Clinical Summary

Surgical Repair and Augmentation of a Large Type-2 Re-tear of the Rotator Cuff with a Novel Biocomposite Scaffold: A Case Report

Authors: Sean McMillan, DO, Elizabeth Ford, DO, Scott Sigman, MD
Journal: Journal of Orthopaedic Experience & Innovation

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Aim:

This case report aimed to evaluate the effectiveness of a novel biocomposite scaffold (BioBrace®) in augmenting a revision rotator cuff repair for a large type-II re-tear. The goal was to assess whether this scaffold could provide both mechanical reinforcement and biological support to enhance healing and reduce the high failure rates typically associated with large rotator cuff re-tears, particularly in patients with poor tissue quality.

Diagnosis & Clinical History

- Patient: 55-year-old female.
- Initial Presentation: Right shoulder pain and weakness following a traumatic event.
- Surgical History:
  - Underwent right rotator cuff repair 4 months prior with dermal strip augmentation due to poor tissue quality.
  - Left shoulder had a failed xenograft repair, revised to full-thickness repair 2 years earlier.
- Imaging: MRI revealed a recurrent large type-II rotator cuff tear with grade 3 Goutallier fatty infiltration.

Intervention & Outcome Measures

To evaluate the potential of a novel bio-composite scaffold (BioBrace®) for rotator cuff repair (RCR) augmentation, combining mechanical strength with bioinductive properties to address high re-tear rates in large, massive, and revision rotator cuff tears.

- Surgical Technique:
  - Revision rotator cuff repair using a 23 x 30 mm BioBrace® scaffold
  - Double row suture bridge technique with margin convergence
  - Anchors and sutures were used to secure the scaffold medially and laterally

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Results

- Imaging:
  - 3-month MRI: Tendon extended across the footprint with robust thickness.
  - 8-month MRI: Maturation of tendon healing, no subacromial fluid.
  - 10-month arthroscopy: Full incorporation of BioBrace® with organized tendon fibers and new tissue growth.
- Clinical Outcome at 1 Year:
  - Full ROM, minimal pain, 4/5 supraspinatus strength.
  - Significant improvement in VAS, ASES, and SANE scores.
  - ASES activity score of the operated shoulder approached that of the contralateral side.

Key Takeaways:

- The BioBrace® scaffold provided both mechanical support and biological integration, addressing key failure points in rotator cuff repair.
- Imaging and arthroscopic findings confirmed scaffold incorporation and tissue remodeling.
- The patient achieved near-normal shoulder function at 1-year post-op.

This case supports the potential of biocomposite scaffolds as a viable option in complex revision rotator cuff repairs, especially in patients with compromised tissue quality.

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