

## Case Report

### Surgical Repair of Acute Extensor Tendon Injury of Hand at Multiple Levels in a Single Setting – A Case Report.

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#### Abstract

Extensor tendon injuries have a documented incidence rate of 14 occurrences per 100,000 person-years, making them the most frequent tendon injuries. With an estimated frequency of 17.9 and 9.9 instances per 100,000 people per year, respectively, extensor tendon injuries and mallet finger represent 16.9% and 9.3% of orthopaedic soft tissue injuries.

Here will be discussing regarding a 28 years old male gives alleged h/o work place injury following which he sustained injury to his right hand. On examination, laceration of size 3 x 5 cm exposing the underlying soft tissue, bone, extensor tendon with muscle was seen. Active extension of middle finger was not possible. X ray revealed no obvious bony fracture or dislocations. Intra-operatively, tendon was identified as extensor communis, the tendon freshened and reattached with adjacent tendon. Boutonniere deformity noted in the middle finger, due to the volar subluxation of lateral band was corrected. Patient's hand was immobilized in plaster for 3 weeks and rehabilitation was started gradually. At the final follow up patient was able to functionally extend his metacarpophalangeal and interphalangeal joints to full range of motion without any deformities. His visual analogue scale was 1/10 at the end of 3<sup>rd</sup> month.

**Keywords:** Tendon injury, Extensor apparatus, Multiple tendon injury, Zone 3 injury, Zone 6 injury, Surgical repair of tendon.

#### Introduction

The most often occurring tendon injuries are extensor tendon injuries, which have an incidence rate of 14 occurrences per 100,000 person-years.<sup>1</sup> Extensor and flexor tendon systems contribute together with a complex arrangement to give a

precise balance of force and positioning of the fingers; therefore, an optimal repair and extensor tendon reconstruction should always be attempted to avoid functional sequelae. The old treatment protocol for ETI included static splinting and immobilization for a mean of 6 weeks, followed by a standard rehabilitation.<sup>2</sup> Recent biomechanical research has pushed for a surgical approach that makes use of stronger and more effective suture methods. The majority of the time, surgical results have dramatically improved as a result of this operative strategy.

#### Case History

28 years old male gives alleged h/o work place injury to his right hand following which he sustained injury on his right hand exposing underlying soft tissue with avulsion of extensor communis tendon. On examination, laceration of size 3 x 5 cm exposing the underlying soft tissue, bone, extensor tendon with muscle was seen. Active

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extension of middle finger was not possible. X ray revealed no obvious bony fracture or dislocations. Pre operative evaluation was done and patient was taken to operation room. Intra-operatively, tendon injured was identified as extensor communis, the tendon freshened and was meticulously reattached with adjacent tendon. Clinically extension of the finger was evaluated post reattachment of tendon.

Boutonniere deformity noted in the middle finger, due to the volar subluxation of lateral band. An incision was given over the dorsal aspect of proximal interphalangeal joint; lateral band identified and was relocated and repaired. Nail bed avulsion was identified which was also repaired in the same setting. Wound was thoroughly washed and closed in layers. Patient's hand was immobilized in plaster for 3 weeks and rehabilitation was started gradually. At final follow up patient was able to functionally extend his metacarpophalangeal and interphalangeal joints to complete range of motion without any deformities. His visual analogue scale was 1/10 at the end of 3<sup>rd</sup> month.



**Figure 1: At the time of presentation in emergency department. Picture depicting Zone 3 and Zone 6 injury of tendon.**



**Figure 2: Exploring the wound and identifying extensor digitorum communis tendon (Zone 6 region ) intraoperatively.**



**Figure 3: Reattachment of extensor digitorum communis tendon (Zone 6 region) with the adjacent tendon and repairing the Boutonniere deformity( Zone 3 region).**



**Figure 4: Post operatively, inspection of postoperative wound after removal of dressing.**

### **Discussion**

Zone I: DIP joint, Zone II: middle phalanx, Zone III: PIP joint, Zone IV: proximal phalanx, Zone V: MCP joint, Zone VI: metacarpals.

Zone3: A central slip lesion could result from trauma to the extensor tendons in zone 3, where discomfort and edema at the proximal interphalangeal joint are linked to weakening of the joint extension against resistance. A boutonniere deformity may develop many weeks after the trauma in this case due to a lack of central slip action and the consequent volar displacement of the lateral bands.<sup>4</sup> To minimise stiffness and reposition the lateral bands of the extensor tendon apparatus, an exercise programme can be linked with immobilisation, involving passive extension of the proximal interphalangeal joint and active flexion of the distal interphalangeal joint.

Zone 6: The prognosis for injuries on the hand's dorsal side is frequently favourable for a variety of reasons: The lack of concomitant joint injuries, the considerable tendon excursion, the

decreased danger of adhesions, the expanded subcutaneous tissue, the convenience of 3-0 core sutures with or without 5-0 cross stitches, and the manageability of dynamic splinting all work in favour of this procedure.<sup>4,5</sup> However, due to the existence of the juncturae tendinum, a diagnosis is not often made right away. It is advised to undergo surgical investigation since the EIP and EDM tendons could conceal a lesion that would permit some extension. Side-to-side tendon transfer or the use of tendon grafts may be viable choices in chronic injuries where direct repair is not possible, as well as two-stage silicone rod restoration in severe cases of substance loss.<sup>6</sup>

Because these lesions are frequently seen in clinical practise, a proper diagnosis and effective treatment of extensor tendon injury of the hand and wrist are imperative. The initial stage in making a diagnosis is still a thorough clinical history and evaluation, which is then followed by ultrasonography to confirm a clinical suspicion of extensor tendon damage or to look into other possible disorders. The study of the nature of the lesions and the classification of injuries into hand anatomical zones are thought to be crucial factors in deciding on the best course of action for ETI.<sup>7</sup>

### **Conclusion**

In some injury patterns, early diagnosis may be difficult but critical to prevent long-term deformities and functional deficits. Understanding of the anatomy and armamentarium of treatment options in extensor tendon injuries is critical to ensure favourable outcomes. Despite recent research discoveries, surgical treatment and postoperative management of ETI continue to lack evidence-based knowledge.<sup>9</sup>

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