

Midfoot Plating Techniques

Surgical Technique



Lapidus Plate

Designed to provide excellent fixation for a lapidus procedure, the Lapidus plate offers the foot and ankle surgeon an anatomically contoured and configured option for procedures in the midfoot. The slot in this low-profile plate allows the surgeon the choice of placing a lag screw across the TMT joint, as an outrigger screw to the 2nd metatarsal, or simply in offset compression mode. The surgeon may also choose to place locking or nonlocking screws in the other three plate holes.

Locking option – The two proximal and most distal holes allow the surgeon to choose a fixed-angle locking or variable-angle nonlocking option, depending on the needs of the patient

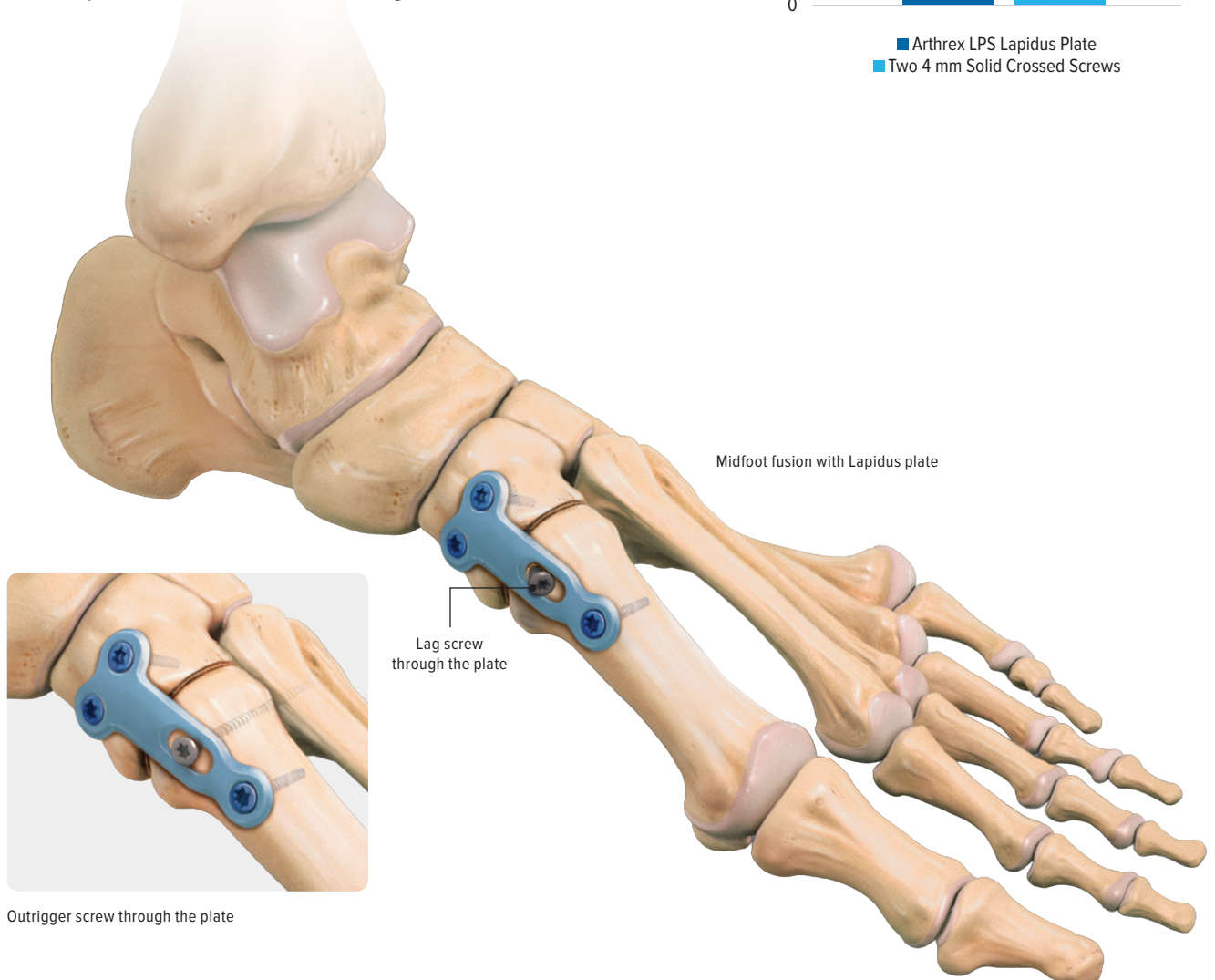
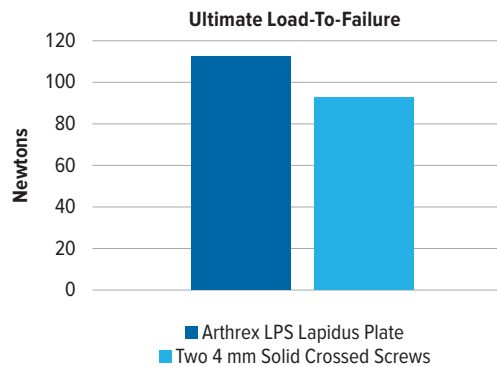
Compression option – The inner slot can accommodate an interfragmentary screw or generate compression when drilled eccentrically

Minimized profile – Low-profile plates and screw heads reduce soft tissue irritation and the need for removal

Anatomic contour – Optimizes construct strength, simplifies surgical technique and reduces soft tissue irritation

Anodized finish – Dramatically improves smoothness

Screw options – 3.5 mm cortical, locking and 4 mm cancellous



H-Plates

Designed to provide excellent fixation for fusions and osteotomies, these plates offer the foot and ankle surgeon a comprehensive option for procedures in the midfoot. These additions to the Low-profile plating system come with and without wedge blocks, and in a variety of lengths to fixate lateral column lengthenings, calcaneocuboid arthrodesis, talonavicular arthrodesis and other common procedures in the midfoot.

Left or right slants: Fits a variety of indications

Wedge option: Wedges save OR time and eliminate the need to harvest a tri-cortical wedge from the iliac crest

Locking option: The outermost holes allow the surgeon to chose a fixed-angle locking or variable-angle nonlocking option, depending on the needs of the patient

