Tips for managing 4 common soft-tissue finger and thumb injuries

After examination and, in some cases, imaging, most of these injuries can be managed conservatively with splinting or injection. Some cases require prompt surgical referral.

Finger injuries are often seen in the primary care physician’s office. The evidence—and our experience in sports medicine—indicates that many of these injuries can be managed conservatively with bracing or injection; a subset, however, requires surgical referral. In this article, we provide a refresher on finger anatomy (see “A guide to the anatomic structures of the digits of the hand,”1,2 page 212) and review the diagnosis and management of 4 common soft-tissue finger and thumb injuries in adults: trigger finger, jersey finger, mallet finger, and skier’s thumb (TABLE 2-18).

Trigger finger
Also called stenosing flexor tenosynovitis, trigger finger is caused by abnormal flexor tendon movement that results from impingement at the level of the A1 pulley.

Causes and incidence. Impingement usually occurs because of thickening of the A1 pulley but can also be caused by inflammation or a nodule on the flexor tendon.3,4 The A1 pulley at the metacarpal head is the most proximal part of the retinacular sheath and therefore experiences the greatest force upon finger flexion, making it the most common site of inflammation and constriction.4

Trigger finger occurs in 2% to 3% of the general population and in as many as 10% of people with diabetes.5 The condition typically affects the long and ring fingers of the dominant hand; most cases occur in women in the sixth and seventh decades.3,5

Multiple systemic conditions predispose to trigger finger, including endocrine disorders (eg, diabetes, hypothyroidism), inflammatory arthropathies (gout, pseudogout), and autoimmune disorders (rheumatoid arthritis, sarcoidosis).3,6 Diabetes
commonly causes bilateral hand and multiple digit involvement, as well as more severe disease.\textsuperscript{3,5} Occupation is also a risk factor for trigger finger because repetitive movements and manual work can exacerbate triggering.\textsuperscript{4}

### Presentation and exam

Patients report pain at the metacarpal head or metacarpophalangeal (MCP) joint, difficulty grasping objects, and, possibly, clicking and catching of the digit and locking of the digit in flexion.\textsuperscript{3,5}

On exam, there might be tenderness at the level of the A1 pulley over the volar MCP joint or a palpable nodule. In severe cases, the proximal interphalangeal (PIP) joint or entire finger can be fixed in flexion.\textsuperscript{6} Repeated compound finger flexion (eg, closing and opening a fist) or holding a fist for as long as 1 minute and then slowly opening it might provoke triggering.

More than 60% of patients with trigger finger also have carpal tunnel syndrome.\textsuperscript{5} This makes it important to assess for (1) sensory changes in the distribution of the median nerve and (2) nerve compression, by eliciting Phalen and Tinel signs.\textsuperscript{4,5}

### Imaging

Trigger finger is a clinical diagnosis. Imaging is therefore unnecessary for diagnosis or treatment.\textsuperscript{5}

### Treatment

Trigger finger resolves spontaneously in 52% of cases.\textsuperscript{7} Most patients experience relief in 8 to 12 months.\textsuperscript{3}

First-line treatment is injection of a corticosteroid into the flexor tendon sheath, which often alleviates symptoms.\textsuperscript{4,5} Injection is performed at the level of the A1 pulley on the palmar surface, just proximal to the MCP joint at the level of the distal palmar crease (FIGURE 1). The needle is inserted at an oblique angle until there is an increase in resistance. The needle is then slightly withdrawn to reposition it in the tendon sheath; 0.5 to 1 mL of 50% corticosteroid and 50% local anesthetic without epinephrine is then injected.\textsuperscript{6}

The cure rate of trigger finger is 57% to 70% with 1 injection and 82% to 86% after 2 injections.\textsuperscript{3,4,19}

Many patients experience symptom relief in 1 to 4 weeks after a corticosteroid injection; however, as many as 56% experience repeat triggering within 6 months—often making multiple injections (maximum, 3 per digit) necessary.\textsuperscript{19,20} Patients who have a longer duration of symptoms, more severe symptoms, and multiple trigger fingers are less likely to experience relief with injections.\textsuperscript{3,5}

Splinting is an effective treatment for patients who cannot undergo corticosteroid
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DIP, distal interphalangeal; MCP, metacarpophalangeal; UCL, ulnar collateral ligament.  
<sup>a</sup> Partial tear marked by laxity on the stress exam, with a firm endpoint.  
<sup>b</sup> Palpable mass over the ulnar side of the MCP joint.  
<sup>c</sup> Complete tear showing laxity and a soft endpoint on a stress exam.  
<sup>d</sup> Partial tear characterized by pain upon palpation but no instability on the stress exam.
injection or surgery. The MCP or PIP joint is immobilized in extension while movement of the distal interphalangeal (DIP) joint is maintained. Instruct the patient that the splint must be worn day and night; splinting is continued for ≥ 6 weeks.21 Splinting relieves symptoms in 47% to 70% of cases and is most effective in patients whose symptoms have been present for < 6 months.3,7

