

Bilateral Simultaneous Traumatic Thumb Injuries – Extensor Pollicis Longus Rupture On One Side And Ulnar Collateral Ligament On The Other. Case Report

Sarang Kasture¹, Raj Sakamuri¹

What to Learn from this Article?

Atypical trauma may involve atypical injury. A high index of suspicion with thorough clinical examination and imaging will avoid missing these injuries and subsequent suboptimal results.

Abstract

Introduction: Though isolated traumatic extensor pollicislongus rupture and ulnar collateral ligament rupture of the metacarpophalangeal joint of the thumb are well known injuries, it is rare to have simultaneous bilateral thumb injuries from a single traumatic event. In this article, we report simultaneous bilateral traumatic thumb injury with extensor pollicislongus tendon rupture on one side and ulnar collateral ligament tear on the other side. To the best of our knowledge, such injury has never been reported in the English literature.

Case report: A 48-year-old healthy gentleman sustained simultaneous bilateral thumb injuries after a fall from mountain bike which was initially missed in the emergency department. Both injuries were later treated operatively with an excellent outcome at the end of six months. A peculiar mechanism explained simultaneous injury to both the thumbs.

Conclusion: This unique combination of bilateral simultaneous traumatic thumb injuries is very rare. Further, due to subtle clinical findings and normal radiographs these injuries are more likely to be missed at initial evaluation. Emergency physicians should be aware of it as majority of them require operative intervention for satisfactory outcome.

Keywords: Extensor indicisproprius, extensor pollicislongus, simultaneous, traumatic, ulnar collateral ligament.

Introduction

Isolated ulnar collateral ligament (UCL) injury of metacarpophalangeal joint (MCPJ) of thumb and extensor pollicislongus (EPL) tendon rupture are well known injuries [1,2]. Due to the distinct mechanism involved, it is indeed rare to have both these injuries occurring simultaneously from a single traumatic event. Furthermore, both injuries pose a diagnostic challenge in acute setting due to subtle clinical signs and normal radiographs. In this article, we report a rare case of simultaneous bilateral thumb injuries after fall from mountain bike, with ulnar collateral ligament rupture of MCPJ of thumb on one side and the extensor pollicislongus rupture on the other side. We believe, this unique combination of injury not reported previously can be explained by a peculiar sequence of events during the fall.

Case Report

A 48-year-old fit and healthy gentleman fell from a mountain bike following a sudden deceleration impact against a tree. He confirmed landing on the left wrist first and sustained injury to both the thumbs at the same time. He attended the emergency department immediately but the injuries were missed due to significant swelling and pain which made clinical examination difficult. As the radiographs revealed no bony injury he was referred to the hand clinic. He presented with pain and swelling of both the thumbs with painful grip on the right and inability to extend the thumb on the left side. Clinically, there was tenderness along the ulnar aspect of the MCPJ of the right thumb and positive stress test for UCL injury. This was confirmed by stress radiographs of the MCPJ joint of the thumb. The ultra sound scan confirmed complete rupture of UCL at insertion with Stener's lesion. On the left side, he was unable to extend the

Author's Photo Gallery



Dr. Sarang Kasture



Dr. Raj Sakamuri

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¹Department of Trauma and Orthopaedics, Gwynedd hospital Penrhosgarnedd, Bangor, UK. LL57 2PW.

Address of Correspondence

Dr. Sarang Kasture,
Department of Trauma and Orthopaedics, Gwynedd hospital, Penrhosgarnedd, Bangor, UK. LL57 2PW.
E-mail: sarangkasture@gmail.com

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Figure 1: Repair of the UCL right side.



Figure 2: Distal stump of Extensor Pollicis Longus tendon left side.

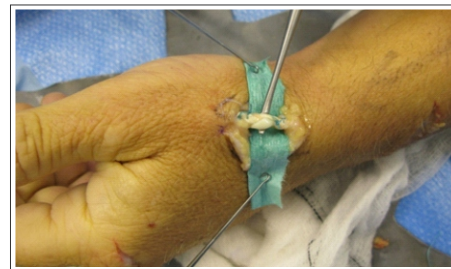


Figure 2: EIP to EPL tendon transfer.