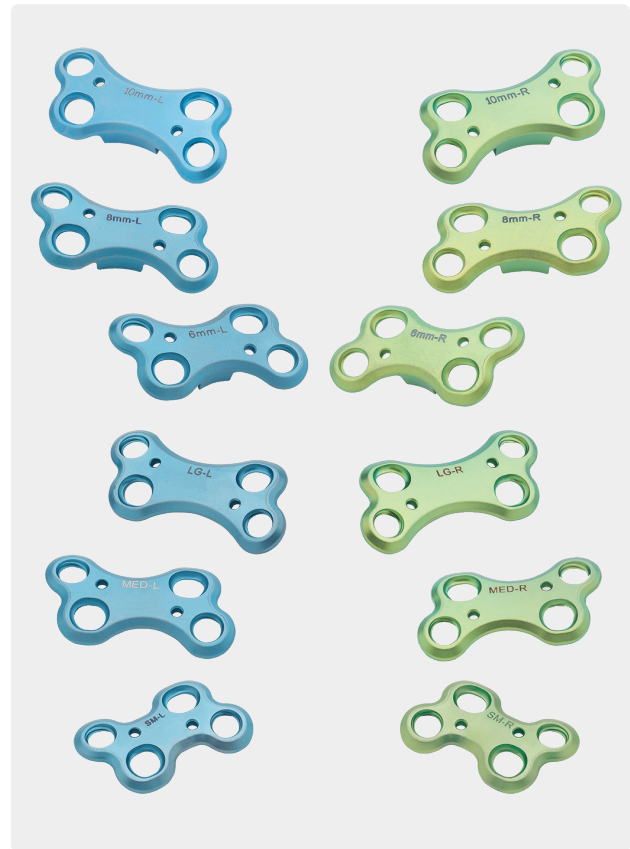
Compression option: The inner slots generate compression when drilled eccentrically in arthrodesis applications

Minimized profile: Low profile plates and screw heads reduce soft tissue irritation and the need for removal

Anatomic contour: Optimizes construct strength, simplifies surgical technique and reduces soft tissue irritation

Anodized finish: Dramatically improves smoothness

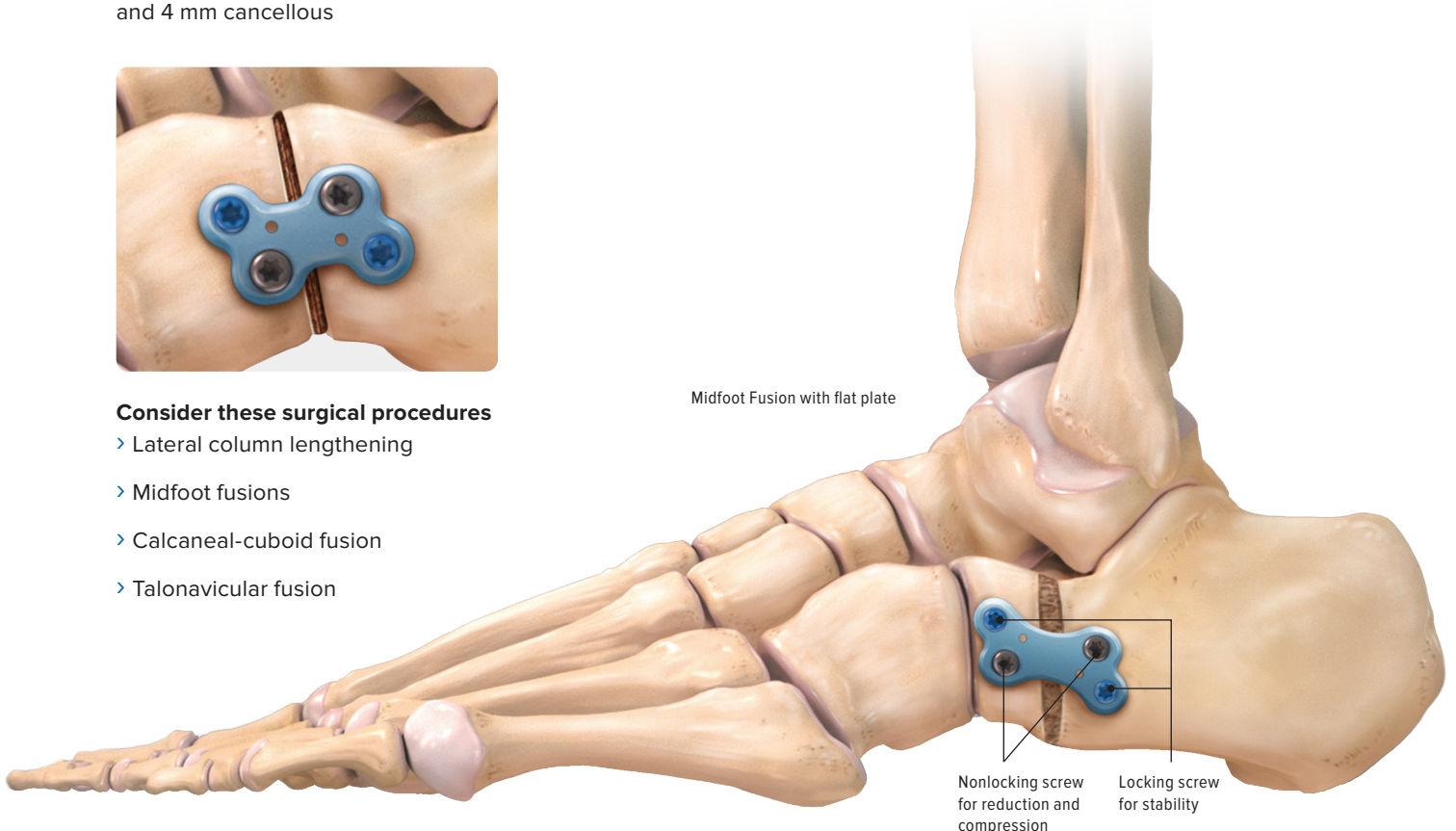
Screw options: 3.5 mm cortical, 3.5 mm cortical locking and 4 mm cancellous



Consider these surgical procedures

- > Lateral column lengthening
- > Midfoot fusions
- > Calcaneal-cuboid fusion
- > Talonavicular fusion

