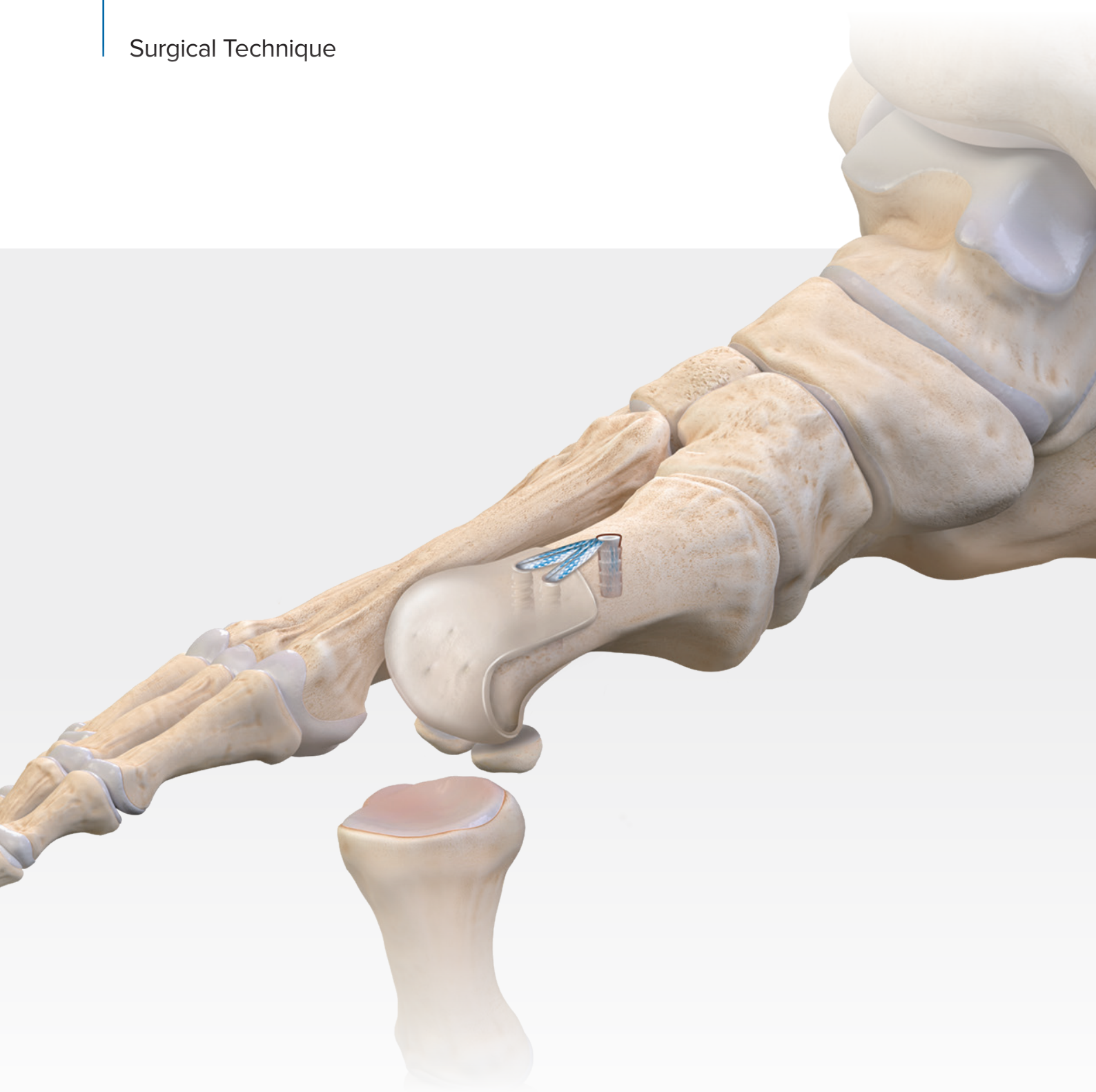


# Hallux Rigidus Interpositional Arthroplasty With ArthroFLEX<sup>®</sup> Acellular Dermal Matrix

Surgical Technique



# Hallux Rigidus Arthroplasty With ArthroFLEX® Dermal Allograft

## Introduction

Hallux rigidus is a condition that causes pain and stiffness, and limits the range of motion at the 1st metatarsophalangeal (MTP) joint. Hallux rigidus arthroplasty using a dermal allograft such as ArthroFlex can provide most patients with excellent or good results.<sup>1</sup> ArthroFlex provides a strong collagen scaffold for host tissue ingrowth while retaining native growth factors.<sup>2,3</sup> For the right patient, this procedure can be a viable alternative to joint fusion that preserves future treatment pathways, allowing for a revision procedure if required.

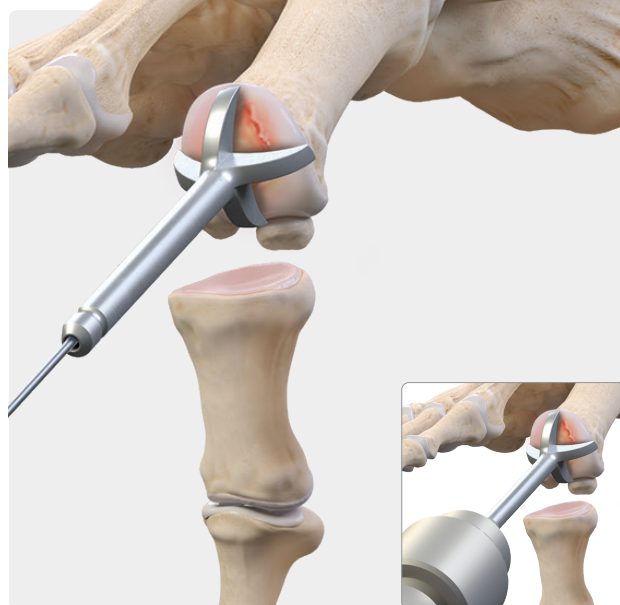
## Surgical Technique



1