interphalangeal joint of the thumb actively. The ultrasound scan confirmed rupture of EPL with the distal stump of the tendon located just distal to the extensor retinaculum. He underwent sequential exploration of both the thumbs in one anaesthetic. On the right side, complete rupture of UCL at the insertion with adductor pollicis aponeurosis interposed (Stener's lesion) and rupture of dorso-ulnar capsule of MPJ was noted. The capsule was repaired with absorbable sutures and the ruptured UCL was repaired with absorbable anchor suture (Fig 1). On the left side, the distal stump of the EPL tendon was located just distal to the extensor retinaculum (Fig. 2) The proximal stump of EPL could not be located as it had probably retracted deep in the forearm. Hence, EIP tendon was transferred to EPL (Fig. 3). Right thumb was immobilised for six weeks and mobilised thereafter. The left thumb was mobilised after two weeks in a custom made thermoplastic dynamic splint. He was followed up at six weeks, three months, five months and one year after surgery. At the end of five months, he regained full range of movements of both the thumbs and satisfactory grip strength as measured with Jamar Dynamometer.

Discussion

EPL tendon rupture is most commonly seen in patients with rheumatoid arthritis [3]. In non-rheumatoid patients, it may be due to high energy direct trauma, associated with fractures or secondary to internal fixation implants used to stabilise the fractures. It has also been reported in sports persons due to repetitive motion strain [4]. The most common mechanism of injury in traumatic EPL rupture is either a direct closed injury to the wrist or a hyperextension injury of the wrist or rarely a rotational injury causing EPL tendon rupture at the musculotendinous junction [1]. Indirect injury can occur due to stretching force applied to a contracting muscle [5]. A recent study also attributes impaction of the base of third metacarpal against the tendon at the Lister's tubercle during hyperextension [6]. Restoration of the thumb extension with extensor indicis proprius (EIP) transfer has been reported with good results [7].

Unlike EPL rupture, the UCL injury of the thumb is usually due to acute trauma or repetitive trauma to the thumb. Skier's thumb usually suggests an acute injury while gamekeepers thumb a chronic injury. The mechanism of injury is excessive valgus strain applied to the metacarpophalangeal joint of the thumb [2,8]. Ultrasound can differentiate Stener's lesion from simple avulsions [9]. Also, majority of patients with complete rupture and Stener' lesion will fail to heal with conservative treatment [10].

The patient presented in this case report was non rheumatoid and denied pain or injury to either hand before the fall. Simultaneous injury to both thumbs can

be explained by a peculiar mechanism of injury. At the time of impact, fall on the extended left wrist resulted in EPL rupture on that side, while continuing to hold on to the handle bar of the push bike at the time of impact resulted in valgus stress on the MCP joint of the right thumb leading to UCL rupture akin to skiers injury due to pole handle. We believe this mechanism of injury can also cause other thumb injuries and the examining clinician should be aware of it. Though, we understand that it is very difficult to predict the mode of injury, we believe that this is atypical trauma as two distinct mechanisms have caused two different injuries in both thumbs occurring from a single event.

The rehabilitation after simultaneous repair in such cases is challenging as both require different physiotherapy regimes and close monitoring to assess the progress. To achieve best results, the patient needs to understand and comply with the rigorous rehabilitation protocol and should be counselled preoperatively about it.

Besides, as in this case, these injuries are more likely to be missed at the initial examination due to subtle clinical findings and normal radiographs. The emergency physician should be well aware of the possibility of these injuries and have a low threshold to investigate them as majority of them subsequently require surgical intervention. The patient should be counselled about the difference in the rehabilitation regimens for both the injuries and the need to adhere to it. These diverse regimens on each side after the surgery can make rehabilitation challenging and can subsequently lead to sub-optimal result when compared to isolated injuries. Finally, each injury should be treated on its own merit and principles remain similar to isolated injuries.

Conclusion

This case report presents an unusual pattern of bilateral thumb injury sustained after a single atypical traumatic event. It also emphasises the need to have low threshold to evaluate these injuries as they are likely to be missed in initial evaluation. Rehabilitation in these diverse injuries is challenging but proper patient counselling and compliance can yield satisfactory functional outcome.

Clinical Message

This report highlights a rare case of bilateral simultaneous thumb injury after an atypical trauma which was initially missed in the emergency department. The emergency physicians should have a low threshold to investigate such injuries further or arrange early referral to the specialist as majority require surgical intervention. The rehabilitation after surgery is challenging and patient needs to be counselled pre-operatively to achieve satisfactory outcome.

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