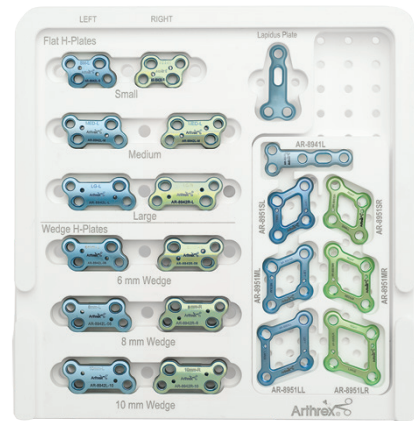
Midfoot Fusion with flat plate



Lisfranc Plates

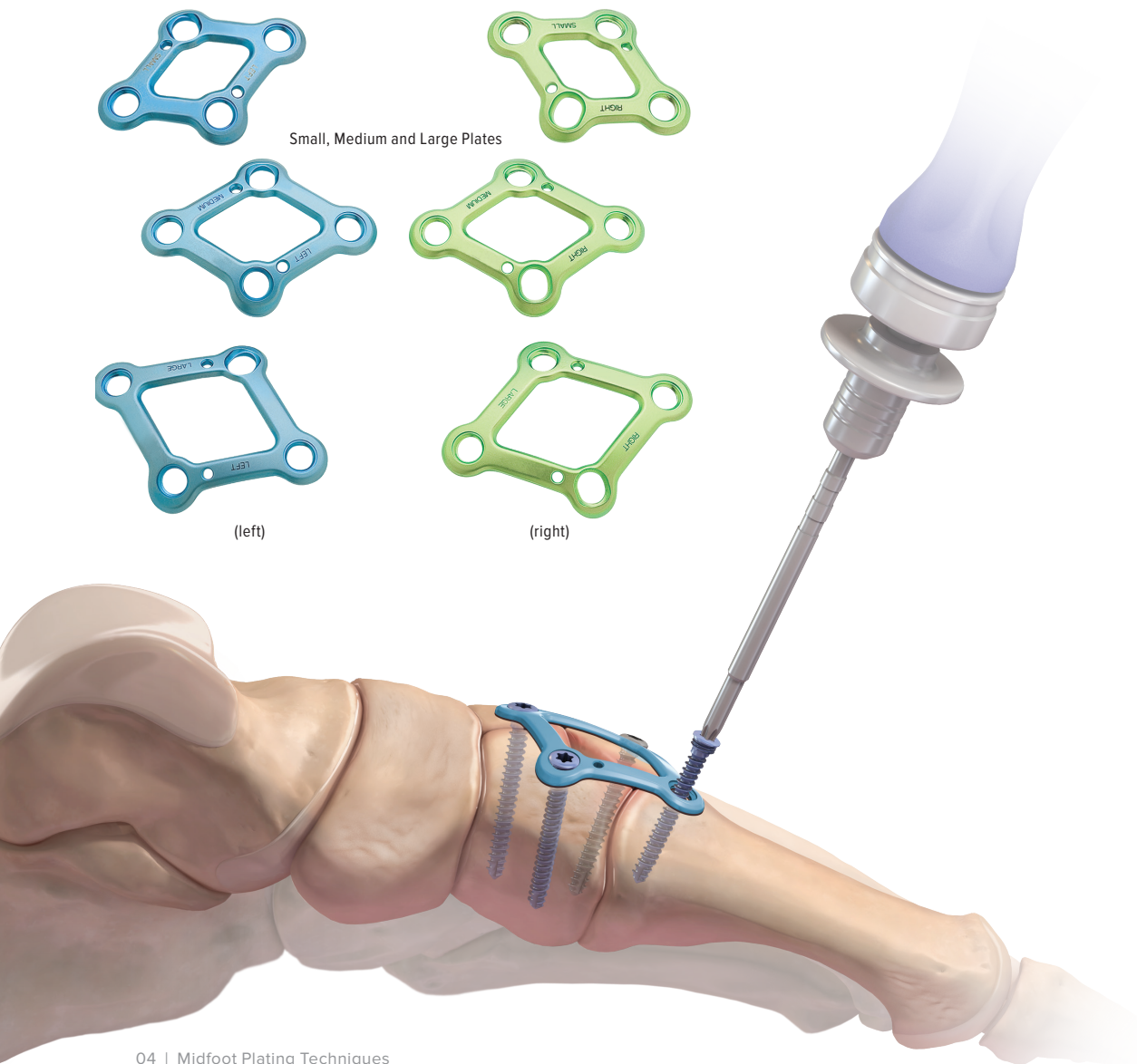
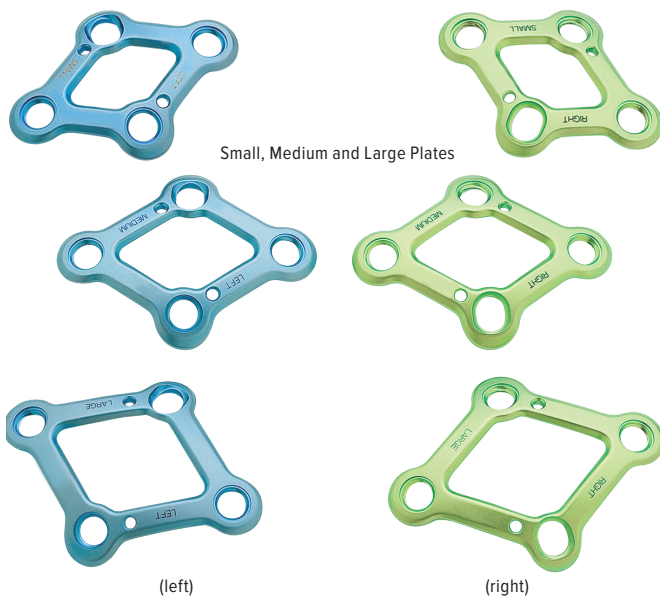
The new Lisfranc plates were designed to provide fixation for acute Lisfranc injuries and fusions of the tarsal-metatarsal joints. The unique design allows for compression along the Lisfranc ligament and allows the surgeon to visualize the healing process during recovery. These plates come in three different sizes with both left and right plates to fit any patient and are contoured to fit the Lisfranc anatomy at only 1.4 mm thick.

- > **Allows visualization** of the Lisfranc joint during healing process
- > **Compresses along the Lisfranc ligament** along the line of injury
- > **Eliminates the joint damage** that may occur with the use of screws and guidewires
- > **Bridge-plateing preserves the joint surfaces** and results in larger surface area for bony fusion
- > **1.4 mm maximum thickness** providing minimal prominence and low profile contouring
- > **Contoured to fit the 1st/2nd metatarsal** cuneiform joints
- > **Allows room** for normal interfrag screw placement



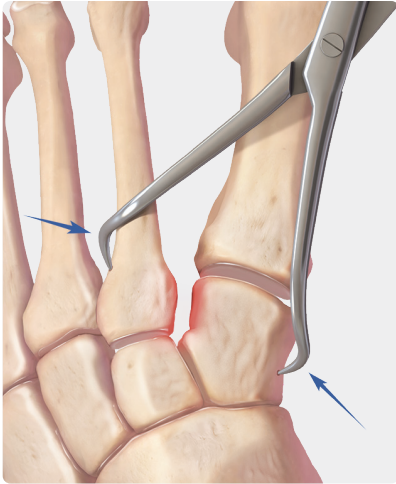
The new module, AR-8941C-PC1 houses the long Lapidus Plate and the new family of Lisfranc Plates and is nested in AR-8941C-PC.

Midfoot plating module set – AR-8941S houses the plate caddy Insert along with the H-plates and Lapidus plates.



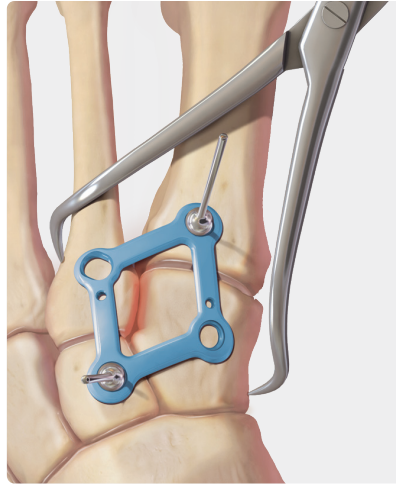
Lisfranc Technique*

Note: Some of the surgical steps from our Lisfranc Reduction for Injuries and Fusions Surgical Technique Guide are depicted below, using the Lisfranc plate. Please reference **LT1-0434-EN** for a complete list of all steps.



