Clinical Summary

Anterior Cruciate Ligament Reconstruction with Quadriceps Tendon Autograft: Surgical Technique Using Augmentation with a Biocomposite Scaffold

Authors: Kaitlin Pyrz, B.S., Audria Wood, M.P.H., Collier Campbell, M.D., Eugene Brabston, M.D., Thomas Evely, D.O., Aaron Casp, M.D., and Amit Momaya, M.D.

Journal: Arthroscopy Techniques

BioBrace® Publications

Aim:

To describe a reproducible surgical technique for ACL reconstruction using a quadriceps tendon autograft augmented with the BioBrace®, aiming to enhance graft healing biologically and mechanically.

Reasons for Augmentation

- ACL graft failure rates range from 3% to 14%, often due to biological factors.
- Traditional internal bracing improves mechanical strength but lacks biological support.
- BioBrace® offers:
  - Mechanical reinforcement at time-zero
  - Biological enhancement via a porous collagen matrix
  - Gradual resorption as native tissue remodels

Surgical Techniques

- Graft Harvest: Standard quadriceps tendon harvest (~70 mm)
- BioBrace® Preparation:
  - Cut to match graft length
  - Can be hydrated with saline, PRP, or BMAC
- Graft Preparation:
  - BioBrace® is whip stitched to graft
  - Both ends secured and tensioned
- Graft Passage & Fixation:
  - Graft passed through medial portal
  - Femoral and tibial buttons used for fixation
  - Final tensioning after cycling the knee
- Rehabilitation: Standard ACL rehab protocol; no changes due to BioBrace®

Surgical Pearls

- Match BioBrace® length to graft to avoid overstuffing.
- Ensure BioBrace® is pierced with each suture pass for secure fixation.

ConMed

Clinical Summary

Anterior Cruciate Ligament Reconstruction with Quadriceps Tendon Autograft: Surgical Technique Using Augmentation with a Biocomposite Scaffold

Authors: Kaitlin Pyrz, B.S., Audria Wood, M.P.H., Collier Campbell, M.D., Eugene Brabston, M.D., Thomas Evely, D.O., Aaron Casp, M.D., and Amit Momaya, M.D.

Journal: Arthroscopy Techniques

BioBrace® Publications

Discussion:

- Enhances early mechanical stability and supports biologic integration.
- Compared to PRP or BMAC, BioBrace® adds mechanical strength and avoids donor-site morbidity.

Key Takeaways

- BioBrace® augmentation is a promising technique for ACL reconstruction.
- Technique is reproducible and adaptable to various graft types.

Offers dual benefits: mechanical support and biological enhancement.

Pyrz, K., Wood, A., Campbell, C., Brabston, E., Evely, T., Casp, A., & Momaya, A. (2023). Anterior Cruciate Ligament Reconstruction With Quadriceps Tendon Autograft: Surgical Technique Using Augmentation With a Biocomposite Scaffold. Arthroscopy Techniques, 12(12). https://doi.org/10.1016/j.eats.2023.08.003

ConMed