Patients whose trigger finger is locked in flexion and those who have not experienced improvement after 2 or 3 corticosteroid injections should be referred for surgery.4 The surgical cure rate is nearly 100%; only 6% of patients experience repeat triggering 6 to 12 months postoperatively.4,7,22

Jersey finger

Causes and incidence. Jersey finger is caused by avulsion injury to the flexor digitorum profundus (FDP) tendon at its insertion on the distal phalanx.8,9 It occurs when a flexed finger is forced into extension, such as when a football or rugby player grabs another player’s jersey during a tackle.9,10 This action causes the FDP tendon to detach from the distal phalanx, sometimes with a bony fragment.9,11 Once detached, the tendon might retract proximally within the finger or to the palm, with consequent loss of its blood supply.9

Although jersey finger is not as common as the other conditions discussed in this article,8 it is important not to miss this diagnosis because of the risk of chronic disability when it is not treated promptly. Seventy-five percent of cases occur in the ring finger, which is more susceptible to injury because it extends past the other digits in a power grip.8,9

Presentation and exam. On exam, the affected finger lies in slight extension compared to the other digits; the patient is unable to actively flex the DIP joint.8,9 There may be tenderness to palpation over the volar distal phalanx. The retracted FDP tendon might be palpable more proximally in the digit.

Imaging. Anteroposterior (AP), oblique, and lateral radiographs, although unnecessary for diagnosis, are recommended to assess for an avulsion fragment, associated fracture, or dislocation.9,11 Ultrasonography or magnetic resonance imaging is useful in chronic cases to quantify the degree of tendon retraction.9

Treatment. Refer acute cases of jersey finger for surgical management urgently because most cases require flexor tendon repair within 1 or 2 weeks for a successful outcome.9 Chronic jersey finger, in which injury occurred > 6 weeks before presentation, also

FIGURE 1

Trigger finger injection technique

Insert the needle at an oblique angle just proximal to the metacarpophalangeal joint at the level of the distal palmar crease. Advance the needle until an increase in resistance is felt. Withdraw the needle slightly and inject 0.5 to 1 mL of 50% corticosteroid and 50% local anesthetic into the tendon sheath.
Complications of jersey finger include flexion contracture at the DIP joint and the so-called quadriga effect, in which the patient is unable to fully flex the fingers adjacent to the injured digit. These complications can cause chronic disability in the affected hand, making early diagnosis and referral key to successful treatment.

Mallet finger

Also called drop finger, mallet finger is a result of loss of active extension at the DIP joint. Causes and incidence. Mallet finger is a relatively common injury that typically affects the long, ring, or small finger of the dominant hand in young to middle-aged men and older women. The condition is the result of forced flexion or hyperextension injury, which disrupts the extensor tendon. Sudden forced flexion of an extended DIP joint during work or sports (eg, catching a ball) is the most common mechanism of injury. This action causes stretching or tearing of the extensor tendon as well as a possible avulsion fracture of the distal phalanx. Mallet finger can also result from a laceration or crush injury of the extensor tendon (open mallet finger) or hyperextension of the DIP joint, causing a fracture at the dorsal base of the distal phalanx.

Presentation. Through any of the aforementioned mechanisms, the delicate balance between the flexor and extensor tendons is disrupted, causing the patient to present with a flexed DIP joint that can be passively, but not actively, extended. The DIP joint might also be painful and swollen. Patients whose injury occurred > 4 weeks prior to presentation (chronic mallet finger) might also have a so-called swan-neck deformity, with hyperextension of the PIP joint in the affected finger.

Imaging. AP, oblique, and lateral radiographs are recommended to assess for bony injury.

Treatment. Splinting is the first-line treatment for almost all mallet finger injuries that are not the result of a laceration or crush injury. The splint must be worn continuously for 6 to 8 weeks, even when the patient is performing daily hygiene. Many different types of splints exist; functional outcomes are equivalent across all of them. In our practice, we manage mal-
let finger with a volar-based splint (Figure 2), which is associated with fewer dermatologic complications and has provided the most success for our patients.23

Surgical repair of mallet finger injury is indicated in any of these situations12,14:
- injury is caused by laceration
- there is volar subluxation of the DIP joint
- more than one-third of the articular surface is involved in an avulsion fracture.