1

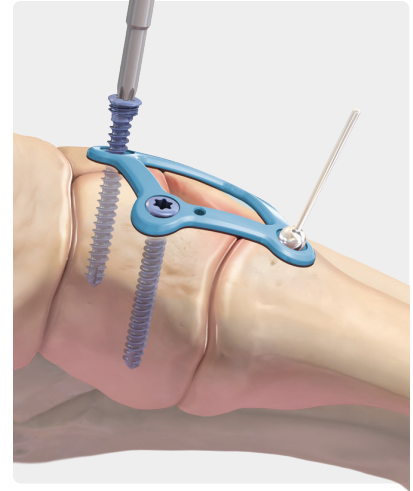
Upon exposure, reduce the Lisfranc fracture/dislocation using a bone reduction clamp. Additional K-wires can be used to supplement the fixation.



2

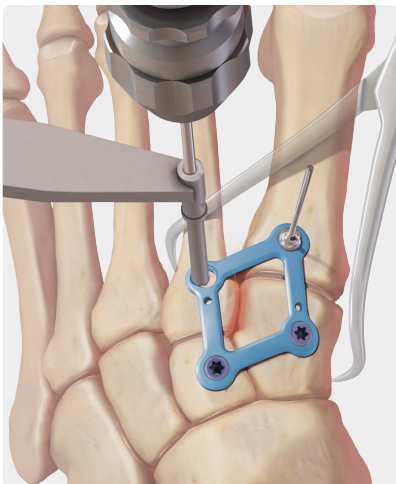
Place the appropriate sized plate dorsally over the Lisfranc joint. The 1st metatarsal and intermediate cuneiform can be temporarily secured with BB-Taks. Additionally, there are other holes in the plate where the BB-taks can be used for added fixation.

Note: See full surgical technique for all steps.



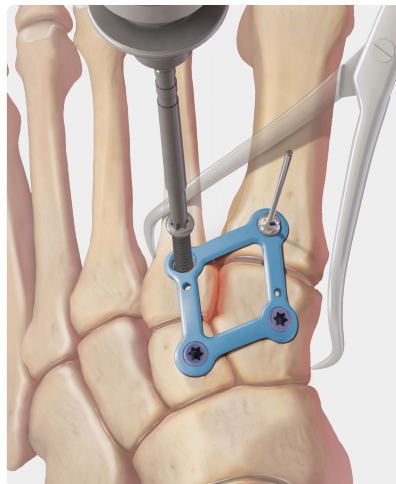
6

The same steps are used to place the other proximal 3.5 mm locking screw.



7

Use the 2.5 mm drill guide to eccentrically drill the oblong hole over the 2nd metatarsal for the 3.5 mm cortical screw.



8

Place the 3.5 mm cortical screw eccentrically in the oblong slot over the 2nd metatarsal for added compression along the Lisfranc ligament.



9

Final plate construct.

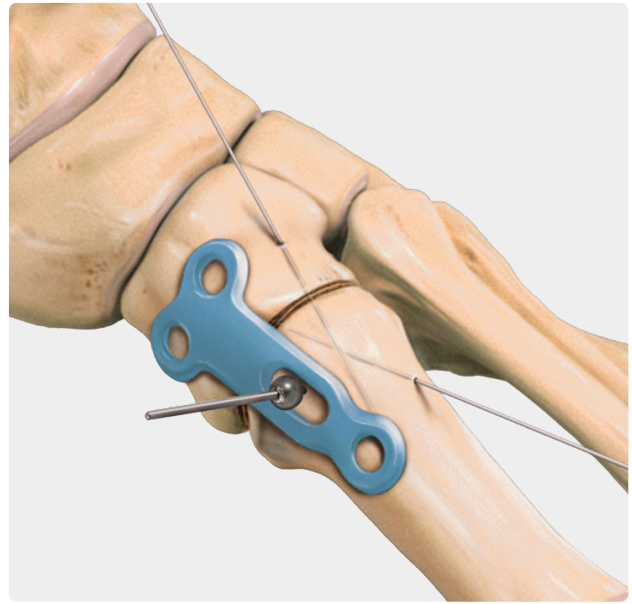
*Designed in conjunction with Thomas Harris, MD, Los Angeles, CA

Lapidus Technique



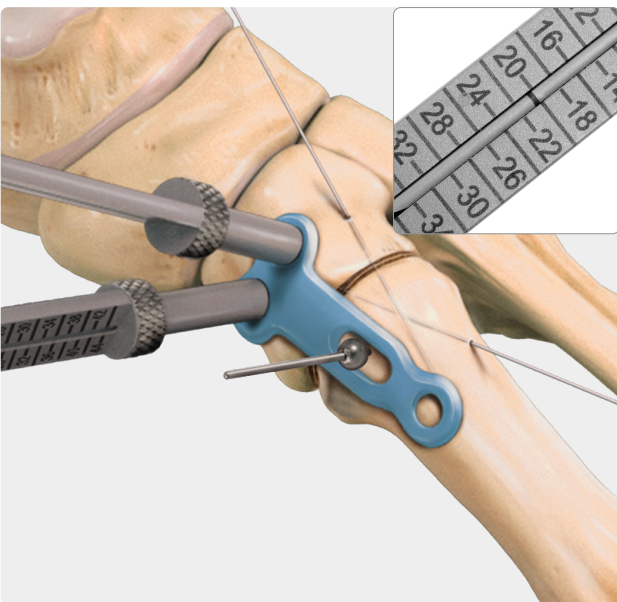
1

Provisionally fix the MTC joint with K-wires to the side of the eventual plate placement.



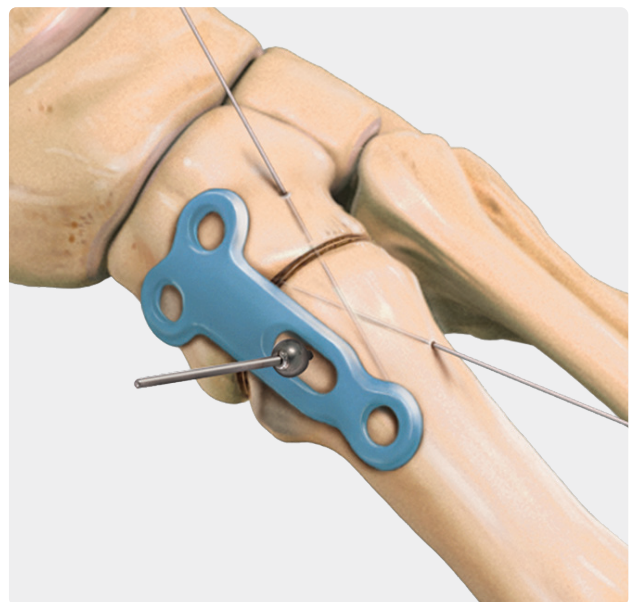
2

Provisionally hold the Lapidus plate in place with a BB-tak at the slot. Ensure the plate is reduced to the bone and fully secure. If needed, the plate may be contoured at this point.



