

# Segmental Meniscus Allograft Transplantation

Surgical Technique



# Segmental Meniscus Allograft Transplantation Technique

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Segmental meniscus transplantation serves as a robust repair option for restoring meniscal function and kinematics in patients with partial meniscal deficiency. Many of the meniscal deficiencies we encounter are only partial or segmental in nature; a segmental meniscal allograft addresses this pathology while maintaining knee kinematics, restoring biology, and maximizing preservation of native meniscal tissue.<sup>1-3</sup> This is especially helpful for the common areas of meniscal deficiency, particularly the posterior horn, middle horn, or both.

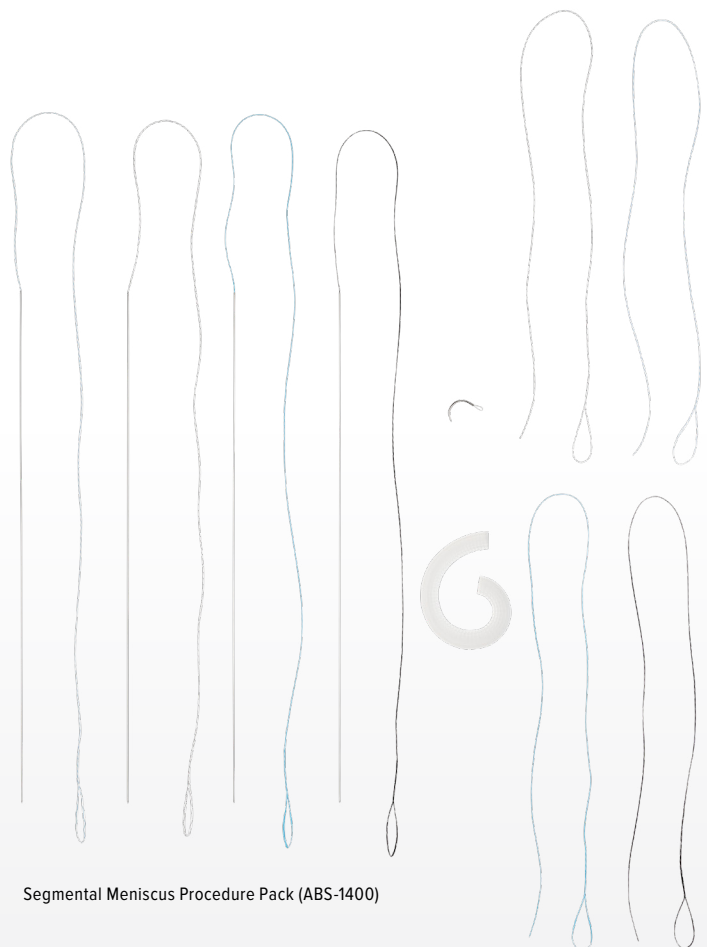
Using meticulously designed cutting and measuring instruments, surgeons can identify and outline the extent of damage to the meniscus and precisely trim the allograft meniscal segment to be transplanted.

This technique also uses suturing devices, including all-inside and inside-out devices, that facilitate restoration of meniscal kinematics and help to stabilize the meniscal segment. Multiple size and measurement options and

precise trimming options allow for excellent matching of the allograft segmental meniscus. In addition, size-matching is not necessary for smaller segmental defects (those measuring less than 1 cm up to 2.5 cm). Off-the-shelf meniscus allograft tissue may be used in these cases.

In summary, segmental meniscus transplantation provides an acceptable alternative for patients who have undergone meniscectomy and for whom function and circumferential mechanical aspects of a deficient meniscus are present. Ultimately, by restoring the tibiofemoral contact pressures in the knee, it may be possible to improve knee stability and prevent the onset of cartilage degeneration commonly observed following meniscectomy procedures.<sup>1,4</sup>

Prior Failed Subtotal Meniscectomy



Segmental Meniscus Procedure Pack (ABS-1400)

## Surgical Technique



**1**

Use the MegaBiter™ tool or Torpedo™ shaver blade to create stable borders on the segmental defect; take care to maintain capsular rim.



