



Case Report

An unusual presentation of metacarpophalangeal joint instability of the thumb[☆]



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ABSTRACT

Thumb injuries are not as common as those occurring in the fingers. The authors present the case of a patient who had an isolated avulsion of the extensor pollicis brevis that resulted in metacarpophalangeal joint instability, with intact radial and ulnar collateral ligament.

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Apresentação incomum de instabilidade metacarpofalângica do polegar

R E S U M O

Lesões no polegar não são tão comuns como aquelas nos dedos. Os autores um caso em que a paciente sofreu uma avulsão isolada do extensor curto do polegar que resultou em instabilidade da articulação metacarpofalângica do polegar, com ligamento colateral ulnar e radial intacto.

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Introduction

Thumb injuries are not as common as injuries occurring to the fingers. Thumb boutonniere deformity, mallet finger, UCL or RCL avulsion can also happen in the thumb.¹

Thumb Boutonniere deformity is characterized by hyperflexion of the MCPJ joint (MCPJ) and hyperextension of the interphalangeal joint (IPJ) of the thumb.^{2,3} The treatment is immobilization and after the 4–6 weeks, MCPJ flexion exercises are introduced with the patient wearing the splint at night for another 4–6 weeks. Surgical approach is also an alternative, through various methods such as pinning of the MCPJ, repair of the central, and tendon rebalancing technique.²

In the thumb, mallet deformity is caused by the Extensor Pollicis Longus (EPL) avulsion or rupture from the dorsal lip of the distal phalanx. Not as common, a previous study over a period of five years identified four cases of mallet thumb compared to 48 cases of mallet finger. The authors also suggested that all cases should be treated surgically due to past literature indicate no successful conservative treatments.⁴ Literature also suggest that non-surgical approach through immobilization, which varies in each case in terms of the position of the splint, type of splint, and the duration of the splint could also be considerate.⁵

When further examining extensor injuries to the thumb, rupture of the extensor pollicis longus is commonly reported but is usually associated with UCL tears, Stener lesions and injuries to the Abductor Pollicis Longus (APL).^{6,7} However, our patient presents with an isolated avulsion of the EPB tendon that has not been previously recorded in literature. Previous literature has only shown a slight injury to the EPB and the Abductor Pollicis Longus (APL) as a result of a radial styloid fracture.⁷

Case report

A 17 y.o. female with no significant past medical history came into the ED after direct trauma to the dorsal aspect of the left thumb. Initial X-ray revealed a volar dislocation of the left thumb Metacarpophalangeal joint (MCPJ), with no fractures.

After reduction, patient was splinted. In her follow-up appointment, she complained of worsening pain, weakness, and decreased range of motion in the left thumb. On inspection, there was swelling on the MCPJ dorsal–ulnar aspect, pain on the MCPJ dorsal–ulnar aspect, decreased MCPJ stability and grip strength. MRI ordered to evaluate the possibility of damage to the ulnar collateral ligament.

MRI indicated an avulsion at the insertion point of the EPB with proximal phalanx volar subluxation, as well as an intact ulnar collateral ligament (UCL) (Fig. 1).

Surgery was recommended. In surgery, the EPL was reinserted through a dorsal approach (Fig. 2). A SonicAnchor (Stryker) was then inserted into the dorsal aspect of the proximal phalanx, the dorsal capsule and the EPB repaired. The stability of the MCPJ was tested with no subluxation or instability. Patient was immobilized for 3 weeks and AROM started.

Discussion

The MCPJ of the thumb is stabilized by collateral ligaments, capsule and balanced by the extensor and flexor tendons.⁸ These collateral ligaments (radial and ulnar) pass from the heads of the metacarpal to the base of the proximal phalange. The UCL functions to protect the MCPJ against valgus stress and volar subluxation, with injury causing a proximal phalanx volar-radial subluxation at the MCPJ. Additionally, the

