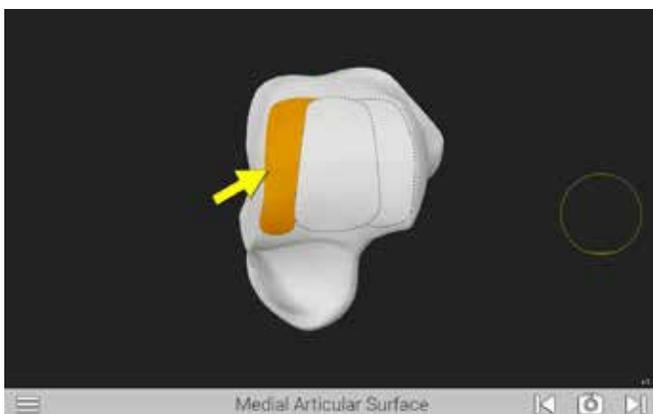


Figure 19l
Medial Articular Surface

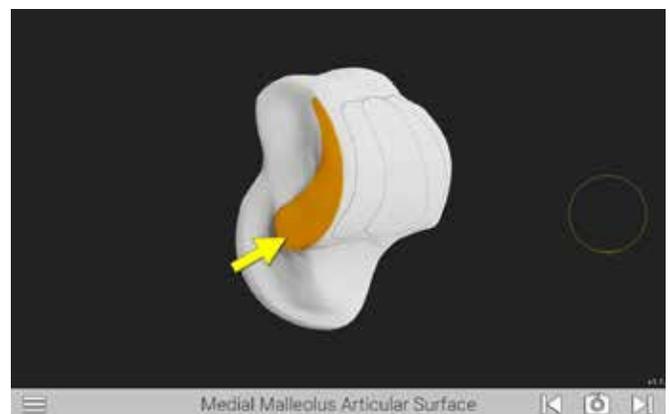


Figure 19m
Medial Malleolus Articular Surface

GPS ANKLE APPLICATION

SURGICAL TECHNIQUE

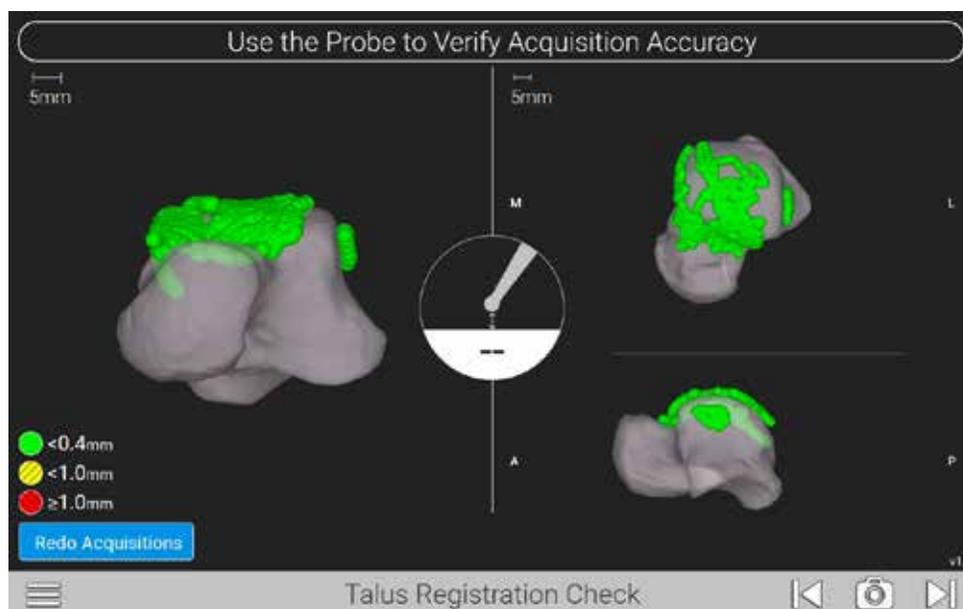


Figure 20
Talus Registration Check

Talus Registration Check: The system will digitize the acquisitions and generate a color map of the points for verification (*Figure 20*).

- Green points signify that the acquired points vary by less than 0.4 mm from the digital reconstruction.
- Yellow points signify that the acquired points vary by 0.5mm to 1.0mm from the digital reconstruction.
- Red points signify that the acquired points vary by more than 1.0mm from the digital reconstruction.

To check that the registration was accurate, put the probe tip in contact with an area on the bone where no points were acquired. Verify that the white dot displayed on the screen corresponds accurately to the probe tip's true position.

To better visualize the acquired points, click on one of the colored dots in the legend to display only those points.