Make a dorsal or dorsal medial incision followed by soft-tissue dissection to expose the metatarsal head and base of the proximal phalanx. Perform subperiosteal dissection of the soft tissues in a medial, lateral, and plantar direction.

**Pearl:** Thorough exposure and release of the collaterals will help with graft management. Sufficient exposure will allow for the toe to be placed at 90° plantar flexion.



2

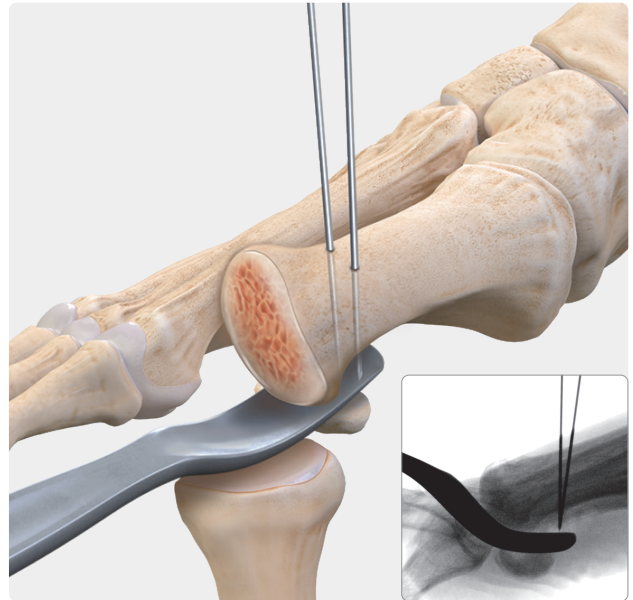
Holding the toe at 90°, center the concave reamer over the metatarsal head by hand and advance the 1.6 mm guidewire into the metatarsal shaft at least 2 cm. Ream until all of the metatarsal cartilage and sclerotic bone are removed as well as any dorsal or circumferential osteophytes.

**Pearl:** Start with the appropriate sized reamer for the bone and work down through the sizes until adequate sizing is achieved. Be sure to advance the reamer on full power prior to contacting the metatarsal head.



