Repair of Distal Triceps Tendon Rupture with Human Acellular Dermal Matrix (ADM)

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CASE STUDY

Distal triceps tendon ruptures can cause long-term disability for the patient, which can be further complicated by difficulties for the surgeon in developing a diagnosis as well as determining the severity of the injury.[1,2] Distal triceps tendon ruptures are often caused from a fall onto an outstretched hand or trauma to the posterior of the arm, with pulling or tearing at the osseous tendon insertion.[1,3] Other studies report intramuscular injury or injury at the myotendinous junction as another possible cause of the rupture.[1,3] Treatment of these ruptures typically includes surgery to reattach the ruptured triceps tendon to the olecranon of the elbow.[4] This is commonly achieved with the use of sutures that are passed through tunnels in the olecranon.[4] Surgeons often augment the tendon with an allograft in patients with chronic tears or undergoing revision surgey.[5]

An alternative treatment for ruptured distal triceps tendon is a matrix scaffold for new tissue generation, an acellular human dermal matrix (ADM) allograft as reviewed by Wainwright and Bury.[6] Decellularized human skin has been used for a variety of medical procedures, primarily involving wound healing, soft tissue reconstruction, and sports medicine applications.[7-10]

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

Patient

- 42 year-old male

Diagnosis

- Failed repair of total full-thickness laceration of the distal tendon of the triceps (Fig. 1)
- Original failed repair had been attempted three months earlier

Treatment

- The scar tissue was resected with a resulting 6 cm gap between the tendon stumps
- Two core sutures (Ethibond 2, Ethicon, Somerville, NJ, USA) were placed at both sides of the tendon (Fig. 2)
- One trimmed piece of 6cm x 7cm non-meshed decellularized dermis was weaved through the tendon mid-structure for augmentation and a second custom fit piece of 6cm x 7cm non-meshed decellularized dermis was laid over the repair site (Figs. 3,4)
- A small incision was made to let the exudate drain
- Elbow was splinted in 90° flexion for three weeks and progressive flexion was allowed to achieve full flexion in the following three weeks

Conclusion

- Post-operative course was uneventful except for a prolonged swelling over olecranon bursa, healed spontaneously after three weeks
- By six months post-op, the patient regained 87% ROM and 70% strength
- Three month MRI demonstrated intact distal triceps brachialis tendon (Fig. 5)
- Excellent augmentation of the distal triceps brachialis tendon achieved

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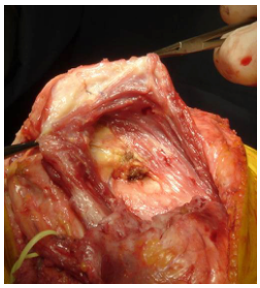

Figure 1. *Full-thickness laceration of the distal tendon of the triceps*

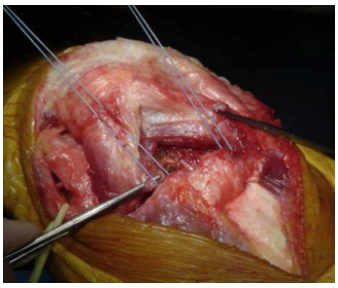

Figure 2. *Core sutures were placed at both sides of the tendon*

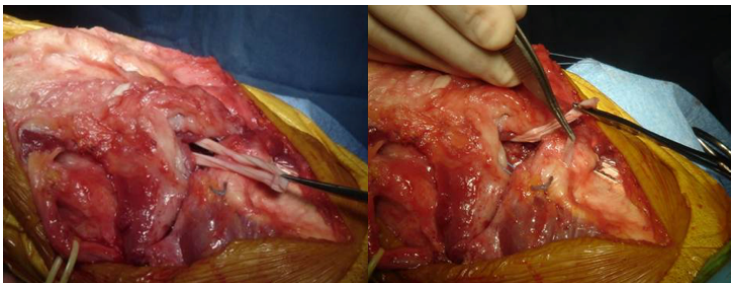

Figure 3. *Dermacell was weaved through the tendon mid-structure*

Figure 4. *A second custom-fit piece of Dermacell was laid over the repair site*

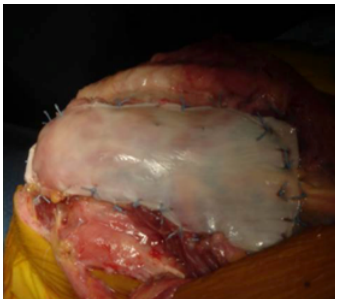

Figure 5. *Three month MRI demonstrates intact distal triceps brachialis tendons*

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