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CLINICAL QUIZ

JCHS-CQ-02-2023
Is My Finger Broken?

Shahrul Hisham Sulaiman

KPJ Tawakkal KL Specialist Hospital, Kuala Lumpur, Malaysia

Case Presentation

A right-handed 52-year-old man complained of sudden deformity over his right ring finger following a hyperflexion injury. He accidentally hyperflexed the distal interphalangeal joint (DIPJ) of his right ring finger while showering. Since then, he noticed that he had a flexion deformity and could not actively extend his ring finger at the DIPJ.

Further examination revealed a 30^0 flexion deformity of the right ring finger at the DIPJ and slight hyperextension at the proximal interphalangeal joint (Figure 1). There was an extension lag at the DIPJ with no wounds, bruises or obvious soft tissue swelling. It was painless upon passive extension of the DIPJ. The flexor tendon function was preserved. Plain radiograph of the right ring finger was done (Figure 2).

Figure 1 Flexion deformity of 30^0 at the DIPJ and slight hyperextension of the proximal interphalangeal joint of the of the right ring finger

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Figure 2 (a) AP and (b) Lateral view of the right ring finger

Question:

Based on the clinical presentation, what is the most likely diagnosis for this patient?

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ANSWER TO JCHS-CQ-02-2023

Acute Tendinous Mallet Finger.

Discussion

Mallet finger is a common terminal extensor tendon injury resulting in an extension lag at the distal interphalangeal joint (DIPJ) [1]. It could be an isolated tendon disruption or associated with fracture of the base of distal phalanx. In this patient, the tendon injury occurs in isolation or more commonly defined as a tendinous mallet finger.

The clinical diagnosis of mallet finger is relatively uncomplicated. Patient usually presents with pain associated with flexion deformity at the distal interphalangeal joint. Patient might describe a typical history of forceful flexion or hyperextension of the DIPJ of the finger [1]. As in this patient, the forceful flexion injury leads to terminal extensor tendon tear. In hyperextension injury mechanism, there will be fracture of the proximal dorsal lip of the distal phalanx as it strikes on the head of middle phalanx. As a result of these, physical examination will show loss of active extension at the DIPJ. Plain radiograph is useful to assess the associated fracture or volar subluxation of the distal phalanx [1, 2]. Figure 2 shows hyperextension of the proximal interphalangeal joint (PIPJ) as a compensatory mechanism due to imbalance in the distribution between extensor force of PIPJ and DIPJ.

In managing mallet finger, restoration of normal DIPJ anatomy is paramount in order to allow tendon healing with minimal remaining extension lag [3]. Conservative treatment has been recommended as first choice treatment for the majority of mallet finger injuries especially in cases without fracture involvement, absence of distal phalanx volar subluxation or fracture involving less than one third of articular surface [2, 3]. The principle of treatment is maintaining immobilization of the DIPJ in full extension for no less than six weeks with subsequent two weeks of night splinting [2, 3]. The patient's compliance to an uninterrupted immobilization of DIPJ for six weeks cannot be overemphasized. If the joint is allowed to flex, the course of immobilization need to be restarted [2, 3]. However, there are possible complications associated with long-term splinting such as ulceration or maceration of skin, allergic skin reactions to splint material, and splint-related pressure pain [4].

There are some closed mallet finger injuries that would benefit from surgery. Surgery is advocated in a non-compliant patient to continuous splinting and patients with a huge dorsal fracture fragment (more than one third articular surface involvement) or volar subluxation of distal phalanx [5]. Surgical management is also indicated in open mallet finger injuries, usually using a K-wire for DIPJ immobilization and repair of the extensor tendon [2].

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If the condition is not addressed early, patient can develop a Swan neck deformity of the finger. Hyperextension deformity at the level of proximal interphalangeal joint is caused by the unopposed extension force of the central slip and lateral bands. There is also risk of developing DIPJ osteoarthritis and dysfunction.

In conclusion, all acute reducible bony or tendinous mallet fingers should be initially managed with splints. Surgical treatments are reserved for failed conservative treatment, intraarticular bony mallet associated with joint subluxation and acute open mallet. Treatment is necessary to prevent complications.

Learning Points

- Acute mallet finger injury is relatively common and may result in a permanent flexion deformity of the finger if not treated appropriately.
- Majority of acute mallet injury cases need a continuous extension splint for 8 weeks to get a good outcome.
- Surgery is indicated only in few selected cases.

Conflict of Interest

Authors declare none.

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Corresponding author:

Dr. Shahrul Hisham Sulaiman,
KPJ Tawakkal KL Specialist Hospital
1, Jalan Pahang Barat,
Pekeliling, 53000 Kuala Lumpur,
Wilayah Persekutuan Kuala Lumpur
Email: drshahrulhisham@kpjtawakkal.com

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