ORIGINAL ARTICLE

Nr 2020;10 (1):144-145

Saving Resources in Accident Emergency: a Simple Device for Injuries to the Extensor Tendons of the Hand

A. Oliviero[1], G. Criscuolo[1], F. Oliva[1], N. Maffulli [1,2]

[1] *Department of Musculoskeletal Disorders, Faculty of Medicine and Surgery, University of Salerno, Salerno, Italy*
[2] *Centre for Sports and Exercise Medicine, Barts and The London School of Medicine and Dentistry, Mile End Hospital, 275 Bancroft Road, London E1 4DG, England*

CORRESPONDING AUTHOR:
Nicola Maffulli
Department of Musculoskeletal Disorders
Faculty of Medicine and Surgery
University of Salerno, Salerno, Italy
E-mail: n.maffulli@qmul.ac.uk
Phone: + 44 20 8567 7553
Pbx: + 44 20 8223 8930

DOI:
10.32098/mltj.01.2020.20

LEVEL OF EVIDENCE: 5

SUMMARY

Background. Finger injuries are common. Many of these can be treated non-operatively with gentle reduction, appropriate splinting, and careful follow-up. Terminal extensor tendon injuries have optimal outcomes with non-operative treatment. A large variety of devices is present on the market, with no evidence of one being superior to any other.

Material. We describe a simple, cheap and effective device for the conservative management of these injuries.

Conclusions. Healthcare costs are high and continue to rise. The simple device described in this technical note could allow a reduction in expenditure and better redistribution of resources.

KEY WORDS

Extensor tendon; hand injuries; simple device; cheap device

INTRODUCTION

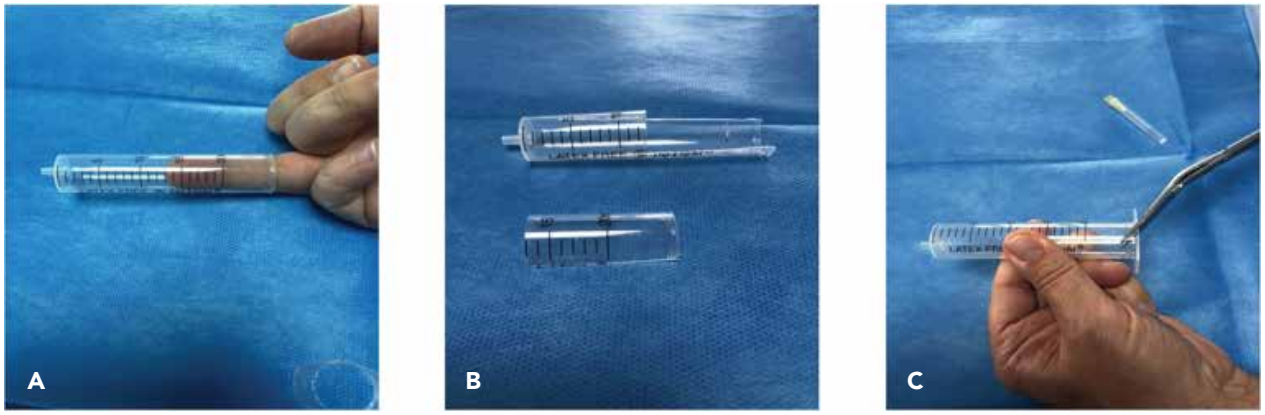
Hand injuries are common and result in enormous costs to the community (1). Extensor tendon injuries are more frequent than flexor tendon injuries (2), as they are not protected as well as the flexor tendons given their superficial location and lack of overlying subcutaneous tissue. Surgical management of extensors tendon injuries is demanding because of their dimensions compared to the flexors and their lack of collagen-bundle linkage, which reduces the grip strength available for the suture material (3). In traumatic mallet finger, the extensor tendon over the distal interphalangeal joint is disrupted causing a flexion deformity of the distal interphalangeal joint (4). Forceful flexion of the distal interphalangeal joint in an extended digit is the most frequent cause, with rupture of the extensor tendon or avulsion from its insertion at the distal phalanx. When left untreated, hyperextension of the proximal interphalangeal joint may develop from the retraction of the central band causing a swan neck deformity (5).

Closed mallet fingers should be treated with an immobilisation splint in extension or slight hyperextension for 8 weeks, which includes 2 weeks night splinting (6). Especially, pediatric mallet finger injuries can achieve good outcomes with nonsurgical treatment. Absolute indications for surgery in this population remain unclear (7).

A Cochrane review found no evidence for difference in outcomes between splints (8).

We describe the procedure to build the splint:

1. a 20 ml or smaller disposable plastic syringe based on finger size and remove the plunger;
2. remove the barrel flange (**figure 1A**);
3. insert the middle and distal phalanx into the barrel, using the notches as a reference for the length of the device (**figure 1B**);
4. cut the barrel at the selected length (**figure 1C**);
5. cover the margins of the device to avoid skin scratches (**figure 2**);
6. to obtain hyperextension, it is possible to use another small piece of the barrel covered with cotton wool (**figure 3**);
7. the device is applied and covered with gauze to fix it.



Figures 1A-B-C.

Figure 2.

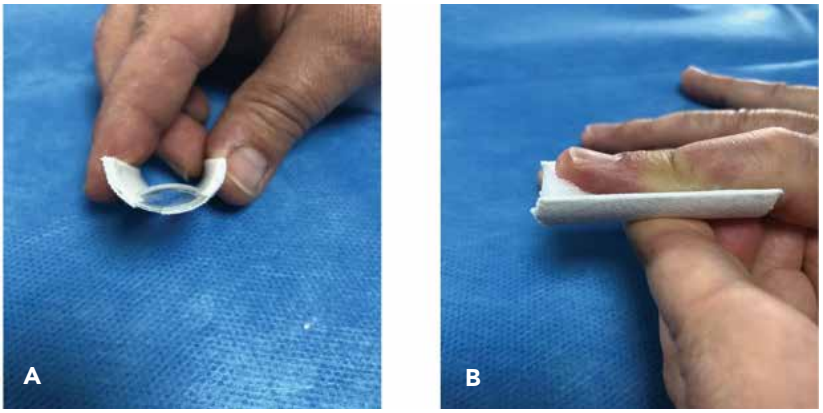


Figure 3.

CONCLUSIONS

Nonoperative management has been advocated for almost all extensor tendon injuries (6), with no evidence of difference in outcomes between splints (8). We analysed the most common used splint and we performed an economic comparison between It and the device proposed. The Stax splint costs about 7 times more than the syringe while the Zimmer splint cost 1.7 times more. Furthermore, from one syringe is possible to obtain up to four splints, so that the device proposed in this article will cost 28 and 6.6 times less than Stax and Zimmer splints respectively.

Healthcare costs are high and continue to rise. The simple device described in this technical note could allow a reduction in expenditure and better redistribution of resources.

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