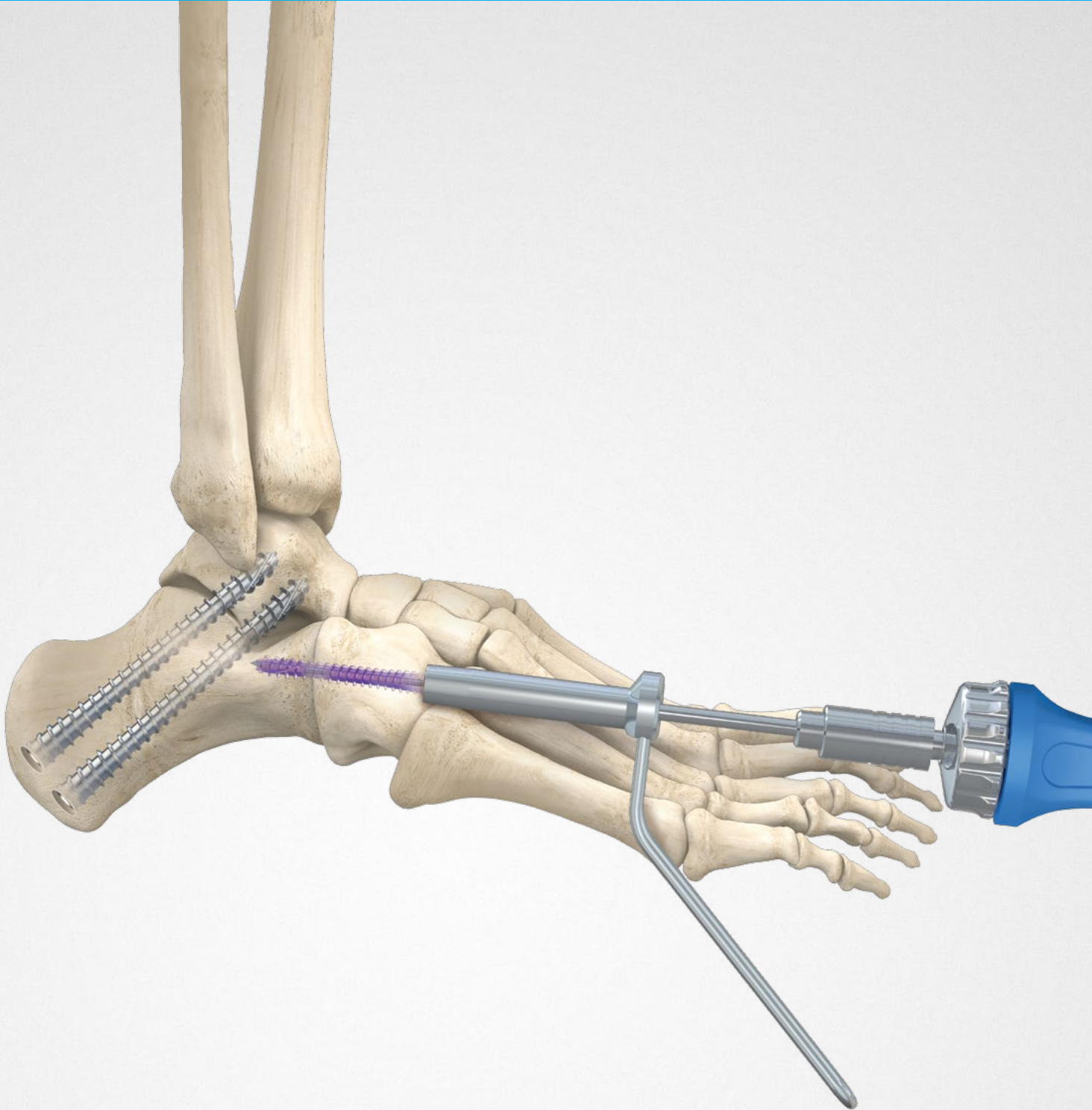


Supplemental Use Guide—Foot and Ankle



Acumed® is a global leader of innovative orthopaedic and medical solutions.



We are dedicated to developing products, service methods, and approaches that improve patient care.



Acumed® Acutrak 2® Headless Compression Screw System— Foot and Ankle

Since its introduction in 1994, the Acutrak® Headless Compression Screw technology has revolutionized the way surgeons treat fractures, fusions, and osteotomies. The Acutrak 2 is the next generation in fully threaded headless fixation offering larger guide wires, larger hex drivers, and a tapered end reducing drill depth sensitivity. Long term surgeon feedback has helped develop this continuously variable fully threaded headless implant with instrumentation designed to simplify the surgical technique.

The Acutrak 2 family is composed of 67 screw size options to fit a wide variety of applications throughout the body, from 2.5 mm x 8 mm up to 7.5 mm x 120 mm.

	Definition
Warning	Indicates critical information about a potential serious outcome to the patient or the user.
Caution	Indicates instructions that must be followed in order to ensure the proper use of the device.
Note	Indicates information requiring special attention.

This guide is intended for supplemental use only and is not intended to be used as a stand-alone surgical technique. Reference the Acumed Acutrak 2 Headless Compression Screw System Surgical Technique (SPF00-02) for more information.

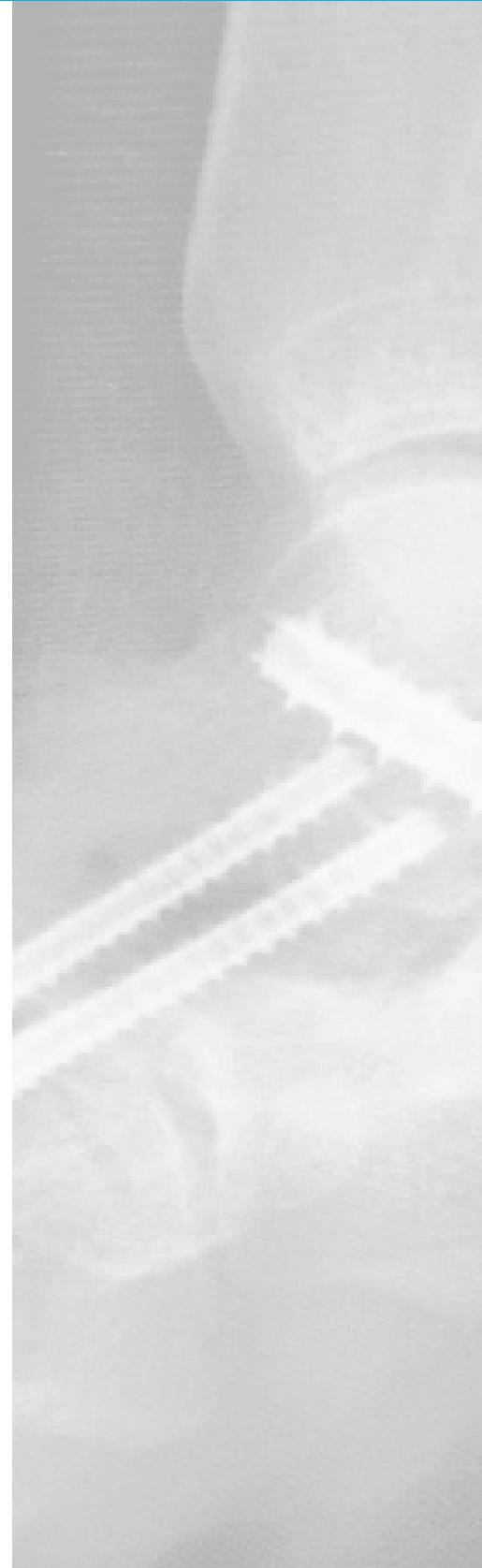


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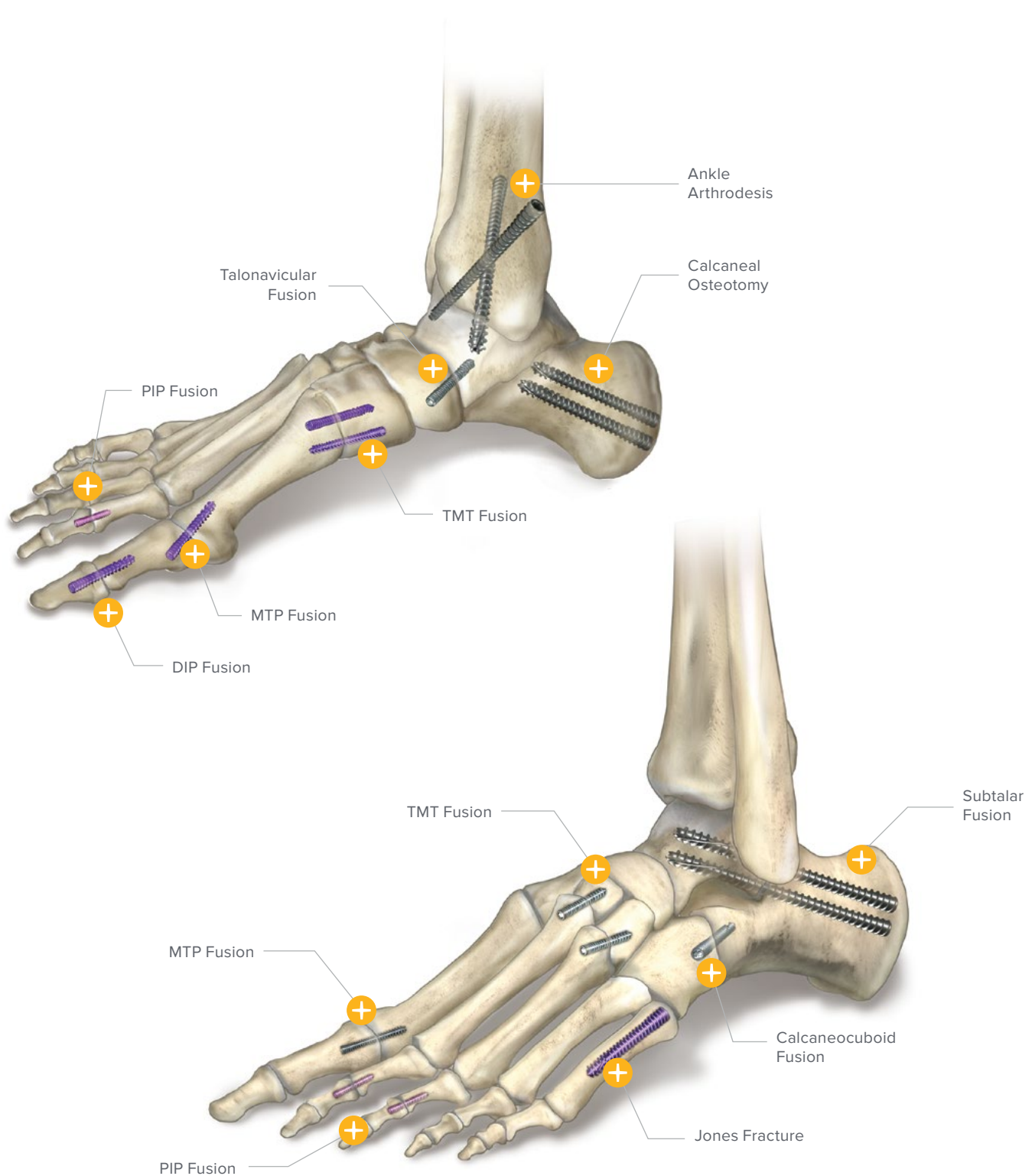
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Indications for Use







Foot and Ankle

AcuTwist® and Acutrak® 2 Micro, Mini, Standard, 4.7, and 5.5 are intended for use as fixation devices for small bones, bone fragments, and osteotomies. They are not intended for interference or soft tissue fixation.

Acutrak 2–7.5 may be used for fusions, fractures, or osteotomies of the clavicle, humerus, radius, ulna, ilium, femur, patella, fibula, tibia, talus, malleolus, and calcaneus.



Acutrak 2® Quick Reference Chart

	Diameter	Lengths		Properties
Micro 	Tip: 2.5 mm Tail: 2.8 mm	8 mm	9 mm	<ul style="list-style-type: none"> ▶ Where used to treat the indications described on page 2, it may be possible to use an Acutrak® screw of similar size instead of the Acutrak 2 screws listed here, or in place of a 2–2.4 mm headed screw ▶ 1.5 mm Hex Driver ▶ .035" (.88 mm) Guide Wire
		10 mm	11 mm	
		12 mm	13 mm	
		14 mm	16 mm	
		18 mm	20 mm	
		22 mm	24 mm	
		26 mm	28 mm	
30 mm				
Mini 	Tip: 3.5 mm Tail: 3.6 mm	16 mm	18 mm	<ul style="list-style-type: none"> ▶ Where used to treat the indications described on page 2, it may be possible to use an Acutrak screw of similar size instead of the Acutrak 2 screws listed here, or in place of a 3.5–4 mm headed screw ▶ 2 mm Hex Driver ▶ .045" (1.1 mm) Guide Wire
		20 mm	22 mm	
		24 mm	26 mm	
		28 mm	30 mm	
Standard 	Tip: 4 mm Tail: 4.1 mm	16 mm	18 mm	<ul style="list-style-type: none"> ▶ Where used to treat the indications described on page 2, it may be possible to use an Acutrak screw of similar size instead of the Acutrak 2 screws listed here, or in place of a 3.5–4 mm headed screw ▶ 2.5 mm Hex Driver ▶ .054" (1.4 mm) Guide Wire
		20 mm	22 mm	
		24 mm	26 mm	
		28 mm	30 mm	
		32 mm	34 mm	
4.7 	Tip: 4.5 mm Tail: 4.7 mm	20 mm	22 mm	<ul style="list-style-type: none"> ▶ Where used to treat the indications described on page 2, it may be possible to use an Acutrak screw of similar size instead of the Acutrak 2 screws listed here, or in place of a 4.5–6.5 mm headed screw ▶ 3 mm Hex Driver ▶ .062" (1.6 mm) Guide Wire
		24 mm	26 mm	
		28 mm	30 mm	
		35 mm	40 mm	
		45 mm	50 mm	
5.5 	Tip: 5.2 mm Tail: 5.5 mm	25 mm	30 mm	<ul style="list-style-type: none"> ▶ Where used to treat the indications described on page 2, it may be possible to use an Acutrak screw of similar size instead of the Acutrak 2 screws listed here, or in place of a 4.5–6.5 mm headed screw ▶ 3 mm Hex Driver ▶ .062" (1.6 mm) Guide Wire
		35 mm	40 mm	
		45 mm	50 mm	
		55 mm	60 mm	
7.5 	Tip: 7 mm Tail: 7.5 mm	40 mm	45 mm	<ul style="list-style-type: none"> ▶ Where used to treat the indications described on page 2, it may be possible to use an Acutrak screw of similar size instead of the Acutrak 2 screws listed here, or in place of a 6–7.5 mm headed screw ▶ 4 mm Hex Driver ▶ .094" (2.4 mm) Guide Wire
		50 mm	55 mm	
		60 mm	65 mm	
		70 mm	75 mm	
		80 mm	85 mm	
		90 mm	95 mm	
		100 mm	105 mm	
		110 mm	115 mm	
		120 mm		

Distal Interphalangeal (DIP) Fusion

Surgical Technique: Acutrak 2®—Micro

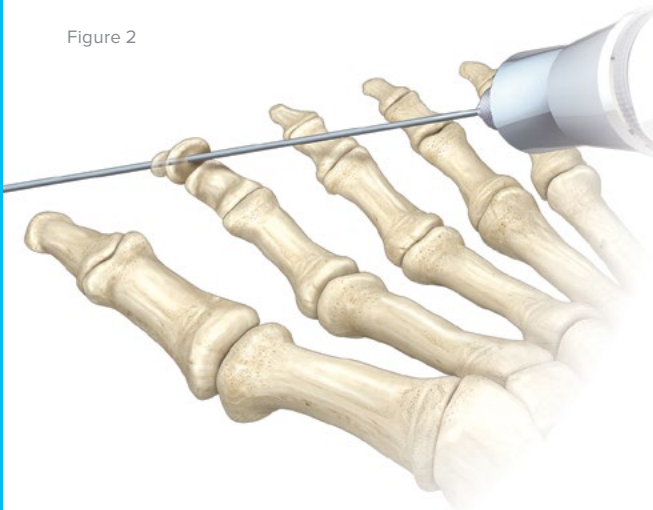
Figure 1



1 Approach

The recommended procedure includes a longitudinal incision with resection of the distal end of the middle phalanx and removal of the distal phalanx cartilage with a curette. Care should be taken to avoid the nail matrix.

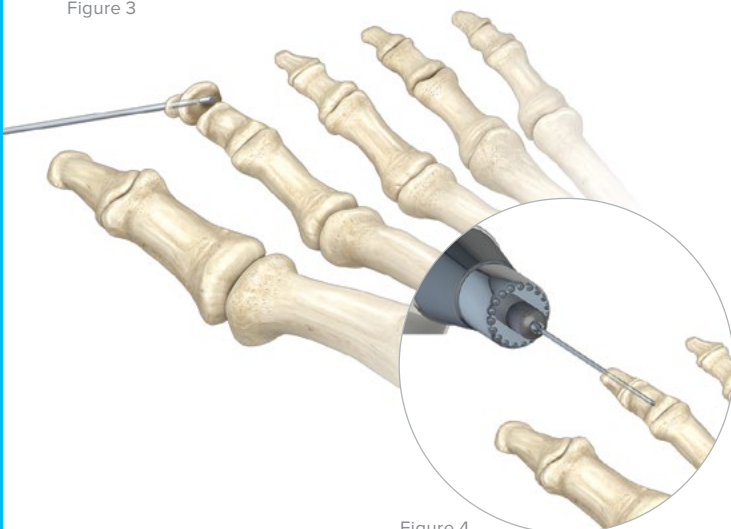
Figure 2



2 Advance Guide Wire

A double-ended guide wire is advanced from the DIP joint out the tip of the toe, just below the nail.

Figure 3



3 DIP Reduction

The joint is then reduced and the guide wire is driven proximally into the middle phalanx.

Figure 4

Distal Interphalangeal (DIP) Fusion

Surgical Technique: Acutrak 2®—Micro [continued]

4 Determine Screw Length

Make a short incision at the tip of the distal phalanx around the wire, down to bone. Measure the guide wire length either by using the percutaneous screw sizer or by placing a second wire at the entry point and subtracting the difference.



Figure 5

5 Drill

Select the cannulated drill and place over the wire. Drill using either a power drill or hand reamer across the joint into the middle phalanx to the desired depth.

Warning: The shoulder of the profile drill will bottom out on the near cortex.

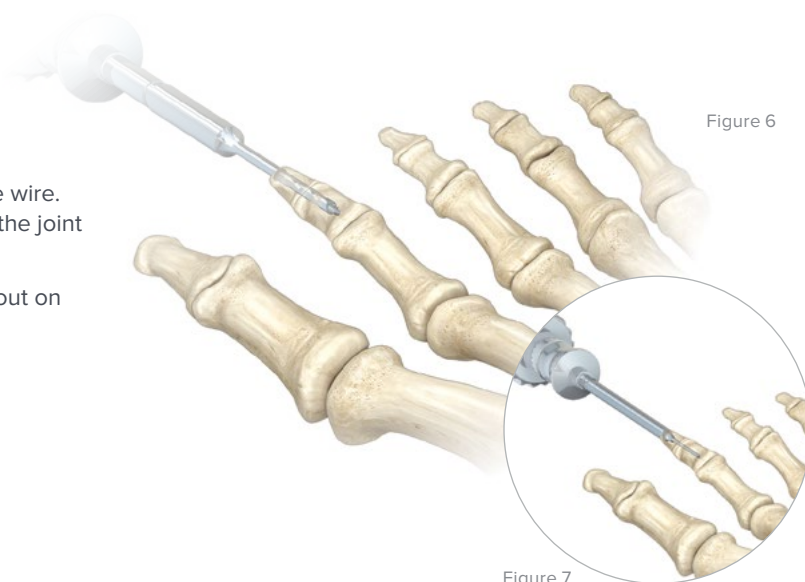


Figure 6

Figure 7

6 Insert Screw

Insert the correct size screw with the appropriate hex driver. If resistance is met upon insertion or if distraction occurs: Stop, remove the screw, re-drill with the extended long drill and re-insert the screw. Confirm the placement and length of the screw under fluoroscopy, ensuring that both the leading and the trailing threads of the screw are within the bone. Lastly, remove the guide wire.

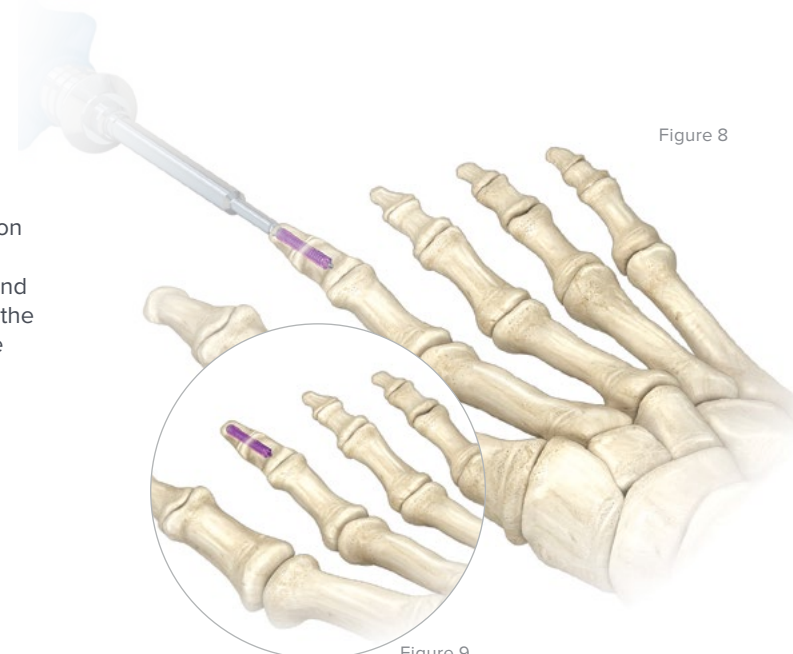


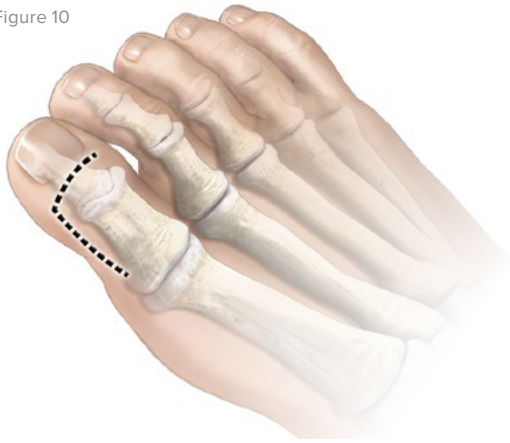
Figure 8

Figure 9

Interphalangeal (IP) Fusion

Surgical Technique: Acutrak 2®—Standard and AcuTwist®

Figure 10



1 Approach

The recommended approach includes an incision transversely over the great toe interphalangeal (IP) joint. Transect the extensor tendon and tag with suture for retraction. The distal end of the proximal phalanx and the proximal end of the distal phalanx are resected. Care is taken to avoid the nail matrix.