Figure 21
Redo Acquisitions

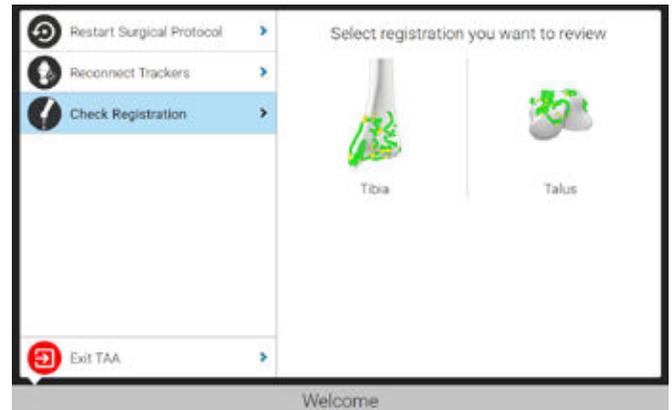


Figure 22
Verify Tibia and Talus Registrations

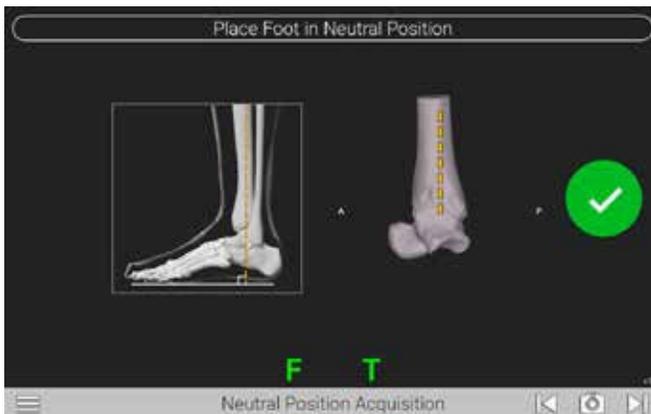


Figure 23
Neutral Position Acquisition

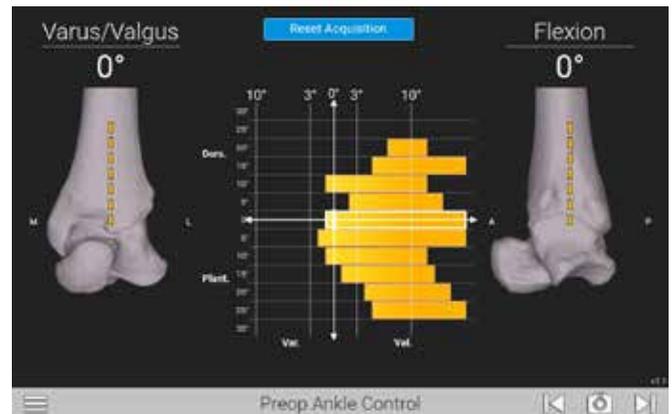


Figure 24
Create Pre-Op Laxity Curve

If the talar acquisitions are not adequate, select “Redo Acquisitions” and select the acquisitions that need to be redone (Figure 21). Retake the selected acquisitions as before.

At any point in the procedure, the check tibia registration and check talus registration pages are accessible through the menu (Figure 22). Use these to verify that the system is accurately tracking the bone.

Neutral Position Acquisition: Position the foot in neutral position and press the next button either on the probe or on the screen to acquire neutral position (Figure 23).

This neutral position will define the neutral orientation of the talus (i.e. 0° flexion and 0° varus/valgus) on the kinematics pages and the talus cut plan page.

If neutral position cannot be achieved due to tight soft tissue, perform soft tissue releases then take the acquisition.

Pre-Op Ankle Control: Develop a pre-operative laxity curve by repeatedly moving the foot through a full dorsiflexion/plantarflexion range of motion while varying the varus/valgus position (Figure 24).

GPS ANKLE APPLICATION

SURGICAL TECHNIQUE



Figure 25
Place Alignment Guide



Figure 26
Insert Tibial Cut Block and Attach G Tracker

Make a small 5mm incision over the tibial tubercle. Use the **Medial Shim** to align the **Tibial Tubercle Pin**, then place the **Tubercle Pin** through the proximal hole in the **Total Ankle Alignment Guide** and into the tibial tubercle (*Figure 25*).

Note: The distal alignment block should be opened halfway distally to allow for superior or inferior adjustments later.

Insert the **Tibial Cut Block** into the alignment guide. Verify that the **Cut Block Tracker's** medial tab is inserted into the **Tibial Cut Block's** medial slot. Insert the **Tibial Cut Tracker** into the **Tibial Cut Block** and attach the **G Tracker** (*Figure 26*). Verify that the **G Tracker** is rigidly attached to the **Cut Tracker** and oriented towards the camera (*Figure 26*).

Note: Do not position the **Cut Block** by manipulating the **G Tracker** or **Tibial Cut Tracker**. Only position the **Cut Block** using the **Alignment Guide's** adjustment mechanisms.

