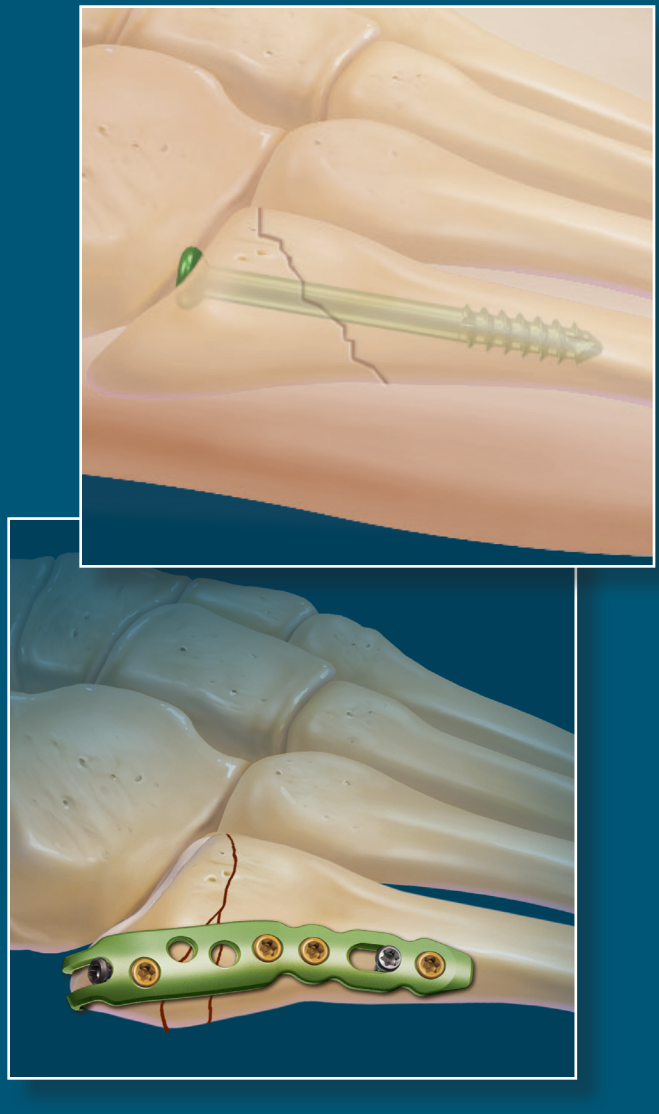
Arthrex®

5th Metatarsal Fracture System

Surgical Technique



5th Metatarsal Fracture System

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The 5th Metatarsal Fracture System (AR-8956S) is a uniquely designed screw and plate system that provides surgeons a variety of options to efficiently and effectively treat both simple and complex 5th metatarsal fractures.

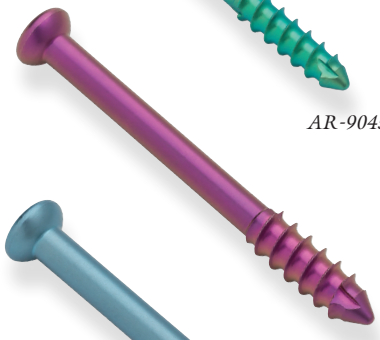
Jones Screw Features:

- Solid-core titanium screw with high fatigue strength to resist micromotion force
- 4.5 mm, 5.5 mm, and 6 mm diameter screws
- Range of sizes, 40 mm to 65 mm in length specific to the 5th metatarsal
- Smal, low-profile head for less soft-tissue irritation
- Cannulated instruments designed specifically for 5th metatarsal fractures

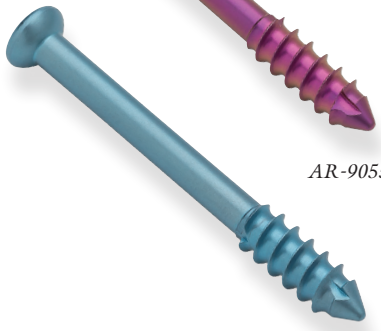
5th Metatarsal Hook Plates Features:

- Universal low-profile plates designed with a dynamic compression slot
- Long left and right 7-hole hook plates designed specifically for the 5th metatarsal
- 2.4 mm nonlocking/locking/variable-angle locking screws
- Instruments designed specifically for 5th metatarsal fractures