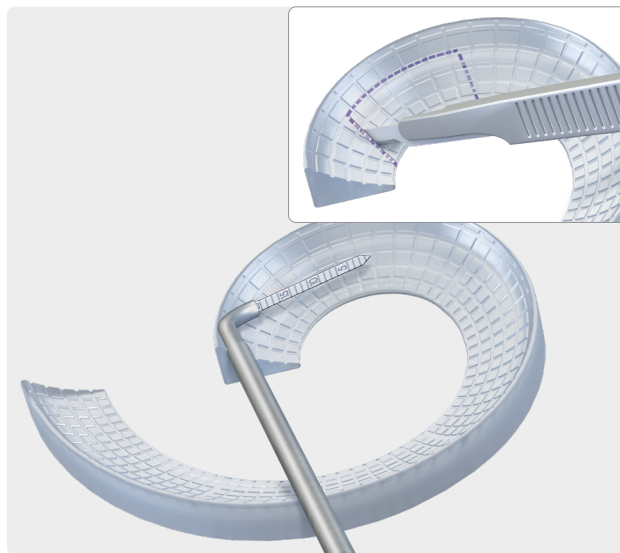
**2**

Use a rasp to stimulate bleeding from the native capsular attachment.



**3**

Measure the inner and outer lengths of the defect to account for the native curvature of the meniscus and defect. In addition, measure the depth of the defect at the anterior and posterior aspects.



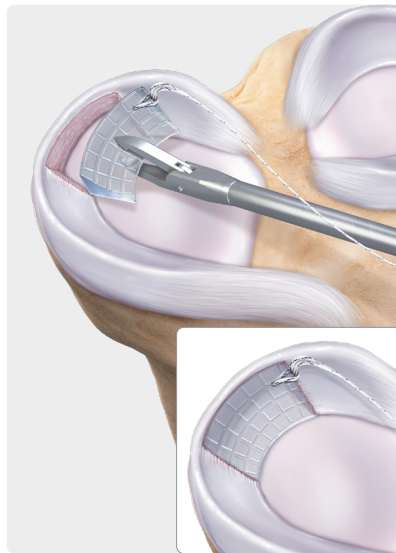
**4**

Using the recorded measurements and appropriate curvature measure and cut the meniscal template to the appropriate size.



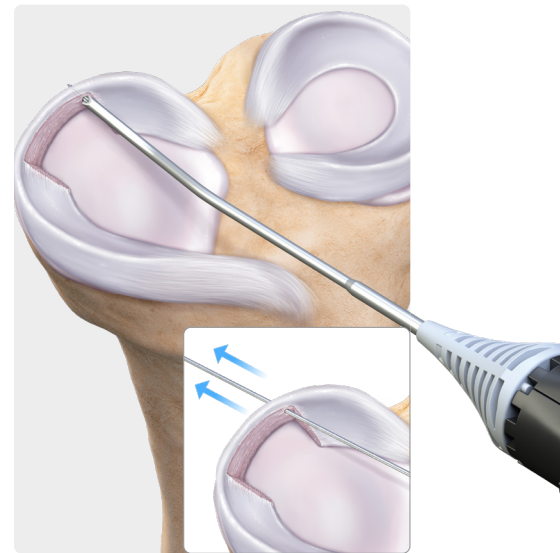
**5**

After cutting the template, use the free needle to pass a retrieval suture for easy withdraw from the joint.