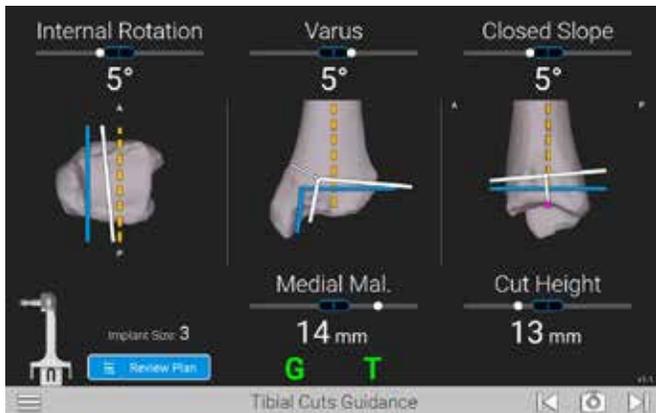


Figure 27
Tibial Cut Guidance

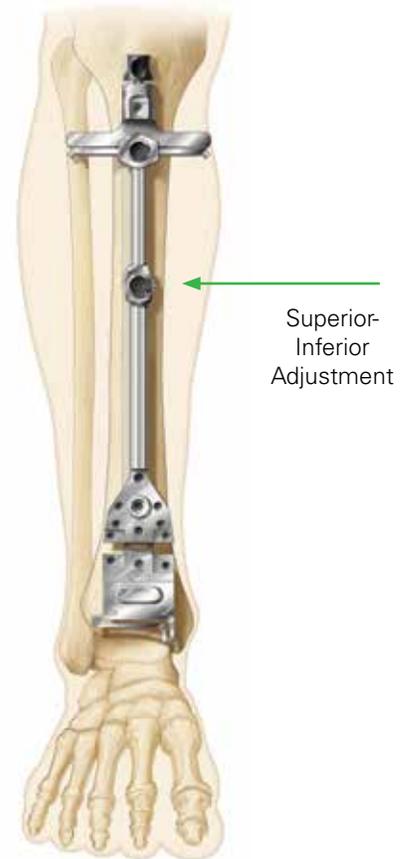


Figure 28
Adjust Alignment Guide and Position Tibial Cut Block

Tibial Cut Guidance: The tracked cut location is displayed in real-time on the screen as a white line. The planned cut location is displayed as a blue line (*Figure 27*).

If desired, press the “Adjust Plan” button to update the planned cut.

Note: The system will display the cut block profile matching the implant size and type that was selected in the planning screen.

Use the black button on the middle of the **Alignment Guide** shaft to adjust its overall length. Position the **Tibial Cut Block** such that the cut height and medial lateral position are within 5mm of the planned cut (*Figure 28*).

GPS ANKLE APPLICATION

SURGICAL TECHNIQUE

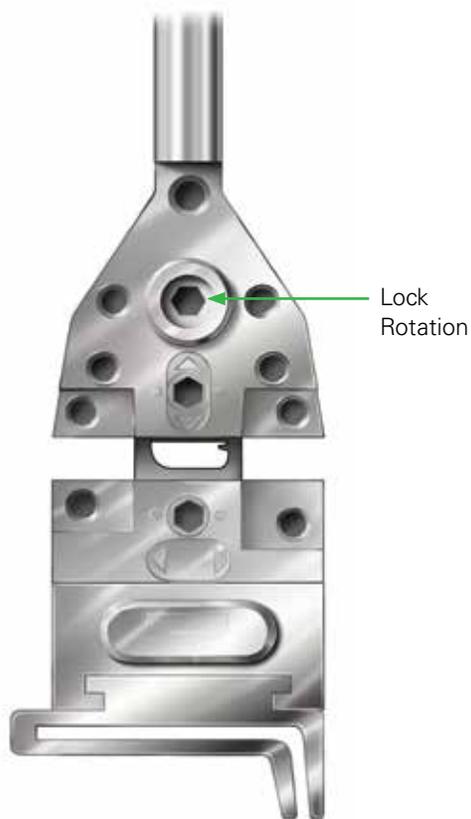


Figure 29
Fix Central Locking Screw



Figure 30
Adjust Alignment Guide

Loosen the central locking screw on the **Alignment Guide** using the **Hex Driver** and align the internal/external rotation to within 5° of the planned cut (*Figure 29*). Tighten the central locking screw to rigidly fix the internal/external rotation.

Press the button at the proximal end of the **Alignment Guide** to adjust the varus/valgus alignment to within 5° of the planned cut (*Figure 30*).