AR-9045



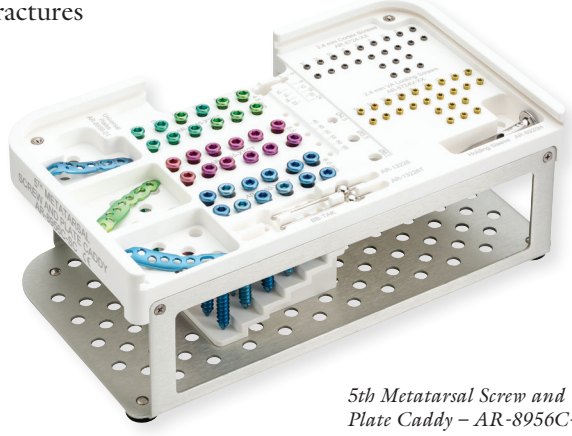
AR-9055



AR-9060

Actual Size

5th Metatarsal Hook Plate – AR-8956-01

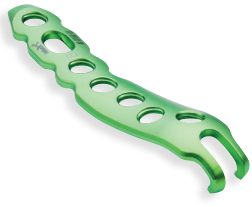


5th Metatarsal Screw and Plate Caddy – AR-8956C-SC

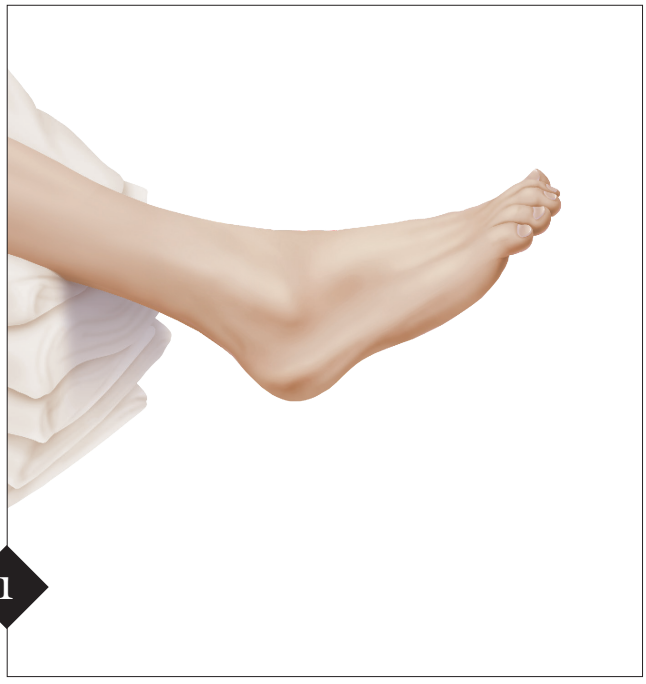
Actual Size

Long Left 5th Metatarsal Hook Plate – AR-8956L-02

Actual Size



Long Right 5th Metatarsal Hook Plate – AR-8956R-03



1

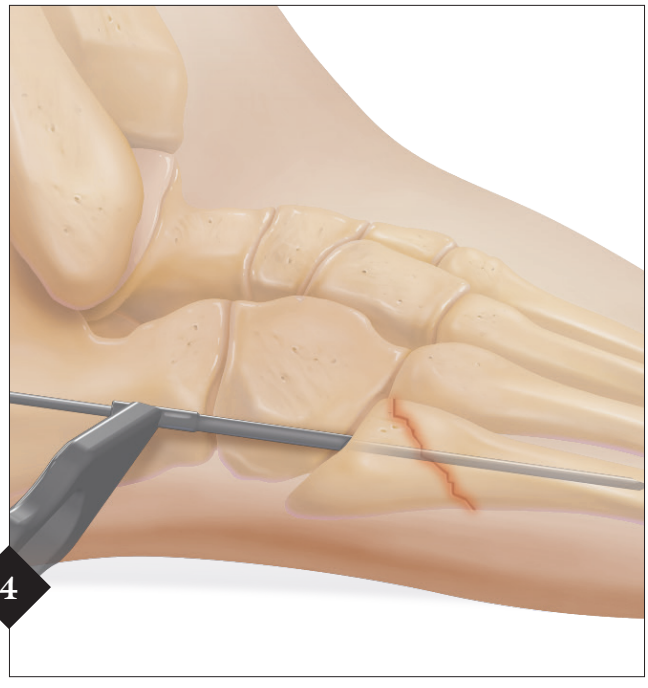
Place the patient's foot off the end of the OR table so the C-arm can be easily maneuvered/manipulated around the foot for intraoperative fluoroscopy. Alternatively, place the patient in the lateral decubitus position with fluoroscopy in front of or behind the OR table.

2

Place a K-wire on the lateral aspect of the foot and use fluoroscopy to position the pin overlapping and parallel to the metatarsal shaft.

3

Make a percutaneous incision approximately 2 cm proximal to the base of the 5th metatarsal, dorsal to the peroneus brevis tendon to facilitate avoidance of branches of the sural nerve.[1] Using blunt deep dissection, palpate the base of the 5th metatarsal. Use the 2 mm drill guide to insert the K-wire "high and inside" on the base of the 5th metatarsal. The K-wire will be opposed to the lateral aspect of the cuboid. The wire is typically angulated plantarly at a 5° to 7° angle relative to the sole of the foot.[2]



