

## de Quervain's Tenosynovitis

 ICD-10 CODE M65.4

### THE CLINICAL SYNDROME

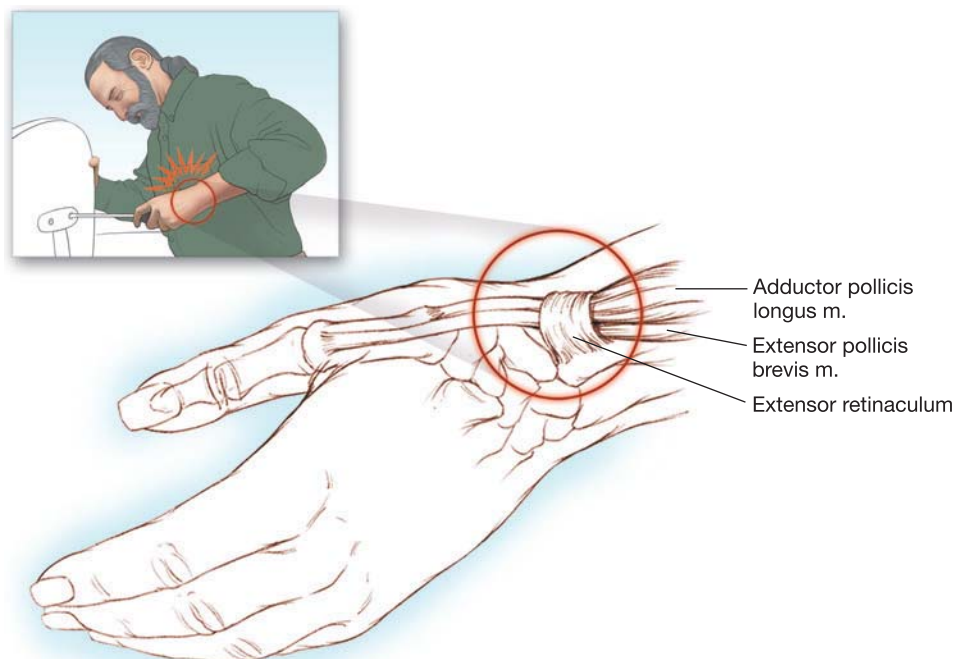
de Quervain's tenosynovitis is caused by inflammation and swelling of the tendons of the abductor pollicis longus and extensor pollicis brevis tendons at the level of the radial styloid process. This painful condition occurs most commonly between the ages of 30 and 50. It occurs more frequently in women. It is usually the result of trauma to the tendon from repetitive twisting motions. This condition is often associated with inflammatory arthritis including rheumatoid arthritis. There is also an association with pregnancy and baby care as lifting an infant requires using the thumbs for leverage. If the inflammation and swelling become chronic, the tendon sheath thickens, resulting in its constriction. A triggering phenomenon may occur, with the tendon catching within the sheath and causing the thumb to lock, or "trigger." Arthritis and gout of the first metacarpal joint may coexist with de Quervain's tenosynovitis and exacerbate the associated pain and disability.

de Quervain's tenosynovitis occurs in patients engaged in repetitive activities such as handshaking or high-torque wrist turning (e.g., when scooping ice cream). De Quervain's tenosynovitis may also develop without obvious antecedent trauma.