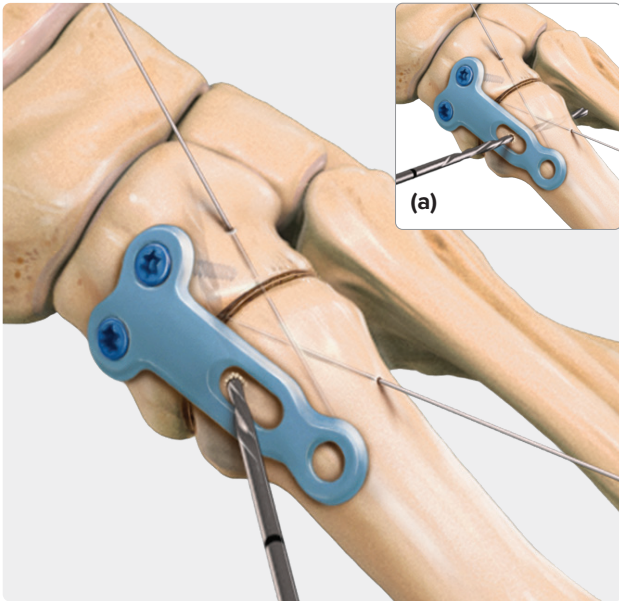
3

Insert locking drill guides into the proximal holes. (Drill guides may also be preassembled on a back table). Drill both holes, noting depth from the laser line on the 2.5 mm drill. A conventional depth device may also be used after the locking drill guides are removed.



4

Insert a 3.5 mm locking screw, if the plate is reduced to bone. If greater reduction is desired, insert a standard screw first and then a locking screw. The standard screw may be replaced later, if two proximal locking screws are desired.



5

Drill for the lag screw at the steepest angle possible, aiming between two proximal screws with a 2.5 mm drill. Overdrill the metatarsal base with a 3.5 mm drill.

Optional (a): Drill from the 1st metatarsal to the 2nd if an outrigger screw is desired to help reduce IM angle.



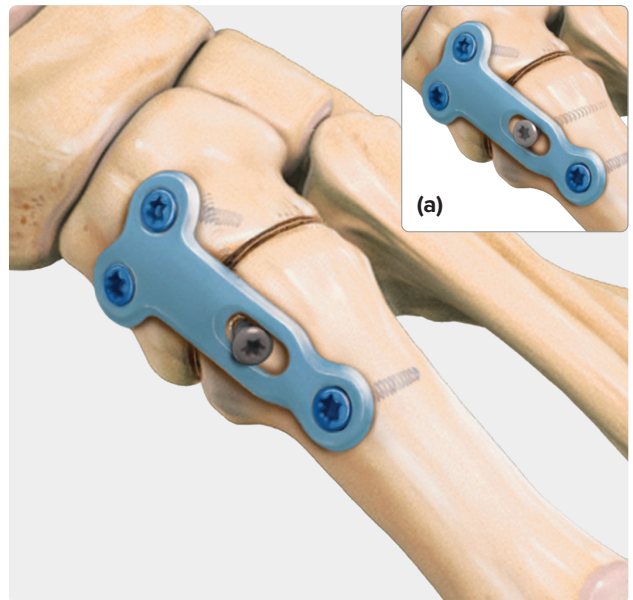
6

Remove K-wires. Insert a 3.5 mm screw until it contacts the plate. Tighten the screw and compress across the MTC joint. The head of the screw will be slightly angled.



7

Insert the locking drill guide into the distal hole. Drill bi-cortically, noting depth from the laser line on the 2.5 mm drill. A conventional depth device may also be used once the locking drill guide is removed.

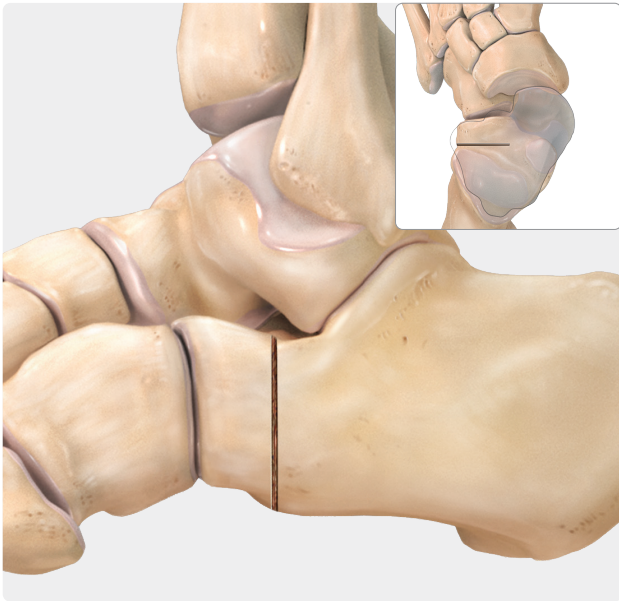


8

Insert a 3.5 mm locking screw distally.

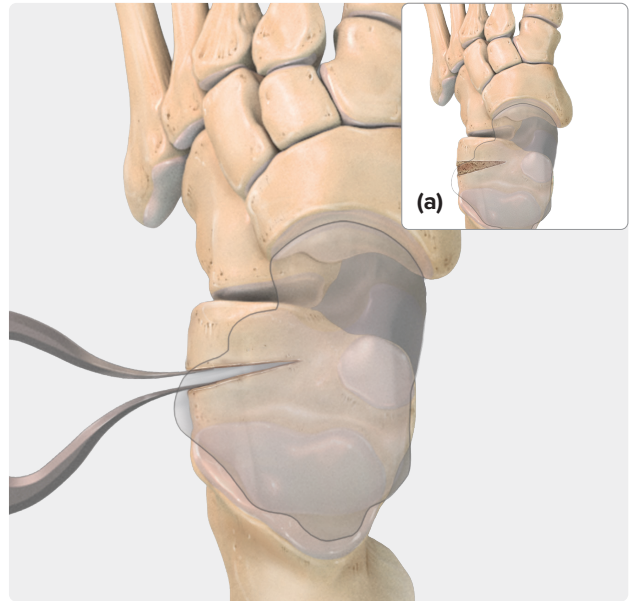
(a) Optional for outrigger screw

H-Plate Evans Technique



1

Make a single transverse cut at least 1.2 cm to 1.5 cm posterior to the calcaneal-cuboid joint and just anterior to the subtalar joint.



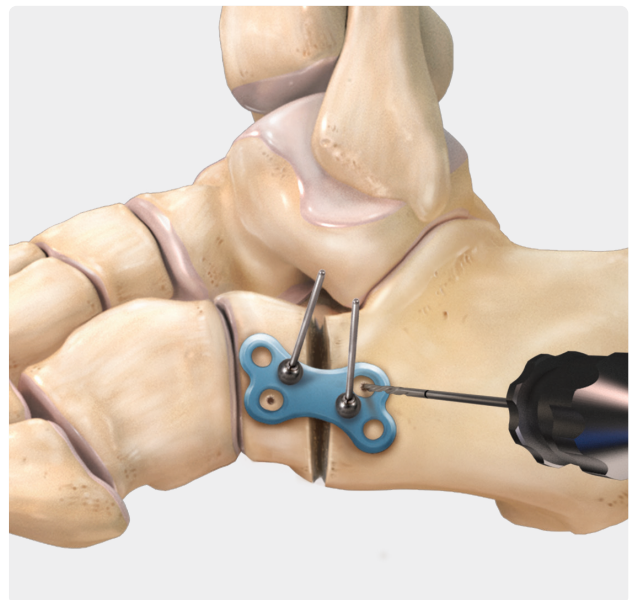
2

With the osteotomy distractor or lamina spreader, open the osteotomy and assess correction. Select either a plate with a wedge or a tri-cortical bone graft wedge **(a)** and a flat plate.