Figure 11

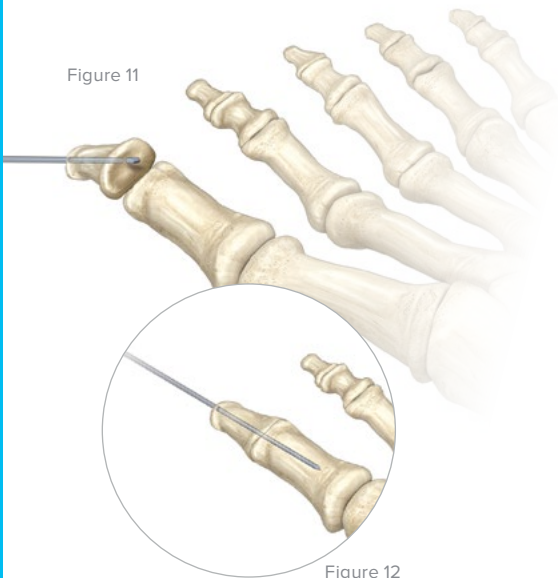
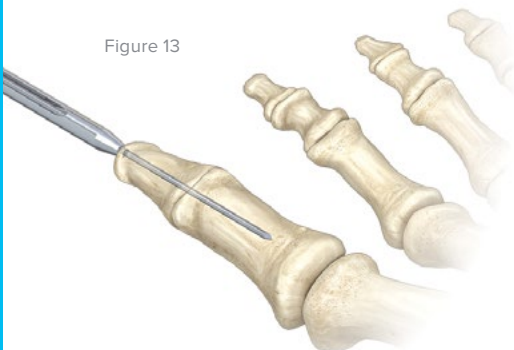


Figure 12

2 Advance Guide Wire

Make a small longitudinal incision over the wire at the toe tip. Then reduce the joint manually, and advance the guide wire retrograde to fixate the joint.

Figure 13



3 Determine Screw Length

Measure the guide wire length either by using the percutaneous screw sizer or by placing a second wire at the entry point and subtracting the difference. Subtract 4 mm from the measured length to ensure that both ends of the screw are buried within the bone.

Interphalangeal (IP) Fusion

Surgical Technique: Acutrak 2®—Standard and AcuTwist® [continued]

4 Drill

Select the cannulated drill and place over the wire. Drill across the joint into the proximal phalanx to the desired depth. Typically the drill must only advance 4–5 mm past the fusion site to be effective.

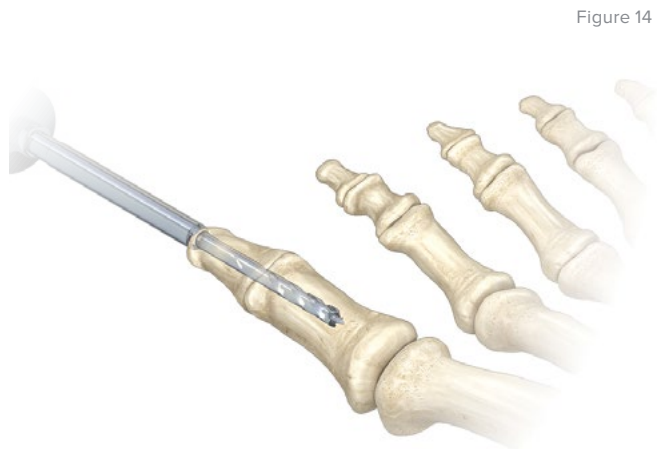


Figure 14

5 Drill the Near Cortex

Open the near cortex with the appropriate profile drill.

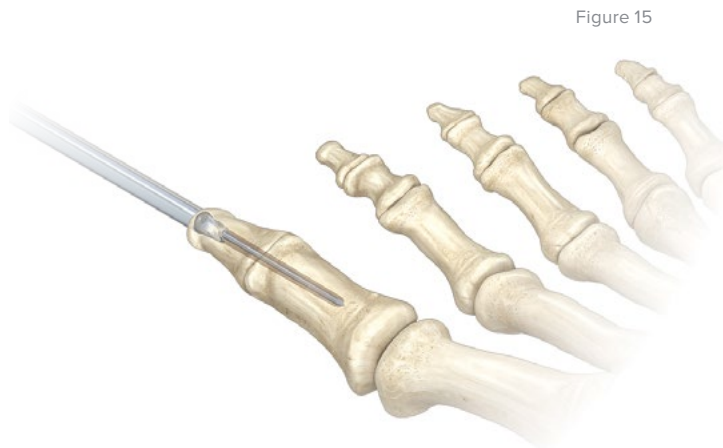


Figure 15

Interphalangeal (IP) Fusion

Surgical Technique: Acutrak 2®—Standard and AcuTwist® [continued]

Figure 16

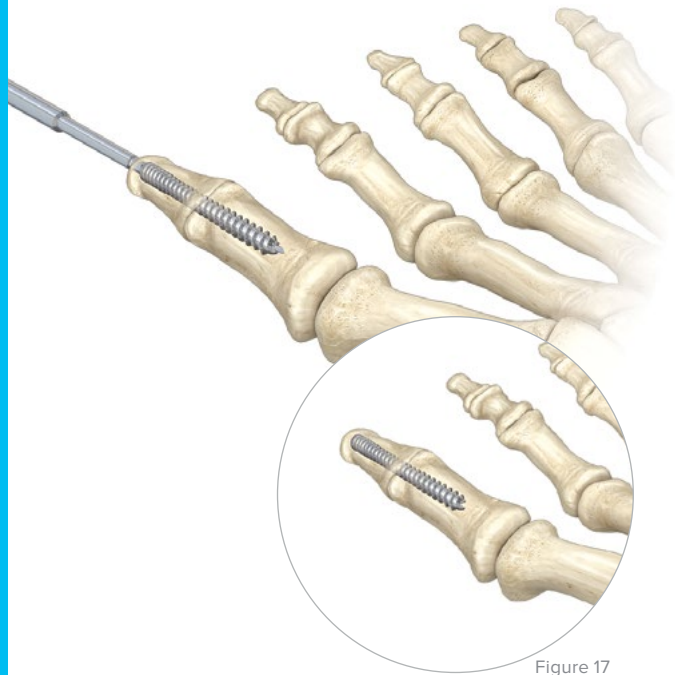


Figure 17

6 Screw Insertion

Insert the correct size screw with the appropriate hex driver. If resistance is met upon insertion or if distraction occurs: Stop, remove the screw, re-drill with the long drill and re-insert the screw. Confirm the placement and length of the screw under fluoroscopy, ensuring that both the leading and the trailing threads of the screw are within the bone. Lastly, remove the guide wire.

Figure 18

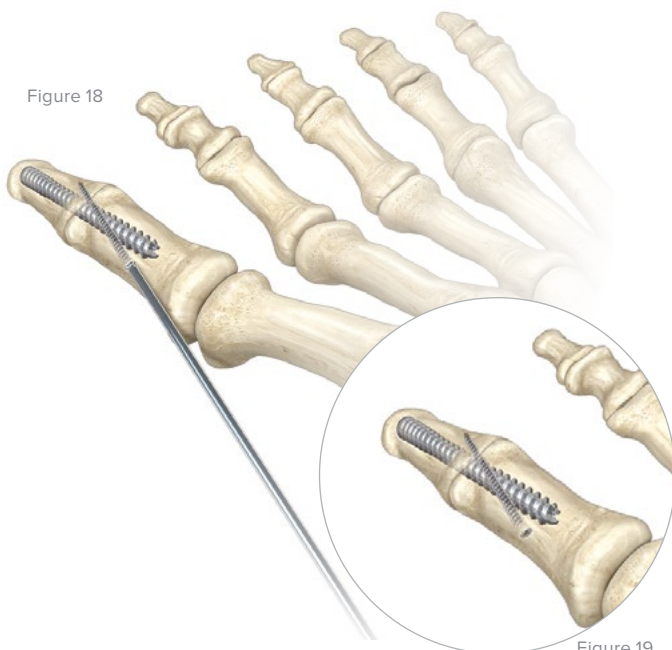


Figure 19

7 Secondary Fixation

The second point of fixation is placed on the medial first phalange. The AcuTwist is advanced distally and laterally across the joint space taking care to avoid the first screw and measured with the screw sizer. The fixation is placed in both the medial cortex and lateral cortex on either side of the joint. Several threads should engage both cortices. Holding the smooth end of the screw, gently bend it back and forth until the screw fatigues at the break-off groove.

Note: If more than one AcuTwist Acutrak Compression Screw is to be utilized, it is advised to delay the break-off process until two or more of the screws have been inserted.

Hammertoe—Proximal Interphalangeal (PIP) Fusion

Surgical Technique: Acutrak 2®—Micro

1 Approach and Needle Insertion

The recommended procedure includes a longitudinal incision with resection of the distal end of the proximal phalanx and removal of the middle phalanx cartilage with a curette. Care should be taken not to remove excessive bone from the middle phalanx, as this bone is typically very short and over-resection will compromise fixation.

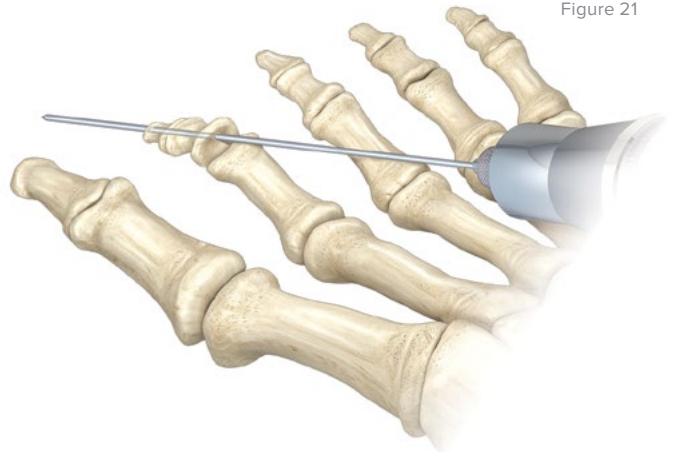
Figure 20



2 Advance Guide Wire

A double-ended guide wire is advanced into the distal phalanx through a transverse incision over the distal interphalangeal joint.

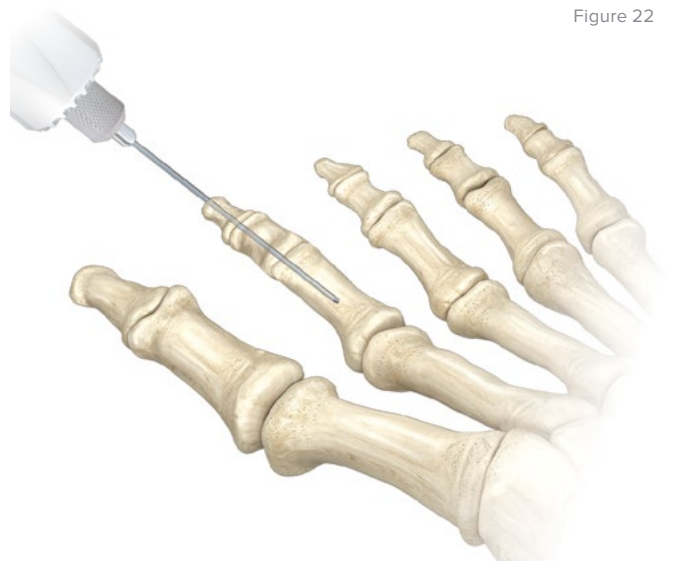
Figure 21



3 Proximal Middle Phalanx Reduction

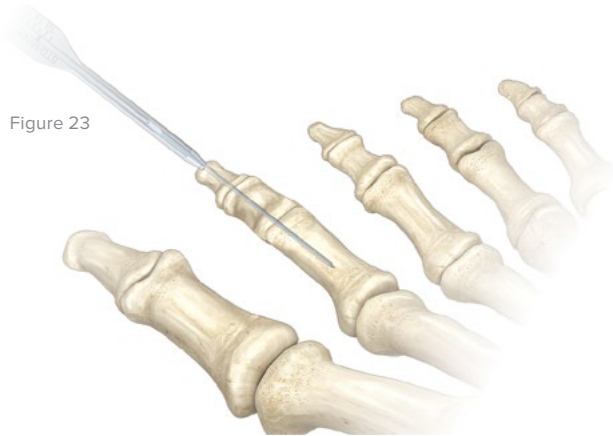
The joint is then reduced and the guide wire is driven proximally into the middle phalanx.

Figure 22



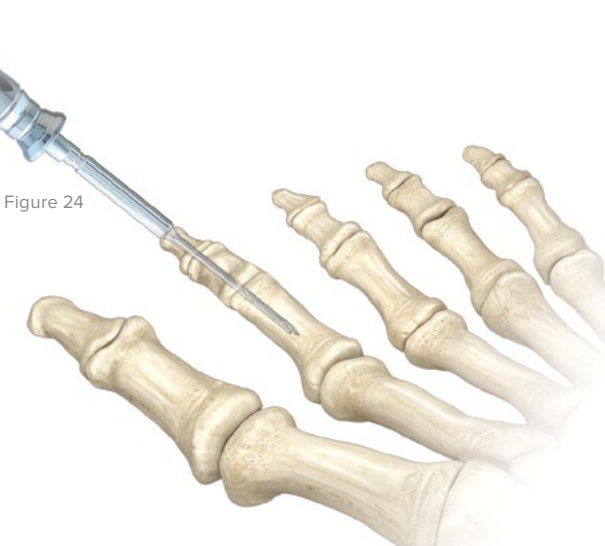
Hammertoe—Proximal Interphalangeal (PIP) Fusion

Surgical Technique: Acutrak 2®—Micro [continued]



4 Determine Screw Length

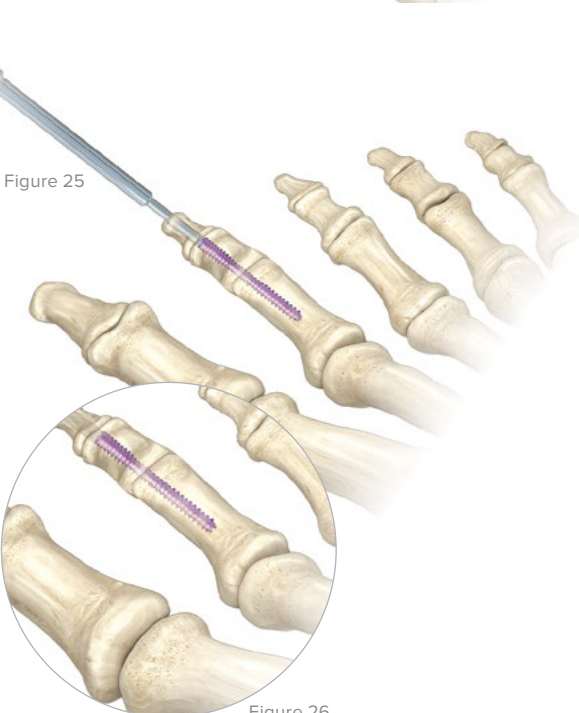
Make a short transverse (fish-mouth) incision in the tip of the distal phalanx and spread using a small (snap) clip. Measure the guide wire length either by using the percutaneous screw sizer or by placing a second wire at the entry point and subtracting the difference. If intending to drive the screw below the surface of the distal phalanx, this must be accounted for in sizing the screw.



5 Drill

Select the cannulated drill and place over the wire. Drill using either a power drill or hand reamer across the joint into the middle phalanx to the desired depth. If it is intended to drive the screw below the surface of the distal phalanx, this must be accounted for in the depth of the prepared hole.

Warning: The shoulder of the profile drill will bottom out on the near cortex.



6 Insert Screw

Insert the correct size screw with the appropriate hex driver. If resistance is met upon insertion or if distraction occurs: Stop, remove the screw, re-drill with the extended long drill and re-insert the screw. Confirm the placement and length of the screw under fluoroscopy, ensuring that both the leading and the trailing threads of the screw are within the bone. Lastly, remove the guide wire.

Sesamoid Fracture Fixation

Surgical Technique: Acutrak 2®—Micro

1 Approach

A stab incision close to the first flexion skin crease of the plantar aspect of the hallux is done distal to the weight-bearing area of the plantar skin. The soft tissues down to the sesamoid bone are bluntly divided with a clamp to avoid damage to the interdigital nerves. Under fluoroscopy, the fractured sesamoid is displayed.

Figure 27



2 Guide Wire Insertion

An appropriate size guide wire is introduced to the distal pole of the sesamoid with the hallux fixed in hyperextension. The course of the wire should be perpendicular to the fracture line and axial in the center of the bone. Pressure is applied to the proximal pole and the whole sesamoid bone against the first MTP joint as the guide wire advances. The position of the guide wire is confirmed in both lateral and AP X-ray views.

Figure 28

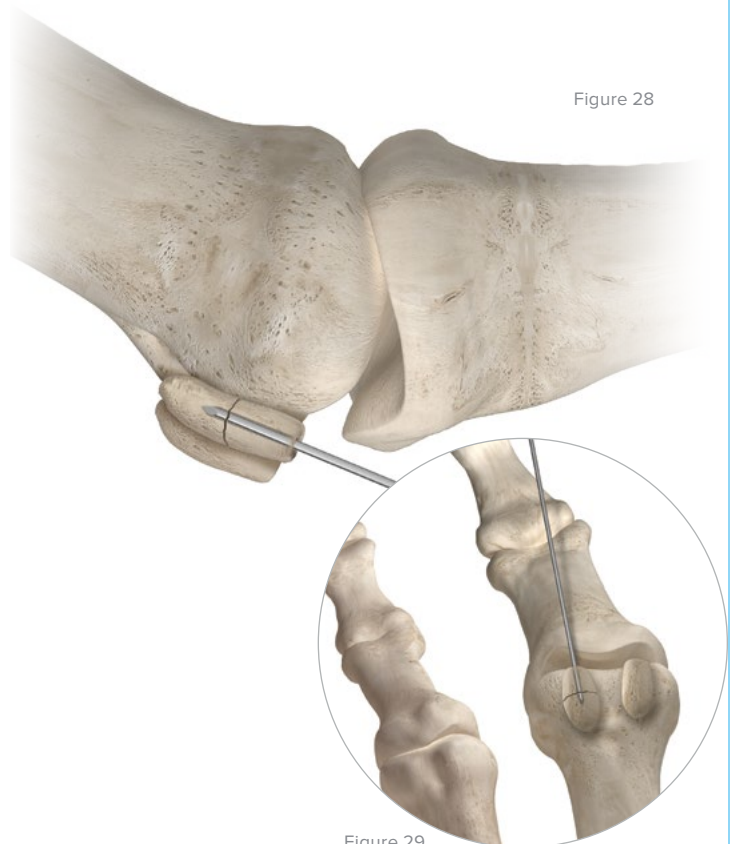


Figure 29

Sesamoid Fracture Fixation

Surgical Technique: Acutrak 2®—Micro [continued]

Figure 30

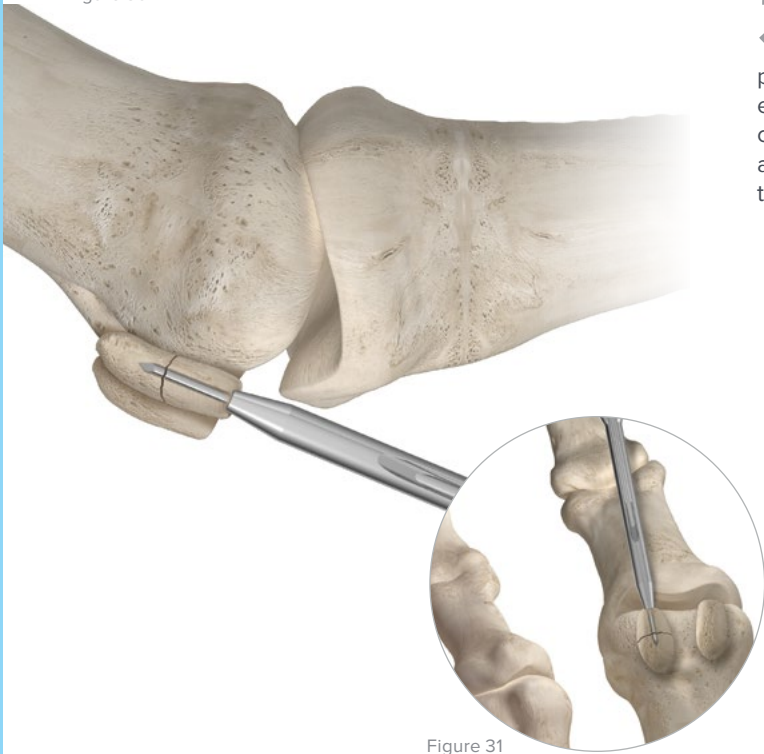


Figure 31

3 Determine Drill Depth

Measure the guide wire length either by using the percutaneous screw sizer or by placing a second wire at the entry point and subtracting the difference. The screw sizer cannot be used with the arthroscopic technique due to limited access. Subtract 4 mm from the measured length to ensure that both screw ends are buried within the bone.

Figure 32

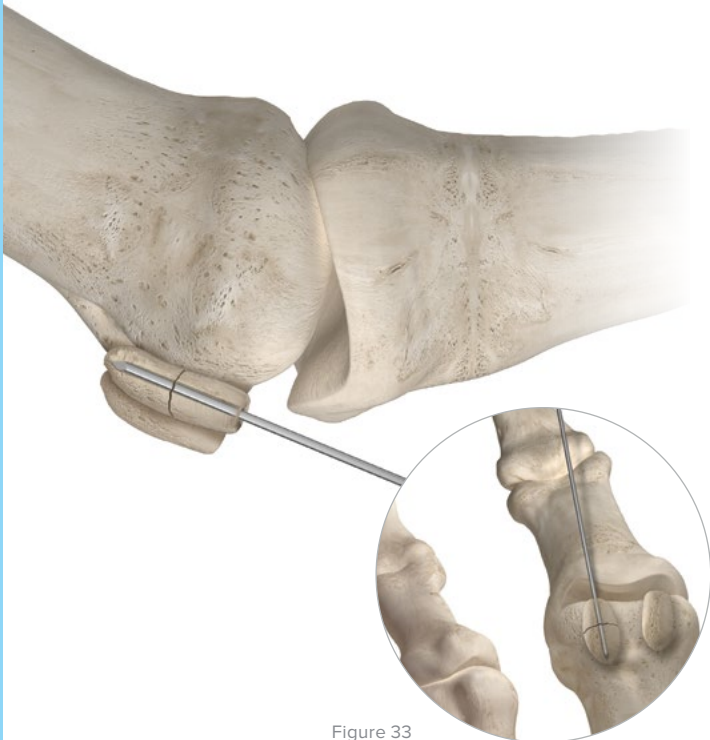


Figure 33

4 Advance Guide Wire

Advance the guide wire through the far cortex with the long drill so that it lies in the subcutaneous tissues. This decreases the risk of accidental withdrawal of the guide wire while drilling and facilitates wire removal if it breaks.

Sesamoid Fracture Fixation

Surgical Technique: Acutrak 2®—Micro [continued]

5 Drill Far Fragment

Drill into the far fragment with the long drill. Typically the drill must advance only 4–5 mm past the fracture site to be effective.

Caution: The long drill is recommended to mitigate the effects of varying bone density and distraction upon screw insertion.

Note: Drilling by hand is recommended and should be performed while compressing the fragment into the body and preventing rotation.