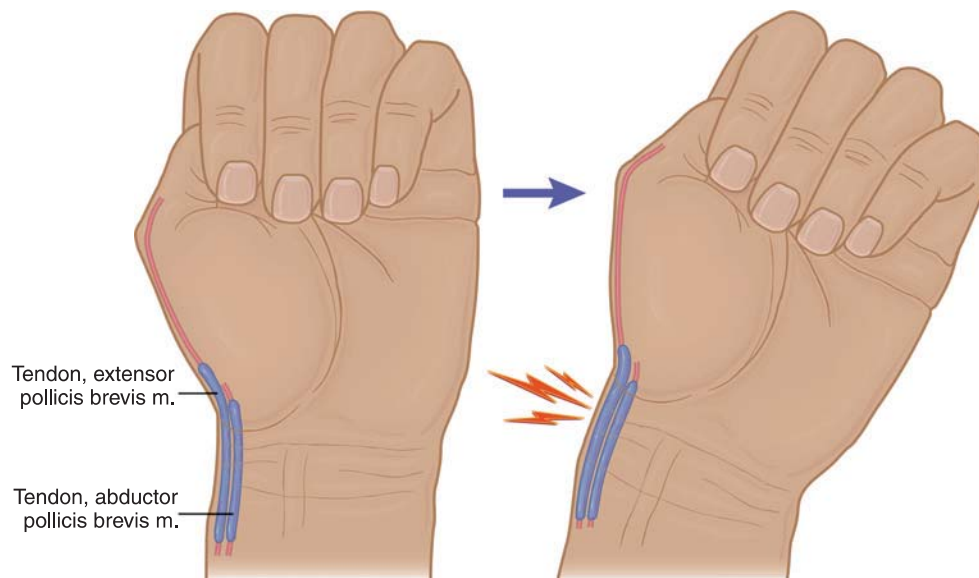
The pain of de Quervain's tenosynovitis is localized to the region of the radial styloid. It is constant and is made worse with active pinching activities of the thumb or ulnar deviation of the wrist (Fig. 52.1). Patients note an inability to hold a coffee cup or turn a screwdriver. Sleep disturbance is common.

### SIGNS AND SYMPTOMS

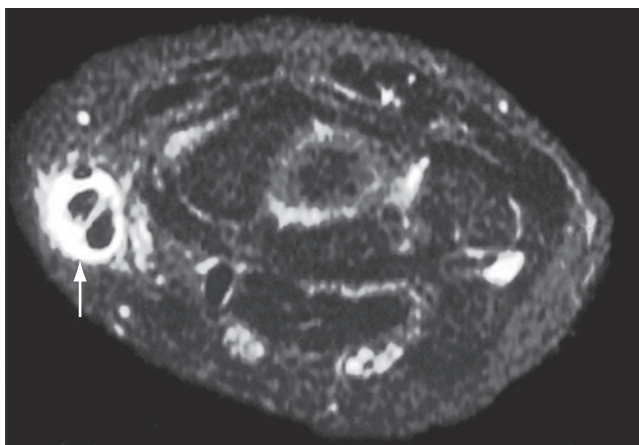
On physical examination, the patient has tenderness and swelling over the tendons and tendon sheaths along the distal radius, with point tenderness over the radial styloid. Many patients with de Quervain's tenosynovitis note a creaking sensation with flexion and extension of the thumb. A catching or stop-and-go sensation may be present when moving the thumb. Range of motion of the thumb may be decreased by the pain, and a trigger thumb phenomenon may be noted. Patients with de



**FIG 52.1** Repetitive microtrauma to the wrist can result in de Quervain's tenosynovitis.



**FIG 52.2** A positive Finkelstein test is indicative of de Quervain's tenosynovitis. (From Waldman SD. *Atlas of pain management injection techniques*. Philadelphia: Saunders; 2000.)

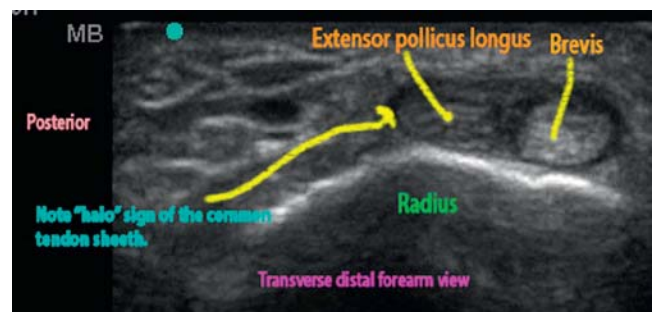


**FIG 52.3** Axial short tau inversion recovery magnetic resonance image demonstrating de Quervain's tenosynovitis. Note the thickened first extensor compartment tendons, with prominent tendon sheath fluid (arrow). (From Edelman RR, Hesselink JR, Zlatkin MB, Cruess JV, eds. *Clinical magnetic resonance imaging*. 3rd ed. Philadelphia: Saunders; 2006:3357.)