3

Provisionally hold the plate to the anterolateral side of the calcaneus with a BB-tak through either wire hole or locking screw hole.



4

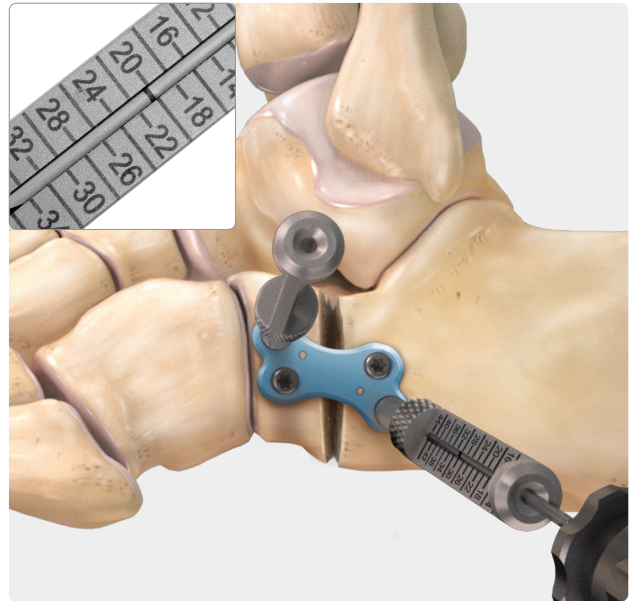
For static placement: Drill both nonlocking slots centrally with the 2.5 mm drill.

For compression: Drill both nonlocking slots away from the osteotomy with a 2.5 mm drill. Aim the drill so it does not interfere with the eventual path of the locking screws.



5

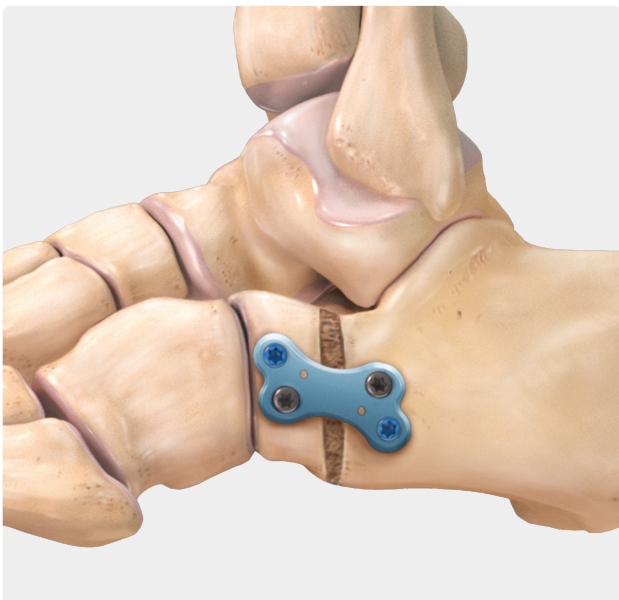
Insert 3.5 mm or 4 mm nonlocking screws and remove the BB-taks. Tighten the screws alternately to reduce plate-to-bone.



6

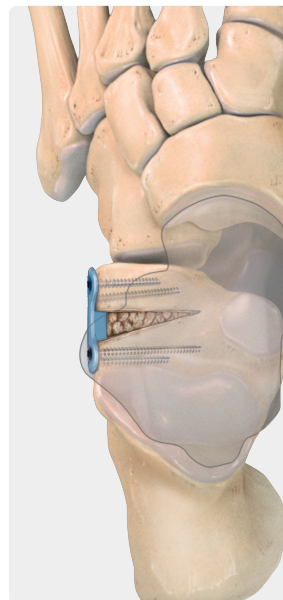
Thread the locking drill guides into the locking holes. Locking drill guides may be threaded into the plate on the back table prior to surgery. Drill both holes, noting depth from the laser line on the drill.

Note: If one hits the nonlocking screw, try to ease by. If impossible, remove the guide and drill freehand for nonlocking screw.



7

Remove the drill guides and insert 3.5 mm locking screws.



8

Wedge plate shown here with bone graft packed into the void.



Flat plate shown here with the tri-cortical bone graft wedge option.

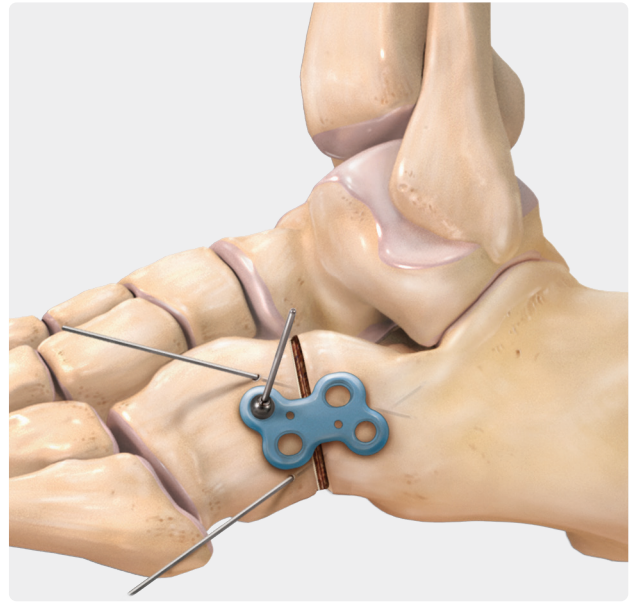
H-Plate CC Arthrodesis Technique*

| **Note:** A similar technique may be used for talonavicular or other midfoot fusion procedures.



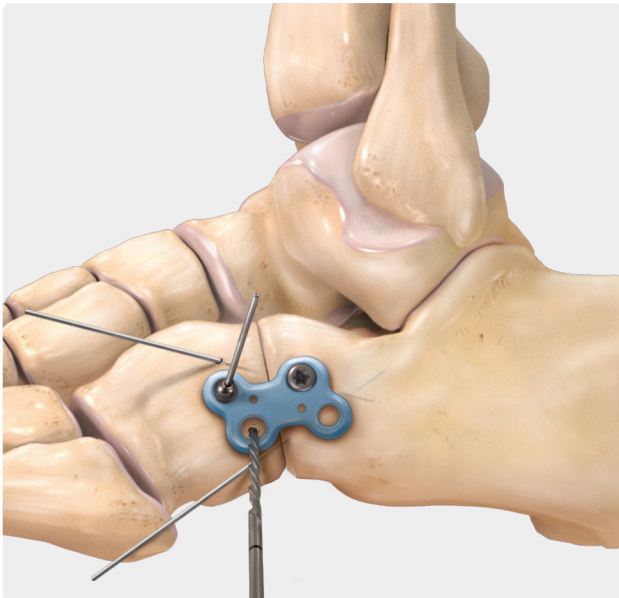
1

Completely denude cartilage from the calcaneocuboid joint for fusion.



