



THE UNIVERSITY OF TOLEDO MEDICAL CENTER

# ORTHOPAEDIC MONTHLY

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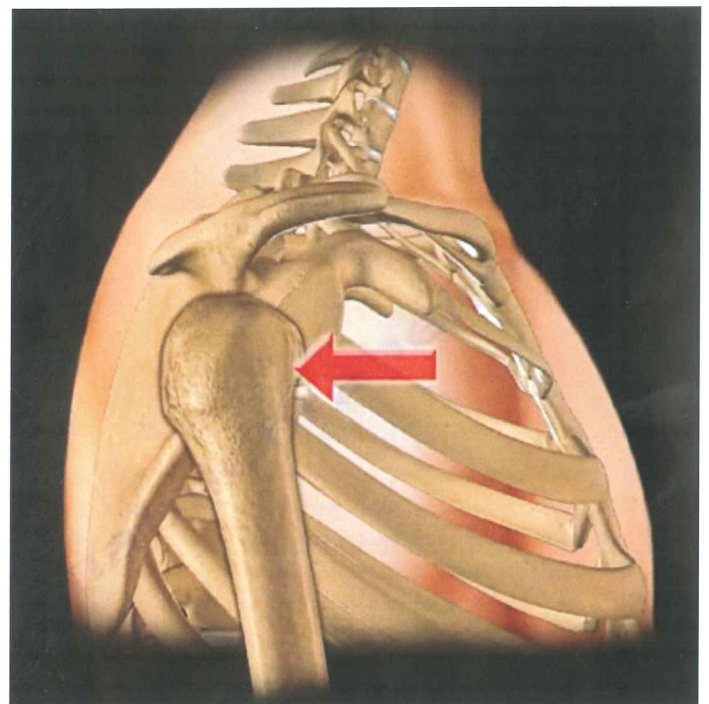
## Posterior Shoulder Dislocation

The usual story is that the patient visits the emergency room and goes back to see their doctor due to constant shoulder pain and the inability to move the shoulder. When examining the patient, they will have limited external rotation of the shoulder.

The physician may be shown an x-ray, an AP view of the shoulder, and the interpretation of the x-ray is that the shoulder appears normal. The physician will need to get two x-ray views (orthogonal views): AP view and Axillary view. An AP view alone will not diagnose a posterior shoulder dislocation. When you have a posterior dislocation of the shoulder, the AP view will show the classic "lightbulb" humeral head due to internal rotation of the shoulder. The axillary view x-ray will show a dislocation of the shoulder posteriorly and is the best view to show the posterior dislocation. After reduction, the physician should always get an axillary view and check for concentric reduction. With the axillary view x-ray, the physician will want to locate the coracoid (anteriorly), the acromion (posteriorly), and the glenoid to determine whether the dislocation is posterior or anterior. In posterior dislocation of the shoulder, the axillary view will show the humeral head going posteriorly away from the coracoid and in the direction of the acromion.

With posterior shoulder dislocation, the shoulder is locked in the internal rotation position with a prominence of the posterior shoulder, prominence of the coracoid process, and the flattening of the anterior shoulder. Posterior shoulder dislocations are sometimes associated with the fracture of the lesser tuberosity. 50% of posterior shoulder dislocations will have a reverse Hill-Sachs lesion or an impaction fracture next to the lesser tuberosity. When the physician examines the patient and finds limitations in their range of motion, especially in external rotation of the shoulder, the physician may think that it is adhesive capsulitis (frozen shoulder). Frozen shoulder can start by limiting the external rotation; however, it is usually a global restriction of the range of motion.

Posterior dislocation of the shoulder is rare (about 5%) and is usually stable after reduction if no fracture is present. Posterior dislocation of the shoulder usually occurs after seizures or electric shock. Some physicians believe that this is due to the fact that the internal rotator muscles of the shoulder (pectoralis major, latissimus dorsi, and subscapularis) are stronger than the external rotator muscles. Up to 50% of posterior shoulder dislocations of the shoulder can go



undiagnosed when the patient is examined in the emergency room, especially if the dislocation results from seizures. If posterior dislocation of the shoulder occurs due to seizures, the patient should be examined carefully and a consultation with a neurologist should be done to control the patient's seizures. Any future treatment of posterior dislocation of the shoulder may fail due to lack of seizure control.

Posterior shoulder dislocation is typically treated with a closed reduction. It is not a difficult procedure in the acute setting and can be done up to three months after the injury. Instability is rare with the absence of the fracture. The patient will then need to immobilize the arm in a neutral position with the elbow at their side and posterior to the plane of the body. Posterior shoulder dislocations with an impaction less than 20%, the physician will want to perform a closed reduction and immobilize in external rotation.