Quervain's tenosynovitis demonstrate a positive Finkelstein test result (Fig. 52.2). The Finkelstein test is performed by stabilizing the patient's forearm, having the patient fully flex his or her thumb into the palm, and then actively forcing the wrist toward the ulna. Sudden severe pain is highly suggestive of de Quervain's tenosynovitis.

## TESTING

The diagnosis is generally made on clinical grounds, but magnetic resonance imaging (MRI) can confirm the presence of tenosynovitis (Fig. 52.3). Electromyography can distinguish de Quervain's tenosynovitis from neuropathic processes such as cervical radiculopathy and cheiralgia paresthetica. Plain

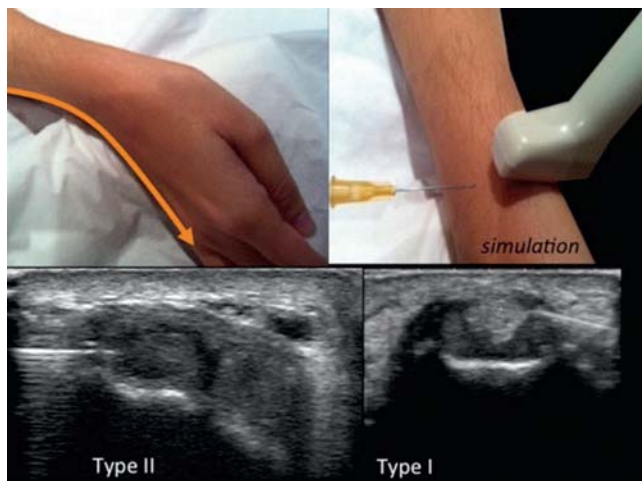


**FIG 52.4** De Quervain's tenosynovitis. Transverse ultrasound image of the first dorsal compartment tendons (abductor pollicis longus and extensor pollicis brevis) showing tenosynovitis. Note the halo sign around tendons due to fluid surrounding the inflamed tendons.

radiographs are indicated in all patients who present with de Quervain's tenosynovitis, to rule out occult bony disease. Based on the patient's clinical presentation, additional testing may be warranted, including a complete blood count, uric acid level, erythrocyte sedimentation rate, and antinuclear antibody testing. MRI and ultrasound imaging of the wrist are also indicated if joint instability is suspected and to clarify the clinical pathology responsible for the patient's symptoms (Fig. 52.4). Ultrasound evaluation will also help determine if the abductor pollicis longus and extensor pollicis tendons are separated by a septum, necessitating repositioning of the needle to determine accurate placement of corticosteroid and local anesthetic (Fig. 52.5). The injection technique described later serves as both a diagnostic and a therapeutic maneuver.

## DIFFERENTIAL DIAGNOSIS

Entrapment of the lateral antebrachial cutaneous nerve, arthritis of the first metacarpal joint, gout, cheiralgia paresthetica



**FIG 52.5** Position of the patient and axial approach for injection of a de Quervain's tenosynovitis. Needle in place in a patient in whom the abductor pollicis longus and extensor pollicis tendons are separated by a septum (Type II de Quervain's tenosynovitis on left of image). Ultrasound-guided needle placement into the extensor pollicis tendon subcompartment, and under the retinaculum in a patient in whom the tendons are not separated by a septum (Type I de Quervain's tenosynovitis on right of image) (From Vuillemin HG, Morvan G. Musculoskeletal interventional ultrasonography: the upper limb. *Diagn Interv Imaging*. 2012;93(9):665–673.)

