

Clinical Summary

Surgical Repair and Augmentation of a Midsubstance Chronic Achilles Tendon Rupture with a Novel Biocomposite Scaffold: A Case Report

Authors: Michael R. Redler, MD

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Aim:

To present a case using BioBrace® to surgically repair a chronic Achilles tendon rupture, demonstrating its dual role in mechanical support and biological healing.

Diagnosis & Clinical History

Patient: 31-year-old male.

Condition: Chronic midsubstance Achilles tendon rupture with significant tendon retraction and cavitation.

Symptoms: No active plantar flexion, slapping foot gait, dorsiflexion strength 4-/5+, MRI showed fibrous tissue infiltration and poor-quality tendon.

Surgical Technique & Post-Op Protocol

- **Surgical Technique**
 - » BioBrace® (23x30mm) implant cut into two 12x30mm strips
 - » Strips placed end-to-end within the tendon defect
 - » Sutured using Krackow-type stitch
 - » Tendon tissue wrapped around the implant to form a tubular structure
- **Postoperative Protocol**
 - » 2 weeks in short leg cast
 - » Transition to CAM walker with early range of motion
 - » Formal physical therapy initiated at 8 weeks

Results

- **8 Weeks Post-op:**
 - » Active dorsiflexion and plantar flexion restored.
 - » Strength: 4+/5+ plantar flexion, 5+/5+ dorsiflexion.
 - » Range of motion: 25° dorsiflexion, 35° plantar flexion
 - » Double-row repair suture bridge repair using double loaded medial row anchors. 1 set of suture is crisscrossed and bridged to lateral row
 - » BioBrace® is shuttled arthroscopically and secured to second set of medial row sutures
 - » BioBrace® is secured laterally to a third row using 2.9-mm knotless anchors for fixation.
- **6 Months Post-op:**
 - » MRI showed near-complete fill-in of the tendon defect with new, integrated tendon-like tissue.
 - » Patient returned to full-duty work at 6-months post-op (physically demanding job).
 - » Demonstrated ability to perform double leg hop.

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Key Takeaways

- BioBrace® effectively augmented the repair of a chronic Achilles tendon rupture, promoting both mechanical stability and biological healing.
- Early mobilization was possible due to the strength of the repair construct.
- The implant showed promising integration and tissue regeneration on imaging.
- This case supports the potential of biocomposite scaffolds in managing complex tendon injuries, though larger studies are needed for validation.

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