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Open reductions should only be performed when the posterior dislocation is chronic or locked. In locked posterior dislocation, the deltopectoral approach to the shoulder is commonly used. If the defect is between 20-40%, the surgeon will transpose the lesser

tuberosity or the subscapularis tendon into the defect. A defect of 45% or greater, or if the dislocation has gone longer than 6 months, the surgeon will need to perform an arthroplasty and place the prosthesis in less retroversion.

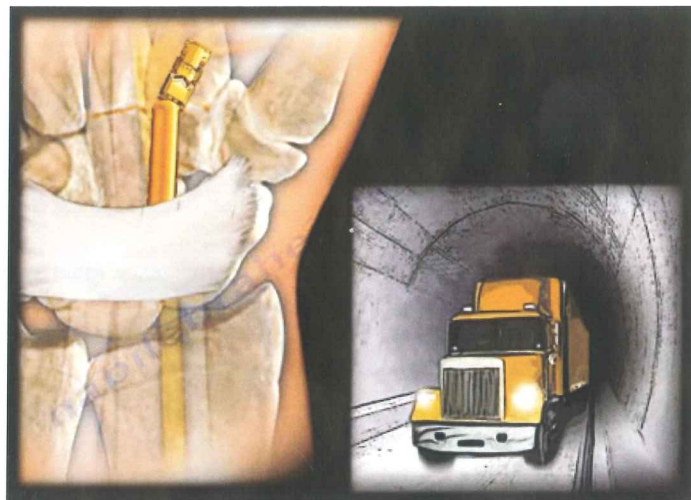
## Carpal Tunnel Syndrome Treatment

The clinical picture of Carpal Tunnel Syndrome typically includes: pain, numbness, and paresthesia in the palmar aspect of the thumb, index, and long finger (median nerve distribution). These symptoms tend to occur more at night and can wake the patient up from sleep, causing the patient to shake the hand in attempt to resolve these symptoms.

Special tests used to diagnose Carpal Tunnel Syndrome include: the Tinel's Sign, the Phalen's Maneuver and Durkan's (Compression) test. In order to test for the Tinel's Sign, the physician will press down on the volar wrist crease, which will produce an electric sensation distally to the fingers. The Phalen's Test is usually positive and is performed by flexing the wrist for 60 seconds. This maneuver will increase the carpal tunnel pressure temporarily and produce the symptoms. If the test is positive, the patient will have numbness and tingling in the hand and wrist.

The Durkan's Test is known as the most sensitive test for Carpal Tunnel Syndrome. When performing this test, the examiner will place even pressure with two thumbs directly over the patient's median nerve in the carpal tunnel for about 30 seconds. Reproduction of symptoms in the distribution of the median nerve means that the test is positive for carpal tunnel syndrome.

Carpal Tunnel Syndrome is a clinical diagnosis. Conservative treatment consists of anti-inflammatory medications, activity modification and neutral wrist splints. The wrist splints will help with nighttime symptoms because it lowers the pressure within the carpal tunnel. Functional wrist splints (30° extension) will aggravate carpal tunnel syndrome because it increases the carpal tunnel pressure. At three months, 50% of patients will improve with splints and at 18 months, more patients will improve with splints. Vitamin B6 is sometimes prescribed to help in treating carpal tunnel syndrome; however, there is really no proof that vitamin B6 or physical therapy have any significant effect on the improvement of carpal tunnel symptoms. Steroid injections are used for the treatment and diagnosis of carpal tunnel syndrome if clinical examination or electro-diagnostic testing is not clear. If the patient improves from the injection, then the patient will improve from surgery. For steroid injections, the physician will mark the intersections of the palmaris longus tendon and the distal palmar crease. Then, they will go 1 cm proximal and 1 cm ulnar to that site to find the point of injection. The physician will want to use a 25 gauge needle with the desired steroid and 1mL of 1% lidocaine. The needle will need to be at a 45° angle towards the skin of the wrist. Then, the physician will direct the needle towards the base of the thumb and advance the needle distally and slowly. The physician should warn the patient before the injection that if there are any



feelings of numbness, paresthesia, or severe pain, to let the physician know immediately. Steroid injections will give 80% transient improvement and 22% of the patients will be symptoms free 1 year after the injection.

Surgical treatment consists of a carpal tunnel release— open or endoscopic. Surgery is usually done when there is a persistence of the symptoms and failure of nonoperative treatment. Injections are a good indicator for improvement after surgery when the splint no longer works, and when steroid injections only offer temporary improvement. The median nerve is much like a truck passing through a tunnel. The nerve (truck) should be able to pass through the tunnel with ease and without friction. So, if the tunnel is narrow, then the nerve (truck) cannot pass. If you want the nerve to pass, then the tunnel will need to be widened by cutting the transverse carpal ligament. Performing an endoscopic procedure will give a better prognosis and allow for an early rehabilitation. The result is the same as with an open release; however, incomplete releases are a complication of the endoscopic procedure. Pinch strength should return to normal by 6 weeks and grip strength at 12 weeks. At one year, 20% of patients with severe carpal tunnel syndrome will continue to have symptoms. Revision carpal tunnel usually occurs when there is an incomplete release. 25% of patients will have no relief and only 25% will have complete relief.