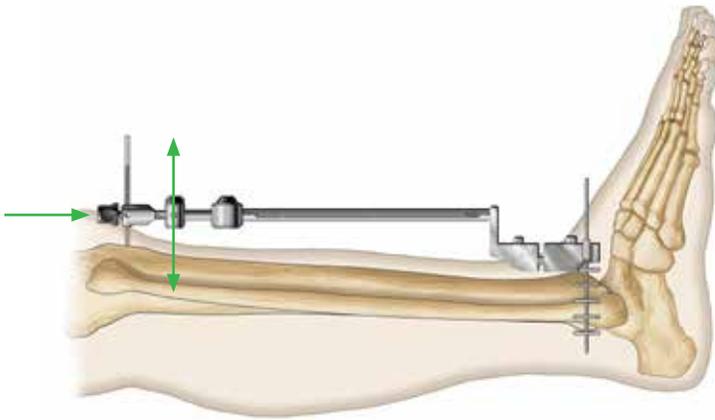


Figure 31
Verify Cut Slope

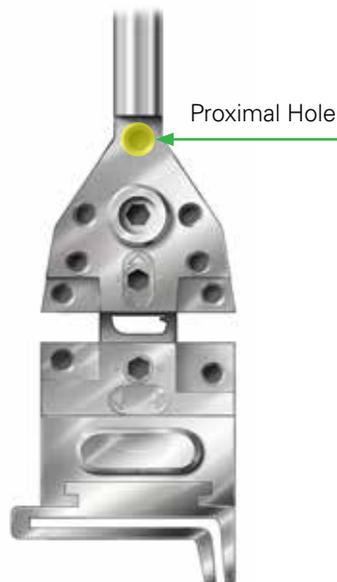


Figure 32
Pin Proximal Hole

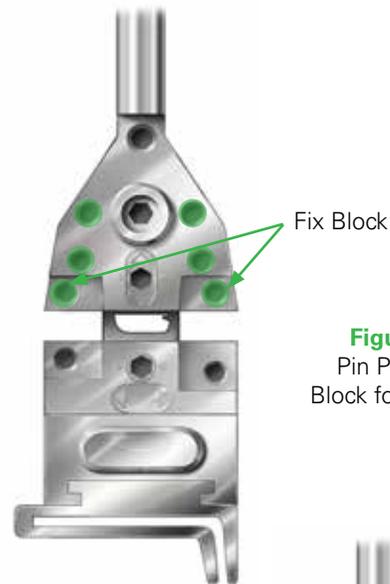
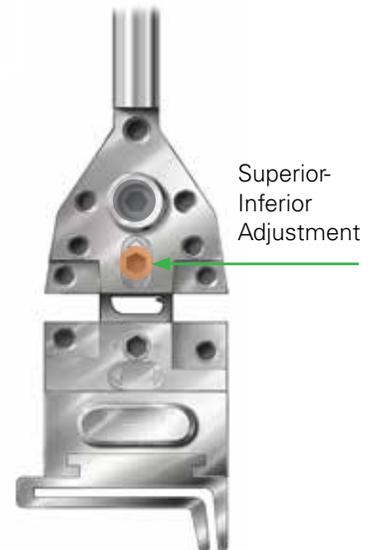


Figure 33
Pin Proximal
Block for Stability

Figure 34
Adjust Superior-
Inferior Position



Superior-
Inferior
Adjustment

Loosen the screw at the proximal end of the **Alignment Guide** to slide it up and down the Tibial Tubercle Pin (*Figure 31*). Position the assembly such that the cut slope is within 5° of the planned cut.

After the cut height, medial/lateral position, rotation, varus/valgus, and slope are within 5mm and 5° of the planned cut, place a pin in the proximal hole of the **Alignment Guide** (*Figure 32*).

Further refine the rotation, varus/valgus, and slope to their final desired values by adjusting the **Alignment Guide** as above. Pin the proximal block to rigidly fix these values (*Figure 33*).

Insert the Hex Driver into the superior-inferior adjustment space shown in the figure, press down, and turn to further refine the cut height to its final desired value (*Figure 34*).

GPS ANKLE APPLICATION

SURGICAL TECHNIQUE

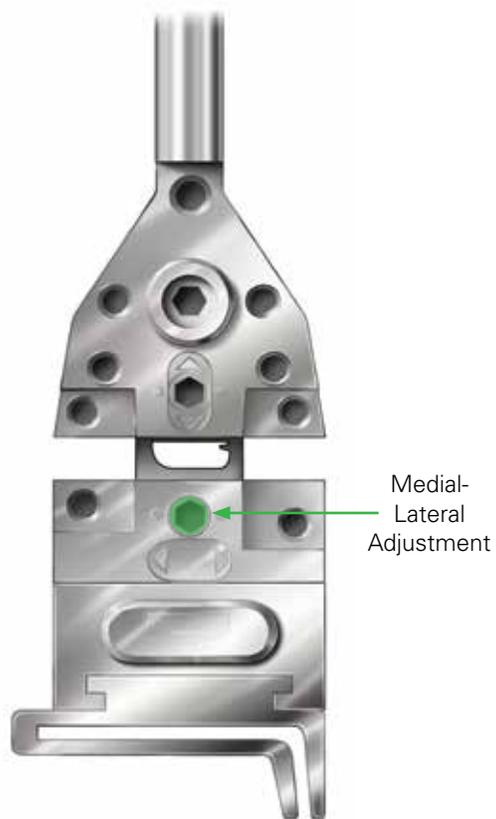


Figure 35
Adjust Medial-Lateral Position

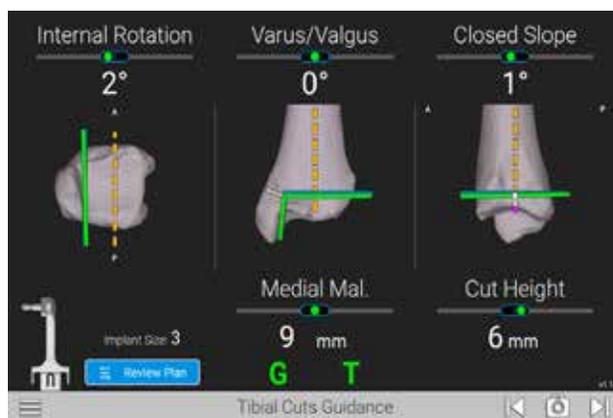


Figure 36
Confirm Tracked Cut

Insert the **Hex Driver** into the Medial-Lateral Adjustment space shown in the figure, press down, and twist to further refine the cut medial/lateral position to its final desired value (*Figure 35*).

When the tracked cut location is within 1mm and 2° of the planned cut, the cut line will turn green (*Figure 36*).



Figure 37
Pin Distal Block



Figure 38
Align Tibial Cutting Block with A/P Mortise View

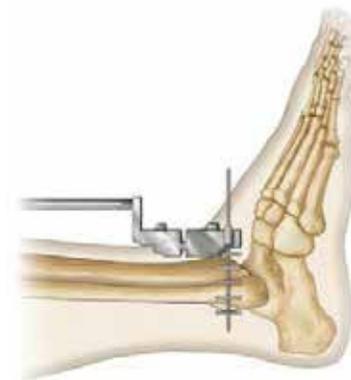


Figure 39
Alignment Guide with Angel Wing – Lateral View

Pin the distal block of the **Alignment Guide** and the tibial cutting block, if applicable (*Figure 37*). Verify that the tracked cut position and orientation are satisfactory, press the “Next” button.