3

Insert a McGlamry elevator under the metatarsal head and past the sesamoids to create space and provide an area for passing suture and the ArthroFlex® graft.



4

Using the 1.1 mm guidewires from the Forefoot *InternalBrace™* system, drill two parallel tunnels 1.0 to 1.5 cm proximal to the metatarsal head and just proximal to the sesamoids. Placement of tunnels should be on the medial and lateral  $\frac{1}{3}$  of the dorsal metatarsal surface. Tunnels should be angled at 15° from proximal dorsal to distal plantar for ease of passing the suture. Ensure the guidewire contacts the McGlamry elevator.



5

Advance the 2.5 mm drill bit over the guidewire until it contacts the McGlamry elevator. Remove the drill bit, but leave the guidewire in place to allow for easy finding of the bone tunnel.

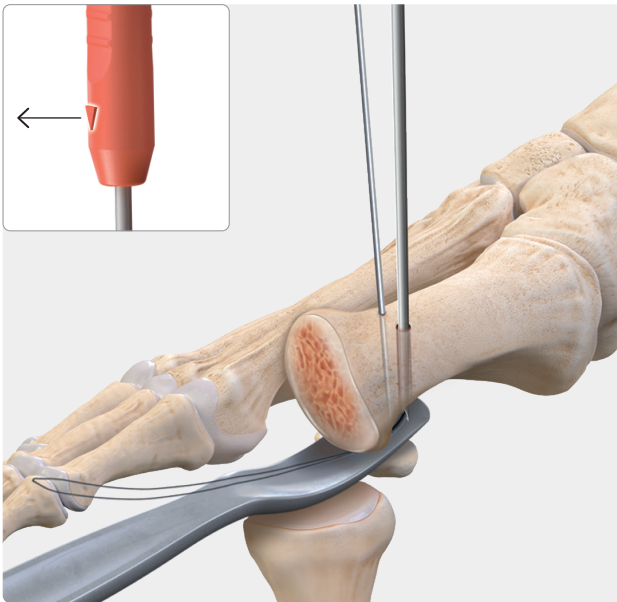




6

Using SutureTape and a free curved needle, place two luggage tag stitches on the plantar end of the ArthroFlex® graft. Ensure the shiny side of the graft will be positioned against the metatarsal head to provide a protective covering.

**Note:** Graft sutures should be spaced at similar intervals as the drill tunnels in the metatarsal to prevent suture bunching.



7

Advance the straight SutureLasso™ suture passer through one drilled hole until it contacts the McGlamry elevator. Be sure the arrow on the suture passer is facing anterior to ensure the wire loop exits in the proper direction. Insert the wire loop through the SutureLasso suture passer and use the McGlamry elevator to advance the wire forward.

**Pearl:** If necessary, mosquito forceps can be used to retrieve the wire loop once it has passed through the tunnel.



8

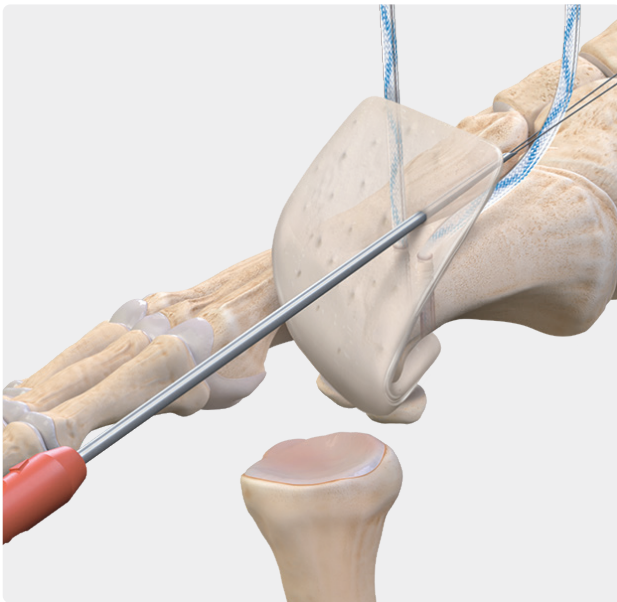
Pass the pairs of SutureTape tails through their respective tunnels using the wire loop.



