Optimizing the Sequence of Zone 1 Extensor Tendon Repair

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Extensor zone 1 lacerations can be challenging to manage due to the thinness of the tendon mechanism at this level. The authors have described numerous methods to repair the extensor tendon in zone 1. One approach advocated by Doyle is a dermotenodesis suture that involves passing a large 3.0 monofilament suture through skin and extensor.¹ Others

have described the use of a continuous epitendinous 5.0 monofilament stitch with the repair protected by a transarticular Kirschner-wire (K-wire).² However, these techniques have drawbacks. Dermotenesodesis can possibly result in higher infection and adhesions rates; furthermore, transarticular K-wiring can result in unnecessary joint stiffness.³

Fig. 1 (A) Complete laceration of the terminal extensor tendon. (B) Back wall epitendinous stitch is passed through the body of the tendon. (C) Core stitch is inserted after tightening of the epitendinous stitch. (D) Finished repair demonstrating approximation of the tendon stumps.

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The authors describe an elegant alternative that provides a robust repair, with minimal bunching and without the need for immobilization with a K-wire. Often, when the extensor tendon is divided at zone 1, it can be challenging to bring the tendon ends together without fraying the tendon ends or causing inadvertent cheese wiring. The fragility and thinness of the tendon compound the problem. This problem can be easily rectified by starting the repair by bringing the tendon ends together with a 6.0 monofilament back wall epitendinous suture. Taking multiple 1-mm bites will eventually make a pulley system that draws the tendon ends together with minimal trauma and facilitates the core repair (► **Fig. 1**). The core suture can be performed more accurately after this initial suture and involves a 3.0 multifilament core stitch, either two or four strands depending on the size of the tendon. A multifilament suture such as Ethibond is preferred as this prevents bunching up of the tendon and overtension of the repair that could pose a problem. Finally the 6.0 epitendinous suture is completed on the front wall to strengthen the repair further.

The technique described here should ideally be utilized when faced with clean lacerations to the terminal extensor tendon, in which the injury did not result in substantial losses of tendinous substance. In cases in which tendon loss precludes tension-free reapproximation, alternative methods of repair need to be used. Although this technique does not describe new concepts in terms of core and epitendinous tendon repair, the sequence of steps described here allows

for a safe, accurate repair in this zone of injury, and can also be used in cases of tendinous mallet finger injury that are not suitable for splinting or where conservative measures have proven unsuccessful. The authors believe that this approach to repairing extensor zone 1 lacerations may result in superior outcomes when compared with dermotenodesis as it minimizes adhesion formation between the skin and underlying tendon and allows for precise tensioning of the tendon ends prior to their reapproximation; however, future studies will need to be conducted to quantify these potential benefits.

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Conflict of Interest
None.

References

- 1 Doyle J. Extensor tendon—acute injuries. In: Green D, ed. *Operative Hand Surgery*. 3rd ed. New York, NY: Churchill-Livingstone; 1993: 1925–1954
- 2 Smit JM, Beets MR, Zeebregts CJ, Rood A, Welters CF. Treatment options for mallet finger: a review. *Plast Reconstr Surg* 2010; 126(05):1624–1629
- 3 Stern PJ, Kastrup JJ. Complications and prognosis of treatment of mallet finger. *J Hand Surg Am* 1988;13(03):329–334