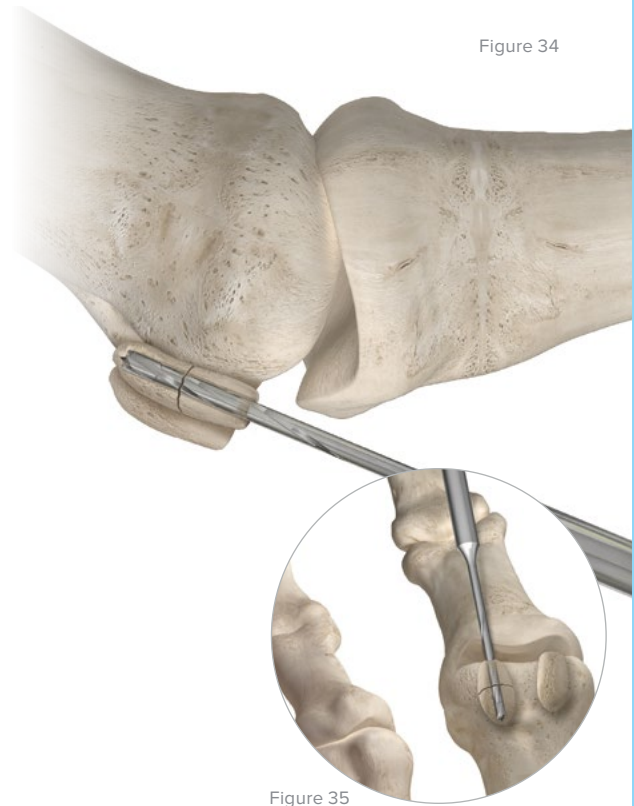


Figure 34

Figure 35

6 Screw Insertion

Insert the correct size of screw with the appropriate hex driver. If resistance is met upon insertion or if distraction occurs: Stop, remove the screw, re-drill with the long drill, and re-insert the screw. Confirm the placement and length of the screw under fluoroscopy, ensuring that both the leading and the trailing threads of the screw are within the bone. Lastly, remove the guide wire.

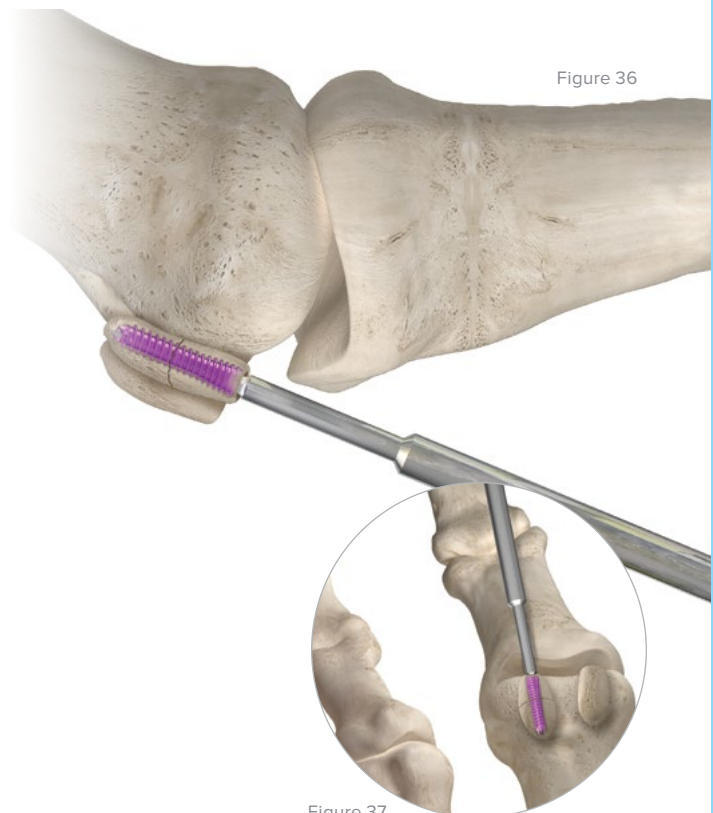


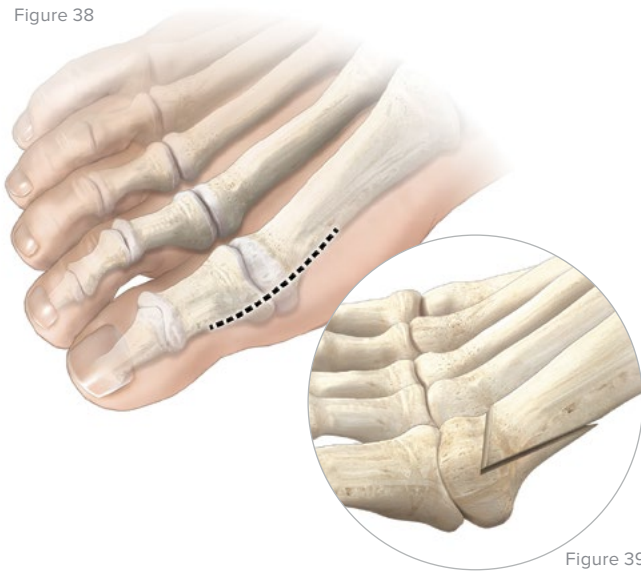
Figure 36

Figure 37

Chevron Bunionectomy

Surgical Technique: Acutrak 2®—Mini and Standard

Figure 38



1 Approach and Chevron Cut

Incision placement is made to surgeon preference, with typical dissection down to the subperiosteal level. Once any desired soft tissue work is completed, a classic chevron (Austin) cut is performed, with care taken to avoid damage to the sesamoid complex. In order to prevent elevation, the wedge is removed from the plantar surface.

Figure 40



2 Guide Wire Placement

The guide wire is placed from the dorsal aspect of the metatarsal across the osteotomy into the capital fragment, with the aiming point toward the plantar first metatarsal head crista. The guide wire can be passed through the plantar cortex of the crista and then retracted to ensure the wire is in the subcortical bone of the first metatarsal head. Fluoroscopic imaging can also be used.

Figure 41



3 Determine Screw Length

Measurements are taken once this wire is in place. Screw size is typically one size below the measured length to ensure proper placement of the screw and avoid protrusion of the screw into the joint space. Typically an Acutrak 2 Mini or Standard screw is used. Depending on patient anatomy, an AcuTwist® or Acutrak 2 Micro screw may be appropriate.

Chevron Bunionectomy

Surgical Technique: Acutrak 2®—Mini and Standard [continued]

4 Drill

Over drill the dorsal cortex prior to insertion of the screw. Only the dorsal cortex is commonly drilled, using the profile drill. The self-drilling design of the Acutrak 2 screw minimizes the need for full drilling. However, if desired, the long drill can be used to drill the entire length of the wire.

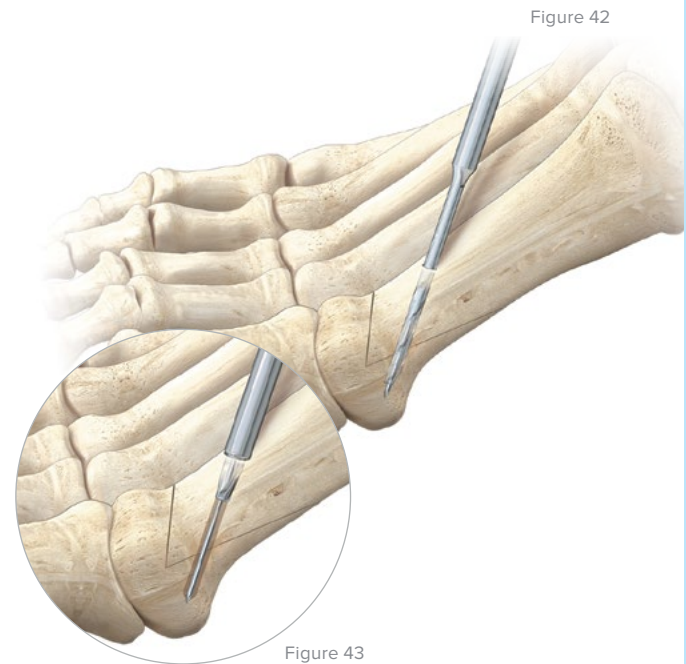


Figure 42

Figure 43

5 Insert Screw

Insert the correct size screw with the appropriate hex driver. This screw should be inserted from a proximal direction anchored bicortically. If resistance is met upon insertion or if distraction occurs: Stop, remove the screw, re-drill with the long drill and re-insert the screw. Confirm placement and length of the screw under fluoroscopy. Lastly, remove the guide wires.

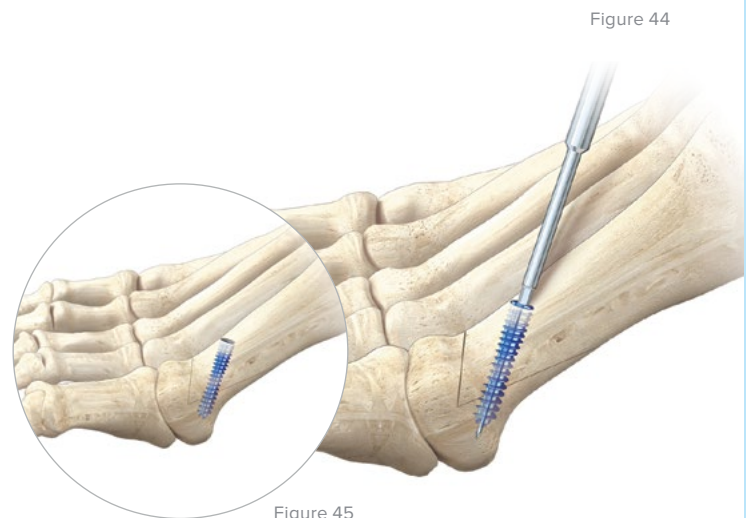


Figure 44

Figure 45

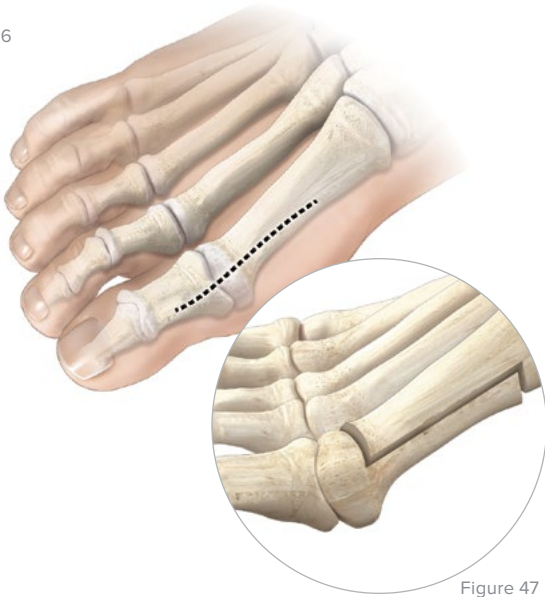
6 Closure

Removal of redundant bone is performed and smoothed. Closure is in typical layered fashion.

Scarf Bunionectomy

Surgical Technique: Acutrak 2®—Mini and Standard

Figure 46



1 Approach and Scarf Cut

Incision is made to surgeon preference, with typical dissection down to the subperiosteal level. Once any desired soft tissue work is completed a Scarf bone cut is performed. Displacement of the capital fragment is made according to preoperative planning. Temporary fixation using a wire or bone clamp is performed.

Figure 48



2 Guide Wire Placement

The guide wire is placed from the dorsal aspect of the metatarsal across the osteotomy into the capital fragment. The point of aim is the plantar first metatarsal head crista. The guide wire can be passed through the plantar cortex of the crista and then retracted to ensure the wire is in the subcortical bone of the first metatarsal head. Fluoroscopic imaging can also be used.

Figure 49



3 Determine Screw Length

Measurements are taken from this wire once in place. Screw size is typically one size below the measured length to ensure proper placement of the screw and avoid protrusion of the screw into the joint space. Typically an Acutrak 2 Mini or Standard screw is used. Depending on patient anatomy, an AcuTwist® or Acutrak 2 Micro screw may be appropriate.

Scarf Bunionectomy

Surgical Technique: Acutrak 2®—Mini and Standard [continued]

4 Drill

Over drill the dorsal cortex prior to insertion of the screw. Only the dorsal cortex is commonly drilled, using the profile drill. The self-drilling design of the Acutrak 2 screw minimizes the need for full drilling. However, if desired, the long drill can be used to drill the entire length of the wire.

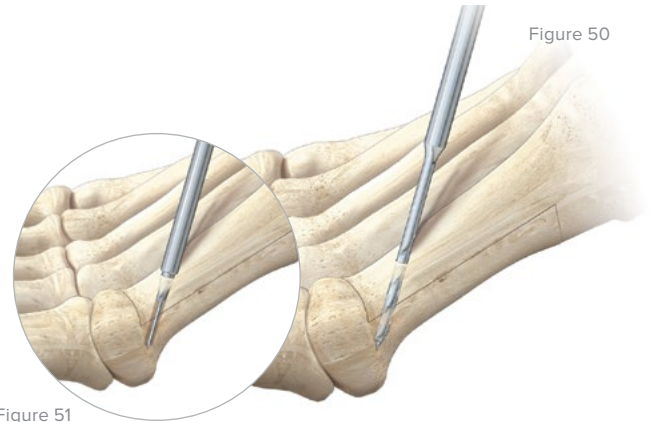


Figure 51

5 Insert Screw

Insert the correct size screw with the appropriate hex driver. If resistance is met upon insertion or if distraction occurs: Stop, remove the screw, re-drill with the long drill and re-insert the screw. Confirm placement and length of the screw under fluoroscopy, ensuring that both leading and trailing threads of the screw are within the bone and do not violate the metatarsophalangeal (MTP) joint. Lastly, remove the guide wires.

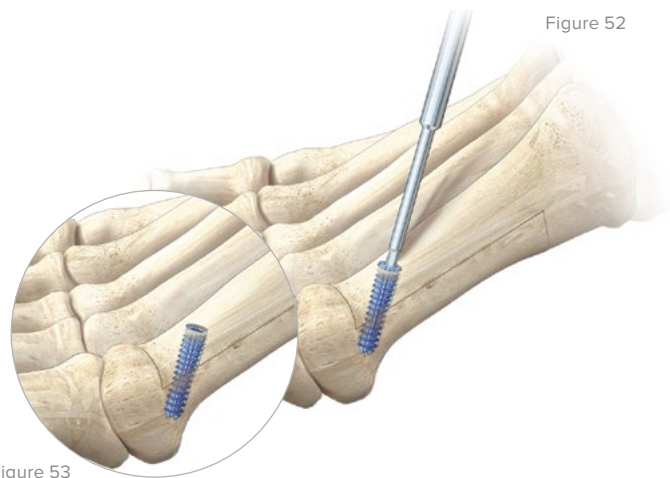


Figure 53

6 Secondary Fixation

The second point of fixation is placed proximal to the first. The guide wire is advanced into the dense bone and measured with the screw sizer. The fixation is placed in both the dorsal cortex and plantar cortex of the first metatarsal. Several threads should engage both cortices.

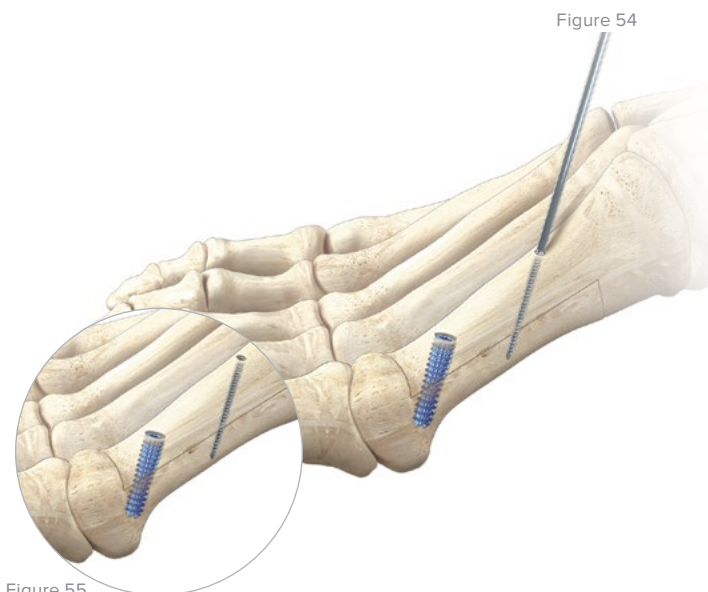


Figure 55

7 Closure

Closure is in typical layered fashion.

Proximal Fifth Metatarsal (Jones Fracture)

Surgical Technique: Acutrak 2®—4.7 and 5.5

Figure 56



1 Patient Positioning

Position the patient in a semi-lateral position utilizing a bean bag body positioner. The patient should be moved to the distal end of the bed and the operative leg draped free as the side up. Exertion of the operative limb should be checked prior to prep and drape to confirm that the operative limb can be positioned on the mini C-arm during surgery.

Figure 57



2 Indication Area Outline

The base of the fifth metatarsal is outlined, including the insertions of the peroneus brevis and tertius tendons.

Proximal Fifth Metatarsal (Jones Fracture)

Surgical Technique: Acutrak 2®—4.7 and 5.5 [continued]

3 Approach and Exposure

The guide wire, .062", for the Acutrak 2–4.7 Screw can be positioned at the base of the fifth metatarsal under fluoroscopic guidance. A small incision is made at the base of the fifth metatarsal at the intersection of the peroneus brevis and tertius tendons.

Caution: Care is made to identify and protect the sural nerve branches that run over the peroneal tendons.

If necessary, fibers of the lateral aponeurosis and peroneus brevis tendon are separated and retracted away from the styloid process of the base of the fifth metatarsal. A mini Hohmann retractor is placed on the plantar aspect of the base of the fifth metatarsal. The surgeon's fingers can be used to reduce the fifth metatarsal fracture by placing them in between the fourth and fifth metatarsals. This closes down the fifth metatarsal fracture site during guide wire, drill and screw placement. A guide wire is drilled from the base of the fifth metatarsal into the central portion of the metatarsal shaft. It is maintained within the intramedullary canal in order to avoid distal penetration. Confirm placement with fluoroscopy.

4 Measure Depth

Depth is measured from the exposed portion of the guide wire with the cannulated depth gauge.

5 Advance Guide Wire

After selecting the appropriate size, advance the guide wire approximately 5 mm to maintain distal pin fixation before drilling.

Caution: Make sure not to compromise the distal joint surfaces when advancing the guide wire.



Figure 58

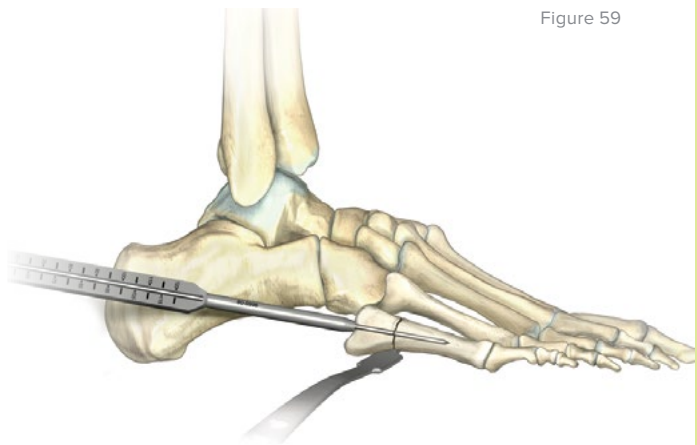


Figure 59

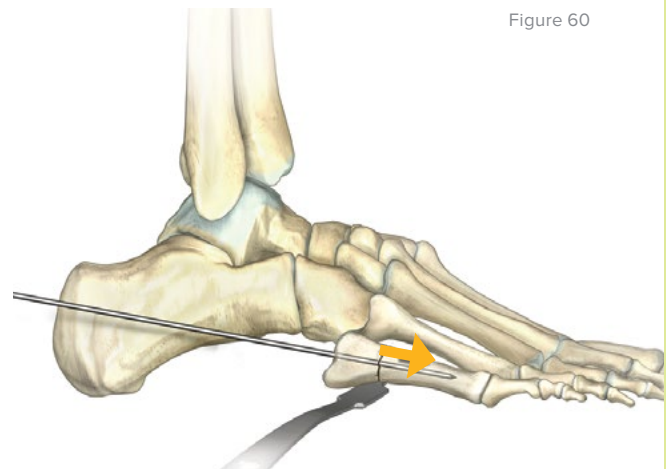
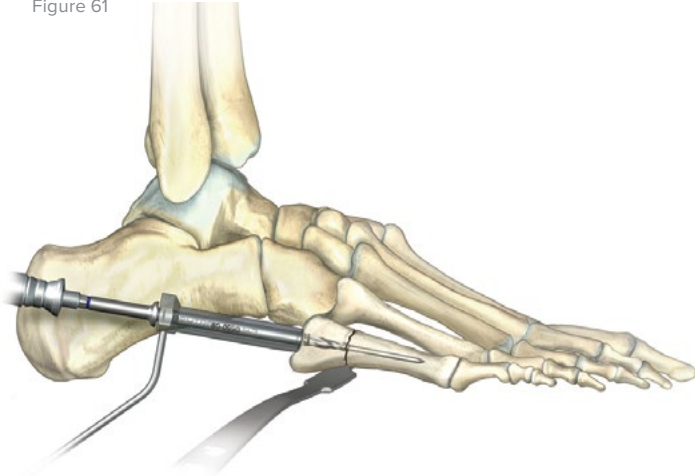


Figure 60

Proximal Fifth Metatarsal (Jones Fracture) Surgical Technique: Acutrak 2®—4.7 and 5.5 [continued]

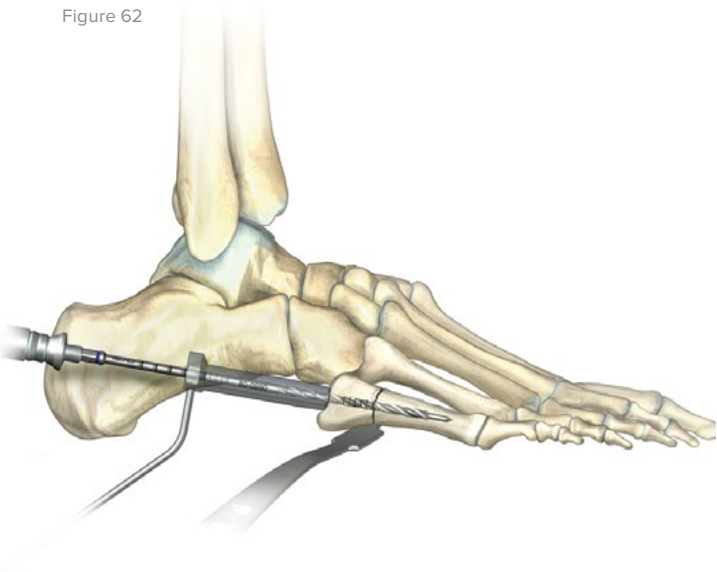
Figure 61



6 Drill the Near Cortex

Place the soft tissue guide (the guide should be used throughout) over the guide wire and open the near cortex using the appropriate cannulated profile drill.

Figure 62



7 Drill

Leaving the soft tissue guide in place, drill into the far fragment with the appropriate cannulated, long drill. Reference the markings on the drill to confirm desired depth.

Caution: The long drill is recommended to mitigate the effects of varying bone density and distraction upon screw insertion.

Proximal Fifth Metatarsal (Jones Fracture) Surgical Technique: Acutrak 2®—4.7 and 5.5 [continued]

8 Fracture Compression

In order to account for countersinking and fracture compression, a screw that measures 5 mm shorter than the measured total depth is inserted over the guide wire while protecting the soft tissues with a soft tissue guide.