9

Shuttle the ArthroFlex® dermal allograft under the metatarsal head and sesamoids by tensioning the SutureTape in a superior direction. Use forceps as needed to keep the graft flat during advancement. While maintaining tension on the suture, secure the SutureTape in place by inserting the 3 mm × 8 mm tenodesis screws from the Forefoot *Internal/Brace*™ ligament augmentation system. Repeat for the second tunnel.

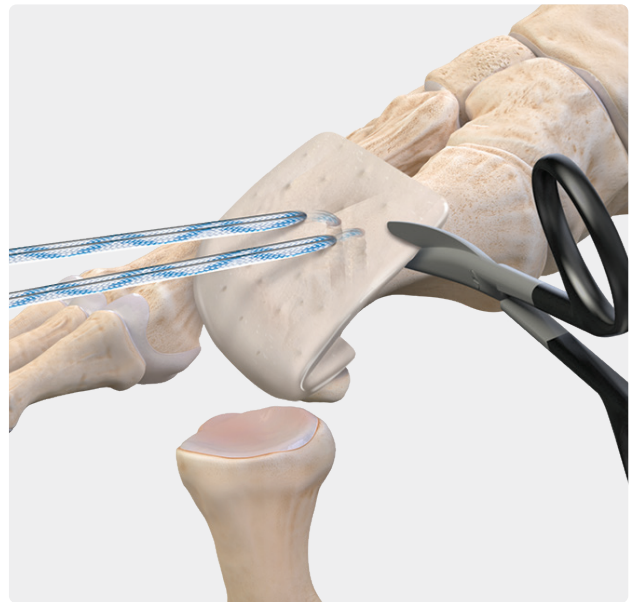
**Pearl:** To ease insertion, remove the tenodesis screw from the inserter and then place it back onto the inserter prior to use.



10

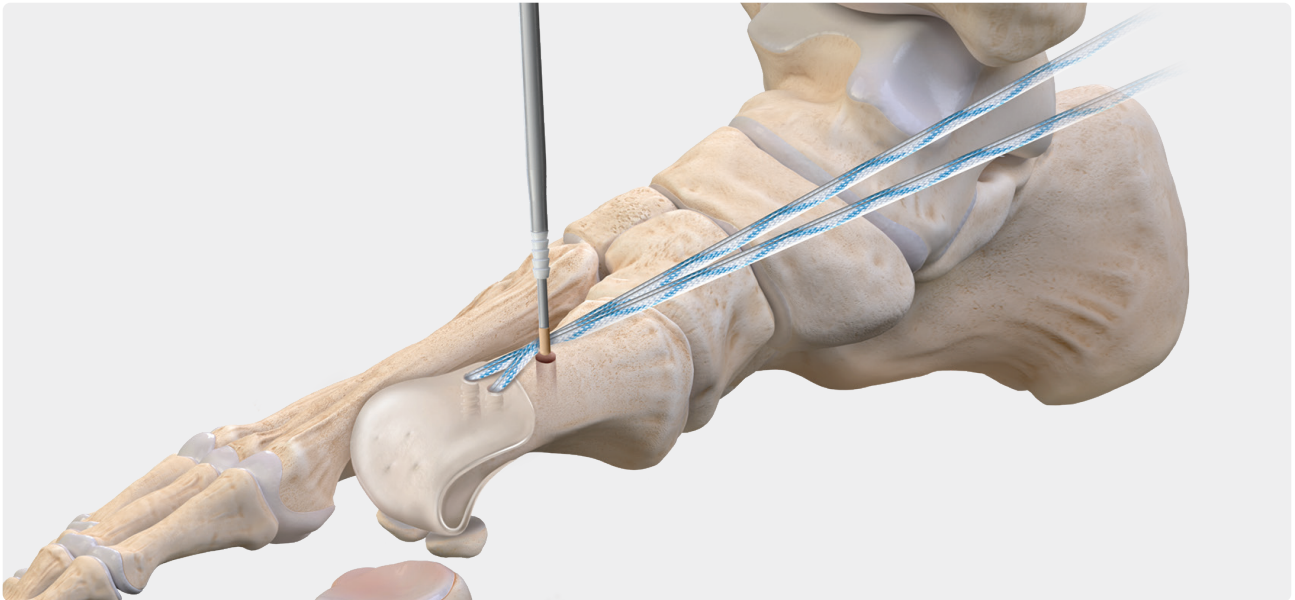
Drape the distal portion of the graft over the metatarsal head and tension proximally. Using the SutureLasso™ suture passer and wire loop, pass the SutureTape tails through the graft just distal to their exit point from the bone. This ensures proper graft tension is maintained throughout the construct.