2

Pin the joint with K-wires. Provisionally, hold the plate to anterolateral side of the calcaneus with a BB-tak through wire or locking screw holes.



3

Drill nonlocking hole eccentrically with a 2.5 mm drill—away from the joint. Insert a 3.5 mm or 4 mm screw 90%. Drill other nonlocking hole eccentrically with a 2.5 mm drill.



4

Insert a second 3.5 mm or 4 mm screw 90%. Remove K-wires and the BB-Tak. Tighten both nonlocking screws alternately to reduce the plate-to-bone and achieve compression. Each slot should achieve 1 mm of compression.



5

Thread locking drill guides into locking holes. Locking drill guides may be threaded into the plate prior to its introduction to the surgical site. Drill bicortically with a 2.5 mm drill, noting the depth from the scale on the drill guide.

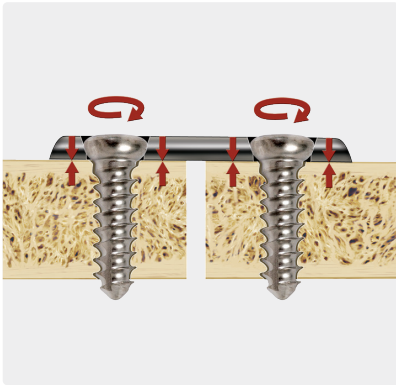


6

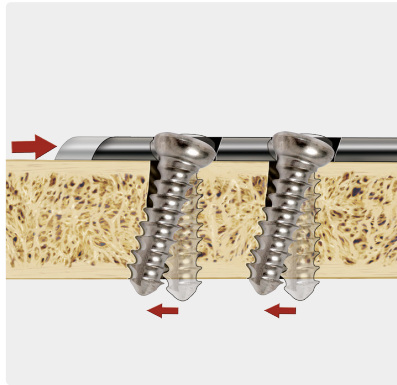
Remove drill guides and insert locking screws.

Plate/Screw Mechanics

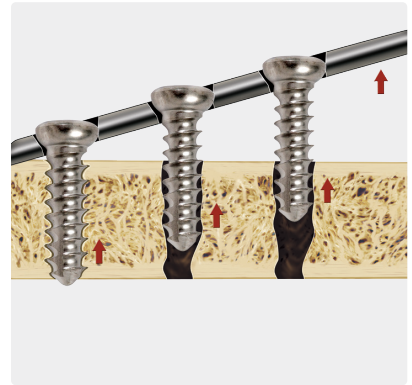
Nonlocking Screws and Plate



Reduction, and possibly compression with standard screws

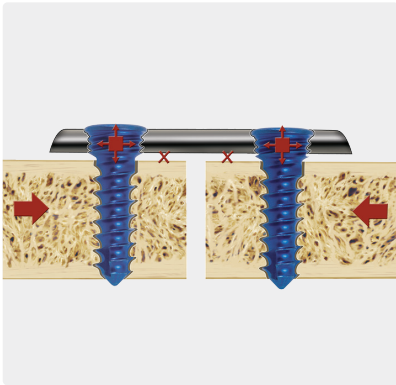


Axial load may cause standard screws to toggle and loosen

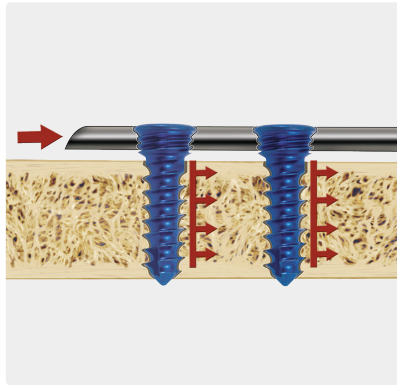


Bending load requires only screw pull-out to fail

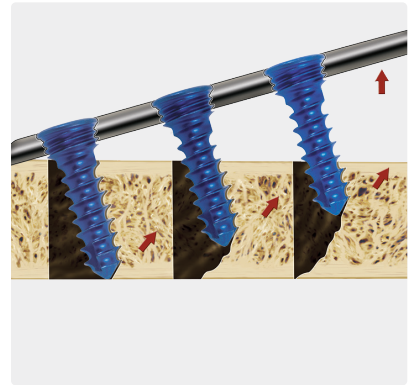
Locking Screws and Plate



No reduction, limited bone contact, and total construct load-sharing with locking screws

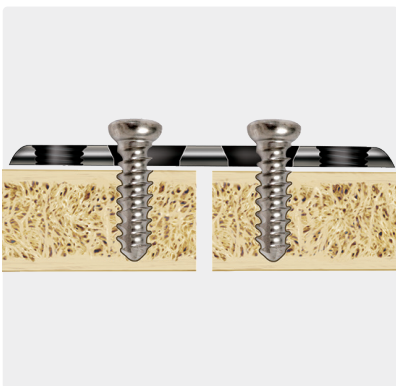


Axial load distributed evenly through the bone

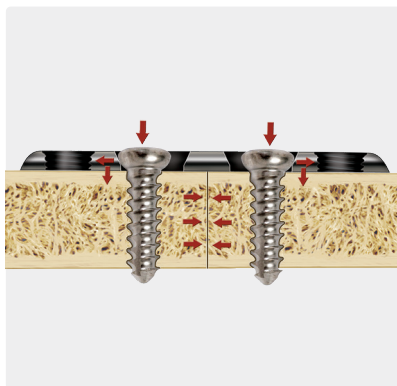


Bending load requires large scale screw, cut-through to fail

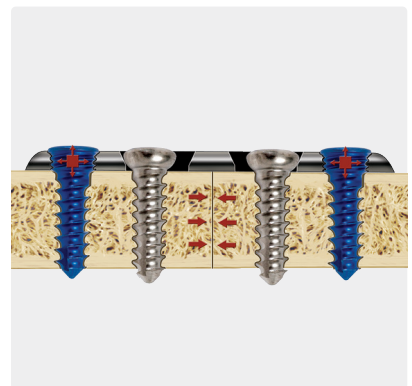
Hybrid Plate



Nonlocking screws drilled and inserted eccentrically away from the bone gap



Reduction of the plate-to-bone and compression, as the screws are inserted and tightened



Locking screws are inserted to hold everything in place – improving construct strength against bending and axial loading