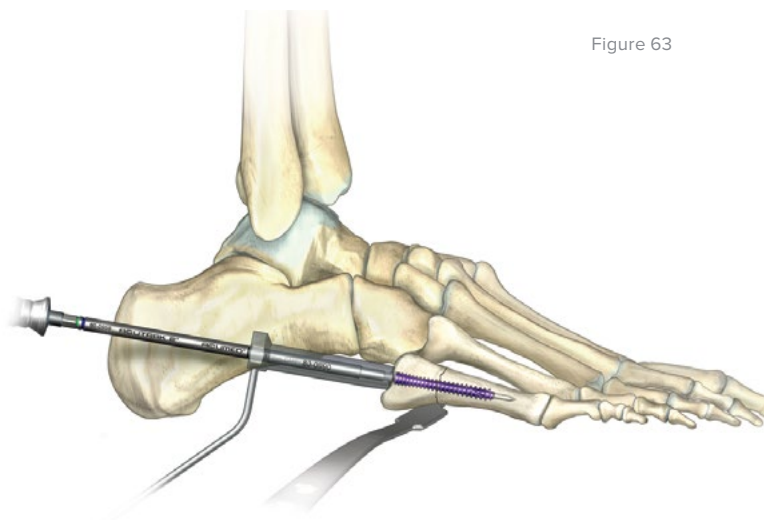


Figure 63

9 Screw Insertion

The screw is placed while under fluoroscopic guidance in order to avoid cortical penetration.

Postoperative protocol: The patient is placed into a soft dressing, supported by a fiberglass splint.

It is advised that the patient not bear weight on the impacted foot for a period of 2–6 weeks postoperatively, depending upon the Torg type of fracture, bone quality, and underlying morbidities.

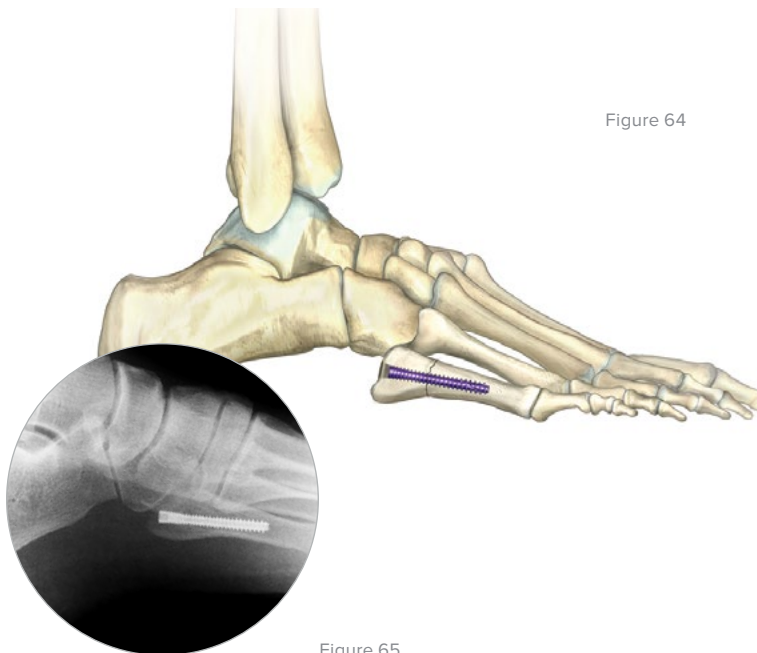


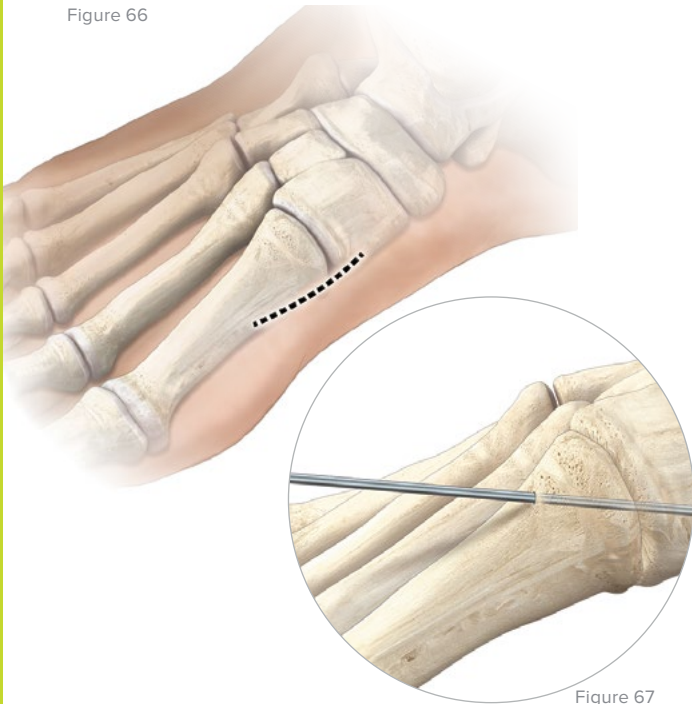
Figure 64

Figure 65

Tarsometatarsal (TMT) Fusion

Surgical Technique: Acutrak 2®—Standard

Figure 66



1 Approach

A dorsomedial incision is made centered over the tarsometatarsal (TMT) area between the extensor hallucis longus tendon and extensor hallucis brevis tendon. A second dorsolateral incision is made centered over the TMT area, roughly in line with the fourth metatarsal, lateral to the neurovascular bundle. Then reduce the TMT joint under direct visualization and image intensification. Fixate with a guide wire placed from the base of the metatarsal to the respective cuneiform.

Figure 67

2 Preparation

The joints are exposed and prepared by removing any dorsal spurs and resecting any remaining cartilage. The subchondral bone is removed down to cancellous bone on each side of the TMT joint.

Figure 68



3 Determine Screw Length

Measure the guide wire length either by using the percutaneous screw sizer or by placing a second wire at the entry point and subtracting the difference in length. Subtract 4 mm from the measured length to ensure that both ends of the screw are buried within the bone.

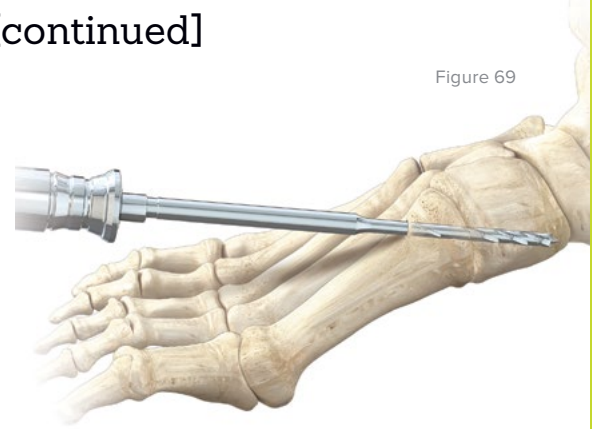
Tarsometatarsal (TMT) Fusion

Surgical Technique: Acutrak 2®—Standard [continued]

4 Advance Guide Wire

Advance the guide wire through the far cortex with the long drill, as this decreases the risk of accidental withdrawal of the guide wire while drilling and facilitates wire removal if it breaks.

Figure 69

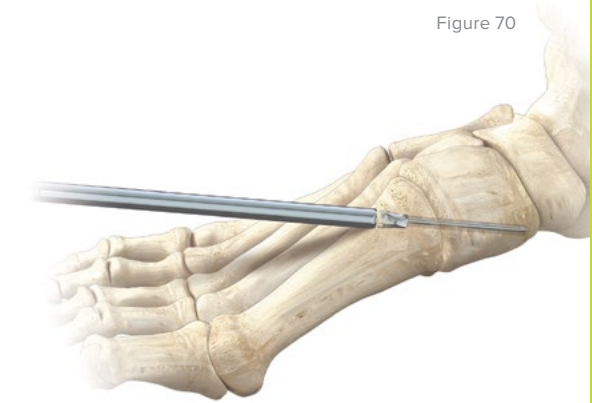


5 Drill Far Fragment

Next, drill into the far fragment with the long drill. Typically the drill must only advance 4–5 mm past the fracture fusion site to be effective.

Caution: The long drill is recommended to mitigate the effects of varying bone density and distraction upon screw insertion.

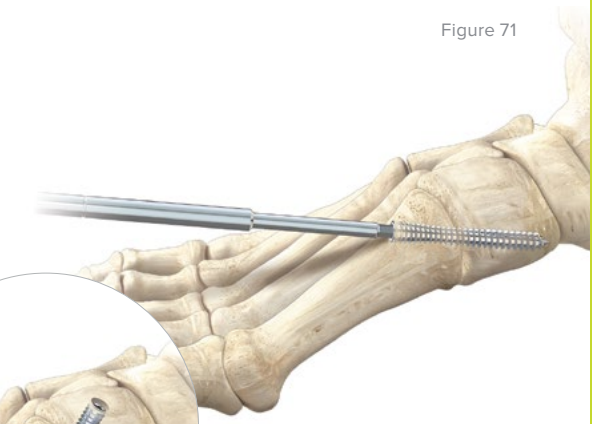
Figure 70



6 Drill the Near Cortex

Open the near cortex with the appropriate profile drill. Countersink if it is felt to be necessary, as this will decrease the chances of the cortex cracking upon screw insertion.

Figure 71



7 Screw Insertion

Insert the correct size screw with the appropriate hex driver. If resistance is met upon insertion or if distraction occurs: Stop, remove the screw, re-drill with the long drill and re-insert the screw. Confirm the placement and length of the screw under fluoroscopy, ensuring that both the leading and the trailing threads of the screw are within the bone. Lastly, remove the guide wires.

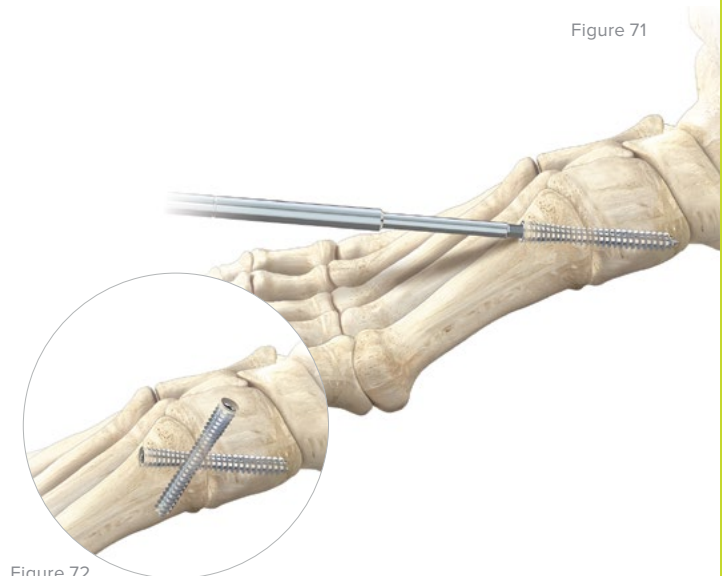


Figure 72

Navicular Fracture

Surgical Technique: Acutrak 2®—Standard

Figure 73



Figure 74

Figure 75



Figure 76

1 Compression

Make two small stab incisions dorsomedially and dorsolaterally. Insert the pointed reduction forceps through the incisions and place on the center of the fragments. Reduce carefully, ensuring that you do not overcompress.

2 Preliminary Guide Wire

Preliminary fixation can be achieved using guide wires. Ensure the guide wire does not penetrate the joint.

3 Check Reduction

Under direct vision, check for and ensure that the joint is anatomically reduced. If needed, palpitate the articular surface with an elevator screw under fluoroscopy, ensuring that both the leading and the trailing threads of the screw are within the bone. Lastly, remove the guide wire.

Navicular Fracture

Surgical Technique: Acutrak 2®—Standard [continued]

4 Fracture Stabilization

If the fracture is unstable it may be helpful to place a second parallel guide wire using the parallel wire guides which are available for all three Acutrak 2 Screw families.

5 Determine Screw Length

Measure the guide wire length either by using the percutaneous screw sizer or by placing a second wire at the entry point and subtracting the difference in length. The screw sizer cannot be used with the arthroscopic technique due to the limited access. Subtract 4 mm from the measured length to ensure that both ends of the screw are buried within the bone.

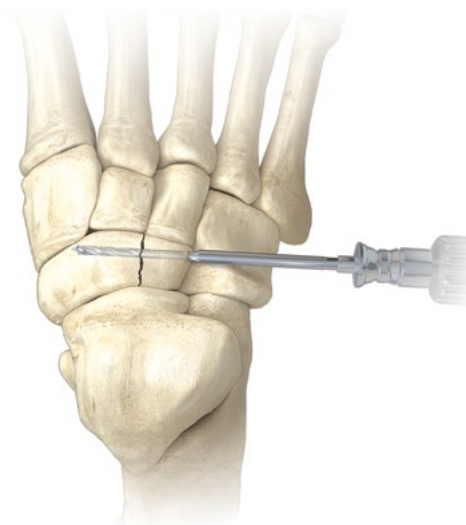
Figure 77



6 Advance Guide Wire

Advance the guide wire through the far cortex with the long drill so that it lies in the subcutaneous tissues. This decreases the risk of accidental withdrawal of the guide wire while drilling and facilitates wire removal if it breaks.

Figure 78



7 Drill Far Fragment

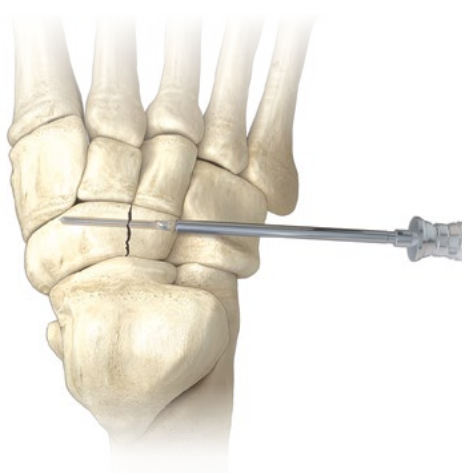
Next, drill into the far fragment with the long drill. Typically the drill must only advance 4–5 mm past the fracture site to be effective.

Caution: The long drill is recommended to mitigate the effects of varying bone density and distraction upon screw insertion.

Navicular Fracture

Surgical Technique: Acutrak 2®—Standard [continued]

Figure 79



8 Drill the Near Cortex

Open the near cortex with the appropriate profile drill.

Figure 80



9 Screw Insertion

Insert the correct size screw with the appropriate hex driver. If resistance is met upon insertion or if distraction occurs: Stop, remove the screw, re-drill with the long drill, and re-insert the screw. Confirm the placement and length of the screw under fluoroscopy, ensuring that both the leading and the trailing threads of the screw are within the bone. Lastly, remove the guide wires.

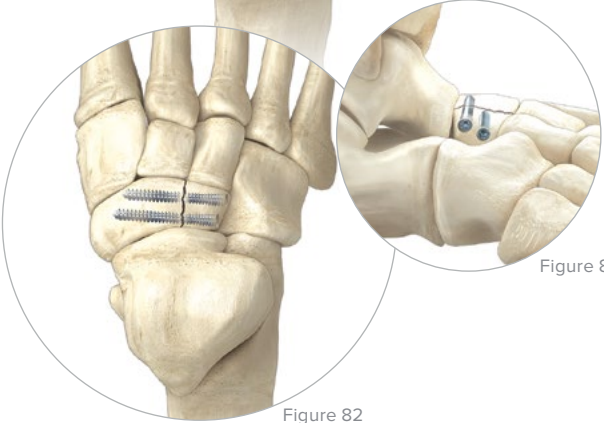


Figure 81

Figure 82

Standard Triple Arthrodesis

Surgical Technique: Acutrak 2®—4.7 and 7.5

Three joints are fused in the triple arthrodesis, namely the subtalar (talocalcaneal/ST), talonavicular (TN), and calcaneocuboid (CC) joints. At times, a double arthrodesis is preferred, and fuses only two of the above-mentioned joints.

1 Incisions

Classically, the procedure is performed via one lateral and one medial incision. The lateral incision begins at the tip of the fibula and extends toward the cuboid-fourth metatarsal joint. The medial incision begins at the tip of the medial malleolus.

Figure 83

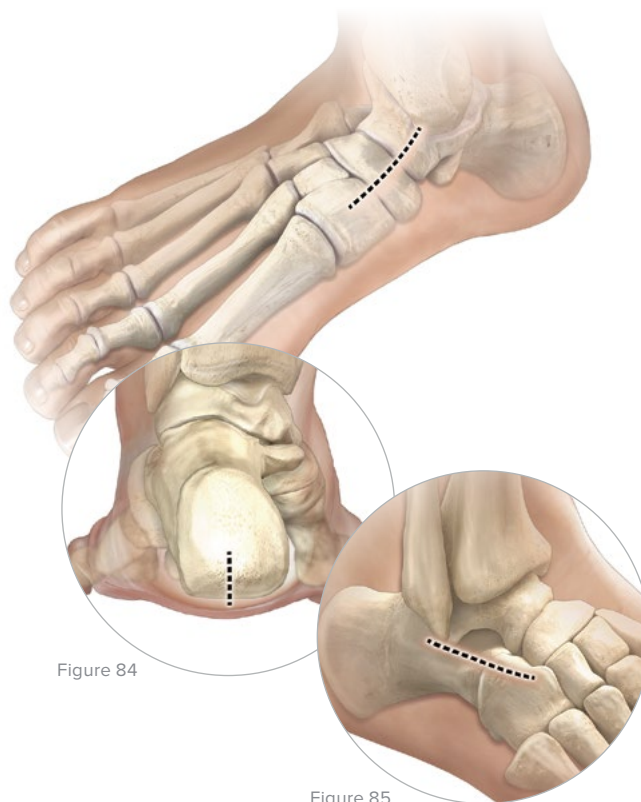


Figure 84

Figure 85

2 Lateral Exposure

Use a periosteal elevator to expose the surfaces of the calcaneus, cuboid, and talus. Prepare the calcaneocuboid and subtalar joints by removing any remaining cartilage and subchondral bone down to cancellous bone, leaving the overall contours of the bones intact. Once all cartilage is removed use a sharp osteotome to “fish-scale” the joints. Use a 2 mm drill bit to make multiple perforations in the subchondral bone to enhance fusion.

3 Subtalar Joint Reduction and Stabilization

Reduce the hindfoot deformity by rotating the calcaneus and the talus with a goal of 5 degrees of the valgus. The slight valgus can also be adjusted by removing extra bone from the medial or lateral side of the calcaneus when prepping the joint. Place 2 guide wires from the calcaneus into the talus, or vice-versa, or one in each direction. Avoid the weightbearing heel pad.

Standard Triple Arthrodesis

Surgical Technique: Acutrak 2®—4.7 and 7.5 [continued]

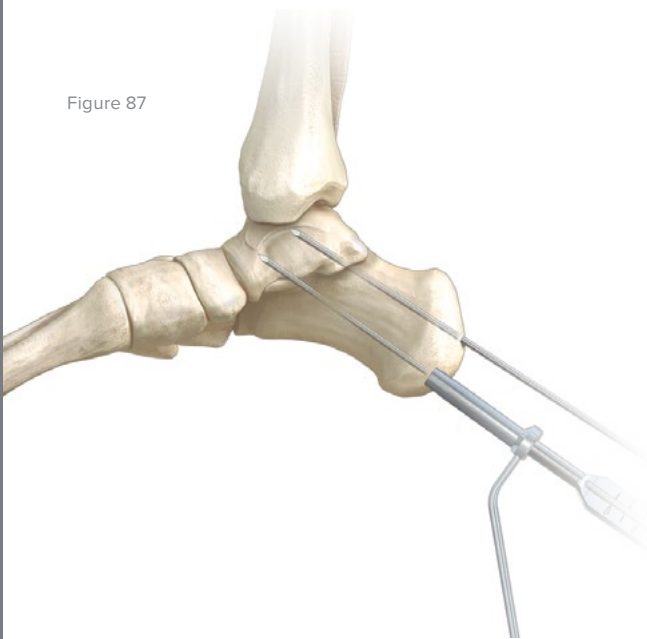
Figure 86



4 Fusion Reduction

If the fusion site is unstable it may be helpful to place a second parallel guide wire using the parallel wire guides which are available for all three Acutrak 2 screw families. The order of joint fusion is often surgeon dependent. Here, the order will be: 1) ST, 2) TN, and 3) CC joint. Bone graft is typically packed between the prepared spaces. Reduce the hindfoot by rotating the calcaneus and the talus with a goal of 5 degrees of valgus. Place 2 guide wires from the calcaneus into the talus, or vice-versa, or one in each direction. Avoid the weight-bearing heel pad.

Figure 87



5 Determine Screw Length

Measure the guide wire length either by using the percutaneous screw sizer or by placing a second wire at the entry point and subtracting the difference in length. Subtract 4 mm from the measured length to ensure that both ends of the screw are buried within the bone.

6 Advance Guide Wire

Advance the guide wire through the far cortex with the long drill, so that it lies in the subcutaneous tissues. This decreases the risk of accidental withdrawal of the guide wire while drilling and facilitates wire removal if it breaks.

Standard Triple Arthrodesis

Surgical Technique: Acutrak 2®—4.7 and 7.5 [continued]

7 Drill Far Fragment

Next, drill into the far fragment with the long drill. Typically the drill must only advance 4–5 mm past the fusion site to be effective.

Caution: The long drill is recommended to mitigate the effects of varying bone density and distraction upon screw insertion.

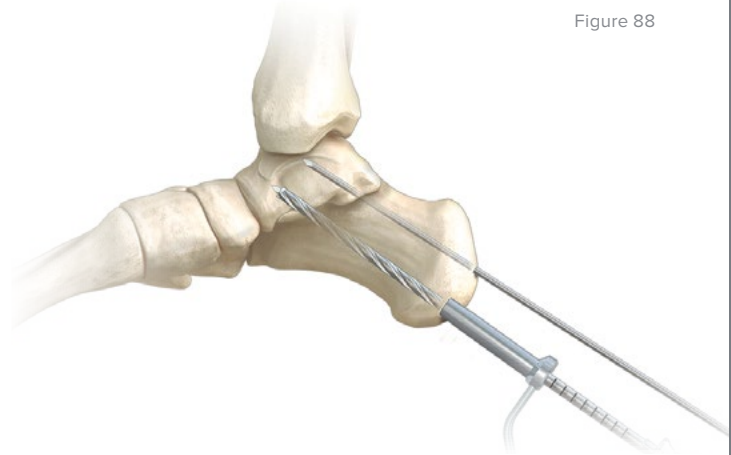


Figure 88

8 Drill the Near Cortex

Open the near cortex with the appropriate profile drill.

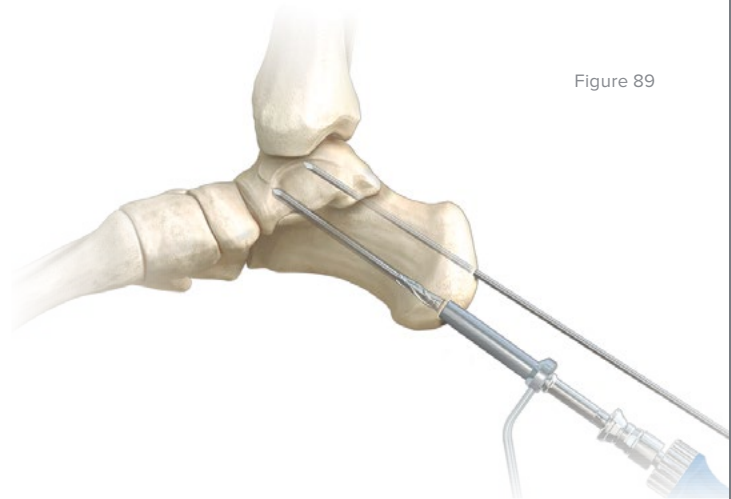


Figure 89

9 Screw Insertion

Insert the correct size screw with the appropriate hex driver. If resistance is met upon insertion or if distraction occurs: Stop, remove the screw, re-drill with the long drill, and re-insert the screw. Confirm the placement and length of the screw under fluoroscopy, ensuring that both the leading and the trailing threads of the screw are within the bone. Lastly, remove the guide wires.