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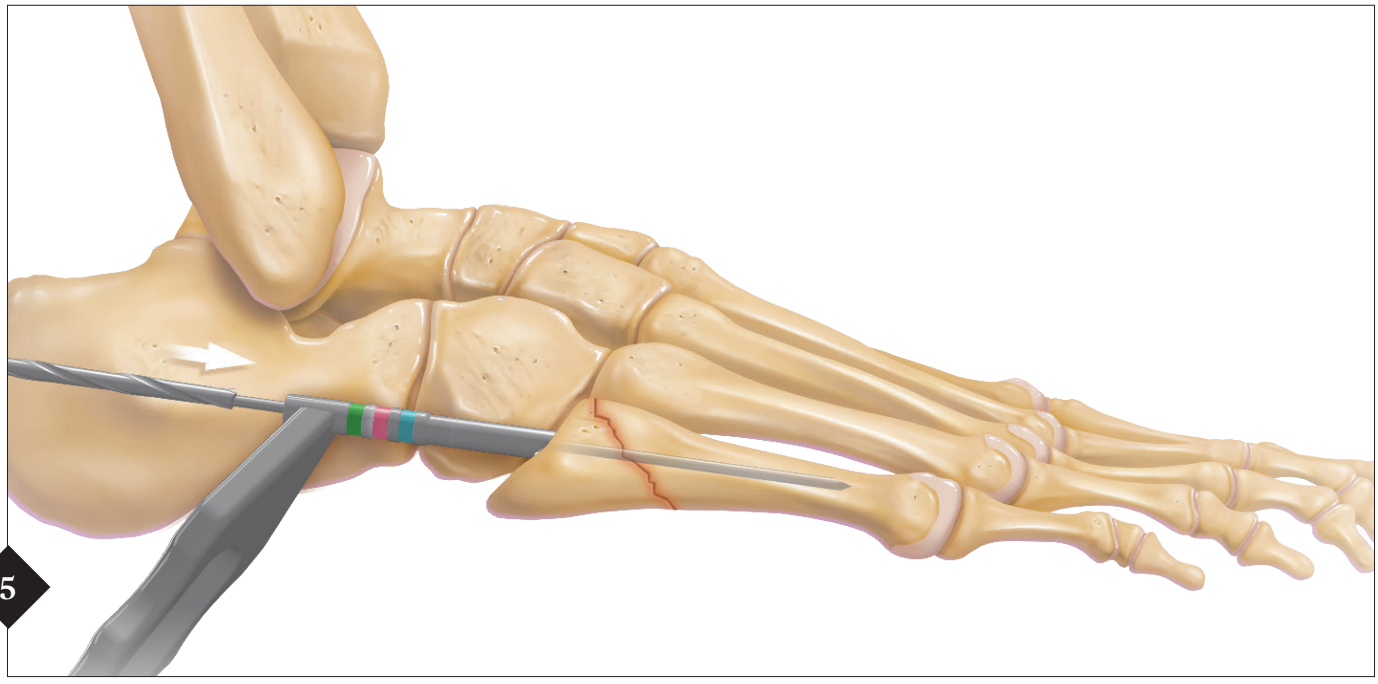
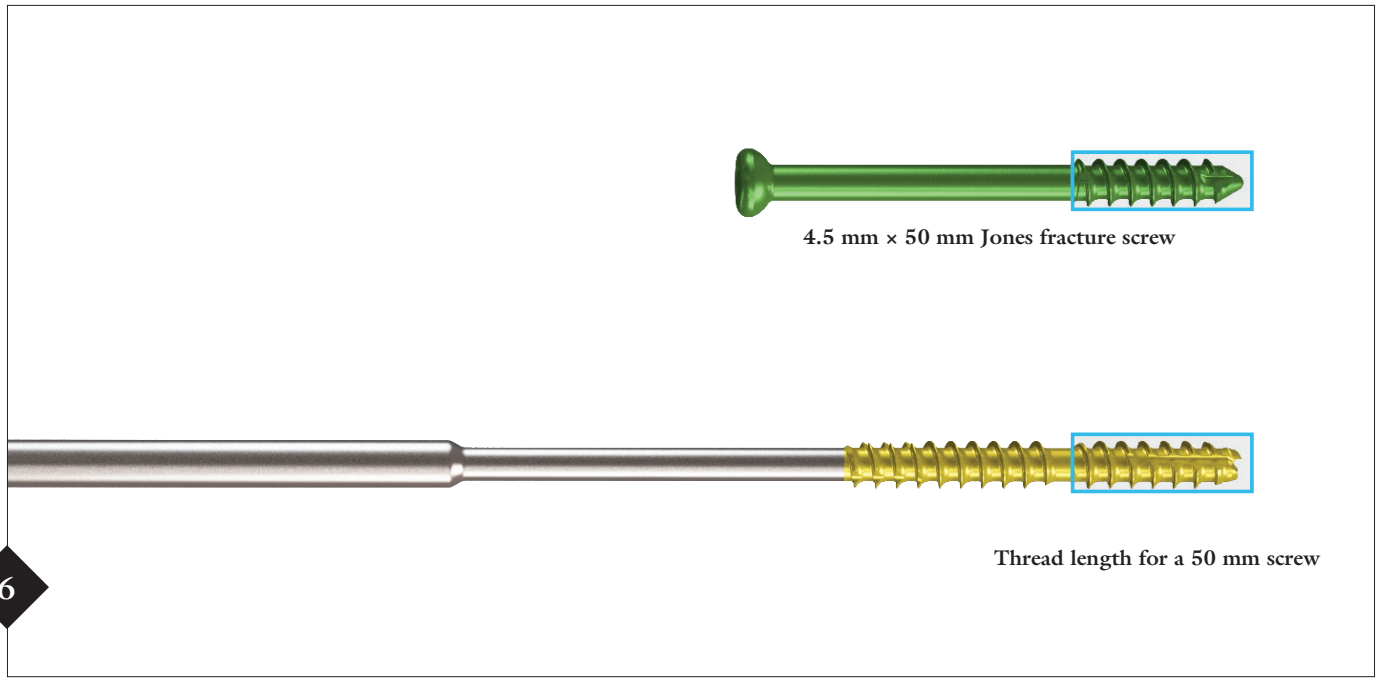
Use fluoroscopy to direct the tip of the K-wire into the center of the intramedullary canal (continuously checking AP, lateral, and oblique views). Advance the K-wire just past the fracture line or half the length of the shaft.