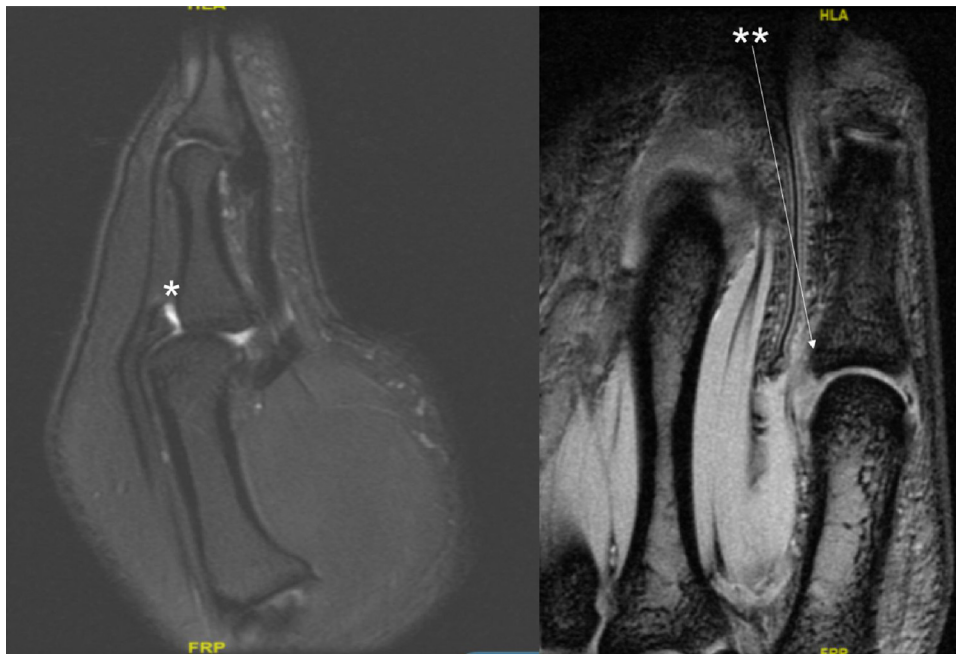


Fig. 1 – (Left) A T2 weighted sagittal MRI the thumb indicated an avulsion at the insertion of the EPB (*) and a volar dislocation of the proximal phalanx. (Right) T2 weighted MRI in an A/P view of the thumb, showing the UCL to be intact ().**

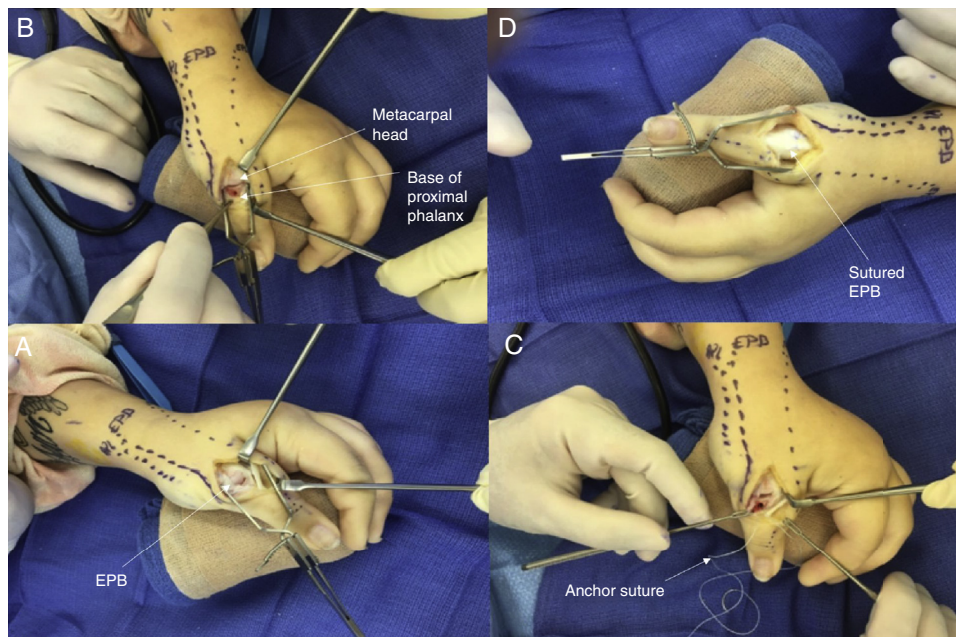


Fig. 2 – Surgical steps, reinsertion EPB at the base of the proximal phalanx (A to D).

thumb also consists of stabilizers that include extrinsic (extensor pollicis longus, extensor pollicis brevis, and flexor pollicis longus muscle) and intrinsic (abductor pollicis brevis, flexor pollicis brevis, and adductor pollicis muscles).⁹ An extrinsic muscle, the EPB attaches to the base of the proximal phalanx of the thumb and is involved in extending the proximal phalanx at the MCPJ, while also extending the carpometacarpal (CMC) joint.⁸ Both the EPB and APL lie in a unified fibrous canal, with the APL playing a role in abduction of the thumb while attaching to the base of the first metacarpal.^{8,10} However, it has been previously reported that the EPB and APL contain anatomical anomalies. The EPB may have an insertion at the extensor hood, proximal phalanx, and partially to both the proximal phalanx and extensor hood. These anatomical variations, do not increase the incidence of thumb boutonniere deformity.³

Upon physical examination of the patient, due to the significant loss of stability as well as a swelling on the dorsal-medial aspect of the thumb, it was previously thought there would be an injury to the UCL. With the results of the MRI as shown above, it was clear that the UCL remained intact and that an avulsion at the distal attachment of the EPB was present. However, due to the unified fibrous canal that contains the EPB and the APL, it was interesting to note that there was not a simultaneous avulsion of the APL at the base of the first metacarpal (the distal attachment of the APL). With previous literature not reporting an isolated avulsion of the EPB, a surgical approach was taken to treat the avulsion.

Although very similar in presentation to the thumb boutonniere mechanism of deformity. In our case, the avulsion of the EPB presented with instability with no UCL avulsion. In thumb boutonniere deformity, there is a hyperflexion of the MCPJ and hyperextension of the IPJ caused by subluxation and withdrawal of the EPL tendon due to a dorsoradial capsule rupture and an EPB avulsion. However, this patient

only presented with pain and volar subluxation in the absence of collateral ligament injury. These anatomical differences require a different approach to be taken in surgery, with thumb boutonniere deformity requiring an advancement of the EPB tendon and imbrication of the dorsoradial capsule, and the isolated avulsion of EPB only requiring reinsertion of the EPB.³

Conflicts of interest

The authors declare no conflicts of interest.

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