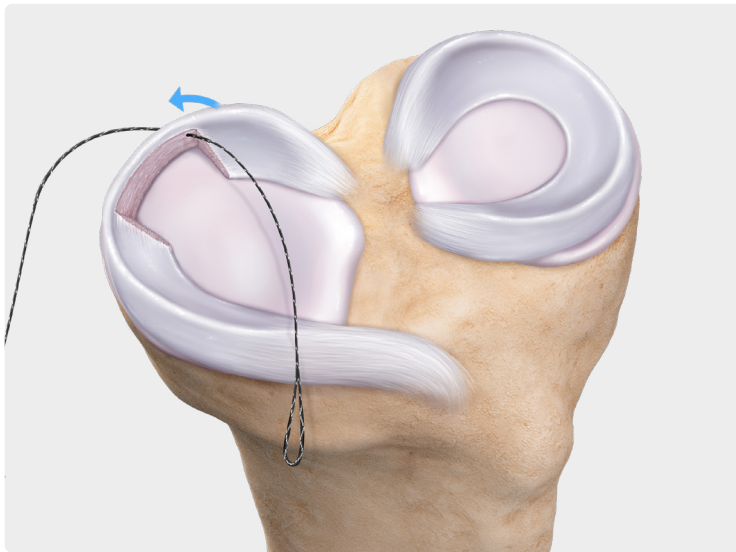
**6**

Use the KingFisher® instrument to grasp and insert the meniscal template segment into the defect location. If satisfied with the fit, remove the segment for later use as a measurement guide to cut the meniscus allograft to size.



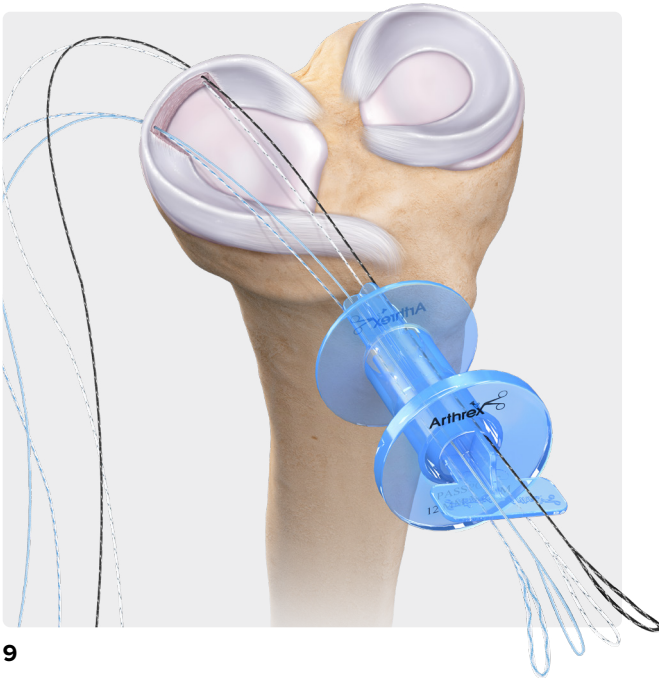
**7**

Using an inside-out approach, use the ZoneNavigator™ device to approximate each quadrant of the defect.



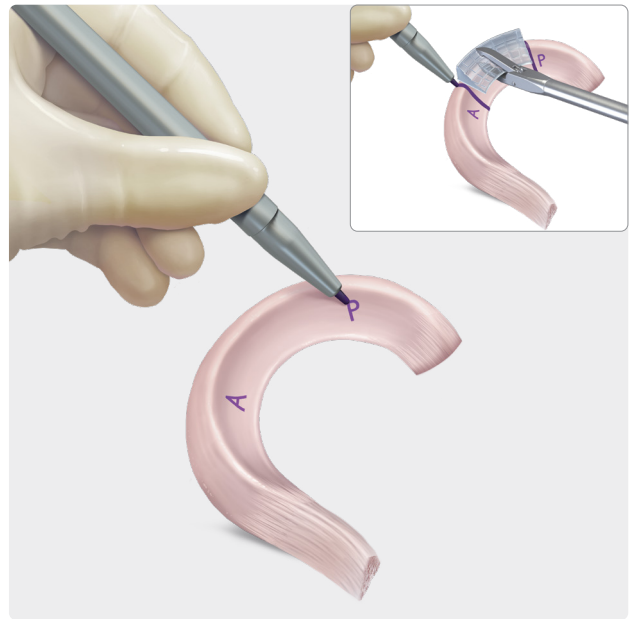
**8**

Advance the needle with 2-0 TigerLink™ SutureTape through the nitinol loop. Repeat for the posterior inferior quadrant. Repeat using FiberLink™ SutureTape suture for the anterior superior and inferior quadrants.