5

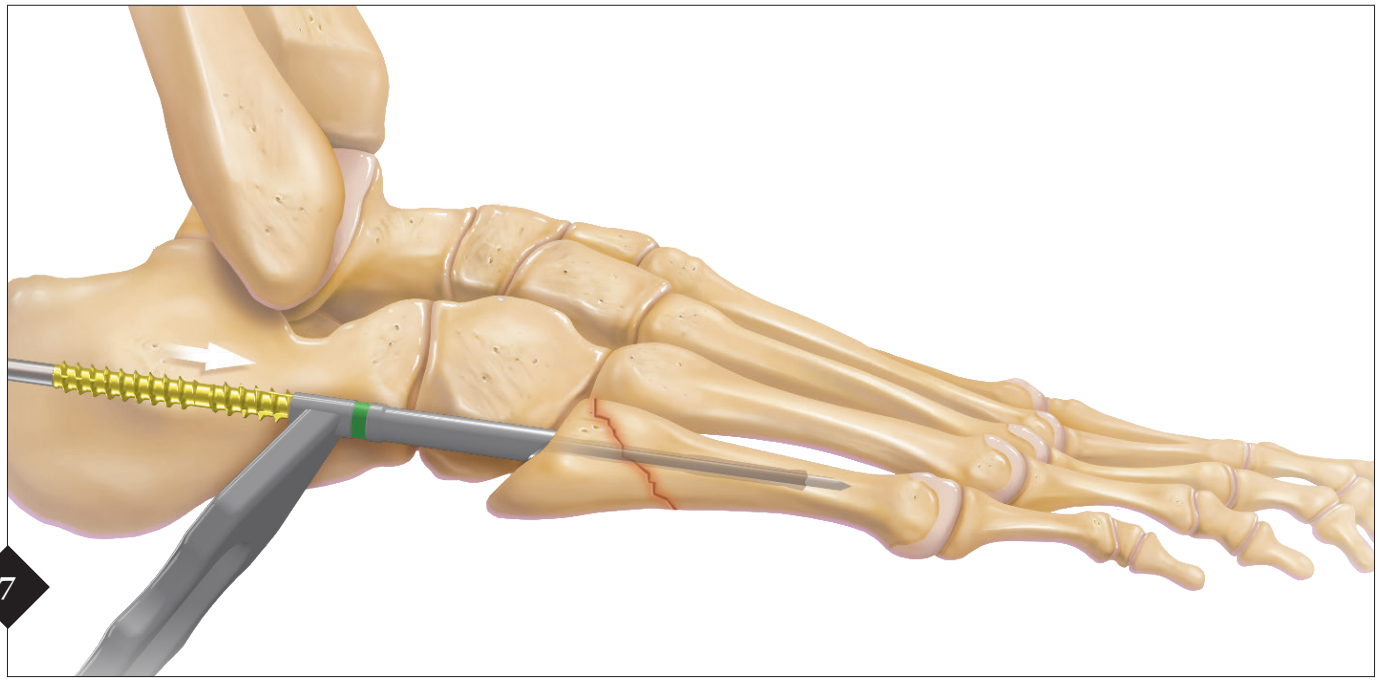
Option One: Using the 3.5 mm drill guide, advance the 3.5 mm cannulated drill past the fracture site under fluoroscopic guidance. Avoid penetration of the distal 5th metatarsal cortex. Drill depth can be read from the drill and the back of the drill guide.

Option Two: Using the 3.5 mm drill guide, advance the solid 3.5 mm drill past the fracture site checking fluoroscopic guidance. Avoid penetration of the distal 5th metatarsal cortex.



6

The Jones fracture depth-measuring taps with thread cutouts indicate when a 50 mm screw (most common length) would have the screw threads past the fracture. Some surgeons superimpose the screw using fluoroscopy (from outside the skin) to ensure all the threads will be past the fracture. This tap provides proper length and keeps all threads beyond the fracture in one step.