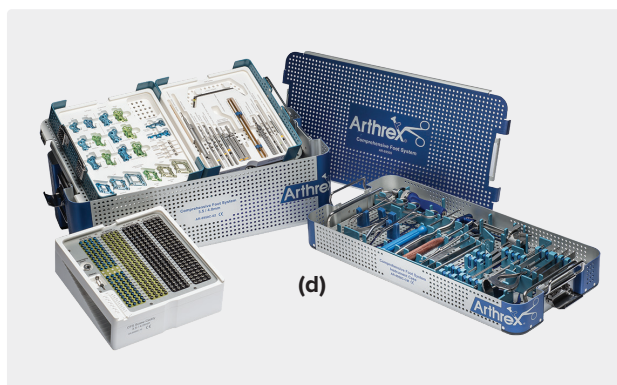
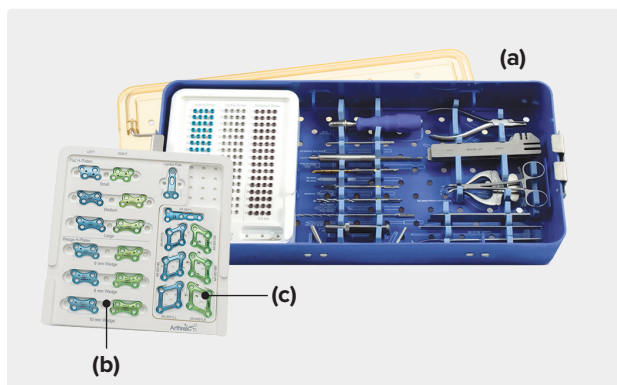
Low Profile System Midfoot Plating Module for H-Plates, Lisfranc and Lapidus Plates

The modules of the Low Profile Plating System house the Lapidus, Lisfranc and H-Plates, along with the 3.5 mm cortical, 3.5 mm cortical locking and 4 mm cancellous screws. The instrumentation for these implants is straightforward and easy to use, assisting the surgeon with distraction, provisional fixation and other elements of the procedure. This module is stackable with the Forefoot Osteotomy, Forefoot Fusion and other future modules. Additionally, all plates and instrumentation are also available in the Comprehensive Foot System (CFS) AR-8950S-02 (3.5/4.0 CFS Module) **(d)**.

Midfoot Plating Module Set (AR-8941S) (a)

Driver Handle w/AO connection, cannulated	AR-13221AOC
Osteotomy Distractor	AR-13225
Drill Bit, 2.5 mm	AR-4160-25
Drill Bit, 3.5 mm	AR-4160-35
Drill Bit, 4 mm	AR-4160-40
Bone Reduction Forceps w/Teeth	AR-4160FT
Depth Device, small	AR-4166
Bending Iron	AR-8941BI
Bending Pliers	AR-8941BP
Hexalobe Driver, T15	AR-8941DH
Drill Guide for metal screws, 3.5 mm/4 mm	AR-8941G
Drill/Depth Guide, locking	AR-8941GL
Osteotome, short, 10 mm	AR-13203-10
Osteotome, short, 12 mm	AR-13203-12
Hohmann Retractor, 8 mm x 16 cm	AR-13210
Countersink, 3.5 mm/4 mm Screws	AR-4162
Drill Guide, 3.5 mm/4 mm	AR-8935G
Bone Tap, 3.5 mm	AR-8935T
Bone Tap, 4 mm	AR-8940T
Screw Holding Forceps	AR-8941F
Low Profile System Instrument Case	AR-8941C
Midfoot Plate Caddy (b)	AR-8941C-PC
Plate Caddy Insert (c)	AR-8941C-PC1

Products advertised in this brochure/surgical technique guide may not be available in all countries. For information on availability, please contact Arthrex Customer Service or your local Arthrex representative.



Plates, flat (housed in AR-8941C-PC, order separately)

H-Plate, 36 mm × 16 mm, large, left	AR-8942L-L
H-Plate, 36 mm × 16 mm, large, right	AR-8942R-L
H-Plate, 32 mm × 16 mm, medium, left	AR-8942L-M
H-Plate, 32 mm × 16 mm, medium, right	AR-8942R-M
H-Plate, 28 mm × 16 mm, small, left	AR-8942L-S
H-Plate, 28 mm × 16 mm, small, right	AR-8942R-S

Plates, wedge (housed in AR-8941C-PC, order separately)

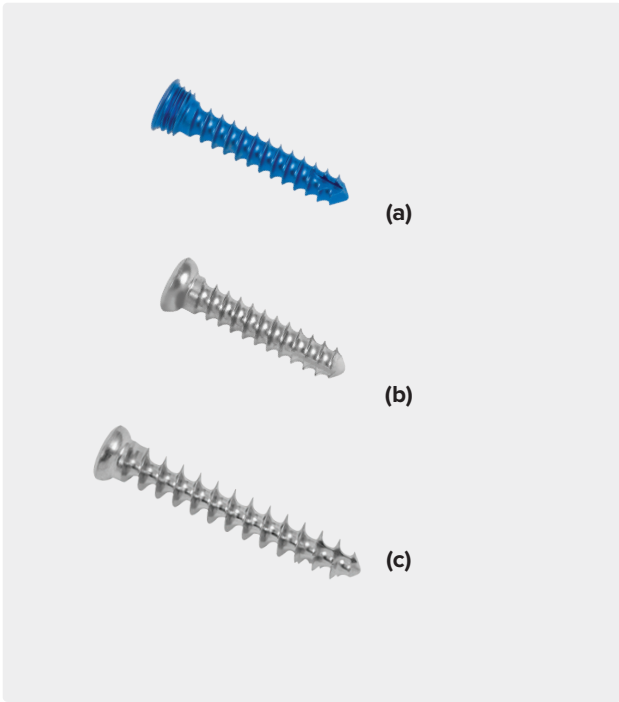
H-Plate, 38 mm × 16 mm, 10 mm wedge, left	AR-8942L-10
H-Plate, 38 mm × 16 mm, 10 mm wedge, right	AR-8942R-10
H-Plate, 36 mm × 16 mm, 8 mm wedge, left	AR-8942L-08
H-Plate, 36 mm × 16 mm, 8 mm wedge, right	AR-8942R-08
H-Plate, 34 mm × 16 mm, 6 mm wedge, left	AR-8942L-06
H-Plate, 34 mm × 16 mm, 6 mm wedge, right	AR-8942R-06

Plates (housed in AR-8941C-PC, order separately)

Lapidus Plate	AR-8941
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Plates (housed in caddy insert AR-8941C-PC1, order separately):

Lapidus Plate, long	AR-8941L
Lisfranc Plate, small, right	AR-8951SR
Lisfranc Plate, small, left	AR-8951SL
Lisfranc Plate, medium, right	AR-8951MR
Lisfranc Plate, medium, left	AR-8951ML
Lisfranc Plate, large, right	AR-8951LR
Lisfranc Plate, large, left	AR-8951LL



Screws	
Locking Screws, titanium, 3.5 mm × 14 – 44 mm (a)	AR-8935L-14-44
Low Profile Screws, titanium, 3.5 mm × 14 – 44 mm (b)	AR-8935-14-44
Low Profile Screws, titanium, 4 mm × 14 – 44 mm (c)	AR-8940-14-44

Disposables	
BB-Tak	AR-13226
BB-Tak, threaded	AR-13226T
Guidewire w/ Trocar Tip, .062 in (1.6 mm)	AR-8941K

Literature	
Lisfranc Reduction for Injuries and Fusions Surgical Technique Guide	LT1-0434-EN
Comprehensive Foot System Brochure	LB1-0437-EN

Multimedia	
Comprehensive Foot System iBook	EB1-0437-EN
Comprehensive Foot & Ankle Repair Surgical Technique by J. Chris Coetzee, MD	AR-13226T

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US patent information