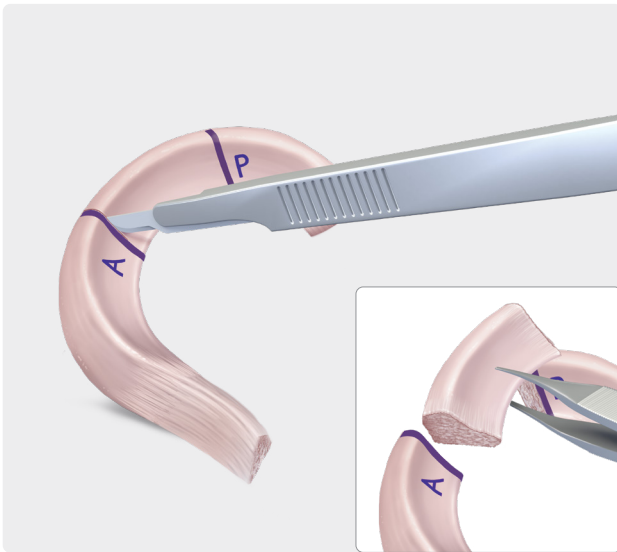
9

Insert the 12 mm PassPort Button™ cannula with four-quadrant divider to aid in suture management.



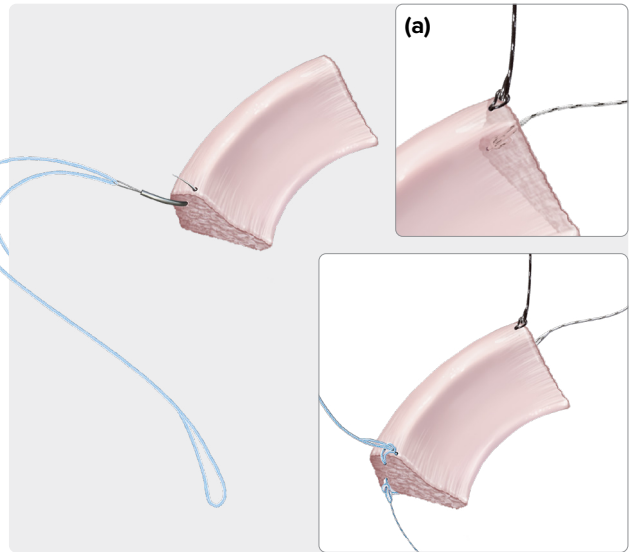
10

Label the anterior and posterior horns of the allograft. Using the meniscal template segment as a measuring guide, mark the measurements of the defect on the allograft.



