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Management of Trigger Finger by Metallic Splint: A Case Report

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CASE REPORT

The patient is a 46-year-old male who developed resistance to flexion movement of the right ring finger for two months. Day by day the movement became more difficult. One morning at 4am the patient woke with severe pain and a finger locked in flexion of the metacarpophalangeal joint. There was pain in the ball of the finger as well as in the dorsal aspect of the distal interphalangeal joint. The patient rushed to the bathroom and placed his finger in hot water. He tried to manipulate the finger to straighten it. The hot water therapy and manipulation worked well and the patient was successful in unlocking his finger. Another episode occurred again within one month, leading the patient to visit a local hand surgeon. After examination and x-rays of the hand, the surgeon assured the patient that it was a case of trigger finger. The case was in the early stages and could be managed without surgery. The surgeon made a metallic splint for the ring finger and advised the patient to wear it as much as possible during the day and always during sleep for at least six months. The patient complied with the instructions, and within a few weeks, the pain subsided. No pain medication was prescribed. Six months later the patient continues to wear the metallic splint every night at bed time. The pain is almost absent and movement of the finger is more comfortable.

OVERVIEW

Tendons are connective tissue cords formed by collagen fibers, which connects the muscles to the bones. Trigger finger, or stenosing tenosynovitis, involves the tendons and their synovial sheaths. Flexion and extension of the fingers at the metacarpophalangeal and interphalangeal joints depend on the smooth movement of the tendons through a series of synovial tunnels.

Trigger finger occurs when the synovial tunnels become narrower and the smooth gliding of the tendons through the synovial tunnels becomes impaired. The tendon may be thickened or the lining of the synovial membrane may be hardened with the development of nodule. Because of the increased resistance to the gliding of the tendon through the synovial tunnels, one may feel pain, popping, or a catching feeling in the finger. As the tendon catches, it produces inflammation and more swelling. This causes a vicious cycle of triggering, inflammation, and swelling. Sometimes the finger becomes stuck or locked and is hard to straighten or bend.[1]

EPIDEMIOLOGY

Trigger finger is a familiar cause of pain and disability in the hand. It is also the fourth most common reason for referral to the hand outpatient clinic. The condition is managed by hand surgeons as well as by the specialist such as rheumatologists and endocrinologists who come across it as a secondary manifestation of a primary systemic disorder.[2] The condition has a reported incidence of 28 cases per 100,000 population per year, or a lifetime risk of 2.6% in the general population. This rises to 10% in patients with diabetes mellitus.[3]

CAUSES

Trigger finger may be associated with rheumatoid arthritis, gout, and diabetes mellitus. Local trauma to the palm/base of the finger may also cause this condition to occur. Trigger finger is more commonly seen among the typists or hand vibrating machine operators.[4] In most cases, the cause is not known (idiopathic).

PATHOPHYSIOLOGY

Trigger finger arises through an incongruity in the span of the flexor tendon and its sheath at the level of the metacarpal head. The thickening of the synovial sheath, along with some localized tendon thickening, can result in a narrowed tunnel for tendon movement. The flexor tendons are usually powerful enough to overcome this obstruction, whereas the weaker extensor tendons are less able to counteract the block, resulting in the finger being locked in flexion.

CLINICAL FEATURES

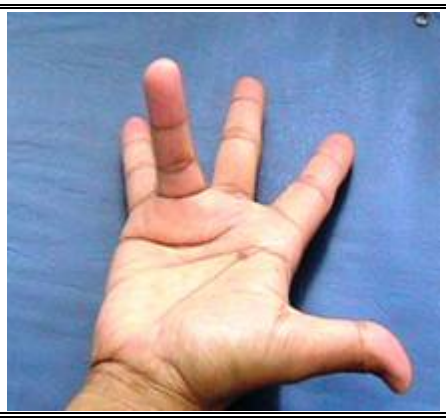
Usually the ring finger or the thumb is affected. The problem may start with discomfort felt at the base of the finger, at the palmer surface of the metacarpophalangeal joint. The area is often tender to local pressure. A bump or nodule may be palpated in this area. When the finger begins to trigger or lock, the patient may think the problem is at the dorsum of the proximal and distal interphalangeal joint. This is due to the compensatory pull by the dorsal digital expansion.

Lab Studies

- Trigger finger is a clinical diagnosis. Rarely, the nodule in the tendon is easily felt, and a palpable and audible click can be appreciated when the triggering is relieved with forced extension of the digit.
- Relevant diagnostic tests are done for diabetes mellitus, rheumatoid arthritis, hypothyroidism, or gout, as suspected.

Imaging Studies

- Radiology is rarely suggested.
- Hand x-rays are performed only if abnormal pathology (e.g, abnormal sesamoids, loose bodies in the MCP joint, osteoarthritic spurs on the metacarpal head, avulsion injuries of collateral ligaments) is suspected.



Trigger finger (palmer view)

Trigger finger managed by splint

MANAGEMENT

The purpose of treatment in trigger finger is to eliminate the catching or locking and to allow full movement of the finger without distress. Swelling around the flexor tendon and their synovial tunnels must be reduced to allow smooth gliding of the tendon.

The wearing of a metallic splint, especially at night, usually reduces inflammation. The metallic splint is available over the counter at most pharmacies. The use of metallic splint decreases the movement of long flexor tendons of the fingers through the synovial pulleys hence the inflammation of the synovial sheath resolves automatically. Rodger et al revealed that treating with splinting for six weeks to the distal interphalangeal joints of the finger of the workers whose occupation requires repeated hand movement resulted in end of symptoms in 53% of patients.[5] Patel et al were successful in managing 50% of trigger finger cases of the thumb and 70% of other fingers by splinting of the metacarpophalangeal joint.[6] In both research studies, patients with more severe disease and longer duration of symptoms were less likely to get benefit from splinting. Treatment may also include changing of day to day activities to reduce swelling.

An injection of steroid into the area around the synovial tunnels is often successful in relieving the trigger finger. The injection of steroid into the flexor sheath is supported as a method of treatment since 1950. Success rates between 38% and 93% have been reported.[7]

Higher success rates are seen when injecting the thumb and in patients for whom a well defined bump was palpable or whose symptoms had been present for less than six months. In patients for whom treatment fails or who have a recurrence of symptoms, a repeat steroid injection offers roughly half the effectiveness of the first injection. Surgery is advocated if all the above steps fail. Surgery is done under local anesthetic in the doctor's office. The synovial pulley is opened through a palmar skin incision, and the pulley is divided under direct vision. Success rates vary from 60% to 97%. Complication rates can be high and may include chronic tender scars, insufficient release, nerve damage, and flexor sheath infection.[8] Surgery may be followed by physical therapy for quick rehabilitation.

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