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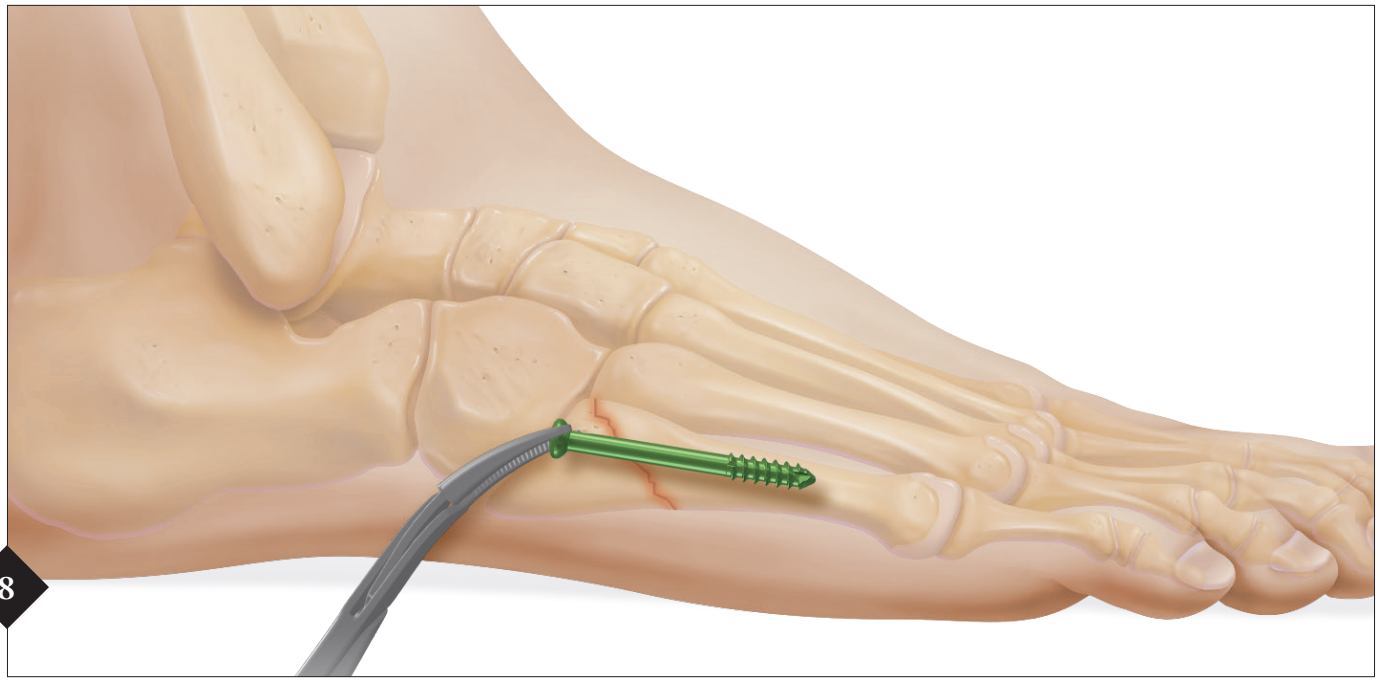
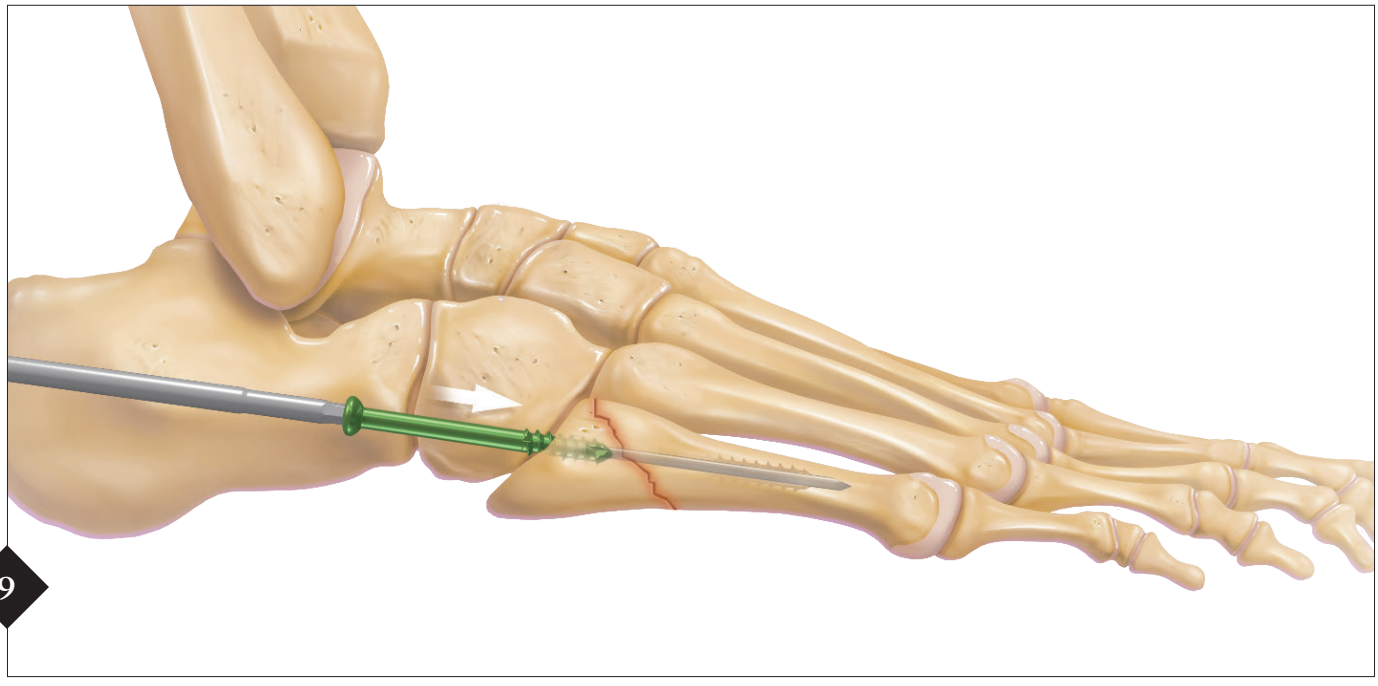
After the correct tap is in the desired position, measure screw length from the laser markings on the tap. Check with fluoroscopy to make sure the angled tip of the drill guide is securely against the proximal 5th metatarsal bone. The K-wire can also be used to measure screw length. Use the depth-measuring device over the K-wire to determine screw length.



8

Alternatively, a screw may be placed on the lateral aspect of the foot and checked under fluoroscopy to confirm that the threads are distal to the fracture.



