MATRACELL®-Processed Dermis Augments Finger Extensor Tendon Reconstruction

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CASE STUDY

Matracell®-processed dermis from LifeNet Health is a human acellular dermal matrix (ADM) that can be used for the repair, reconstruction, augmentation, and reinforcement of soft tissues such as tendons and ligaments.[1-4] The bio-implant is processed using proprietary technologies which make it resistant to premature enzyme degradation, biocompatible, and safe.[5] This bio-implant is an effective scaffold that has demonstrated recellularization and revascularization properties in vivo.[6]

The patient was a 40-year-old male with a complete deficit of active extension of the middle finger proximal interphalangeal after an open crushing injury over the dorsal aspect of the middle finger of his left, non-dominant hand during a car accident three years earlier. Dorsal skin, the extensor apparatus at both the proximal and middle phalanges, and the proximal interphalangeal joint (PIP-j) were injured.

The patient presented eight months after the injury with a large attenuated scar over the dorsal aspect of the finger that maintained the PIP-j in full extension following total joint replacement. After resection of the lengthened scar tissue, Matracell-processed dermis was used to augment the direct repair of the central tendon.

The following case presentation involves treatment of a ruptured distal triceps tendon with this human decelluralized dermis

Patient

- 40 year-old male
- Sustained an open crushing injury over the dorsal aspect of the middle finger of his left, non-dominant hand during a car accident. The dorsal skin, the extensor apparatus at both the proximal and middle phalanges, and the proximal interphalangeal joint (PIP-j) were injured.
- The patient presented eight months after the injury with a large attenuated scar over the dorsal aspect of the finger that maintained the PIP-j in full extension.
- Total PIP-j replacement was performed with a Pyrocarbon implant, resulting in severe extension lag (Fig. 1) and an extensor tendon reconstruction was performed six months later (Fig. 2).

Treatment

- Tendon repair was performed by an Ethibond 2-0 core suture, reinforced with a Prolene 4-0 running stitch (Fig. 3). Due to the poor quality of the tendon, the repair site was augmented with a strip of Matracell-processed dermis overlaid over the repair site and secured with Prolene 4-0 interrupted sutures (Fig. 4).
- The tourniquet was deflated after the repair and the patient was asked to actively move the finger intraoperatively (Fig. 5). Full PIP-j extension was achieved as well as 90° flexion without any detectable damage to the repair site. The wound was then irrigated and the skin closed with interrupted sutures.
- The finger was splinted in slight flexion for two weeks and an early rehabilitation program started. A progressive increase to maximal flexion was allowed over the following four weeks.

Conclusion

- Excellent augmentation of the extensor apparatus at the PIP-j was achieved
- Post-operative course was uneventful: no swelling was observed that would alter the finger shape
- Observed Matracell-processed dermis did not adhere to skin in this case
- Three month post-operative, the patient regained 10° to 90° ROM (Fig. 6)
- Augmentation with Matracell-processed dermis proved to be an effective option for extensor tendon reconstruction

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CASE STUDY

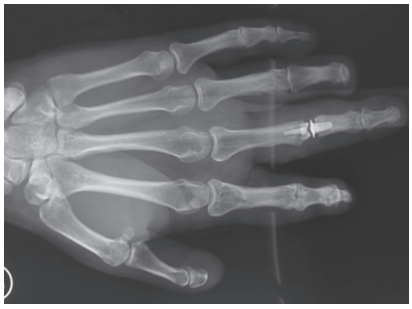

Figure 1. *Pre-operative X-ray showing AP*

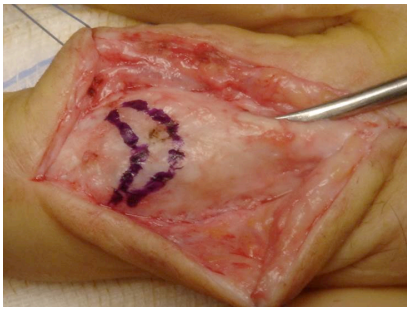

Figure 2. *Pre-operative image of the central tendon*

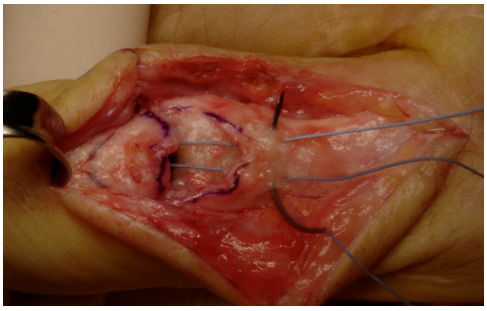

Figure 3. *Tendon repair suture reinforced with running stitch*

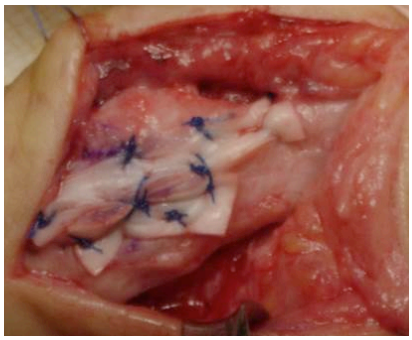

Figure 4. *Augmentation with Matracell-processed dermis*

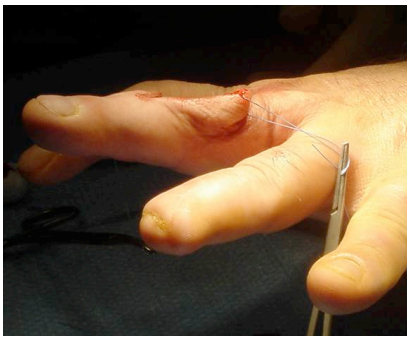

Figure 5. *Intraoperative check*

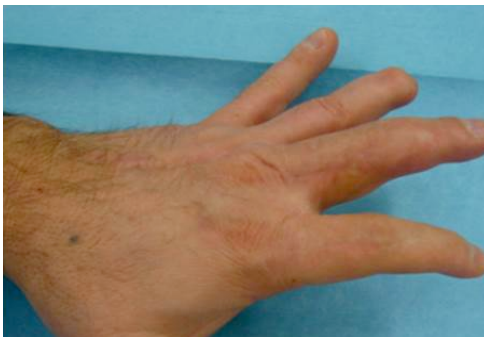

Figure 6. *Three months post-operative, patient regained 10° to 90° ROM*

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