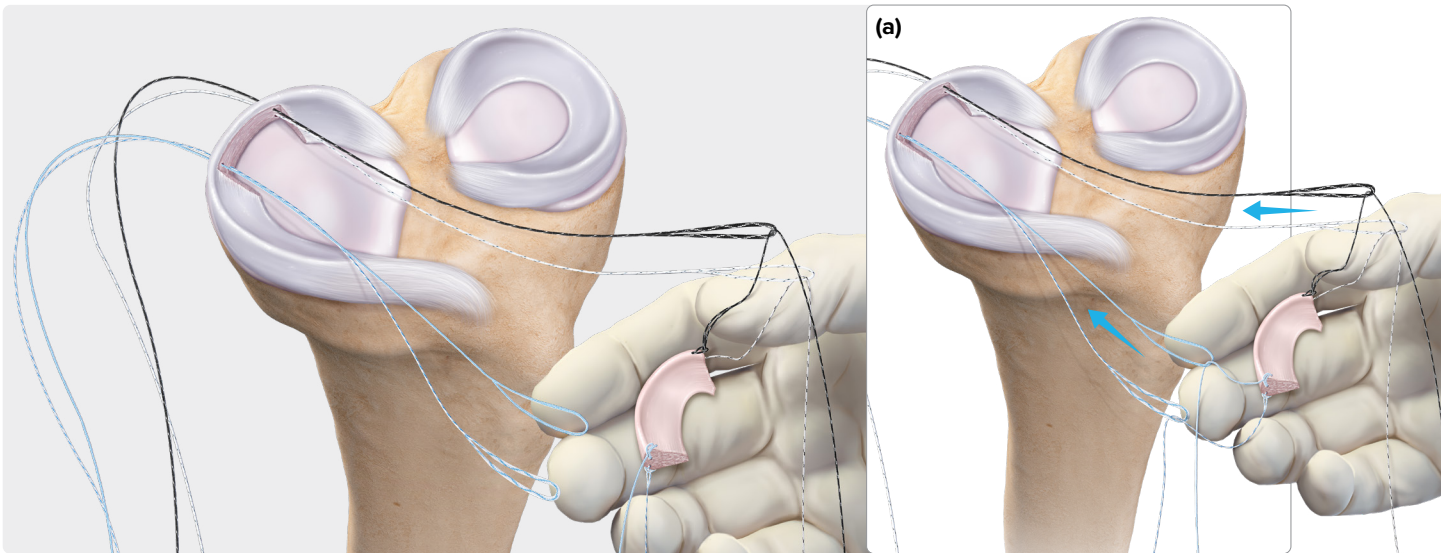
11

Cut the allograft to the desired length and sharply excise. Use the meniscal template to ensure an exact fit.



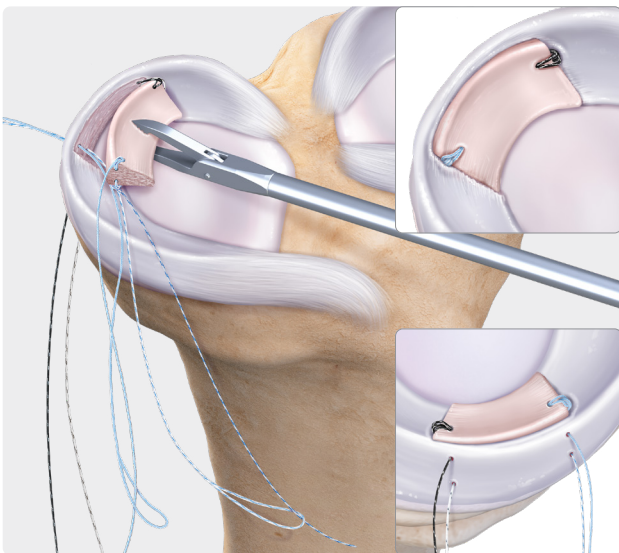
12

On the allograft segment, use the free needle from the procedure pack with attached nitinol loop to pass FiberLink™ and TigerLink™ SutureTape sutures that correspond to the SutureTape sutures that have been passed in the recipient site. Create a cinch configuration on each suture **(a)**.



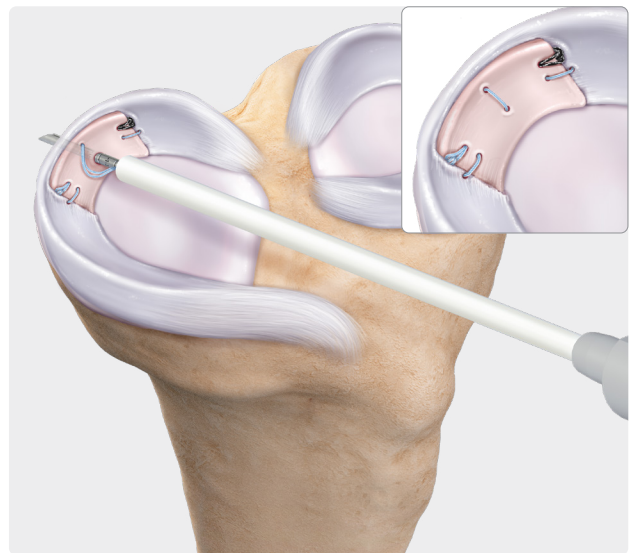
13

While maintaining good suture management, remove the divider and PassPort Button™ cannula, then assemble and pass the posterior links **(a)**. Repeat the loading and passing steps with anterior links.