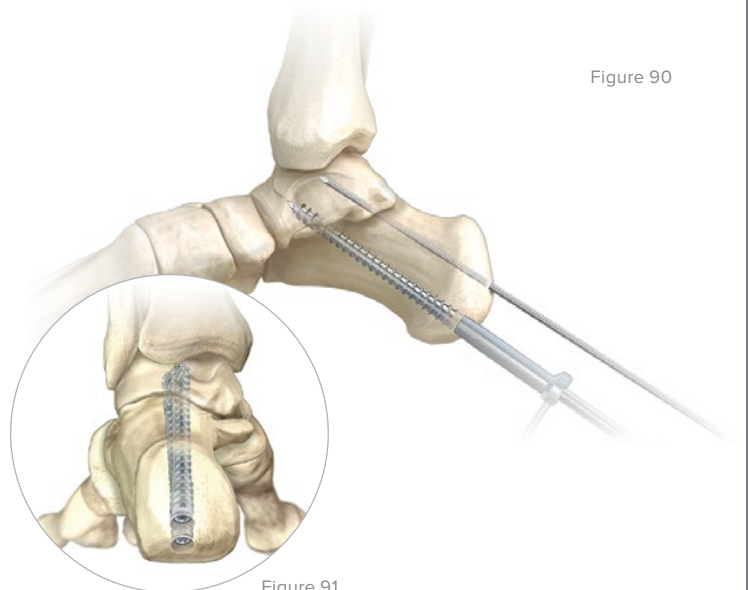


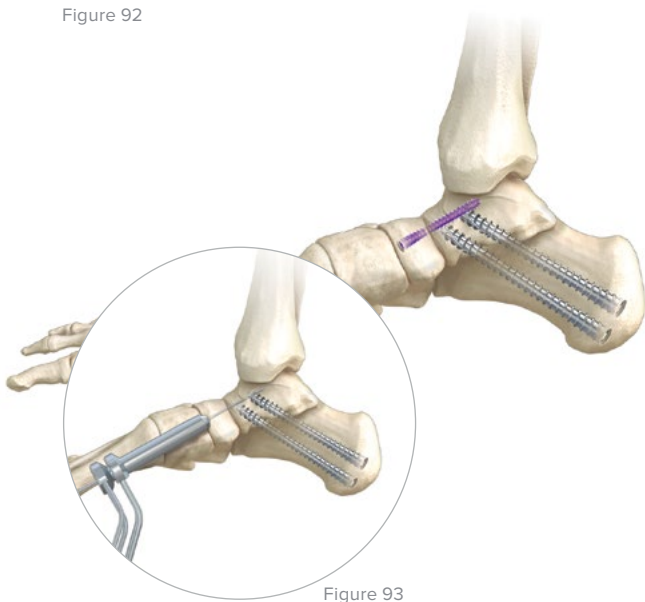
Figure 90

Figure 91

Standard Triple Arthrodesis

Surgical Technique: Acutrak 2®—4.7 and 7.5 [continued]

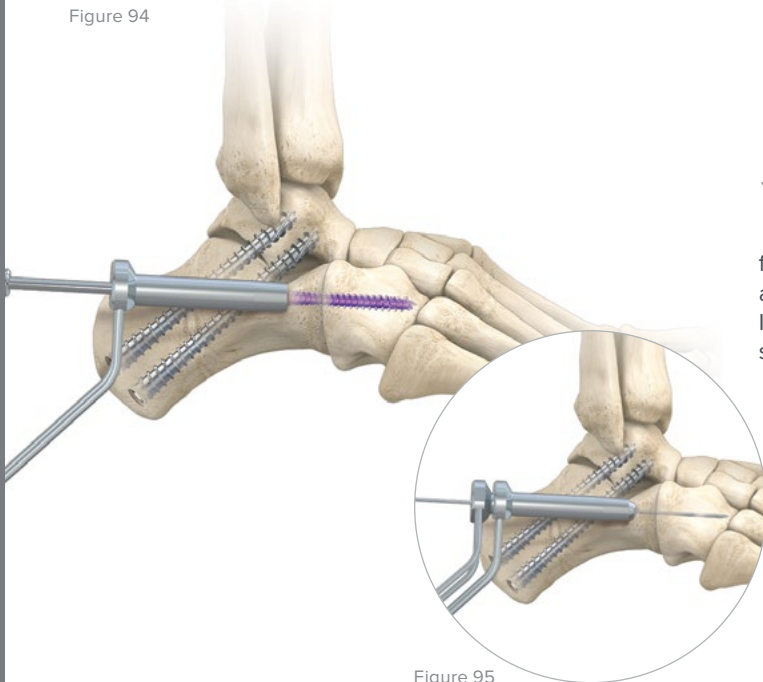
Figure 92



10 Talonavicular Fusion

Reduce the talonavicular (TN) joint through pronation, adduction, and plantarflexion of the forefoot while pressure is applied from the plantar medial aspect of the talar neck to hold it in reduced position. Insert the guide wire to fixate and hold the TN joint approximately 5 degrees of valgus. Insert the screw in a manner similar to that described in steps 5–9.

Figure 94



11 Calcaneocuboid Fusion

Reduce the calcaneocuboid (CC) joint in a similar fashion to the TN joint reduction. Insert the guide wire to fixate and hold the CC joint approximately 5 degrees of valgus. Insert the screw in a manner similar to that described in steps 5–9.

Figure 95

Calcaneal Osteotomy

Surgical Technique: Acutrak 2®—7.5

Medial displacing calcaneal osteotomies are frequently performed to correct hindfoot valgus deformity. Lateral displacing calcaneal osteotomies are performed in patients with a cavus foot arising from the hindfoot. The plantar fascia must be released through a separate incision medially for a lateral displacing osteotomy, whereas the abductor hallucis muscle and medial neurovascular structures can be pushed away through the osteotomy bluntly prior to medial displacement of the osteotomized calcaneus.

1 Patient Positioning

Position the patient at the end of the bed, semi-lateral. Check that the leg can be placed easily onto the mini C-arm prior to preparation of the operative limb.

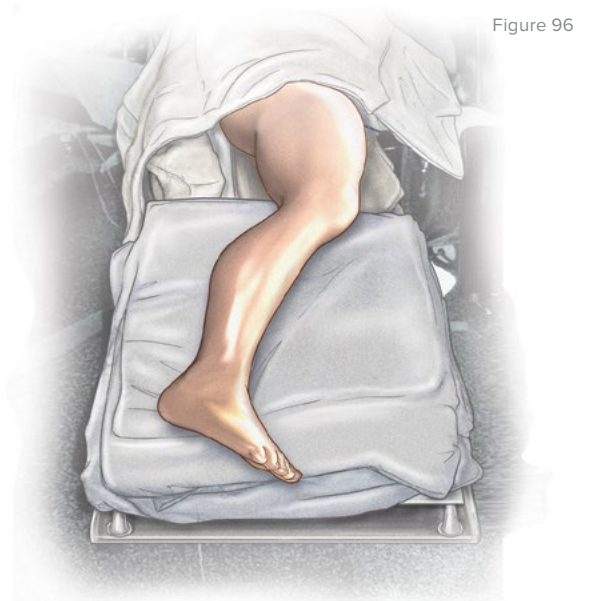


Figure 96

2 Approach and Exposure

An incision is made posterior to the peroneal tendons, perpendicular to the body of the calcaneus. Cephalad and caudal mini Hohmann retractors are placed to protect the neurovascular structures and plantar fascia. Care is made to preserve the peroneal tendons and the sural nerve.

Caution: Care is made to preserve the peroneal tendons and the sural nerve.

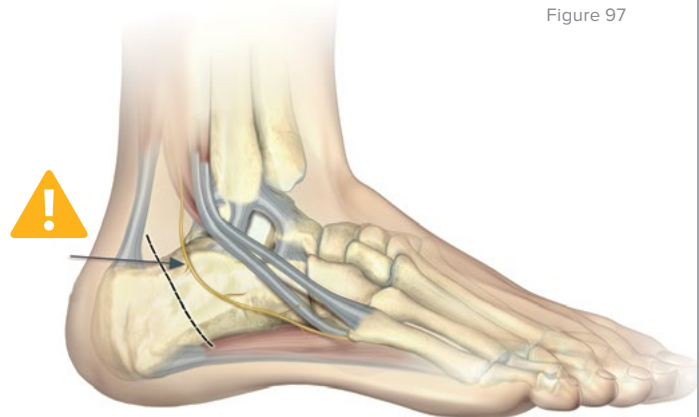
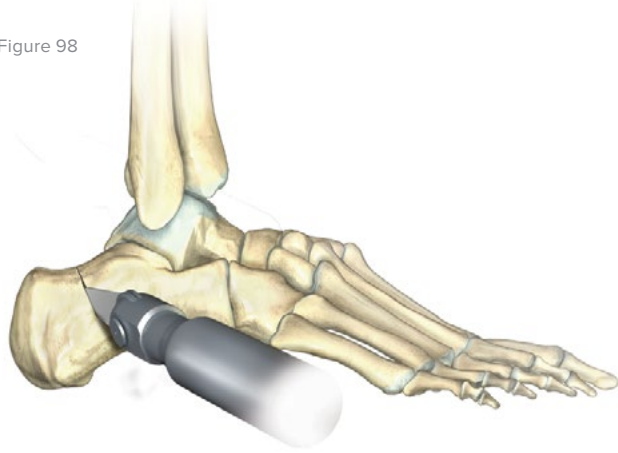


Figure 97

Calcaneal Osteotomy

Surgical Technique: Acutrak 2®—7.5 [continued]

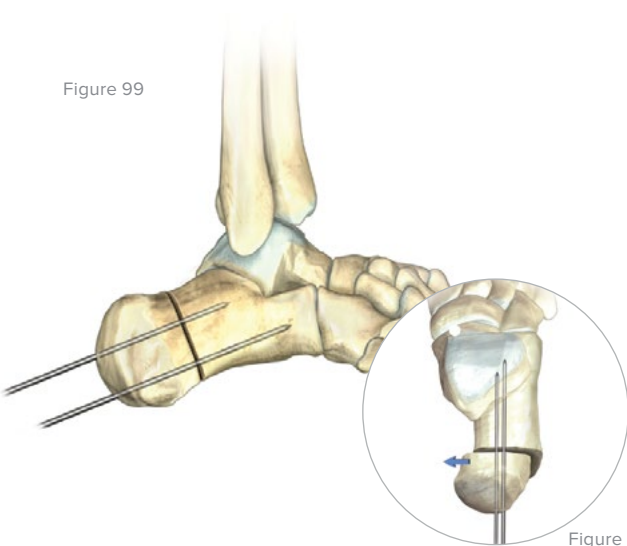
Figure 98



3 Create Osteotomy

An oscillating saw is used to make the osteotomy cut perpendicular to the body of the calcaneus. The saw is not used to complete the cut through the medial cortex. This is completed with an osteotomy in order to avoid damaging medial neurovascular structures.

Figure 99



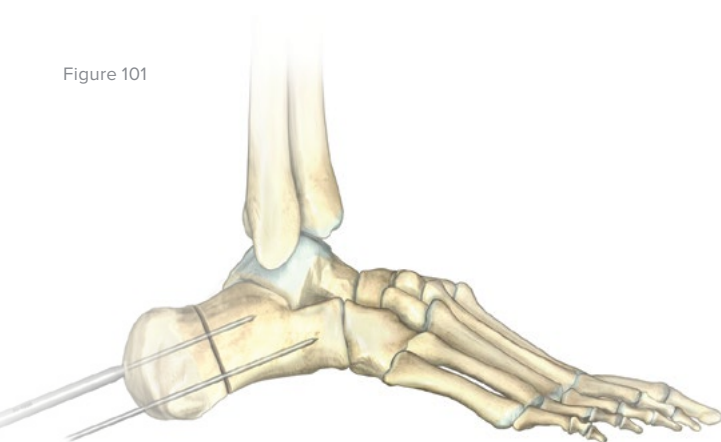
4 Guide Wire Placement

The body of the calcaneus is displaced medially or laterally and held in place with two guide pins.

The distal portion of the pins are placed at the volar aspect of the angle of Gissane in order to capture solid bone distally and assist with compression of the osteotomy by the screws. Confirm guide pin placement under fluoroscopy.

Note: The soft tissue protector and arthroscopic probe can be used to assist in guide wire placement.

Figure 101



5 Measure Depth

Depth is measured from the exposed portion of the guide wire with the cannulated depth gauge.

Calcaneal Osteotomy

Surgical Technique: Acutrak 2®—7.5 [continued]

6 Select Screw Size

Select a screw the same size as measured. However, to account for countersinking and compression it is common to select a screw one size shorter than the measured depth.

Advance the guide wire approximately 5 mm to maintain distal pin fixation before drilling.

Warning: Make sure not to compromise joint surfaces when advancing the guide wire.

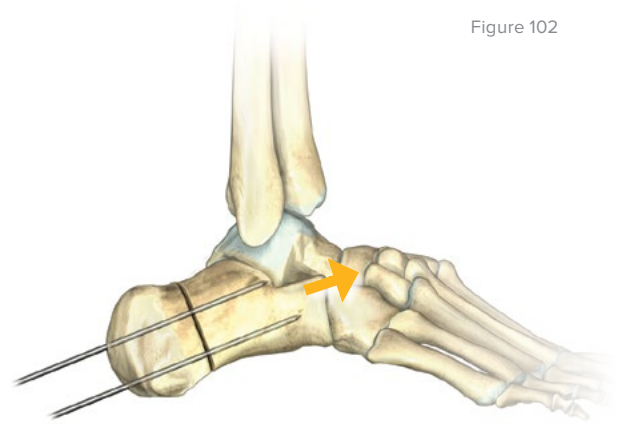


Figure 102

7 Drill the Near Cortex

Place the soft tissue guide over the guide wire and open the near cortex using the appropriate cannulated profile drill.

Note: Drills 80-0945, 80-0946, and 80-0976 should be advanced slowly with continuous irrigation to decrease the potential of heat build-up. Clean the drill periodically during each procedure to optimize performance.

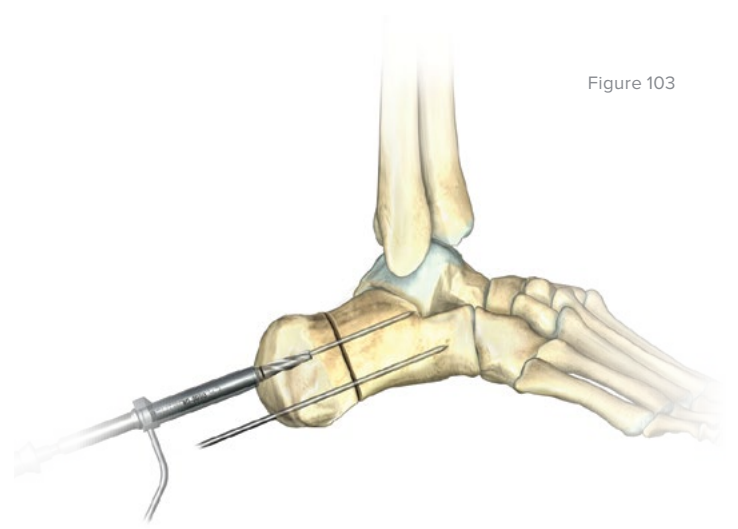


Figure 103

8 Drill

Leaving the soft tissue guide in place, drill into the far fragment with the appropriate cannulated, long profile drill. Reference the markings on the drill to confirm desired depth.

Caution: The long drill is recommended to mitigate the effects of varying bone density and distraction upon screw insertion.

Note: The Acutrak 2—7.5 Long Drill does not show depth markings relative to the bone surface.

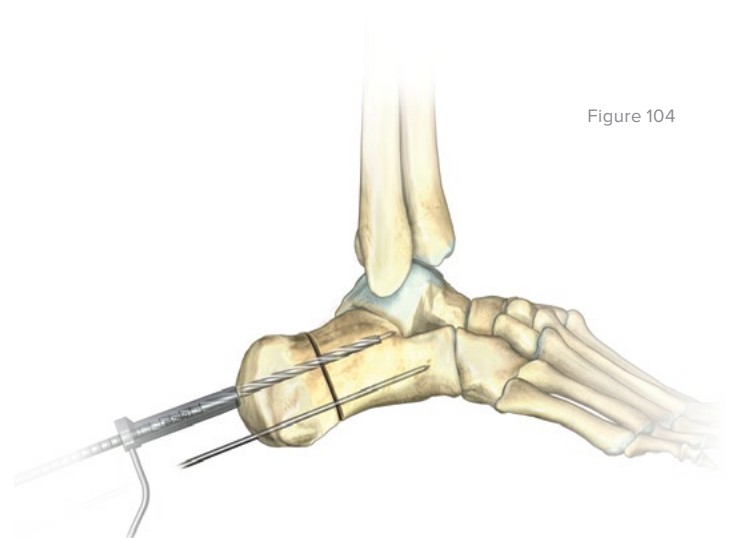
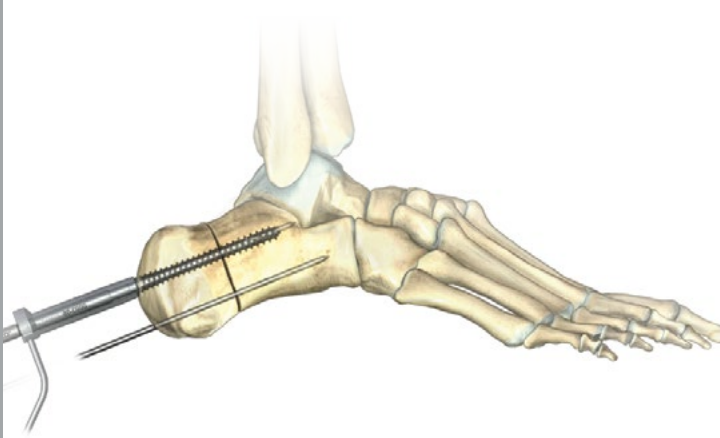


Figure 104

Calcaneal Osteotomy

Surgical Technique: Acutrak 2®—7.5 [continued]

Figure 105

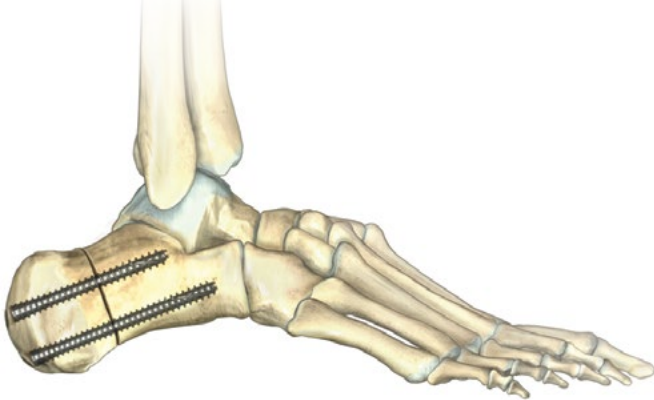


9 Screw Insertion

Cannulated Acutrak 2 screws are appropriately placed. Placement is confirmed by lateral and axial fluoroscopy views in the operating room.

Caution: The marking on the driver shows when the screw is approximately flush with the end of the soft tissue protector; ensure that the soft tissue protector is touching bone to accurately determine screw depth. Verify final screw position with fluoroscopy.

Figure 106



10 Additional Screw Placement

Repeat steps 5–9 for each additional screw placement.

Note: Bone density has a great effect on the performance of drills. Peck drilling with long drills is advised.

Drills 80-0945, 80-0946, and 80-0976 should be advanced slowly with continuous irrigation to decrease the potential of heat build-up. Clean drill periodically during each procedure to optimize performance.

11 Postoperative Protocol

The following protocol may be replaced with an alternative protocol at the performing surgeon's discretion.

The operative limb is placed into a bulky compression dressing. A splint is also placed. It is advised that the patient not bear weight on the affected foot by being placed in a cast, boot, or splint for 6 weeks after surgery.

Subtalar Fusion

Surgical Technique: Acutrak 2®—7.5

1 Approach

The procedure is performed via a lateral incision beginning at the tip of the fibula and extending toward the articulation of the cuboid and fourth metatarsal joint. The extensor digitorum brevis can be split or elevated in a distal direction. Ensure that the crossing branch of the sural nerve to the dorsal intermediate branch of the superficial peroneal nerve and peroneal tendons are protected during exposure.

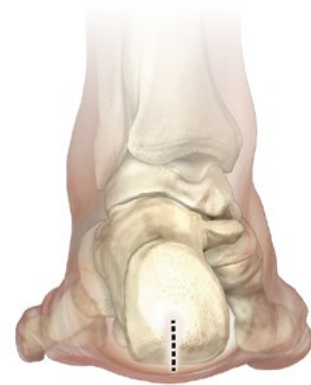


Figure 107

2 Joint Preparation

Prepare the joint by completely removing cartilage from the posterior and middle facets using a sharp osteotome, a curette, and a rongeur, leaving the overall contours of the bones intact.

Once all cartilage is removed, use a sharp osteotome to “fish-scale” the posterior and middle facets. Using a 2 mm drill bit, make multiple perforations in the subchondral bone to enhance fusion.

3 Reduction and Fusion Stabilization

Reduce the hindfoot deformity by rotating the calcaneus and the talus with a goal of 5 degrees of the valgus. The slight valgus can also be adjusted by removing extra bone from the medial or lateral side of the calcaneus when prepping the joint. Place 2 guide wires from the calcaneus into the talus, or vice-versa, or one in each direction. Avoid the weight-bearing heel pad.

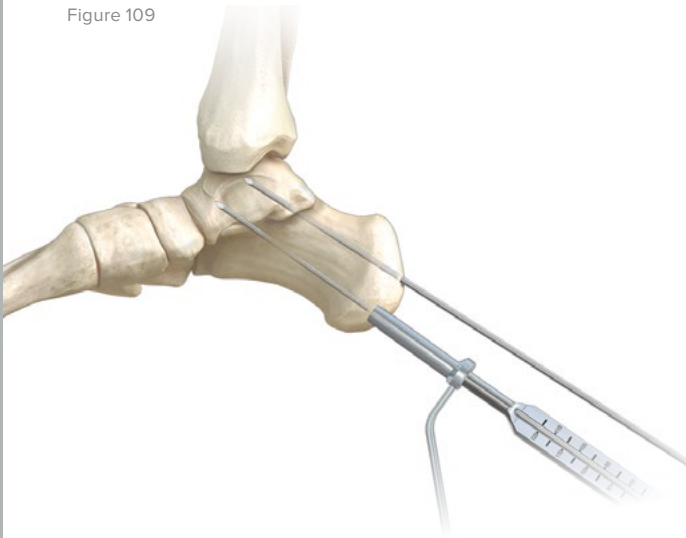


Figure 108

Subtalar Fusion

Surgical Technique: Acutrak 2®—7.5 [continued]

Figure 109



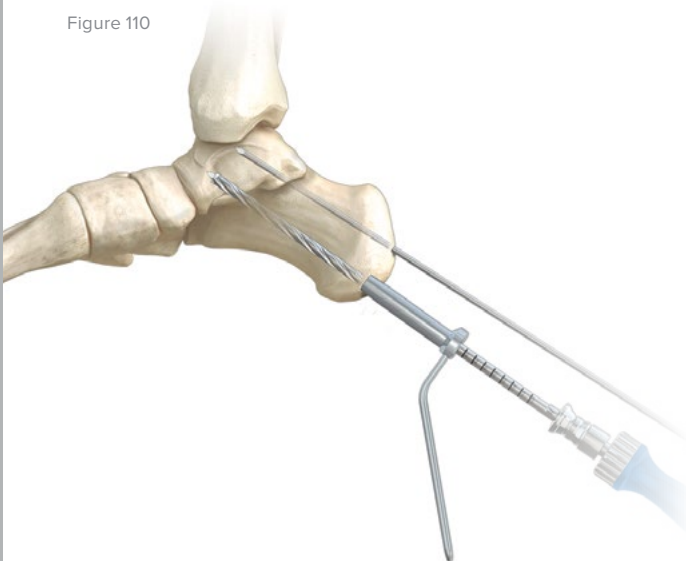
4 Determine Screw Length

Measure the guide wire length either by using the percutaneous screw sizer or by placing a second wire at the entry point and subtracting the difference in length. Subtract 4 mm from the measured length to ensure that both ends of the screw are buried within the bone.