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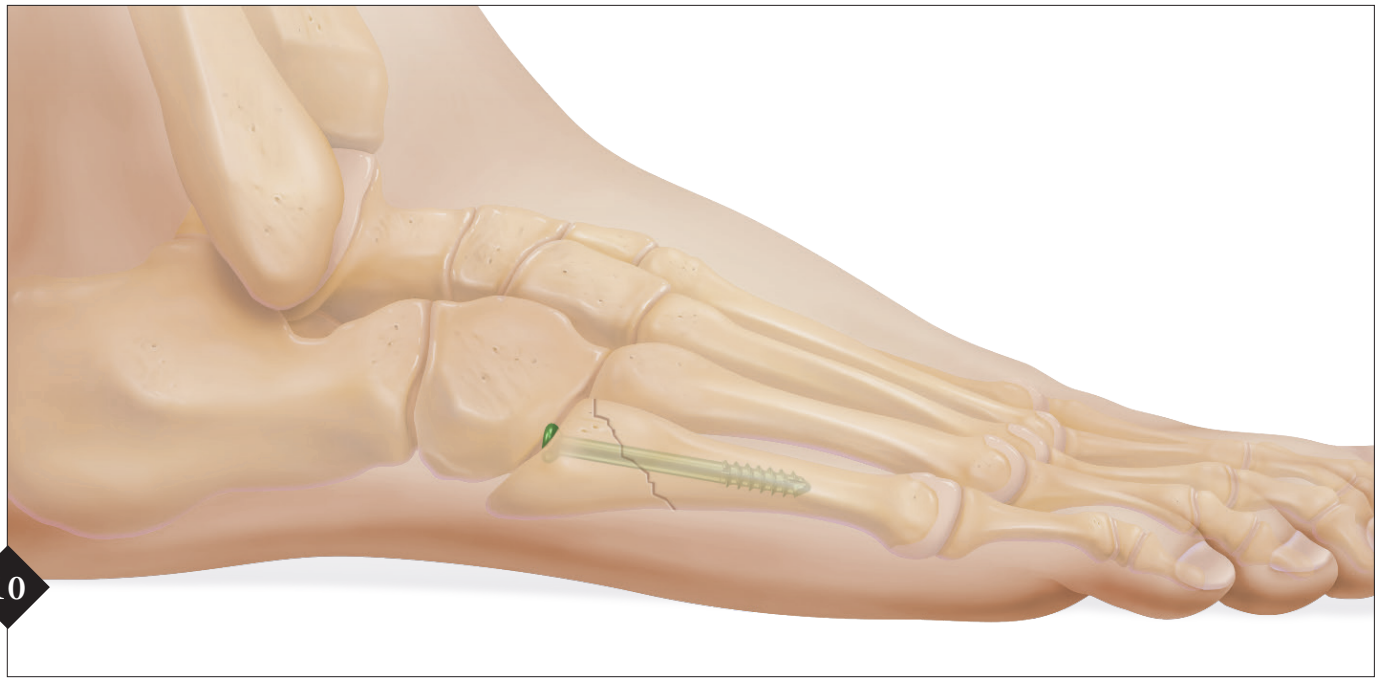
Using the driver, insert the appropriate screw until fully engaged. Check under fluoroscopy for final screw placement. The screw can also be placed through the guide.



10

Final fixation.

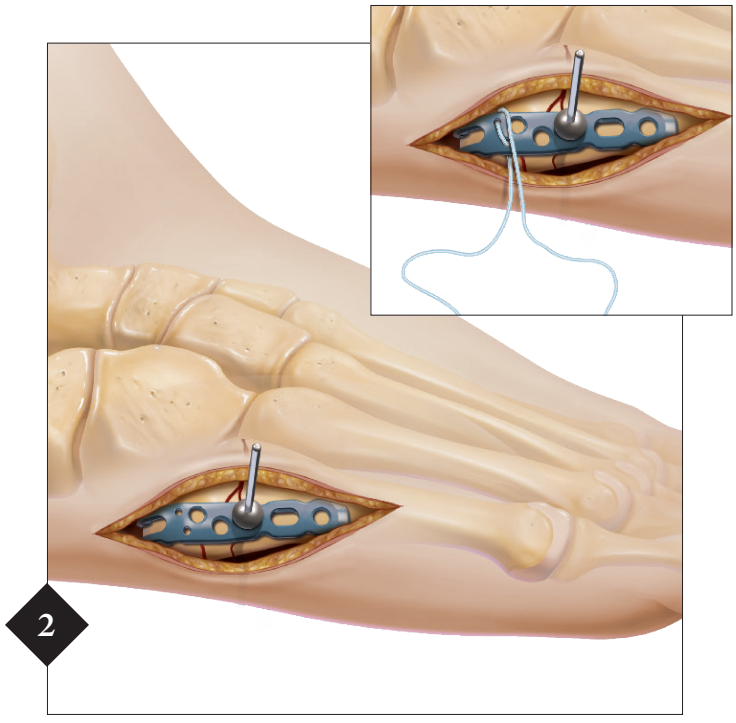
Note: optional 4.0 mm solid and cannulated drill bits available.

References

1. Fansa AM, Smyth NA, Murawski CD, Kennedy JG. The lateral dorsal cutaneous branch of the sural nerve: clinical importance of the surgical approach to proximal fifth metatarsal fracture fixation. *Am J Sports Med*. 2012:40(8):1895–1898. doi:10.1177/0363546512448320.

