

Diagnosing Elbow Pain – Locating Pain by Region of the Elbow Helps Define Causes

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This article discusses the causes of pain localized by anatomic area within the elbow. When patients complain of elbow pain, most often a diagnosis can be made on the basis of history and physical examination.

Studies such as radiographs, CT scans, MRIs, bone scans, blood tests, and electromyography/nerve conduction velocity (EMG/NCV) studies are sometimes needed to confirm or rule out a diagnosis, but are the exception rather than the rule for patients with elbow pain. I have divided elbow pain into lateral, anterior, medial, posterior, and global regions. In each section the distinguishing features of the history and physical examination of common diagnoses are highlighted.

Lateral Pain

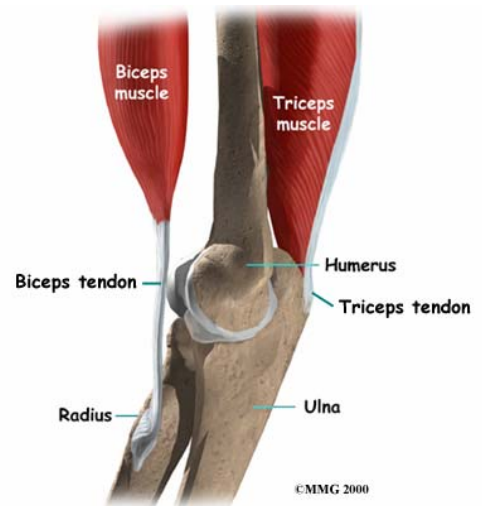
The most common causes of lateral elbow pain are lateral epicondylitis (tennis elbow), radial tunnel syndrome or posterior interosseous nerve compression, lateral collateral ligament injury, radio-capitellar arthritis, and elbow plica syndrome. By far the most common presenting elbow complaint is lateral pain, and the most common cause of lateral elbow pain is lateral epicondylitis. The most typical history for a patient with lateral epicondylitis is the insidious onset of pain, initially only with activities (especially those involving gripping) but frequently progressing to constant pain. The pain also may be acute, secondary to a single overuse event, and in these cases crepitation may be present.

The pain is located at or just distal to the lateral epicondyle and is provoked by palpation, gripping, wrist flexion, and resisted wrist extension, all of which stress the extensor carpi radialis brevis (ECRB) muscle tendon unit, which is the main tendon involved in lateral epicondylitis. Also useful is the finger extension test. The patient will experience acute pain when, while holding the arm out in front, the elbow, wrist, and fingers extended, the examiner pushes down on the long finger. This is thought to be caused by tendonitis in the extensor digitorum communis tendon to the long finger which, like the ECRB, originates on the lateral epicondyle.

The second most common cause of lateral elbow pain is entrapment of the radial nerve or its terminal branch, the posterior interosseous nerve (PIN). Symptoms of nerve entrapment are a dull aching pain in the muscle just distal and anterior to the lateral epicondyle. The pain is aggravated by use of the arm, particularly activities with forearm rotation. The pain will be acute with activities and persist as an ache for some time after the activity stops. Most importantly, the patient will be tender over the nerve, which is located two to three finger breadths anterior to and just distal to the lateral epicondyle. Most people are sensitive to palpation here so the asymptomatic arm should be used for comparison. Nerve compression and lateral epicondylitis frequently coexist.

Trauma (radiograph negative) to the elbow resulting in lateral elbow pain associated with all activities of daily living is suspicious for lateral collateral ligament injury. Pain with varus stress to the elbow, a moving varus stress test, or a positive postero lateral rotatory instability (PLRI) test are suspicious for this injury and warrant a gadolinium arthrogram MRI for confirmation.

Different types of elbow pain arise from different structures in the elbow. Locating the pain source within elbow regions helps the orthopedist diagnose the cause and make treatment decisions.