5 Advance Guide Wire

Advance the guide wire through the far cortex with the long drill, so that it lies in the subcutaneous tissues. This decreases the risk of accidental withdrawal of the guide wire while drilling and facilitates wire removal if it should break.

Figure 110



6 Drill Far Fragment

Next, drill into the far fragment with the long drill. Typically the drill must only advance 4–5 mm past the fracture fusion site to be effective.

Caution: The long drill is recommended to mitigate the effects of varying bone density and distraction upon screw insertion.

Subtalar Fusion

Surgical Technique: Acutrak 2®—7.5 [continued]

7 Drill the Near Cortex

Open the near cortex with the appropriate profile drill.

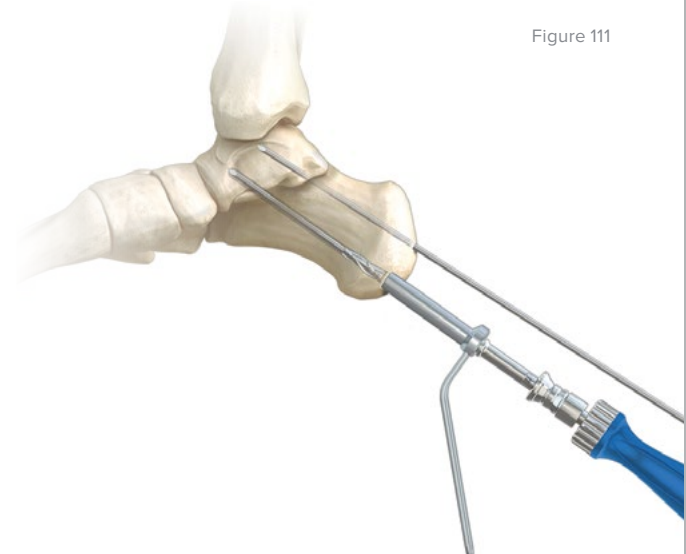


Figure 111

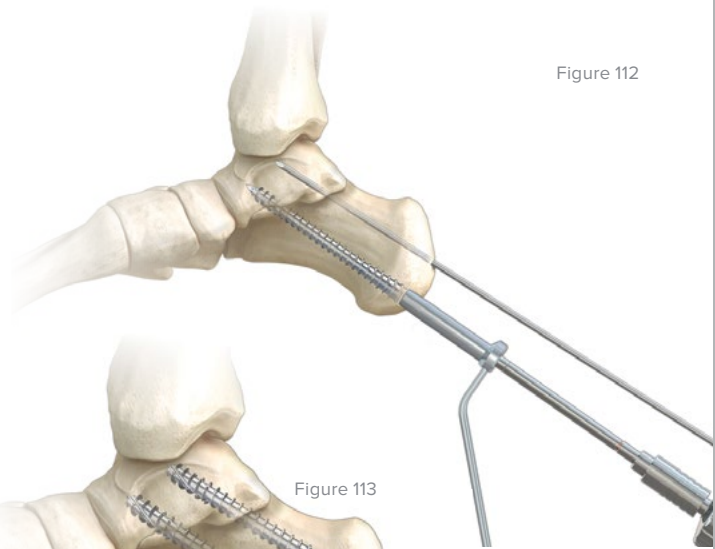


Figure 112

8 Screw Insertion

Insert the correct size screw with the appropriate hex driver. If resistance is met upon insertion or if distraction occurs: Stop, remove the screw, re-drill with the long drill, and re-insert the screw. Confirm the placement and length of the screw under fluoroscopy, ensuring that both the leading and the trailing threads of the screw are within the bone. Lastly, remove the guide wires.

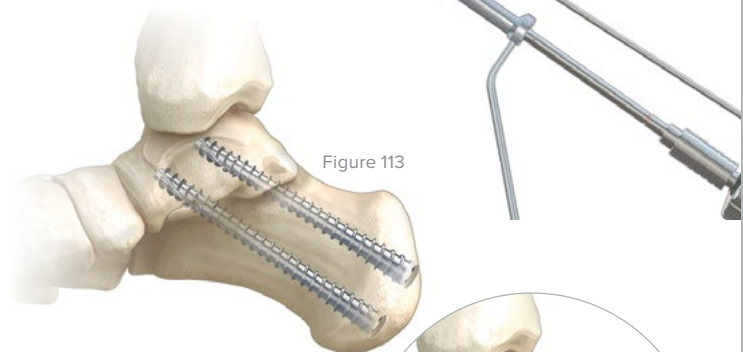


Figure 113

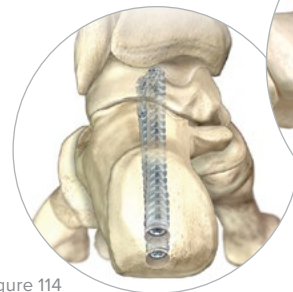


Figure 114



Figure 115

Alternative method of screw placement

Talar Body Fracture Fixation

Surgical Technique: Acutrak 2®—4.7

Talar body fracture fixation transmalleolar medial approach.

Figure 116



1 **Approach**
A medial malleolus osteotomy is performed, exposing the talus. Subtalar comminution is removed if present.

2 **Reduction**
The fracture is reduced either manually or with clamps.

Talar Body Fracture Fixation

Surgical Technique: Acutrak 2®—4.7 [continued]

3 Approach

The first guide is inserted posterior medial to anterior lateral while remaining inferior to allow for placement of a second wire. A second wire is introduced medially and dorsally into the talar neck.

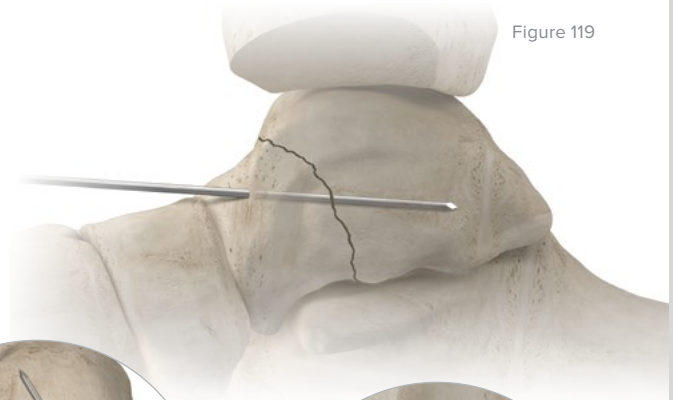


Figure 119

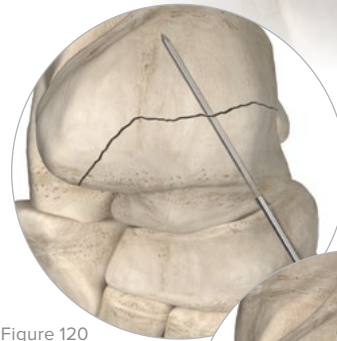


Figure 120

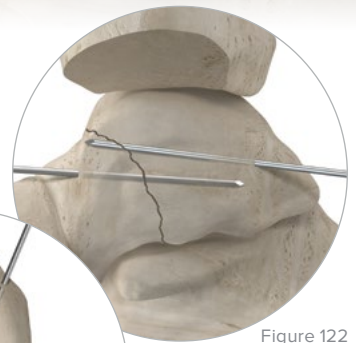


Figure 122

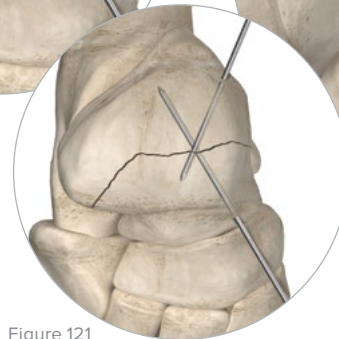


Figure 121

4 Determine Drill Depth

Measure the guide wire length either by using the percutaneous screw sizer or by placing a second wire at the entry point and subtracting the difference in length. The screw sizer cannot be used with the arthroscopic technique due to the limited access. Subtract 4 mm from the measured length to ensure that both screw ends are buried within the bone.

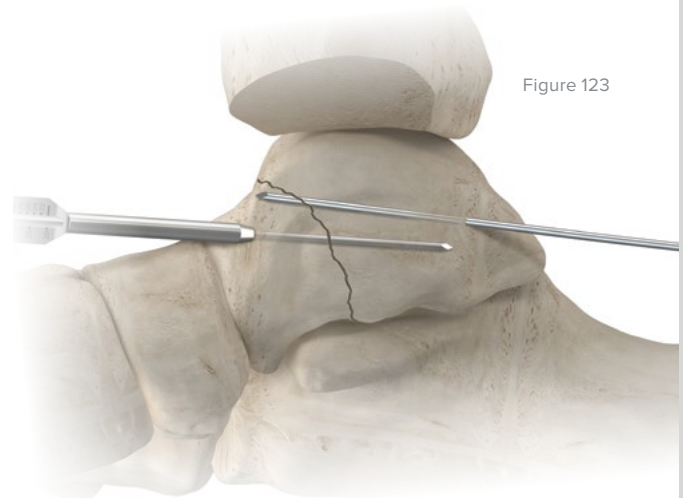


Figure 123

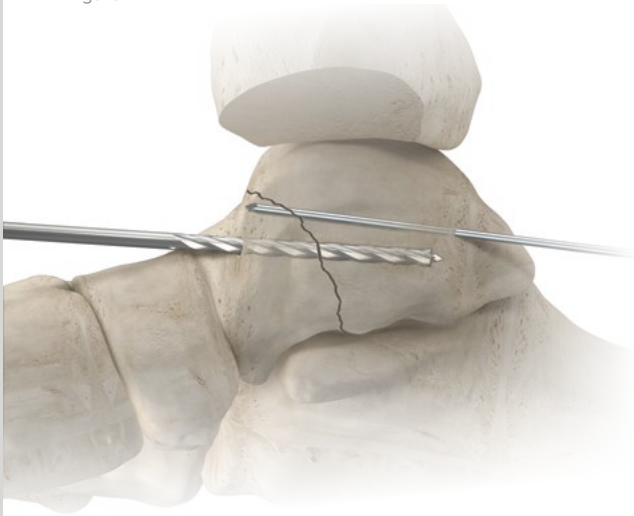
Talar Body Fracture Fixation

Surgical Technique: Acutrak 2®—4.7 [continued]

5 Advance Guide Wire

Advance the guide wire through the far cortex with the long drill so that it lies in the subcutaneous tissues. This decreases the risk of accidental withdrawal of the guide wire while drilling and facilitates wire removal if it breaks.

Figure 124



6 Drill Far Fragment

Drill into the far fragment with the long drill. Typically the drill must only advance 4–5 mm past the fracture site to be effective.

Caution: The long drill is recommended to mitigate the effects of varying bone density and distraction upon screw insertion.

Talar Body Fracture Fixation

Surgical Technique: Acutrak 2®—4.7 [continued]

7 Drill the Near Cortex

Open the near cortex with the appropriate profile drill.

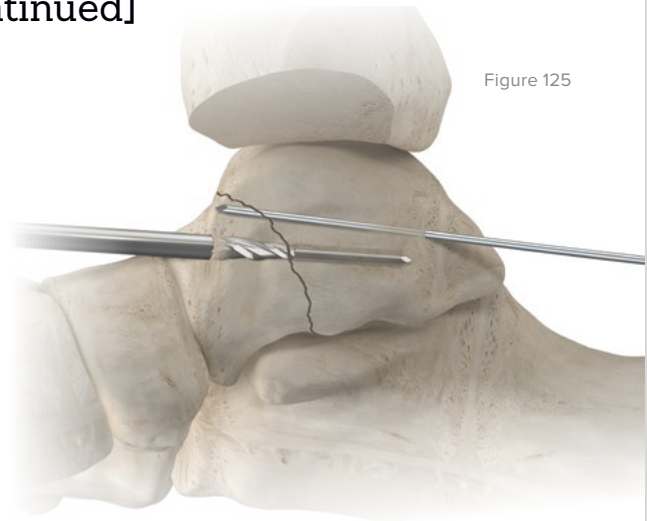


Figure 125

8 Insert Screw

Insert the correct size screw with the appropriate hex driver. If resistance is met upon insertion or if distraction occurs: Stop, remove the screw, re-drill with the long drill, and re-insert the screw. Confirm the placement and length of the screw under fluoroscopy, ensuring that both the leading and the trailing threads of the screw are within the bone. Lastly, remove the guide wires.

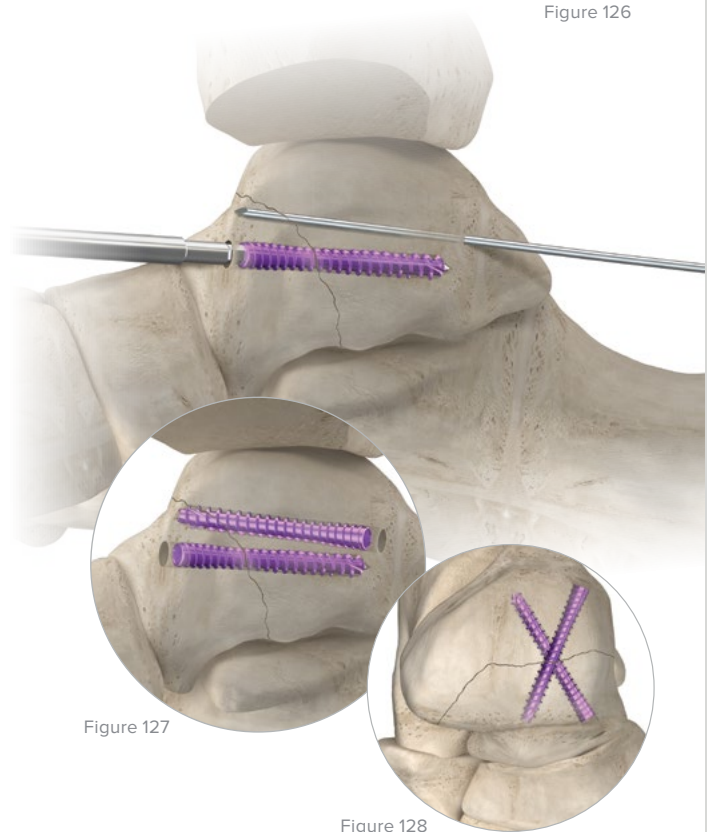


Figure 126

Figure 127

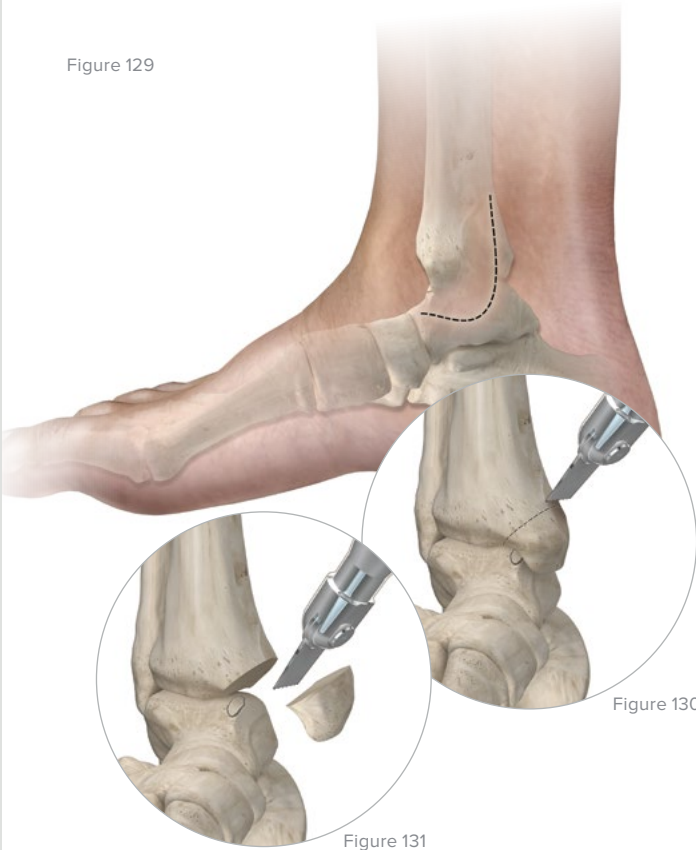
Figure 128

Talar Dome Fracture Fixation

Surgical Technique: Acutrak 2®—Micro

Talar dome fracture fixation or fixing of large osteochondral lesion with intact subchondral (medial) bone.

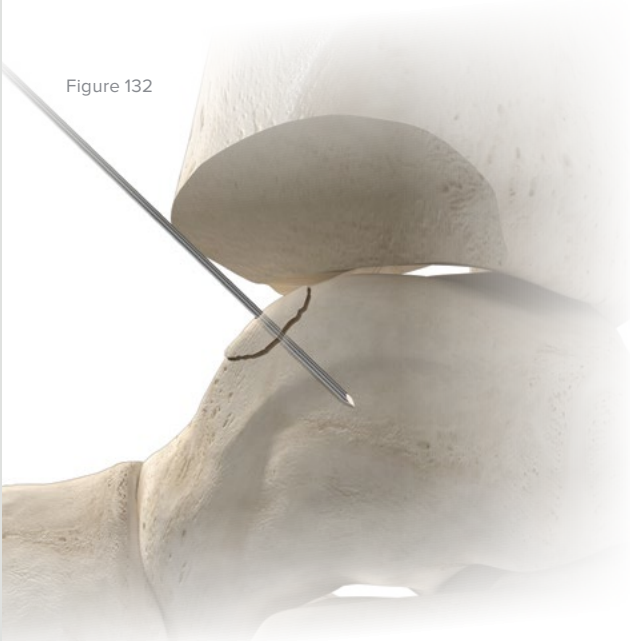
Figure 129



1 Approach

A medial malleolus osteotomy is performed, exposing the talus. Subtalar comminution is removed if present. Remove the fragment and curette. Perforate the base of the cavity with the drill.

Figure 132



2 Insert Guide Wire

Gently scrape only through the center of the bone. Pass the guide wire from the underside of the fragment. Make sure the guide wire is exactly perpendicular to the surface of the subchondral bone. Use the double-ended guidewire if possible. Place the OC fragment into the cavity and check the orientation. Pass the guide wire into the talar body.

Note: Often the bone will be smaller than the cartilage cap.

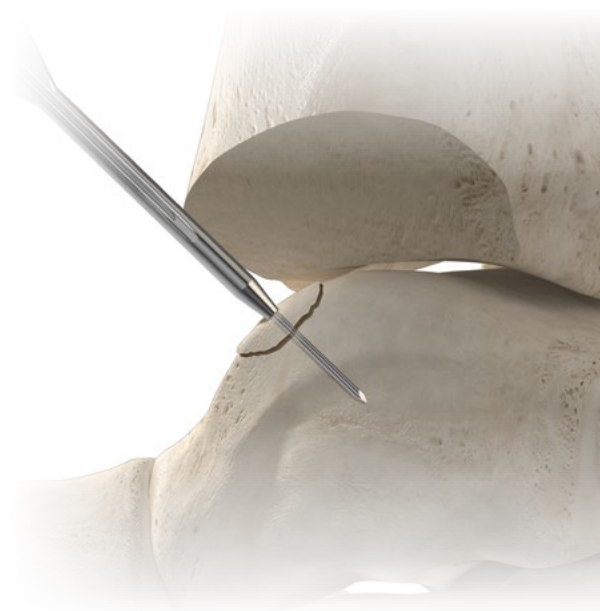
Talar Dome Fracture Fixation Surgical Technique: Acutrak 2®—Micro [continued]

Figure 133

3 Determine Drill Depth

Measure the guide wire length either by using the percutaneous screw sizer or by placing a second wire at the entry point and subtracting the difference in length. Subtract 4 mm from the measured length to ensure that both ends of the screw are buried within the bone.

Caution: The screw sizer cannot be used with the arthroscopic technique due to limited access.



4 Advance Guide Wire

Advance the guide wire through the far cortex with the long drill until it lies in the subcutaneous tissues. This decreases the risk of accidental withdrawal of the guide wire while drilling and facilitates wire removal if it breaks.

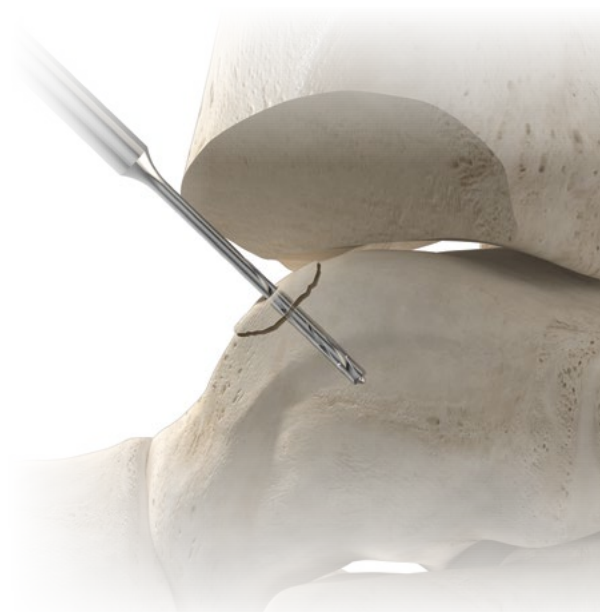
Figure 134

5 Drill Far Fragment

Drill into the far fragment with the long drill. Typically the drill only must only advance 4–5 mm past the fracture site to be effective.

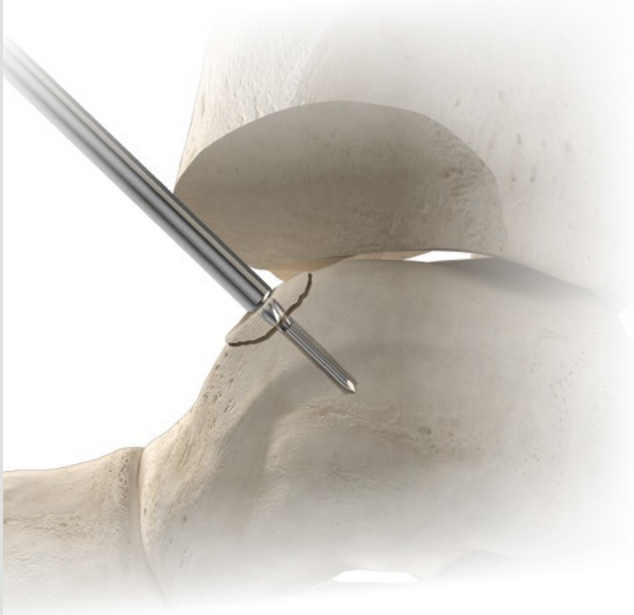
Caution: The long drill is recommended to mitigate the effects of varying bone density and distraction upon screw insertion.

Note: Drilling by hand is recommended, while compressing the fragment into the body and preventing rotation.



