ArthroFLEX® Dermal Allograft Scientific Update

Upper Extremity

ArthroFlex dermal allograft is an acellular dermal extracellular matrix intended for supplemental support and covering of soft-tissue repairs. Matracell® is a patented and validated process that renders the ArthroFlex allograft dermis acellular without compromising biomechanical or biochemical properties. This process allows the matrix to retain its growth factors, native collagen scaffold, and elastin, which is required for healing and provides a clean scaffold intended for supplemental support and covering for soft-tissue repair.[1] ArthroFlex grafts are the most widely used soft-tissue augmentation product on the market.[2] The following published studies highlight the demonstrated success of the ArthroFlex graft in supporting and providing pain relief in upper extremity joints.

Clinical Reports on ArthroFLEX® Dermal Allograft Use in the Upper Extremities

Neumann JA, Klein CM, van Eck CF, Rahmi H, Itamura JM

Outcomes after dermal allograft reconstruction of chronic or subacute pectoralis major tendon ruptures. *Orthop J Sports Med*. 2018 2018;6(1):2325967117745834. doi:10.1177/2325967117745834

Takeaway: Authors perform a retrospective review, at an average of 26.4 months postoperative, of 19 patients with augmented pectoralis major tendon rupture repairs. Scores for the visual analog scale (VAS) and Disabilities of the Arm, Shoulder, and Hand (DASH) scale improved significantly. The authors concluded that pectoralis major tendon reconstructions augmented with dermal allograft "resulted in good objective and subjective patient-reported outcomes."

Mirzayan R, Conroy C, Sethi PM

Distal biceps repair with acellular dermal graft augmentation. *Tech Shoulder Elb Surg.* 2015;16(3):89-92. doi:10.1097/BTE.0000000000000057

Takeaway: The authors found that graft augmentation significantly improved load to failure, increased construct stiffness, and decreased displacement compared to nonaugmented repair in tendon-deficit models. The clinical relevance of this study is that graft augmentation of the distal biceps is a biomechanically feasible option for patients with attritionally thin tendons.

Mirzayan R, Sethi PM

Distal biceps repair with acellular dermal graft augmentation. Operative techniques in sports medicine. *Oper Tech Sports Med.* 2018;26(2):130-135. doi:10.1053/j.otsm.2018.02.013

Takeaway: In this article, the authors describe a technique for augmenting distal bicep tear primary repairs with ArthroFlex dermal allograft. The authors report no re-tears, no synostosis, no infections, no inflammatory reactions, and no reoperations for previous repairs following this technique. They also concluded that this technique reduces repair site interface, normalizes tendon stiffness, and reduces the risk of tendon elongation.

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Lee B, Acevedo D, Mirzayan R

Reconstruction of the acromioclavicular joint, its superior capsule, and coracoclavicular ligaments using an interpositional acellular dermal matrix and tibialis tendon allograft. *Tech Shoulder Elb Surg.* 15(3):79-86. doi:10.1097/BTE.0000000000000023

Takeaway: This article describes a biologic and anatomic reconstruction technique for the coracoclavicular ligaments and AC joint using ArthroFlex dermal allograft and an anterior tibialis tendon. The authors report that senior author Raffy Mirzayan, MD, has performed 12 procedures with only one failure (8%) at two months postoperative, "when the patient attempted to do a push-up."

Atzei A, Bertasi G

Repair of distal triceps tendon rupture with a human acellular dermal matrix (adm). LifeNet Health. Data on file (68-20-097). Virginia Beach, VA; 2013.

Takeaway: This case study describes the surgical technique, including augmentation with DermACELL®* allograft, used in a successful distal triceps tendon repair.

Study available upon request.

Atzei A, Bertasi G

Reconstruction of finger flexor tendon and pulley repair with human acellular dermal matrix (adm). LifeNet Health. Data on file (68-20-098). Virginia Beach, VA; 2013.

Takeaway: The authors present a case study describing a successful outcome by using DermACELL to augment the flexor digitalis profundus tendon and pulley repair in a 16-year-old male.

Study available upon request.

Atzei A, Bertasi G

Matracell®-processed dermis augments finger extensor tendon reconstruction. LifeNet Health. Data on file (68-20-159). Virginia Beach, VA; 2015.

Takeaway: The presented case study describes the surgical technique and of using Matracell-processed dermis (ArthroFlex dermal allograft) to augment the extensor tendon in a 40-year-old male.

Study available upon request.

Bertasi G

Isolated annular ligament radii injury: reconstruction with Dermacell. *Clin Orthop Rheumatol.* 2019;5(1):034.

Takeaway : This case study describes the successful use of DermACELL dermal allograft to treat an isolated annular ligament injury in a 26-year-old female.

*ArthroFlex dermal allograft is also marketed under the name Dermacell

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Acevedo DC, Shore B, Mirzayan R

Orthopedic applications of acellular human dermal allograft for shoulder and elbow surgery. *Orthop Clin North Am*. 2015;46(3):377-x. doi:10.1016/j.ocl.2015.02.006

Takeaway: The authors review the basic science, rationale for use, and surgical applications of human dermal allograft, such as ArthroFlex, in various shoulder and elbow injuries. They conclude that acellular dermal allograft (ADM) "plays a role in a variety of applications for shoulder elbow surgery. There is a reasonable amount of evidence supporting its use along with good short-term outcomes, particularly in the shoulder. ADM appears to be safe for implantation with a low risk of rejection, infection, or inflammatory response."

References

1. Moore MA, Samsell B, Wallis G, et al. Decellularization of human dermis using non-denaturing anionic detergent and endonuclease: a review. *Cell Tissue Bank*. 2015;16(2):249-259. doi:10.1007/s10561-014-9467-4
2. SmartTRAK Market Research, OrthoBio, Soft Tissue Augmentation-US, 2019.

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