Pain located posterior to the lateral epicondyle is frequently caused by a plica – a fold in the joint capsule that can become inflamed and swell to cause symptoms. The pain is worse with elbow activity and the patients will frequently note a swelling in the area. The tenderness is over the lateral condyle of the humerus, either just anterior or posterior to the ridge of the condyle.

A palpable thickening is noted on examination. Radiocapitellar arthritis is difficult to discern from a symptomatic plica. Here the pain is just distal to the plica over the radiocapitellar joint. Radiographs, MRI, or bone scan may be necessary to confirm the diagnosis.

Anterior Pain

Anterior elbow pain most commonly results from a biceps tendon injury. The patient, usually a middle aged male often with gray hair, relates a single event such as carrying a heavy object that slipped and he had to grab it and felt immediate pain in the anterior elbow. Thought to be a sprain, the patient may delay seeking medical care, but the pain persists and is worse with forearm rotation. Complete ruptures result in the biceps muscle retracting proximally in the arm. The patient has decreased supination strength. Resisted supination causes pain in both complete ruptures and partial tears of the biceps.

Anterior elbow pain associated with median nerve symptoms can occur from entrapment of the median nerve in between the two heads of the pronator teres. The nerve is tender to palpation and pressure reduplicates the hand symptoms.

Medial Pain

The most common causes of medial elbow pain are medial epicondylitis, ulnar nerve entrapment, and chronic medial collateral ligament injury. Ulnar nerve entrapment at the elbow accompanies numbness in the small and ulnar half of the ring finger. A Tinel's test is frequently positive over the ulnar nerve in the groove behind the medial epicondyle. Holding the elbow flexed reduplicates the hand numbness. As the syndrome progresses, weakness in the ulnar innervated hand muscles and the flexor of the small finger DIP joint may be seen.

In medial epicondylitis, or golfer's elbow, the pain is just distal to the medial epicondyle and is aggravated by activities that require flexion or pronation, such as unscrewing a bolt or nut. The area is tender to palpation, but stressing the medial collateral ligament is not painful.

Medial collateral ligament injury also can cause pain in the same area. Usually there is a history of injury or repetitive throwing. Activities of daily living do not usually cause pain, but throwing activities are very painful or avoided by the patient. The elbow is tender to valgus stress and the milking test is positive. A gadolinium arthrogram MRI is helpful to confirm the diagnosis.

Posterior

The most common causes of posterior elbow pain are olecranon bursitis, triceps tendonitis, snapping triceps, and posterior impingement. These are most easily differentiated by physical examination. Olecranon bursitis is a swelling over the proximal, dorsal ulna. Triceps tendonitis is painful to palpation of the tendon and with activation of the muscle tendon unit. Posterior impingement is painful with active or passive terminal elbow extension. And a snapping triceps is a partial tear of the triceps that can cause the tendon to slip off the olecranon, especially during an eccentric contraction, resulting in a palpable or visible snapping.

Global Pain

The most prevalent causes of global elbow pain are osteoarthritis, loose bodies, gout, and rheumatoid arthritis (RA). The most common of these is osteoarthritis characterized by generalized elbow pain, initially worse with activities, but progressing to an ache all the time. In the early stages NSAIDs are helpful. Loss of terminal extension frequently is seen and the elbow may be slightly swollen, which is best observed in the soft spot between the lateral epicondyle, the olecranon, and the radial head. Radiographs are usually diagnostic, osteopenia, but further radiographic studies, laboratory studies, and rheumatology consultation may be needed to confirm the diagnosis. In some cases only time and further progression of the disease confirms the diagnosis.

Loose bodies may follow trauma or occur spontaneously. The patient usually complains of intermittent but well defined locking (inability to extend) the elbow that is relieved with time or with a manipulation needed to rule out infection. The diagnosis is usually clear if the practitioner considers gout. The presence of birefringent crystals in the elbow fluid confirms the diagnosis.

Summary

Stratifying elbow pain by anatomic area should make the history and physical examination and diagnosis of patients with elbow pain more straightforward for the practitioner.