Talar Dome Fracture Fixation Surgical Technique: Acutrak 2®—Micro [continued]

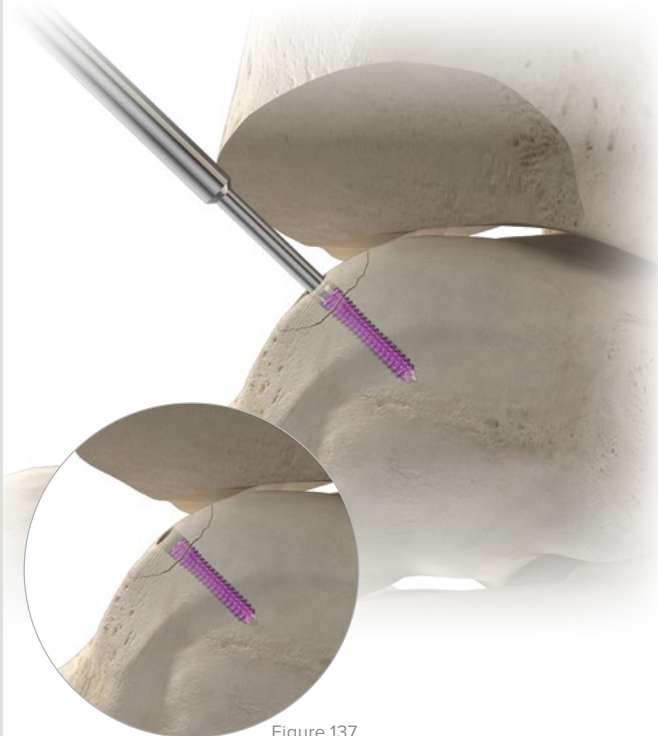
Figure 135



6 Drill the Near Cortex

Open the near cortex with the appropriate profile drill.

Figure 136



7 Insert Screw and Confirm Placement

Insert the correct size of screw with the appropriate hex driver. Check the X-ray frequently when the screw is below the cartilage cap. If resistance is met upon insertion or if distraction occurs: Stop, remove the screw, re-drill with the long drill, and re-insert the screw. Confirm placement and length of the screw under fluoroscopy, ensuring that both the leading and the trailing screw threads are within the bone. The screw base must be exactly at the level of the subchondral bone in two planes. Make sure the base of the screw is flush with the surface of the subchondral bone. Remove the guide wires.

Based on variation in osteochondral lesion size, an Acutrak 2 Mini or Standard may be appropriate.

Figure 137

Ankle Fusion

Surgical Technique: Acutrak 2®—7.5

Lateral Approach

There are two main approaches for fusing an ankle, namely the lateral approach and the anterior approach. Both are described below. The lateral approach usually incorporates excision of the distal fibula as direct access to the ankle. The anterior approach spares the fibula, allowing direct access to the anterior ankle, and theoretically preserving the fibula for a possible total ankle replacement in the future. Thus, the anterior approach is typically used in younger individuals.¹

1 Approach

A hockey stick incision is made over the fibula laterally with an anterior direction just distal to the tip of the fibula. Subperiosteal dissection is carried around the distal 3 cm of the fibula, and a microsagittal saw is used to perform a distal fibulectomy, beginning proximal lateral and ending distal medial. The ankle capsule is released anteriorly and posteriorly, allowing for access to the lateral tibiotalar joint.



Figure 138

2 Preparation and Guide Wire Insertion

The distal tibia and dorsal talus are decorticated down to cancellous bone, leaving the convexity of the talus and concavity of the distal tibia intact. A guide wire is used to make vascular ingrowth channels in the distal tibia and dorsal talus. Any angular deformities present are corrected via bone removal. Cancellous bone is harvested from the excised distal fibula and packed into the tibiotalar joint. Guide wires from the large Acutrak 2 Screw System are placed across the tibiotalar joint. Either two or three wires are used, one from the anterolateral tibia to the posterior medial talus, one from the lateral process of the talus into the medial aspect of the distal tibia, and one from the anterolateral talar neck into the distal medial tibia. On an anterior-posterior (AP) view the guide wires form an X, and on the lateral view they are parallel to one another.

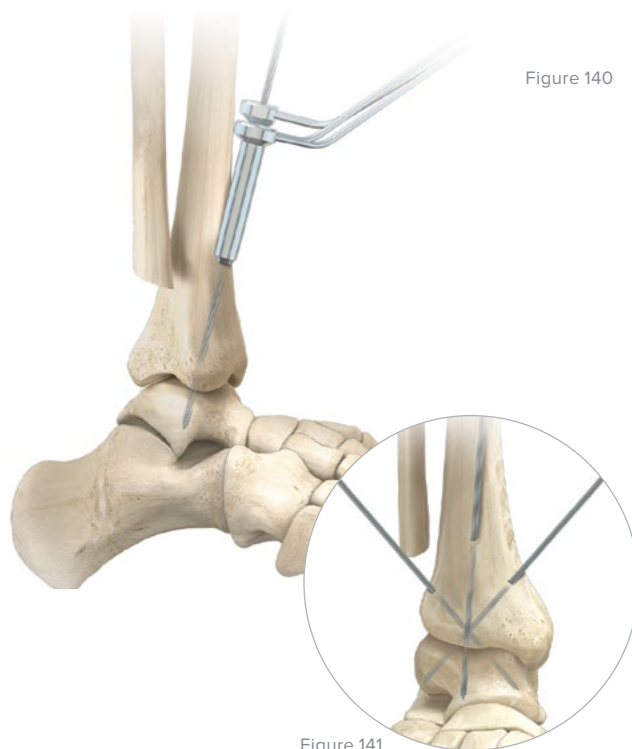


Figure 140

1. Weatherall JM, Mroczek K, McLaurin T, Ding B, Tejwani N. Post-traumatic ankle arthritis. *Bull Hosp Jt Dis.* 2013;71(1):104-112.

Figure 141

Ankle Fusion

Surgical Technique: Acutrak 2®—7.5 [continued]

Lateral Approach

Figure 142

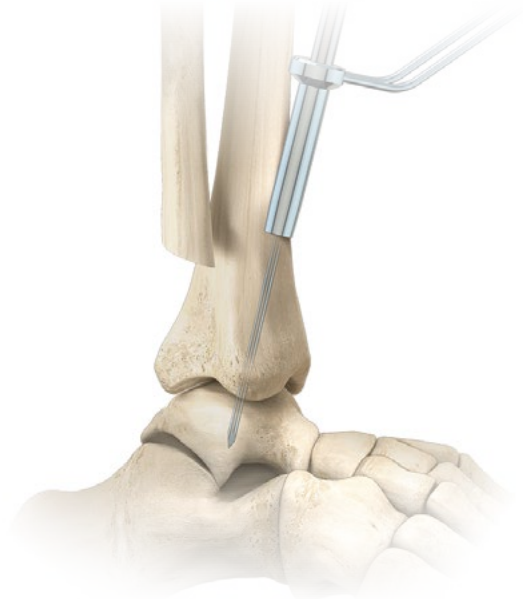
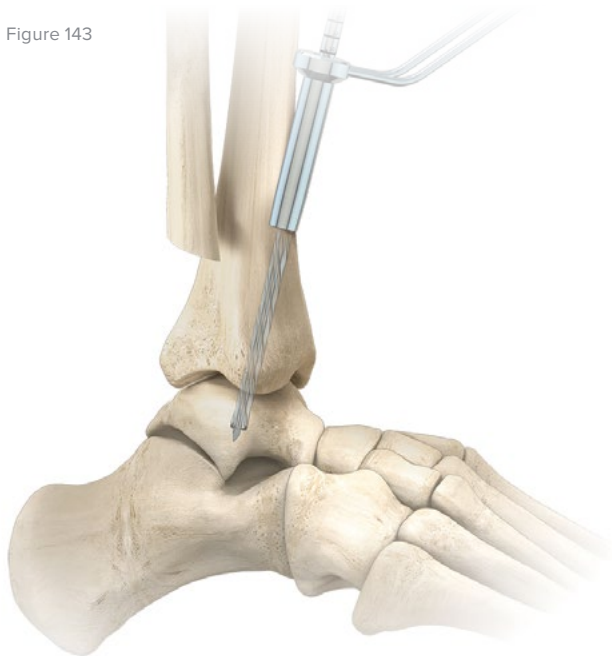


Figure 143



3 Determine Screw Length

Measure the guide wire length either by using the percutaneous screw sizer or by placing a second wire at the entry point and subtracting the difference in length. The screw sizer cannot be used with the arthroscopic technique due to the limited access. Subtract 4 mm from the measured length to ensure that both ends of the screw are buried within the bone.

4 Advance Guide Wire

Advance the guide wire through the far cortex so that it lies in the subcutaneous tissues. This decreases the risk of accidental withdrawal of the guide wire while drilling and facilitates wire removal if it breaks.

5 Drill Far Fragment

Next, drill into the far fragment with the long drill. Typically the drill must only advance 4–5 mm past the fusion site to be effective.

Warning: Make sure not to violate the subtalar joint.

Caution: The long drill is recommended to mitigate the effects of varying bone density and distraction upon screw insertion.

Ankle Fusion

Surgical Technique: Acutrak 2®—7.5 [continued]

Lateral Approach

6 Drill the Near Cortex

Open the near cortex with the appropriate profile drill.

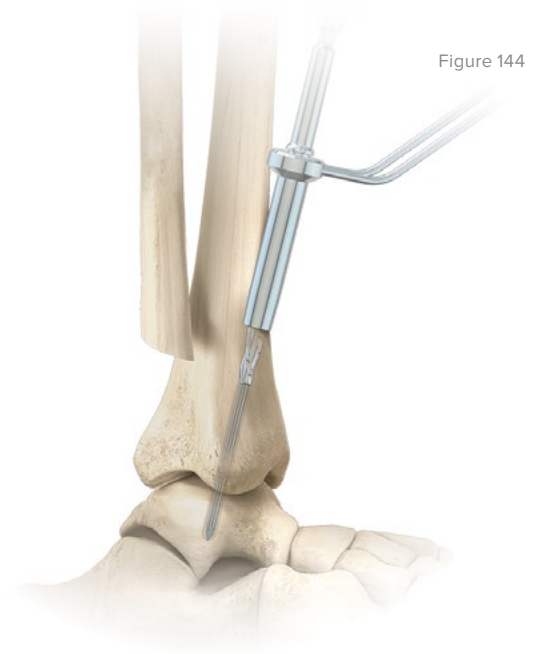


Figure 144

7 Screw Insertion

Insert the correct size large Acutrak 2 7.5 screw with the appropriate hex driver. If resistance is met upon insertion or if distraction occurs: Stop, remove the screw, re-drill with the long drill, and re-insert the screw. Confirm the placement and length of the screw under fluoroscopy, ensuring that both the leading and the trailing threads of the screw are within the bone. Lastly, remove the guide wires.

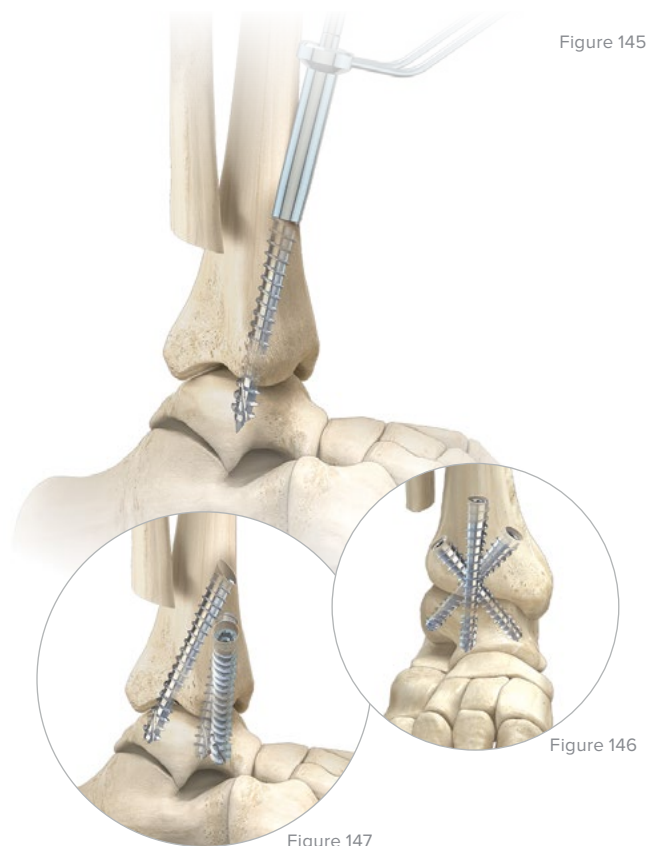


Figure 145

Figure 146

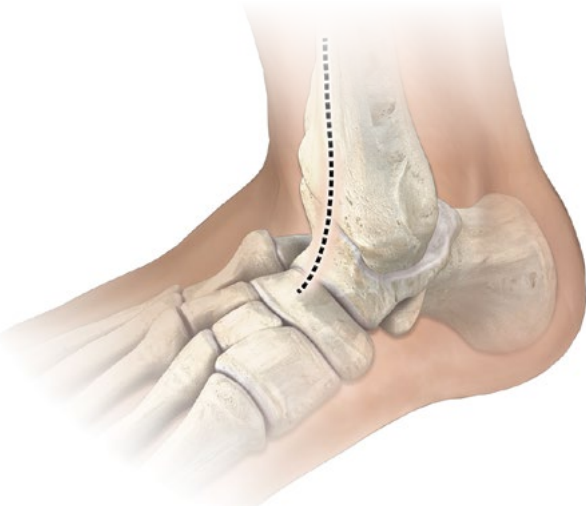
Figure 147

Ankle Fusion

Surgical Technique: Acutrak 2®—7.5 [continued]

Anterior Approach

Figure 148



1 Approach

An incision is made on the anterior aspect of the ankle, just lateral to the tibialis anterior tendon, and medial to the extensor hallucis tendon and neurovascular bundle. The posterior sheath of the extensor hallucis longus (EHL) is incised, along with the anterior ankle capsule. Subperiosteal dissection is carried out medially and laterally.

Figure 149



2 Preparation and Guide Wire Insertion

The distal tibia and dorsal talus are decorticated down to cancellous bone, leaving the convexity of the talus and concavity of the distal tibia intact. A guide wire is used to make vascular ingrowth channels in the distal tibia and dorsal talus. Any angular deformities present are corrected via bone removal. Cancellous bone, either autograft or allograft, is packed into the tibiotalar joint. Guide wires from the large Acutrak 2 Screw System are placed across the tibiotalar joint. Either 2 or 3 wires are used, one from anterolateral tibia to posterior medial talus, one from the posterior medial tibia to the anterolateral talus, and a homerun screw from the posterior tibia down the talar neck.

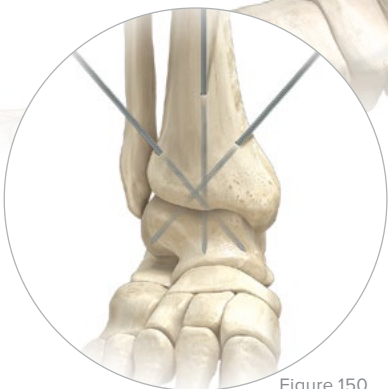


Figure 150

Ankle Fusion

Surgical Technique: Acutrak 2®—7.5 [continued]

Anterior Approach

3 Determine Screw Length

Measure the guide wire length either by using the percutaneous screw sizer or by placing a second wire at the entry point and subtracting the difference in length. The screw sizer cannot be used with the arthroscopic technique due to the limited access. Subtract 4 mm from the measured length to ensure that both ends of the screw are buried within the bone.

4 Advance Guide Wire

Advance the guide wire through the far cortex with the long drill, so that it lies in the subcutaneous tissues. This decreases the risk of accidental withdrawal of the guide wire while drilling and facilitates wire removal if it breaks.

5 Drill Far Fragment

Next, drill into the far fragment with the long drill. Typically the drill must only advance 4–5 mm past the fracture site to be effective.

Warning: Make sure not to violate the subtalar joint.

Caution: The long drill is recommended to mitigate the effects of varying bone density and distraction upon screw insertion.

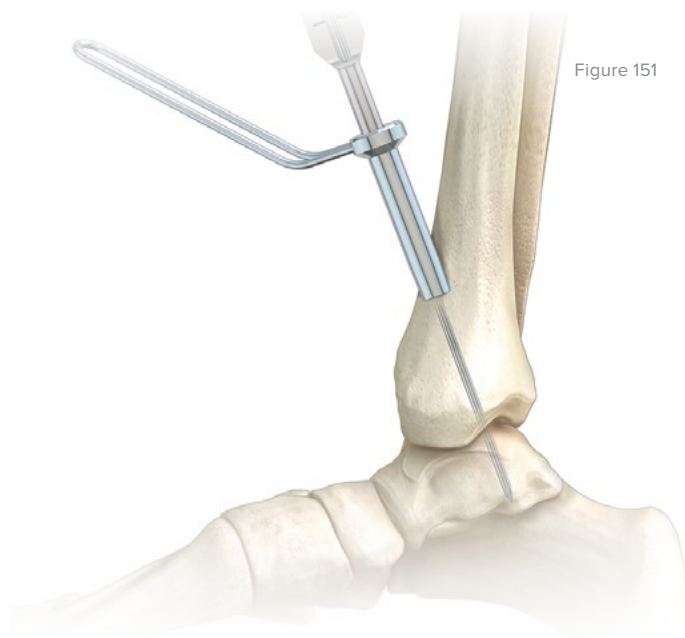


Figure 151

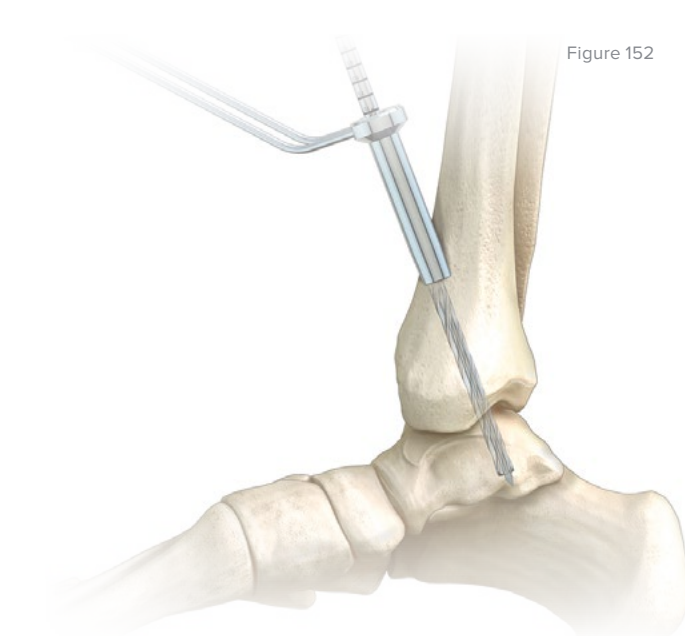
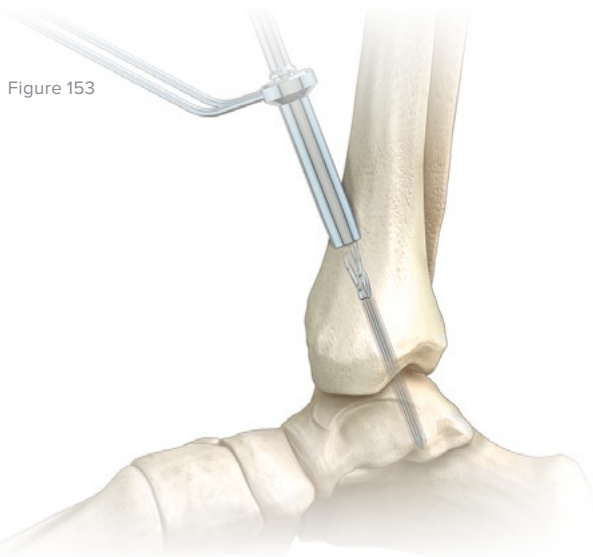


Figure 152

Ankle Fusion

Surgical Technique: Acutrak 2®—7.5 [continued]

Anterior Approach



6 Drill the Near Cortex

Open the near cortex with the appropriate profile drill.

Figure 154



Figure 155

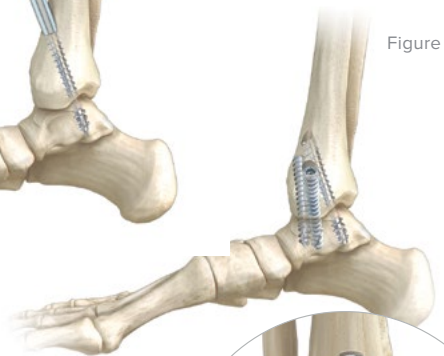


Figure 156



Figure 157

7 Screw Insertion

Insert the correct size screw with the appropriate hex driver. If resistance is met upon insertion or if distraction occurs: Stop, remove the screw, re-drill with the long drill, and re-insert the screw. Confirm the placement and length of the screw under fluoroscopy, ensuring that both the leading and the trailing threads of the screw are within the bone. Lastly, remove the guide wires.

Fibula Fracture (Weber A and B Fractures)

Surgical Technique: Acutrak 2®—5.5

1 Site Preparation

Prepare the fracture, fusion, or osteotomy site using the surgeon's preferred technique. Remove any fibrous or interposed tissue, and bone graft as needed. For an open approach, use either a straight longitudinal or J-shaped incision. For a percutaneous approach, make a stab incision at the screw entry site. Bluntly dissect down to the tip of the fibula.



Figure 158

2 Guide Wire Insertion

Insert a .062" guide wire to the appropriate depth. The recommended entry point is 2 mm medial to the fibular tip. Direct the guide wire parallel to the medullary canal. Check placement of the wire under fluoroscopy. To prevent rotation of the fragment, use the same procedure to insert a second guide wire parallel to the first wire. Take care to avoid the posterior tibial tendon just posterior to the malleolus.