Remove the **Tibial Cut Tracker** from the cut block. An anterior fluoroscopic image should be taken to ensure alignment between the cutting block and the medial gutter of the tibia. This should be done using a mortise view (*Figure 38*).

Verify varus/valgus alignment visually by referencing the tibial crest.

Insert the **Angel Wing** into the tibial cutting block. A lateral fluoroscopic image should be taken at this point to assess the cut slope and cut height (*Figure 39*). After the cut position and orientation have been verified by fluoroscopy, make the tibia cuts according to the Vantage Ankle operative technique.

GPS ANKLE APPLICATION

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Figure 40
Place Cut Checker on Tibia

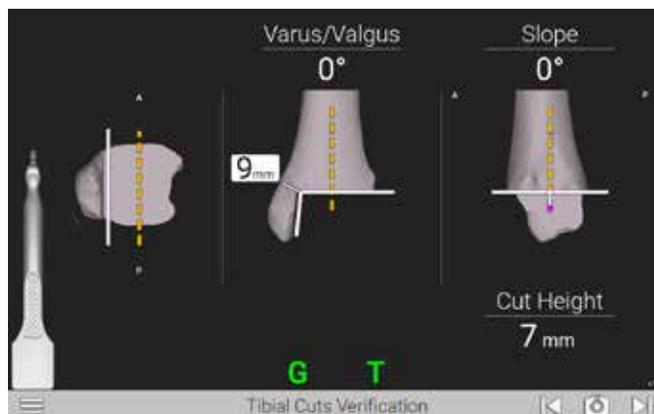


Figure 41
Verify Tibia Cut

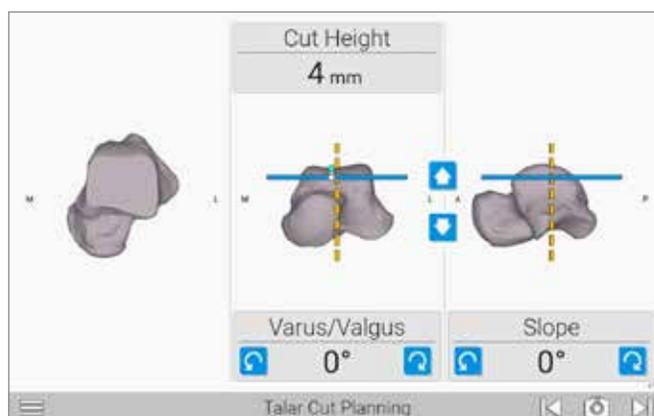


Figure 42
Talar Cut Planning Screen

UNCOUPLED CUT PROCEDURE

Remove the resected bone according to the Vantage Ankle operative technique. Check the cut position and orientation by attaching the **G Tracker** to the **Cut Checker**. Verify that the G Tracker is rigidly attached to the Cut Checker and oriented towards the camera (*Figure 40*).

Press the face marked "TIBIA" against the resected surface on the tibia. Place the **Cut Checker**'s medial shoulder against the resected surface's medial shoulder such that there is contact along the surface's entire length. The textured grip surface on the front of the **Cut Checker** should not penetrate further than the anterior tibial face (*Figure 40*).

If needed, position a lamina spreader underneath the **Cut Checker** and tension the joint to ensure complete contact between the instrument and the resected surface.

Tibia Cut Verification: With the Cut Checker positioned properly on the resected surface, the system displays the resection's true location as a white line. The planned cut is shown in the bone model itself. When the real cut and the planned cut are aligned within 2 degrees and 1mm, the cut's true location line will turn green. The cut can be refined if the checked cut is not satisfactory compared to the plan. When the checked cut location and orientation are satisfactory, press the "Next" button (*Figure 41*).

Talar Cut Planning: The Talar Cut Planning screen shows an axial, frontal and lateral view of the talus (*Figure 42*). Position the planned cut using the translation and rotation buttons.