14

Advance the segmental graft to the defect using the KingFisher® grasper while tensioning suture tails. To complete primary fixation, tie the anterior sutures to each other and then tie the posterior sutures to each other. Tie the sutures over the capsule.



15

**Optional:** Complete fixation using FiberStitch™ 1.5 implants or sutures using the ZoneNavigator™ device as necessary along the rim of meniscal segment.

## Ordering Information

| Product Description                                    | JRF Ortho Part Number | LifeNet Health Part Number |
|--------------------------------------------------------|-----------------------|----------------------------|
| Lateral meniscus, right                                | 28325001              | <b>FMN RL</b>              |
| Lateral meniscus, left                                 | 28325002              | <b>FMN LL</b>              |
| Medial meniscus, right                                 | 28225001              | <b>FMN RM</b>              |
| Medial meniscus, left                                  | 28225002              | <b>FMN LM</b>              |
| <b>Segmental Meniscus Procedure Pack</b>               |                       |                            |
| Segmental meniscus procedure pack w/ meniscal template |                       | ABS-1400                   |
| <b>Accessories and Supportive Products</b>             |                       |                            |
| KingFisher® grasper with self-ratcheting handle        |                       | AR-13970SR                 |
| MegaBiter™ resector, straight tip, 5.5 mm × 2.5 mm     |                       | AR-41006                   |
| Arthroscopic measurement probe, 60°, 220 mm            |                       | AR-4070-01                 |
| ZoneNavigator™ system anterior cannula                 |                       | AR-7905                    |
| ZoneNavigator system cannula, left posterior           |                       | AR-7910L                   |
| ZoneNavigator system cannula, right posterior          |                       | AR-7910R                   |
| Arthroscopic knot pusher, closed end                   |                       | AR-1305                    |
| FiberStitch™ 1.5 implant, 12° up curve                 |                       | AR-4580                    |
| FiberStitch 1.5 implant, 12° reverse curve             |                       | AR-4580R                   |
| FiberStitch 1.5 implant, 24° up curve                  |                       | AR-4580-24                 |
| FiberStitch 1.5 implant, straight                      |                       | AR-4580S                   |

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. Nyland J, Campbell K, Kalloub A, Strauss EJ, Kuban K, Caborn DNM. Medial meniscus grafting restores normal tibiofemoral contact pressures. *Arch Orthop Trauma Surg.* 2018;138(3):361-367. doi:10.1007/s00402-017-2849-x
2. Seiter MN, Haber DB, Ruzbarsky JJ, Arner JW, Peebles AM, Provencher MT. Segmental meniscus allograft transplantation. *Arthrosc Tech.* 2021;10(3):e697-e703. doi:10.1016/j.eats.2020.10.059
3. Strauss E, Caborn DNM, Nyland J, Horng S, Chagnon M, Wilke D. Tissue healing following segmental meniscal allograft transplantation: a pilot study. *Knee Surg Sports Traumatol Arthrosc.* 2019;27(6):1931-1938. doi:10.1007/s00167-019-05355-z
4. Roos H, Laurén M, Adalberth T, Roos EM, Jonsson K, Lohmander LS. Knee osteoarthritis after meniscectomy: prevalence of radiographic changes after twenty-one years, compared with matched controls. *Arthritis Rheumatol.* 1998;41(4):687-693. doi:10.1002/1529-0131(199804)41:4<687::AID-ART16>3.0.CO;2-2

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.



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