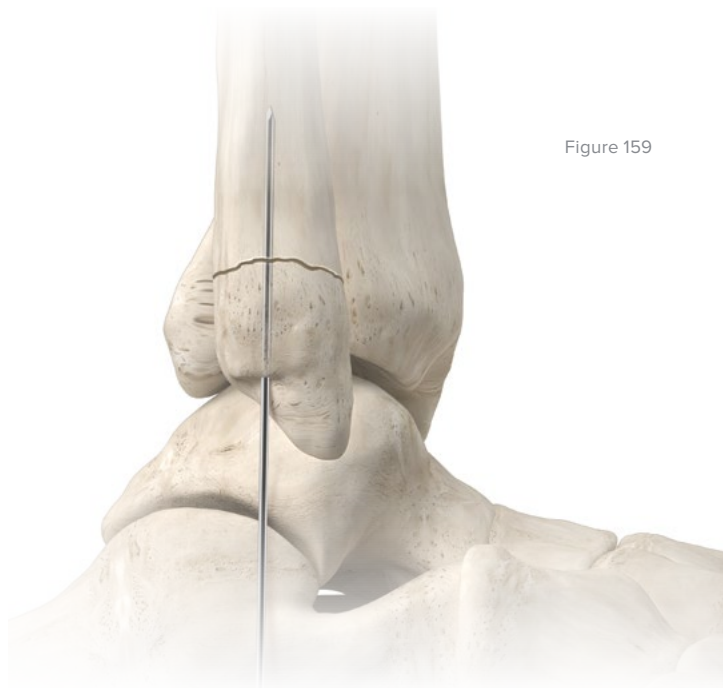
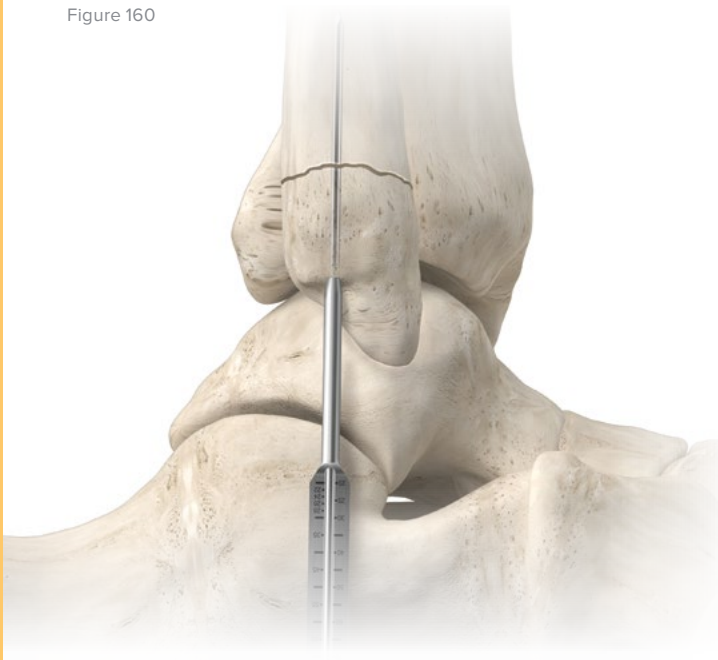


Figure 159

Fibula Fracture (Weber A and B Fractures) Surgical Technique: Acutrak 2®—5.5 [continued]

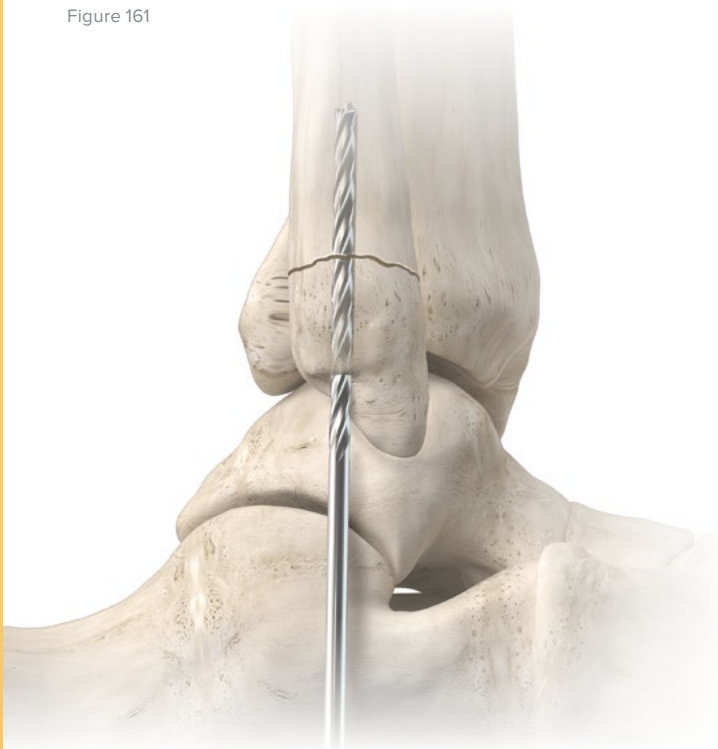
Figure 160



3 Determine Screw Length

Measure the guide wire with a Large Acutrak 2® Screw Sizer. This ensures contact with cortical bone. Or, place a second wire at the entry point and subtract the difference. This measurement indicates the appropriate screw length that will place the screw at the tip of the guide wire. Subtract appropriately for any anticipated fragment reduction resulting from screw insertion.

Figure 161



4 Drill Far Fragment

Drill into the far fragment with the long drill for each implant. Typically, the drill must only advance 4–5 mm past the fracture site to be effective.

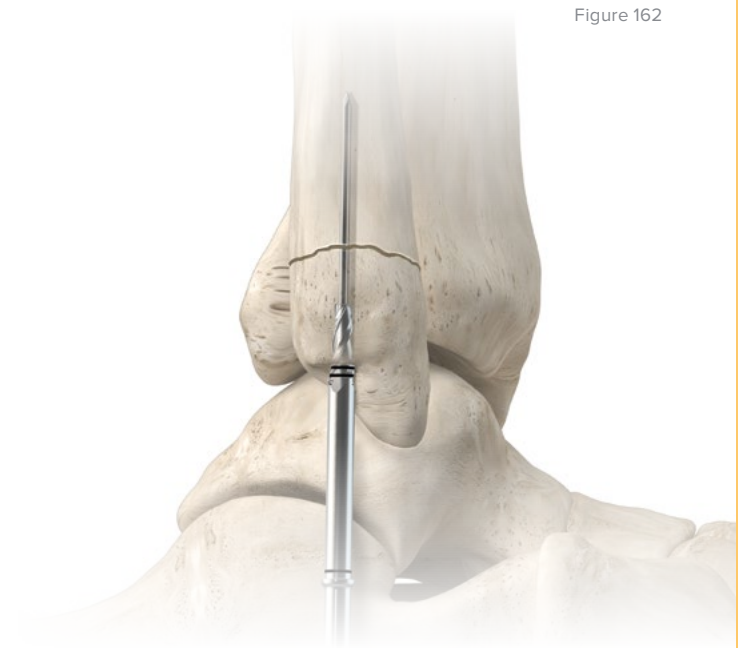
Caution: The long drill is recommended to mitigate the effects of varying bone density and distraction upon screw insertion.

Fibula Fracture (Weber A and B Fractures) Surgical Technique: Acutrak 2®—5.5 [continued]

5 Drill the Near Cortex

The near cortex is opened using the appropriate size of profile drill to accommodate each implant.

Figure 162



6 Screw Insertion

Insert the correct size of screw with the appropriate hex driver. If resistance is met upon insertion or if distraction occurs: Stop, remove the screw, re-drill with the long drill, and re-insert the screw. Confirm the placement and length of the screw under fluoroscopy, ensuring that both the leading and the trailing threads of the screw are within the bone. Lastly, remove the guide wires.

Figure 163

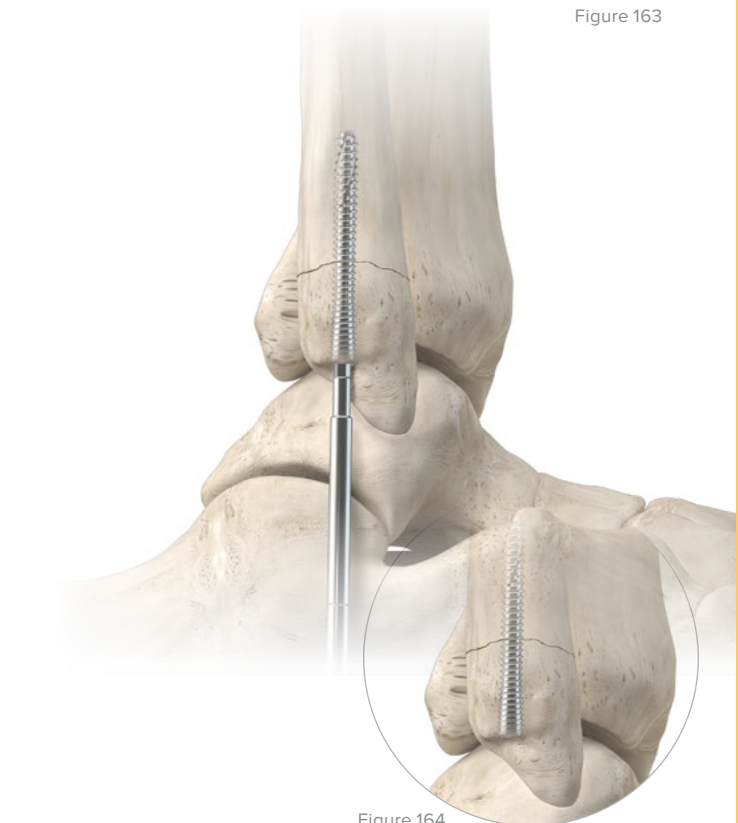
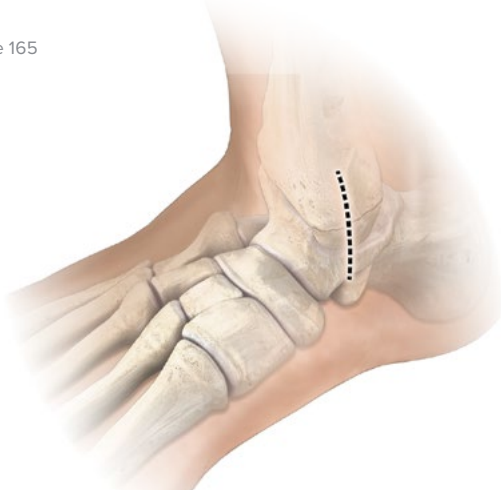


Figure 164

Medial Malleolus

Surgical Technique: Acutrak 2®—4.7

Figure 165

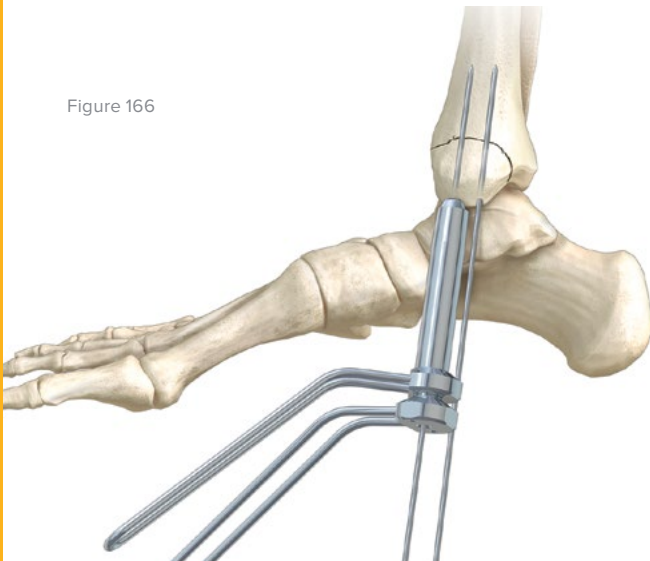


1 Site Preparation

For an open approach, use either a straight longitudinal or J-shaped incision. Prepare the fracture, fusion, or osteotomy site using the surgeon's preferred technique. Remove any fibrous or interposed tissue, and bone graft as needed.

For a percutaneous approach, make a stab incision at the screw entry site then bluntly dissect down to the tip of the malleolus.

Figure 166



2 Guide Wire Insertion

Insert the .062" guide wire to the appropriate depth. Check placement of the wire under fluoroscopy. To prevent rotation of the fragment, insert a second guide wire parallel to the first wire, following the same procedure. Take care to avoid the posterior tibial tendon just posterior to the malleolus.

Figure 167



3 Determine Screw Length

Each guide wire is measured using the Large Acutrak 2 Screw Sizer, ensuring contact with cortical bone, or by placing a second wire at the entry point and subtracting the difference. This measurement indicates the appropriate screw length to place the screw at the tip of the guide wire. Subtract appropriately for any anticipated fragment reduction resulting from screw insertion.

Medial Malleolus

Surgical Technique: Acutrak 2®—4.7 [continued]

4 Drill Far Fragment

Next, drill into the far fragment with the long drill for each implant. Typically the drill must only advance 4–5 mm past the fracture site to be effective.

Caution: The long drill is recommended to mitigate the effects of varying bone density and distraction upon screw insertion.



Figure 168

5 Drill the Near Cortex

The near cortex is opened using the appropriate size profile drill to accommodate each implant.

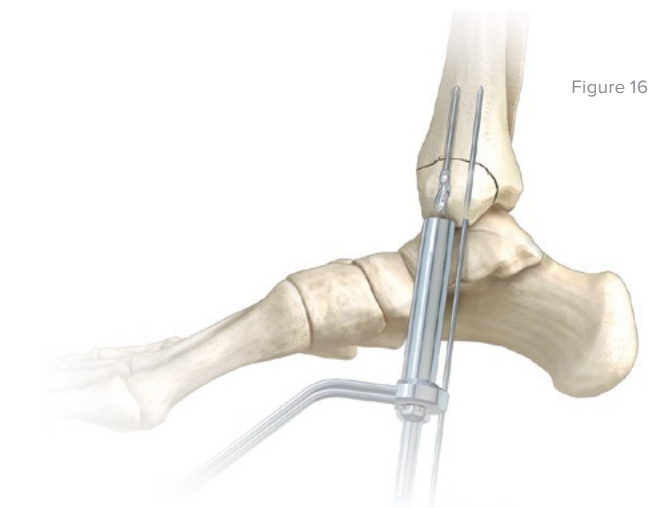


Figure 169

6 Screw Insertion

Insert the correct size screw with the appropriate hex driver. If resistance is met upon insertion or if distraction occurs: Stop, remove the screw, re-drill with the long drill, and re-insert the screw. Confirm placement and length of the screw under fluoroscopy, ensuring that both the leading and the trailing edges of the screw are beneath the articular surfaces. Repeat steps for the additional screw. Lastly, remove the guide wires.

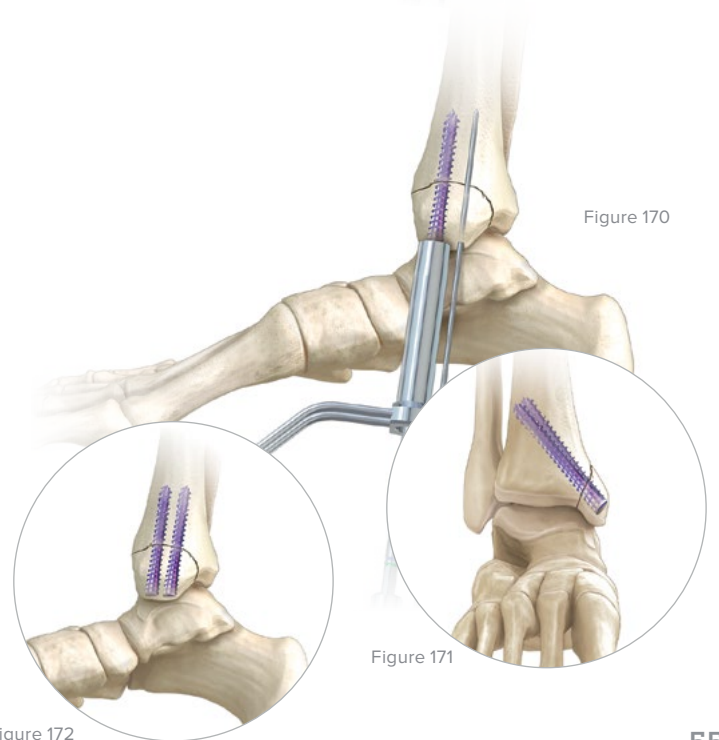


Figure 170

Figure 171

Figure 172

Ordering Information

Acutrak 2® Micro Implants

Implants

8 mm Micro Acutrak 2	AT2-C08
9 mm Micro Acutrak 2	AT2-C09
10 mm Micro Acutrak 2	AT2-C10
11 mm Micro Acutrak 2	AT2-C11
12 mm Micro Acutrak 2	AT2-C12
13 mm Micro Acutrak 2	AT2-C13
14 mm Micro Acutrak 2	AT2-C14
16 mm Micro Acutrak 2	AT2-C16
18 mm Micro Acutrak 2	AT2-C18
20 mm Micro Acutrak 2	AT2-C20
22 mm Micro Acutrak 2	AT2-C22
24 mm Micro Acutrak 2	AT2-C24
26 mm Micro Acutrak 2	AT2-C26
28 mm Micro Acutrak 2	AT2-C28
30 mm Micro Acutrak 2	AT2-C30

Instrumentation

.035" Diameter, Parallel Wire Guide Assembly	AT2-3500
0.035" x 6" Guide Wire	WS-0906ST
Micro Acutrak 2 Drill	AT2-1509
Micro Acutrak 2 Drill, Long	80-0100
1.5 mm Cannulated Quick Release Driver Tip	HT-0915
Micro Acutrak 2 Extended Long Drill	80-1522
Micro Acutrak 2 Screw Sizer	80-1523
.035 x 6" Single Trocar Guide Wire	80-1524
.035 x 6" in Double Trocar Guide Wire	80-1525

Tray

Micro Acutrak 2 Extension Caddy	80-1526
Micro Acutrak 2 Extension Platter	80-1527
Micro Acutrak 2 Extension Platter Lid	80-1534

Acutrak 2® X-ray Template

Acutrak 2 Micro X-ray Template	ACT70-02
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Ordering Information [continued]

Acutrak 2® Mini

Implants

16 mm Mini Acutrak 2	AT2-M16
18 mm Mini Acutrak 2	AT2-M18
20 mm Mini Acutrak 2	AT2-M20
22 mm Mini Acutrak 2	AT2-M22
24 mm Mini Acutrak 2	AT2-M24
26 mm Mini Acutrak 2	AT2-M26
28 mm Mini Acutrak 2	AT2-M28
30 mm Mini Acutrak 2	AT2-M30

Instrumentation

.045" Diameter Parallel Wire Guide Assembly	AT2-4500
.045" x 6" Guide Wire	WS-1106ST
Mini Acutrak 2 Drill	AT2M-1813
Mini Acutrak 2 Drill, Long	AT2M-L1813
2 mm Cannulated Hex Driver	HT-1120

X-ray Template

Acutrak 2 Mini X-ray Template	ACT70-03
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Acutrak 2® Standard

Implants

16 mm Standard Acutrak 2	AT2-S16
18 mm Standard Acutrak 2	AT2-S18
20 mm Standard Acutrak 2	AT2-S20
22 mm Standard Acutrak 2	AT2-S22
24 mm Standard Acutrak 2	AT2-S24
26 mm Standard Acutrak 2	AT2-S26
28 mm Standard Acutrak 2	AT2-S28
30 mm Standard Acutrak 2	AT2-S30
32 mm Standard Acutrak 2	AT2-S32
34 mm Standard Acutrak 2	AT2-S34

Instrumentation

.054" Diameter, Parallel Wire Guide Assembly	AT2-5400
.054" x 7" Guide Wire	WS-1407ST
Standard Acutrak 2 Drill	AT2-2515
Standard Acutrak 2 Drill, Long	AT2-L2515
2.5 mm Cannulated Quick Release Driver Tip	HT-1725

X-ray Template

Acutrak 2 STD X-ray Template	ACT70-01
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Additional Instrumentation

Micro, Mini, and Standard Instrumentation

Acutrak Short Arthroscopic Cannula Assembly	80-0519	Acutrak 2 Perc. Screw Sizer (Standard, Mini, Micro)	AT2-SMCZ
Acutrak 2—Arthroscopic Probe	AT2-0402	Acutrak Plunger Assembly	AT-7060

Ordering Information [continued]

Acutrak 2®—4.7

Implants

20 mm Acutrak 2—4.7 Screw	30-0620	40 mm Acutrak 2—4.7 Screw	30-0640
22 mm Acutrak 2—4.7 Screw	30-0622	45 mm Acutrak 2—4.7 Screw	30-0645
24 mm Acutrak 2—4.7 Screw	30-0624	50 mm Acutrak 2—4.7 Screw	30-0650
26 mm Acutrak 2—4.7 Screw	30-0626		
28 mm Acutrak 2—4.7 Screw	30-0628		
30 mm Acutrak 2—4.7 Screw	30-0630		
35 mm Acutrak 2—4.7 Screw	30-0635		

Instrumentation

Acutrak 2—4.7 Profile Drill	80-0945
Acutrak 2—4.7 Long Drill	80-0946

Acutrak 2®—5.5

Implants

25 mm Acutrak 2—5.5 Screw	30-0021	55 mm Acutrak 2—5.5 Screw	30-0084
30 mm Acutrak 2—5.5 Screw	30-0023	60 mm Acutrak 2—5.5 Screw	30-0085
35 mm Acutrak 2—5.5 Screw	30-0025		
40 mm Acutrak 2—5.5 Screw	30-0027		
45 mm Acutrak 2—5.5 Screw	30-0029		
50 mm Acutrak 2—5.5 Screw	30-0031		

Instrumentation

Acutrak 2 - 5.5 Profile Drill Large AT2	80-0955
Acutrak 2 - 5.5 Long Drill Large AT2	80-0956

Additional Instrumentation

4.7 and 5.5 Instrumentation

1.6 mm Guide Wire Probe	80-0992	3.0 mm Cannulated QR Hex Driver Tip AT2	80-0958
1.6 mm (.062") x 9.25" Guide Wire	80-0950	3.0 mm Solid QR Hex Driver Tip AT2	80-0959

Ordering Information [continued]

Acutrak 2®—7.5

Implants

40 mm Acutrak 2—7.5 Screw	30-0740	85 mm Acutrak 2—7.5 Screw	30-0785
45 mm Acutrak 2—7.5 Screw	30-0745	90 mm Acutrak 2—7.5 Screw	30-0790
50 mm Acutrak 2—7.5 Screw	30-0750	95 mm Acutrak 2—7.5 Screw	30-0795
55 mm Acutrak 2—7.5 Screw	30-0755	100 mm Acutrak 2—7.5 Screw	30-0800
60 mm Acutrak 2—7.5 Screw	30-0760	105 mm Acutrak 2—7.5 Screw	30-0805
65 mm Acutrak 2—7.5 Screw	30-0765	110 mm Acutrak 2—7.5 Screw	30-0810
70 mm Acutrak 2—7.5 Screw	30-0770	115 mm Acutrak 2—7.5 Screw	30-0815
75 mm Acutrak 2—7.5 Screw	30-0775	120 mm Acutrak 2—7.5 Screw	30-0820
80 mm Acutrak 2—7.5 Screw	30-0780		

Instrumentation

2.4 mm Guide Wire Probe	80-0994	Acutrak 2—7.5 Long Drill	80-0976
2.4 mm (.094") x 9.25" Guide Wire	80-0970	4.0 mm Cannulated QR Hex Driver Tip AT2	80-0978
2.4 mm (.094") x 9.25" Guide Wire, Threaded	80-0971	4.0 mm Solid QR Hex Driver Tip AT2	80-0979
Acutrak 2—7.5 Profile Drill	80-0975		

Additional Instrumentation

4.7, 5.5 and 7.5 Instrumentation

Large Acutrak 2 Drills and Driver Platter	80-0870	Large Acutrak 2 4.7 and 5.5 Screw Platter	80-0876
Large Acutrak 2 Common Instrument Platter	80-0871	Large Acutrak 2 7.5 Screw Platter	80-0877
Small Ratchet Handle with QR Connection	80-0398	Large Acutrak 2 4.7 Screw Caddy	80-0878
Forceps	AT-7005	Large Acutrak 2 5.5 Screw Caddy	80-0880
Ratchet T-Handle with A/O Connection	80-0999	Large Acutrak 2 7.5 Screw Caddy	80-0882
Sharp Hook	PL-CL06	Large Acutrak 2 Screw 2 x 2 Base	80-0884
3.0 mm Easyout, Quick Release	80-0601	Large Acutrak 2 Screw Lid	80-0885
4.0 mm Easyout, Quick Release	80-0603		

Note: All screws are also available sterile-packed. Add an -S to end of product number for sterile product.

Additional Sterile Instrumentation

Large Acutrak 2 Screw System Lid	80-0869
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Acumed Headquarters
5885 NW Cornelius Pass Road
Hillsboro, OR 97124
Office: +1.888.627.9957
Office: +1.503.627.9957
Fax: +1.503.520.9618
www.acumed.net

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