Figure 43

Attach G Tracker to Adjustable Talar Cut Block

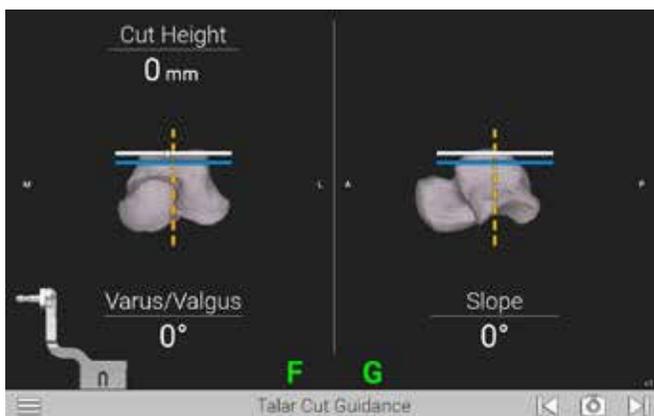


Figure 44

Talar Cut Guidance Screen

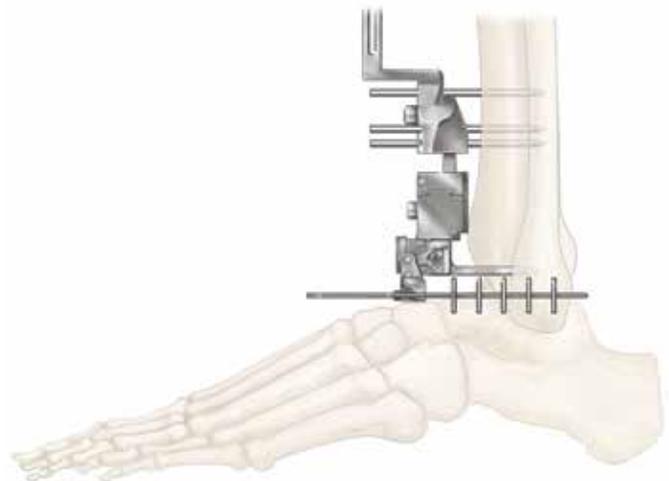


Figure 45

Insert Angel Wing and Verify Cut Position/Orientation

Unpin the **Alignment Guide's** distal block to allow for superior/inferior adjustments. Insert the **Adjustable Talar Cut Block** into the alignment guide. Insert the **Talar Cut Tracker** into the **Adjustable Talar Cut Block** and attach the **G Tracker**. Verify that the **G Tracker** is rigidly attached to the **Talar Cut Tracker** and oriented towards the camera (*Figure 43*). Extend the **Alignment Guide** distally to tension the joint. Care should be taken to ensure the paddle is contacting the talar bone.

Talar Cut Guidance: The tracked cut location is displayed in real-time on the screen as a white line. The planned cut location is displayed as a blue line. If desired, press the "Adjust Plan" to go back to the talar planning screen to update the planned cut. When the tracked cut location is within 1mm and 2° of the planned cut, the cut line will turn green (*Figure 44*).

Adjust the cut location by moving the foot/talus and adjusting the **Adjustable Talar Cut Guide**. When the cut position is satisfactory, pin the **Alignment Guide** and **Adjustable Talar Cut Guide** rigidly to the bone.

Remove the **Talar Cut Tracker** from the cut block and insert the **Angel Wing**. Verify the cut's position and orientation in a lateral and mortise view (*Figure 45*).

After the cut position and orientation have been verified by fluoroscopy, press the "Next" button. Make the talar cut according to the Vantage Ankle operative technique.

Remove the resected talar bone.

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Figure 46

Connect G Tracker to Cut Checker and Place on Talus

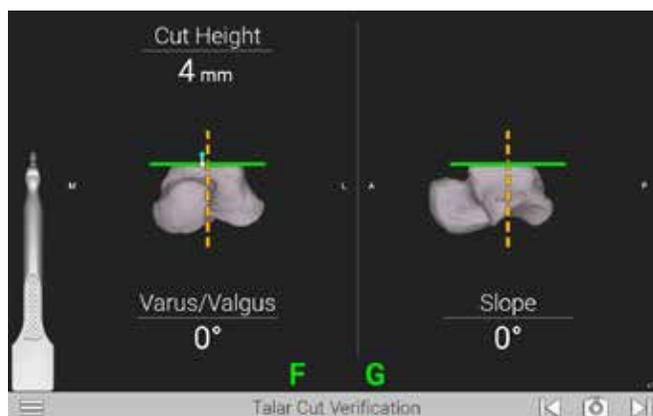


Figure 47

Talar Cut Verification Screen

Connect the **G Tracker** to the **Cut Checker**: Verify that the G Tracker is rigidly attached to the Cut Checker and oriented towards the camera (*Figure 46*). The textured grip surface on the front of the **Cut Checker** should not penetrate further than the anterior tibial face.

If needed, position a **Lamina Spreader** above the **Cut Checker** and tension the joint to ensure complete contact between the instrument and the resected surface.

Talar Cut Verification: With the Cut Checker positioned properly on the resected surface, the system displays the cut's true location with a white line. The planned cut is shown in the bone model itself. When the performed cut and the planned cut are aligned within 2 degrees and 1mm, the cut's true location line will turn green (*Figure 47*).

The cut can be refined if the checked cut is not satisfactory compared to the plan. When the checked cut location and orientation are satisfactory, press the "Next" button.

Implant the planned Vantage Ankle tibial plate, liner trial and talar implant per the Vantage Ankle operative technique.