Patients who cannot comply with wearing a splint 24 hours per day or whose occupation precludes wearing a splint at all (eg, surgeons, dentists, musicians) are also surgical candidates.12

Surgical and conservative treatments have similar clinical and functional outcomes, including loss of approximately 5° to 7° of active extension and an increased risk of DIP joint osteoarthritis.12,14,24 Patients with chronic mallet finger can be managed with 6 weeks of splinting initially but will likely require surgery.6,12,13

Skier’s thumb
This relatively common injury is a tear of the ulnar collateral ligament (UCL) at the MCP joint of the thumb.16

■ Causes and incidence. Skier’s thumb occurs when a valgus force hyperabducts the thumb,16 and is so named because the injury is often seen in recreational skiers who fall while holding a ski pole.15,17 It can also occur in racquet sports when a ball or racquet strikes the ulnar side of thumb.16

In chronic cases, the UCL can be injured by occupational demands and is termed gamekeeper’s thumb because it was first described in this population, who killed game by breaking the animal’s neck between the thumb and index finger against the ground.15,16 A UCL tear causes instability at the thumb MCP joint, which affects a person’s ability to grip and pinch.2,16,18

■ Presentation. On exam, the affected thumb is swollen and, possibly, bruised. There might be radial deviation and volar subluxation of the proximal phalanx. The ulnar side of the MCP joint is tender to palpation.16 If the distal UCL is torn completely, it can displace proximally and present as a palpable mass over the ulnar side of the MCP joint, known as a Stener lesion.16

Stress testing of the MCP joint is the most important part of the physical exam for skier’s thumb. Stabilize the metacarpal neck and apply a valgus stress on the proximal phalanx at both 0° and 30° of MCP flexion (Figure 3), which allows for assessment of both the proper and accessory bands of the UCL.2,16

(A common pitfall during stress testing is to allow the MCP joint to rotate, which can mimic instability.2) Intra-articular local anesthesia might be necessary for this exam because it can be painful.16,18,26 A stress exam should assess for laxity and a soft or firm endpoint; the result should be compared to that of a stress exam on the contralateral side.16,17

■ Imaging. AP, oblique, and lateral radiographs of the thumb should be obtained to assess for instability, avulsion injury, and associated fracture. Subluxation (volar or radial) or supination of the proximal phalanx relative to the metacarpal on imaging sug-
gests MCP instability of the MCP joint.16,17

If the stress exam is equivocal, magnetic resonance imaging is recommended for further assessment.2,18

Stress radiographs (ie, radiographs of the thumb with valgus stress applied at the MCP joint) can aid in diagnosis but are controversial. Some experts think that these stress views can further damage the UCL; others recommend against them because they carry a false-negative rate ≥ 25%.15,16 If you choose to perform stress views, order standard radiographs beforehand to rule out bony injury.17

Treatment. UCL tears are classified as 3 tiers to guide treatment.

- Grade 1 injury (a partial tear) is characterized by pain upon palpation but no instability on the stress exam.
- Grade 2 injury (also a partial tear) is marked by laxity on the stress exam with a firm endpoint.
- Grade 3 injury (complete tear) shows laxity and a soft endpoint on a stress exam16,17; Stener lesions are seen only in grade 3 tears.16,17

Grades 1 and 2 UCL tears without fracture or with a nondisplaced avulsion fracture can be managed nonoperatively by immobilizing the thumb in a spica splint or cast for 4 to 6 weeks.16,18 The MCP joint is immobilized and the interphalangeal joint is allowed to move freely.2,16,17

Grade 3 injuries should be referred to a
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References
7. Shapiro LM, Kamal RN. Evaluation and treatment of flexor ten-

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References
2005090900-0007
15. Weintraub MD, Hunsford BG, Sihwili SE, et al. Avulsion inju-
16. Avery III DM, Inkelas ER, Carlson MG. Thumb collateral liga-
mament injuries in the athlete. Curr Rev Musculoskelet Med. 2017:10:
28-37. doi: 10.1007/s12178-017-9581-z
17. Steffes MJ. Thumb collateral ligament injury. Orthobullets [Inter-
orthobullets.com/hand/6040/thumb-collar-ligament-injury
20. Huistede BM, Gladines S, Randuropo MS, et al. Effectiveness of conservative, surgical, and postsurgical interventions for trig-
ger finger, Dupuytren disease, and de Quervain disease: a sys-
24. Lin JS, Samora JB. Surgical and nonsurgical management of mal-
25. Handoll H, Vaghela M. Interventions for treating mallet fin-
26. Pulas N, Shin AT. Treatment of ulnar collateral ligament inju-

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Letters

Taking the time to get it right
I cannot agree more with Dr. Hickner’s editorial, “The power of the pause to prevent diagnostic error” (J Fam Pract. 2022;71:102). In 1974, when I started at the Medical College of Virginia, I thought I was going to be a medical researcher. By mid-1978, I had completely changed my focus to family medicine. Fortunately, my drive for detail and accuracy remained, albeit at odds with a whirlwind residency and solo practice. I drove my staff (and wife) crazy because I frequently spent more than the “allotted” time with a patient. The time was not wasted; it was most important for me to gain the trust of the patient and then to get it right—or find a path to the answer.

Jeff Ginther, MD
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Don’t overlook this cause of falls
I enjoyed reading “How to identify balance disorders and reduce fall risk” (J Fam Pract. 2022;71:20-30) from the January/February

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