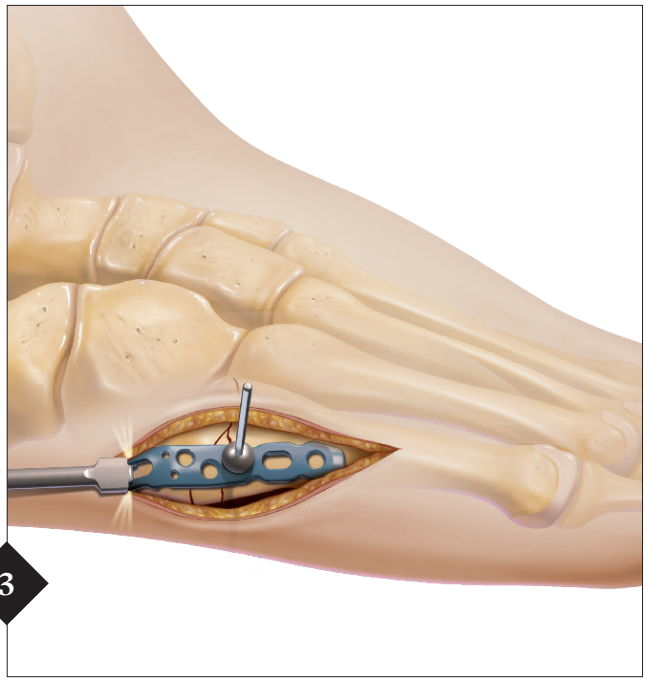
2. Johnson JT, Labib SA, Fowler R. Intramedullary screw fixation of the fifth metatarsal: an anatomic study and improved technique. *Foot Ankle Int*. 2004:25(4):274–277.

Expose the tuberosity of the 5th metatarsal. Manually reduce the fracture and stabilize the fracture with K-wires or bone reduction forceps.



Place the 5th metatarsal hook plate on the tuberosity. Insert a BB-Tak pin for provisional fixation. If not using the oblong hole of the plate, stay in the distal portion of the selected hole to allow the plate to migrate distal with tamp advancement.

Optional: The universal hook plate contains 2 suture eyelets that allow FiberWire® suture to be passed after the plate is fixed to bone.



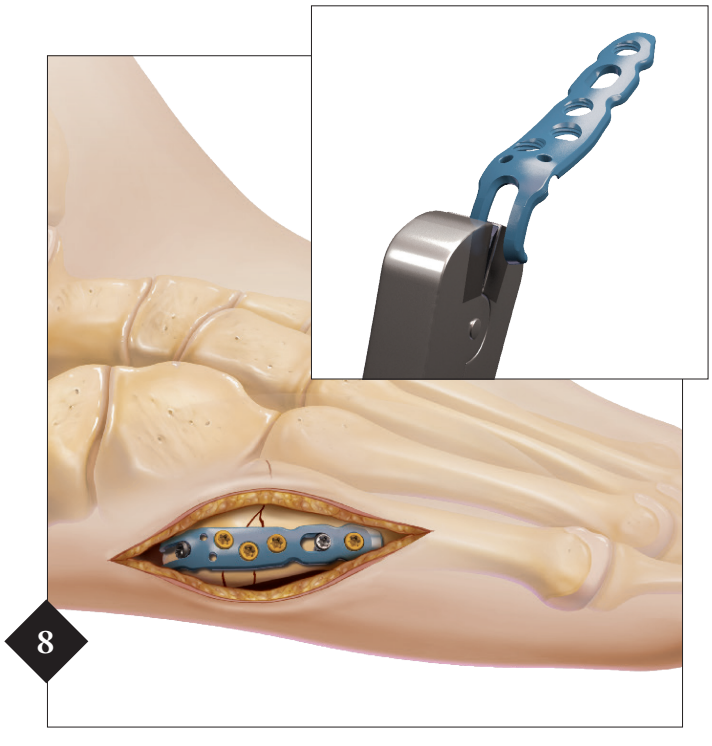
Use the tamp to engage the hooks of the 5th metatarsal hook plate into the tuberosity of the 5th metatarsal.

Use the 1.7 mm drill bit with the 1.7 mm/2.4 mm drill guide. Drill eccentrically in the dynamic compression unit (DCU) or oblong hole in the shaft of the plate. Measure screw length with the depth device. Place a 2.4 mm nonlocking screw.

Using the 1.7 mm drill bit and drill guide, drill between the hooks in a lateral-to-medial fashion towards the base of the 4th metatarsal (avoid entering the tarsometatarsal joint). Measure and insert the appropriate 2.4 mm nonlocking screw.

Locking Screw: Insert the locking drill guide. Use the 1.7 mm drill bit. Measure the screw length off the laser line on the drill bit or use the depth device. Insert the 2.4 mm locking screw.

Variable-angle locking screws can be inserted by using the drill guide, which allows for 10° in each direction.



Check under fluoroscopy for final placement.

Optional: The hooks may be removed by using the plate cutter (AR-8956-10) one hook at a time.

Ordering Information

5th Metatarsal Fracture System (AR-8956S)