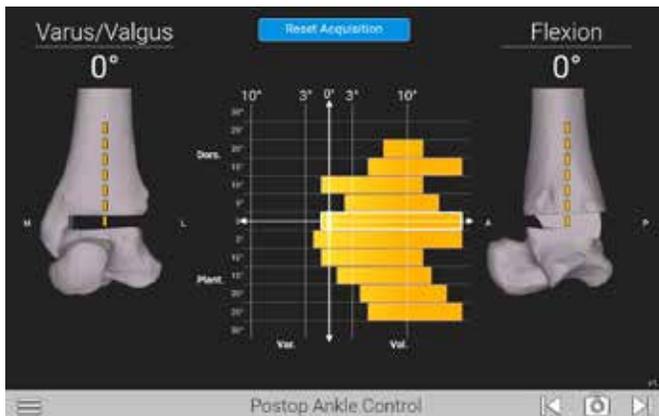


Figure 48

Develop Post-Operative Laxity Curve

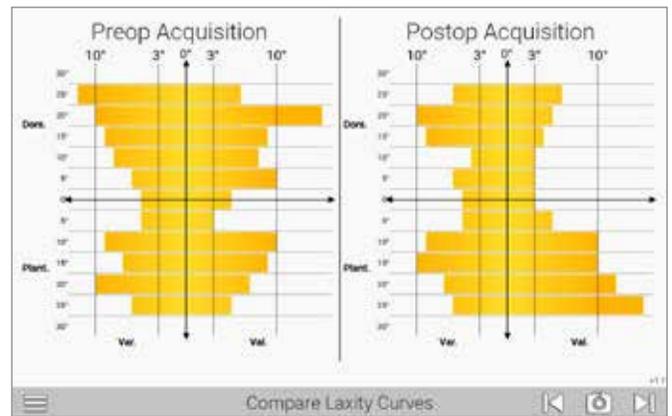


Figure 49

Compare Laxity Curve

Post-Op Ankle Control Develop a post-operative laxity curve by repeatedly moving the foot through a full dorsiflexion/plantarflexion range of motion while varying the varus/valgus position of the foot (Figure 48). Press the “Next” button. The post-operative laxity curve may be created again after final liner implantation. The post-operative laxity curve may be created again after liner implantation.

Compare Laxity Curves: The preoperative and postoperative acquisitions are shown for comparison (Figure 49). Press the “Next” button to finish the case.

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SURGICAL TECHNIQUE

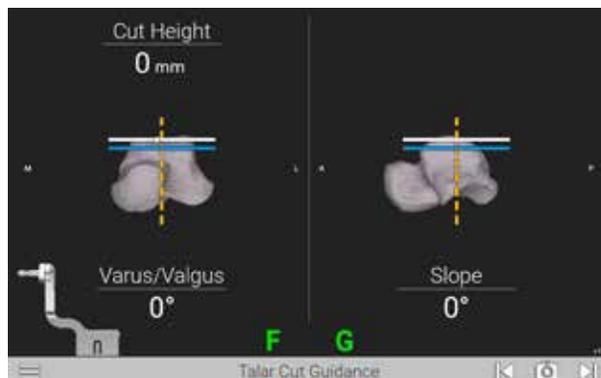


Figure 51
Talar Cut Guidance Screen



Figure 50
Attach G Tracker to Talar Cut Block and Tracker

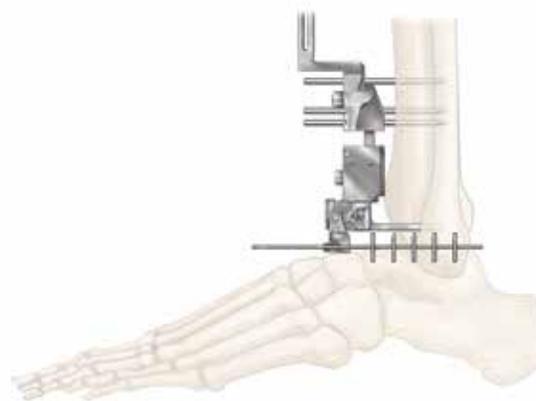


Figure 52
Insert Angel Wing

COUPLED CUT PROCEDURE

Insert the **Talar Cut Tracker** into the **Cut Block** and attach the **G Tracker**. Verify that the **G Tracker** is rigidly attached to the **Talar Cut Tracker** and oriented towards the camera (*Figure 50*).

Talar Cut Guidance: The tracked cut location is displayed in real time on the screen as a white line (*Figure 51*). Adjust the cut location by moving the foot/talus. When the cut position is satisfactory, pin the **Cut Block** rigidly to the talus.

Remove the **Talar Cut Tracker** from the **Cut Block** and insert the **Angel Wing**. Verify the cut's position and orientation in a lateral and mortise view (*Figure 52*).

After the cut position and orientation have been verified by fluoroscopy, press the "Next" button. Make the talar cut according to the Vantage Ankle operative technique. Remove the **Cut Block**.

Remove the tibial and talar bone resections.



Figure 53

Verify Cut Position/Orientation

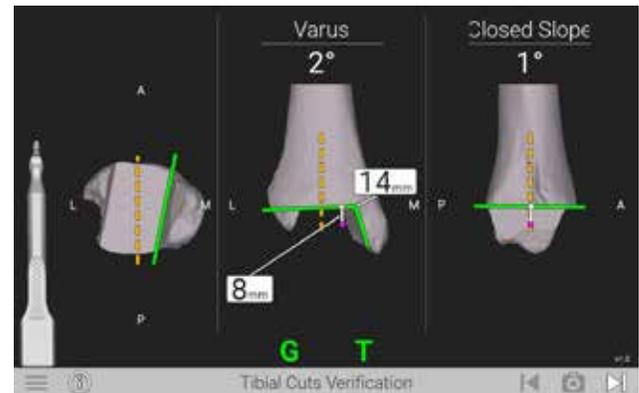


Figure 54

Tibial Cuts Verification Screen



Figure 55

Press Cut Checker Onto Talus

Check the tibial cut position and orientation by attaching the **G Tracker** to the **Cut Checker**. Verify that the G Tracker is rigidly attached to the Cut Tracker and oriented towards the camera (*Figure 53*).

Press the face marked "TIBIA" against the resected surface on the tibia. Place the **Cut Checker's** medial shoulder against the resected surface's medial shoulder such that there is contact along the surface's entire length. The textured grip surface on the front of the Cut Checker should not penetrate further than the anterior tibial face (*Figure 53*).

If needed, position a lamina spreader underneath the **Cut Checker** and tension the joint to ensure complete contact between the instrument and the resected surface.