**Pearl:** If struggling to use the SutureLasso suture passer to pass through graft, a free needle can be used.



11

Trim the excess graft approximately 5-10 cm proximal to the suture.



**12**

Using the disposables kit for the desired anchor, drill a hole in the midline of the metatarsal 1.0-1.5 cm proximal to the suture tunnels. Pass all suture tails through the eyelet of the selected anchor and approximate tension before advancing the anchor into the bone tunnel.

**Note:** A 2.9 mm × 12.5 mm BioComposite PushLock® anchor or a 3.5 mm × 13.5 mm PEEK DX SwiveLock® anchor is recommended.



**13**

Remove the anchor driver and cut the excess suture tails. Trim or suture any excess graft on the medial and lateral sides. Ensure adequate dorsiflexion of the toe and, if indicated, consider a phalangeal osteotomy of the proximal phalanx until range of motion is suitable.

## Ordering Information

### Forefoot *InternalBrace*™ Ligament Augmentation System (AR-1530P-CP)

PEEK tenodesis screw, 3 mm × 8 mm, qty. 2

LabralTape™ suture, 1.5 mm, white/black, 36 in

#2 FiberTape® suture, blue

#0 TigerWire® suture w/ needle, white/green

4-0 FiberLoop® suture w/ needle, blue, 12 in

Micro SutureLasso™ suture passer w/ wire, straight

Oblong button, 2.6 mm

K-wire, 1.1 mm, qty. 2

Drills, cannulated, 2.5 mm and 3.0 mm

Suture retrieval funnels, qty. 2

Suture passing wire, 8 in

ArthroFlex® dermal allograft, 40 mm × 70 mm × 2.0 mm

AFLEX201

ArthroFlex dermal allograft, 40 mm × 70 mm × 1.5 mm

AFLEX101

SutureTape, 1.3 mm with tapered needle (white/blue), qty. 2

AR-7500

2.9 mm BioComposite PushLock® disposables kit

AR-8923DSC

2.9 mm BioComposite PushLock anchor

AR-8923BC

MTP reamer caddy

AR-8944C-RC

DX SwiveLock® anchor, 3.5 mm × 13.5 mm

AR-8979P

Disposable kit for DX SwiveLock anchor, 3.5 mm × 13.5 mm

AR-8979DS

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.

### References

1. Aynardi MC, Atwater L, Dein EJ, Zahoor T, Schon LC, Miller SD. Outcomes After Interpositional Arthroplasty of the First Metatarsophalangeal Joint. *Foot Ankle Int.* 2017;38(5):514-518. doi:10.1177/1071100716687366
2. Lederman ES, McLean JB, Bormann KT, et al. Histologic case series of human acellular dermal matrix in superior capsule reconstruction. *J Shoulder Elbow Surg.* 2021;30(9):2146-2155. doi:10.1016/j.jse.2021.01.019
3. LifeNet Health. OrACELL acellular dermis: analysis of the acellular matrix, growth factors, and cytokines present in OrACELL. LifeNet Health; 2020. Publication No. 68-20-047.01.



ArthroFlex® is a registered trademark of LifeNet Health.

The *InternalBrace* surgical technique is intended only to augment the primary repair/reconstruction by expanding the area of tissue approximation during the healing period and is not intended as a replacement for the native ligament. The *InternalBrace* technique is for use during soft tissue-to-bone fixation procedures and is not cleared for bone-to-bone fixation.

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.



Arthrex manufacturer, authorized representative, and importer information (Arthrex eIFUs)



US patent information