(caused by entrapment of the superficial branch of the radial nerve at the wrist), and occasionally C6-7 radiculopathy can mimic de Quervain's tenosynovitis. All these painful conditions can also coexist with de Quervain's tenosynovitis.

## TREATMENT

Initial treatment of the pain and functional disability associated with de Quervain's tenosynovitis includes a combination of nonsteroidal antiinflammatory drugs (NSAIDs) or cyclooxygenase-2 inhibitors and physical therapy. Local application of heat and cold may also be beneficial. Any repetitive activity that may exacerbate the patient's symptoms should be avoided. Nighttime splinting of the affected thumb may help avoid the trigger phenomenon that can occur on awakening in many patients suffering from this condition. For patients who do not respond to these treatment modalities, the following injection technique is a reasonable next step.

Injection for de Quervain's tenosynovitis is carried out by placing the patient in the supine position with the arm fully adducted at the patient's side and the ulnar surface of the wrist and hand resting on a folded towel to relax the affected tendons. A total of 2 mL local anesthetic and 40 mg methylprednisolone is drawn up in a 5-mL sterile syringe. After sterile preparation of the skin overlying the affected tendons, the radial styloid is identified. Using strict aseptic technique, the clinician inserts a 1-inch, 25-gauge needle at a 45-degree angle toward the radial styloid through the skin and into the subcutaneous tissue overlying the affected tendon. If bone is encountered, the needle is withdrawn into the subcutaneous tissue. The

contents of the syringe are then gently injected. Little resistance to injection should be felt. If resistance is encountered, the needle is probably in the tendon and should be withdrawn until the injection can proceed without significant resistance. The needle is then removed, and a sterile pressure dressing and ice pack are applied to the injection site. The injection of platelet-rich plasma and/or stem cells around the inflamed tendons may aid in the resolution of symptoms associated with de Quervain's tenosynovitis. Ultrasound-guided needle placement will aid in the accurate needle placement in patients suffering from de Quervain's tenosynovitis.

Physical modalities, including local heat and gentle range-of-motion exercises, should be introduced several days after the patient undergoes injection. Splinting may provide symptomatic relief. Vigorous exercises should be avoided, because they will exacerbate the patient's symptoms.

## COMPLICATIONS AND PITFALLS

The injection technique is safe if careful attention is paid to the clinically relevant anatomy. The radial artery and superficial branch of the radial nerve are susceptible to damage if the needle is placed too medially, so care must be taken to avoid these structures. The major complications associated with injection are related to trauma to the inflamed and previously damaged tendons. These tendons may rupture if they are injected directly, so the needle position should be confirmed to be outside the tendon before injection. Another complication of injection is infection, although it should be exceedingly rare if strict aseptic technique is followed, as well as universal precautions to minimize any risk to the operator. The incidence of ecchymosis and hematoma formation can be decreased if pressure is applied to the injection site immediately after injection. Approximately 25% of patients complain of a transient increase in pain after injection, and patients should be warned of this possibility.

### CLINICAL PEARLS

The injection technique described is extremely effective in the treatment of pain secondary to de Quervain's tenosynovitis. A hand splint to immobilize the thumb may also help relieve the symptoms. Simple analgesics and NSAIDs can be used concurrently with the injection technique. Coexistent arthritis and gout may contribute to the pain, thus necessitating additional treatment with more localized injection of local anesthetic and methylprednisolone. Arthritis of the first metacarpal joint, gout, cheiralgia paresthetica, and cervical radiculopathy may mimic de Quervain's tenosynovitis and must be excluded.

## SUGGESTED READINGS

- Cavaleri R, Schabrun SM, Te M, et al. Hand therapy versus corticosteroid injections in the treatment of de Quervain's disease: a systematic review and meta-analysis. *J Hand Ther*. 2016;29(1):3–11.
- Lee K-H, Kang C-N, Lee BG, et al. Ultrasonographic evaluation of the first extensor compartment of the wrist in de Quervain's disease. *J Orthop Sci*. 2014;19(1):49–54.