Tibia Cut Verification: With the **Cut Checker** positioned properly on the resected surface, the system displays the resection's true location as a white line. The planned cut is shown in the bone model itself. When the performed cut and the planned cut are aligned within 2 degrees and 1mm, the cut's true location line will turn green (*Figure 54*). The cut can be refined if the checked cut is not satisfactory compared to the plan.

When the checked cut location and orientation are satisfactory, press the "Next" button.

Use the Gap Check Tool to verify adequate joint space. Press the face marked "TALUS" against the resected surface on the talus (*Figure 55*). The textured grip surface on the front of the **Cut Checker** should not penetrate further than the anterior tibial face.

GPS ANKLE APPLICATION

SURGICAL TECHNIQUE

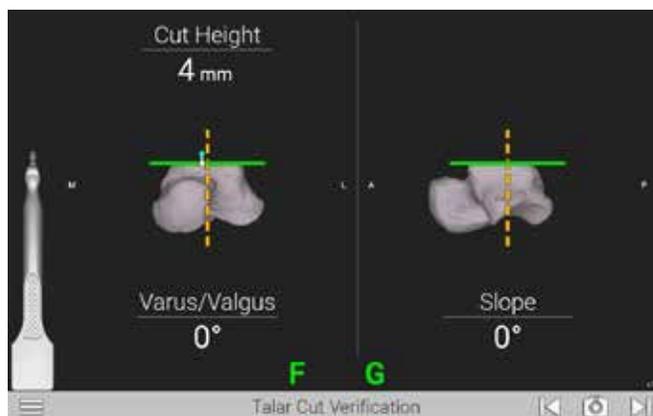


Figure 56
Talar Cut Verification Screen



Figure 57
Develop Post-Op Laxity Curve

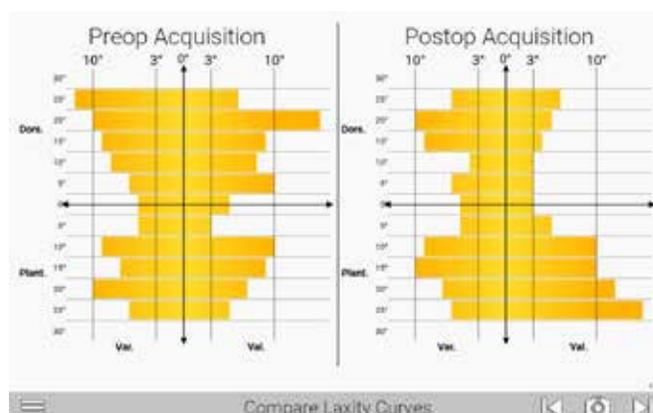


Figure 58
Compare Laxity Curve

If needed, position a Lamina Spreader above the **Cut Checker** and tension the joint to ensure complete contact between the instrument and the resected surface.

Talar Cut Verification: With the Cut Checker positioned properly on the resected surface, the system displays the cut's true location with a white line (*Figure 56*). The cut can be refined if the checked cut is not satisfactory.

When the checked cut location and orientation are satisfactory, press the "Next" button.

Implant the planned Vantage Ankle tibial plate, liner trial and talar implant per the Vantage Ankle operative technique.

Post-Op Ankle Control: Develop a post-operative laxity curve by repeatedly moving the foot through a full dorsiflexion/plantarflexion range of motion while varying the varus/valgus position of the foot (*Figure 57*). Press the "Next" button. The post-operative laxity curve may be created again after final liner implantation.

Compare Laxity Curves

The preoperative and postoperative acquisitions are shown for comparison (*Figure 58*). Press the "Next" button to finish the case.

INSTRUMENT LISTING

CATALOG NUMBER **PART DESCRIPTION**

A10003 or A00203

GPS Probe Tracker (P)



A10004 or A00204

GPS Femoral Tracker (F)



A10005 or A00205

GPS Tibial Tracker (T)



A10006 or A00206

GPS Guide Tracker (G)



03-GNB-BF-0002

Bone Fixator



541-00-01

GPS Ankle Implant Kit
Includes: 2.4mm x 3.5" Threaded Pins, sterile drape, batteries and cleaning wipe



INSTRUMENT LISTING

CATALOG NUMBER	PART DESCRIPTION
KIT-501, KIT501C or KIT-501+	GPS Station
100025	Main GPS Unit
100021	Power Supply
J00010	Lower Mounting Arm
J00012, J00020 or or J00065	Upper Mounting Arm
J00011	GPS Bedrail Clamp
I00022	GPS Travel Case
03-GNB-CB-0001	Tibial Cut Tracker
03-GNB-CC-0001	Cut Checker
03-GNB-CB-0002	3D/3D+ Tibial Cut Tracker
03-GNB-CC-0002	3D/3D+ Cut Checker
03-GNB-CB-0003	Talus Cut Tracker
03-GNB-PG-0001	Pin Guide

KIT-501, KIT501C or KIT-501+
100025
100021
J00010
J00012, J00020 or or J00065
J00011
I00022

GPS Station
Main GPS Unit
Power Supply
Lower Mounting Arm
Upper Mounting Arm
GPS Bedrail Clamp
GPS Travel Case



03-GNB-CB-0001

Tibial Cut Tracker



03-GNB-CC-0001

Cut Checker



03-GNB-CB-0002

3D/3D+ Tibial Cut Tracker



03-GNB-CC-0002

3D/3D+ Cut Checker



03-GNB-CB-0003

Talus Cut Tracker



03-GNB-PG-0001

Pin Guide



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