Instrumentation

Drill Bit, 1.7 mm, short, qty. 2	AR-1201.7D
Drill Bit, 1.7 mm, long, qty. 2	AR-8916-14
Drill Pin Tip, 3.5 mm, qty. 2	AR-8956C-35PD
Drill Pin Tip, 4.0 mm, qty. 2	AR-8956-40PD
Drill Guide, VAL, 2.4 mm	AR-8724GV
Drill Guide, 1.7/2.4 mm	AR-8916-05
Drill Guide, 2.0 mm	AR-8956G-20
Drill Guide, 3.5 mm	AR-8956G-35
Drill Guide, 4.5 mm	AR-8956G-45
Drill Guide, 5.5 mm	AR-8956G-55
Drill Guide, 6.0 mm	AR-8956G-60
Drill/Depth Guide, locking, 2.4 mm, qty. 2	AR-8950-04
Depth Guide, mini	AR-13120G-2
Depth Device, cannulated, for Jones screws	AR-8956-12
Holding Sleeve for 2.0 and 2.5 mm screws	AR-8920H
Bone Reduction Forceps, curved, pointed	AR-8943-07
Plate Cutter	AR-8956-10
Tamp	AR-8956-08
Hex Driver, 3.5 mm, qty. 2	AR-8955D
Hudson Adapter	AR-1416
Screw Driver Handle, QC, ratcheting, cannulated	AR-8950RH
Screw Driver Handle, ratcheting, AO handle, mini, cannulated	AR-1999
Driver, T8 hexalobe, self-retaining	AR-8916-27
Bone Tap, cannulated, 4.5 mm	AR-8956C-45T
Bone Tap, cannulated, 5.5 mm	AR-8956C-55T
Bone Tap, cannulated, 6.0 mm	AR-8956C-60T
Instrument Case	AR-8956C

Plates:

Universal 5th Metatarsal Hook Plate, qty. 2	AR-8956-01
5th Metatarsal Hook Plate, long, left	AR-8956L-02
5th Metatarsal Hook Plate, long, right	AR-8956R-03

2.4 mm Screws:

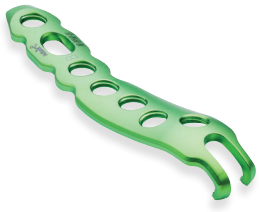
Cortex Screw, Ti, 2.4 mm x 8 mm-24 mm	AR-8724-08-24
VAL Locking Screw, Ti, 2.4 mm x 8 mm-24 mm	AR-8724V-08-24

Jones Screws:

4.5 mm Partially Threaded, Low-Profile Ti Screw 4.5 mm x 40-65 mm (5 mm increments)	AR-9045-40PT – 65PT
5.5 mm Partially Threaded, Low-Profile Ti Screw 5.5 mm x 40-65 mm (5 mm increments)	AR-9055-40PT – 65PT
6.0 mm Partially Threaded, Low-Profile Ti Screw 6.0 mm x 40-65 mm (5 mm increments)	AR-9060-40PT – 65PT

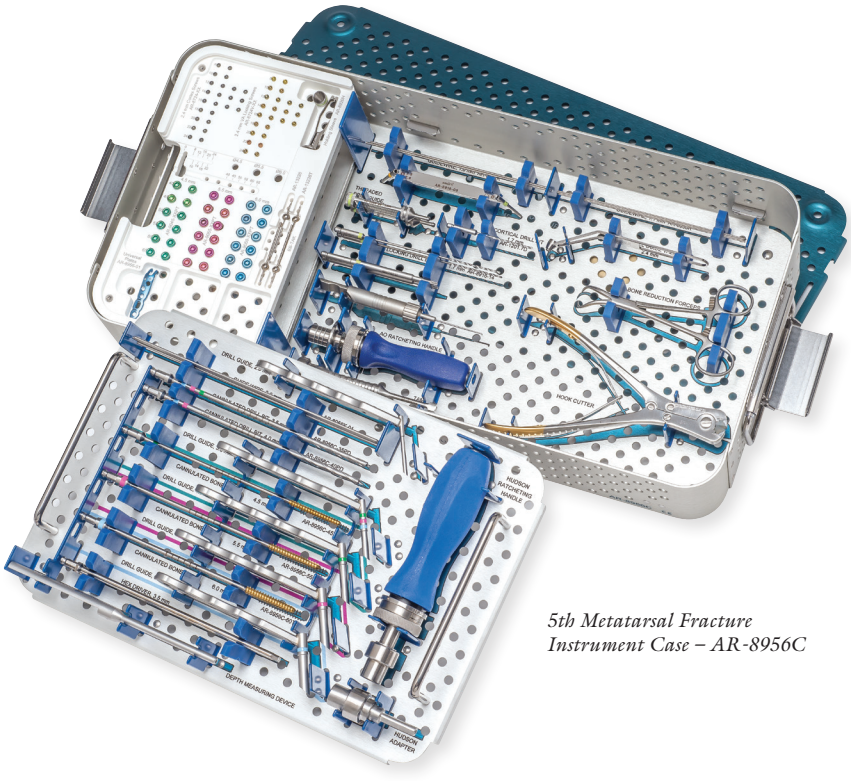
Disposables (included in AR-8956S):

Guidewire w/ Trocar Tip, .062 in (1.6 mm)	AR-8941K
Guidewire, .045 in (1.1 mm)	AR-8933K
Guidewire w/ Trocar Tip, .078 in (2.0 mm)	AR-8956K-01
BB-Tak, qty. 2	AR-13226
BB-Tak, threaded, qty. 2	AR-13226T



5th Metatarsal Hook Plate, long, right – AR-8956R-03

Universal 5th Metatarsal Hook Plate – AR-8956-01



5th Metatarsal Fracture Instrument Case – AR-8956C

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This description of technique is provided as an educational tool and clinical aid to assist properly licensed medical professionals in the usage of specific Arthrex products. As part of this professional usage, the medical professional must use their professional judgment in making any final determinations in product usage and technique. In doing so, the medical professional should rely on their own training and experience and should conduct a thorough review of pertinent medical literature and the product's Directions For Use. Postoperative management is patient specific and dependent on the treating professional's assessment. Individual results will vary and not all patients will experience the same postoperative activity level or outcomes.