The recurrent motor branch of the median nerve can be injured during surgery. After passing through the carpal tunnel, the median nerve gives a branch on the radial side called the recurrent motor branch. This branch is an important nerve supply to the thenar muscles.

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The recurrent motor branch of the median nerve has multiple variations of the nerve: 50% are extraligamentous with recurrent innervation, 30% are subligamentous with recurrent innervation, and 20% are transligamentous with recurrent innervation. This transligamentous nerve can be injured. If it is injured, the patient will get progressive thenar atrophy due to the injury. It is important to cut the transverse ligament far ulnarly in order to avoid cutting the recurrent motor branch of the median nerve.

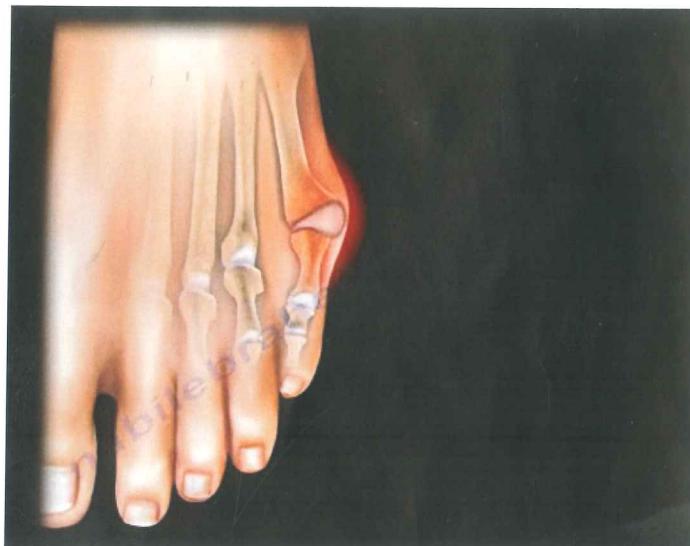
The American Academy of Orthopaedic Surgeons (AAOS) recommends doing electrodiagnostic studies before performing a carpal tunnel release surgery. Graham stated that if the patient has a strong history and clinical examination for the diagnosis of carpal tunnel syndrome, then the electro-diagnostic test is unlikely to change the clinical diagnosis.

## Bunionettes

A bunionette is also called "Tailor's Bunion". It is a prominence usually at the lateral part of the fifth metatarsal head. Pain can result from the bursitis which can happen due to the rubbing of the fifth metatarsal head prominence against the shoes. The patient will have a widened forefoot and may have hyperkeratosis. This condition tends to occur more in women and can be bilateral. Bunionette's can be diagnosed with a weight-bearing AP view radiograph.

The type of bunionette will determine the treatment method. There are three types of bunionettes: Type I bunionettes cause an enlargement of the fifth metatarsal head and have normal alignment; Type II bunionettes have a lateral bowing of the diaphysis of the fifth metatarsal; and Type III bunionettes have a widened fourth and fifth metatarsal angle, angles greater than 8° are considered pathologic.

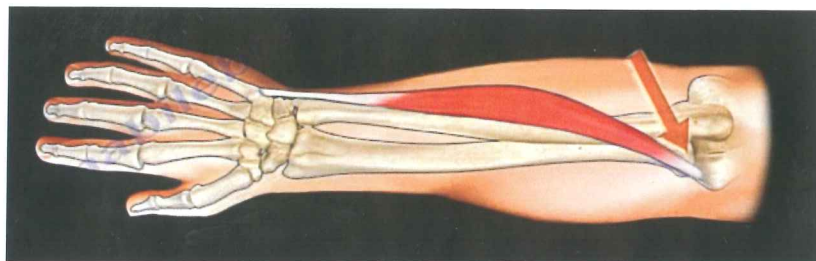
Nonoperative treatment for bunionettes have a high success rate. Nonoperative treatment typically consists of anti-inflammatory medications and orthosis. It is necessary for the patient to wear proper shoes with a wider toe box and padding at the prominence area. Surgery is rarely needed.



In cases where surgery is required, a resection of the lateral part of the fifth metatarsal head will be performed for Type I bunionettes.

## The Extensor Carpi Ulnaris

The extensor carpi ulnaris (ECU) arises from a common extensor origin on the lateral epicondyle of the humerus and is inserted into the posterior surface of the base of the 5th metacarpal bone. The ECU tendon lies in the sixth dorsal extensor compartment of the wrist. The ECU tendon has its own fibro-osseous tunnel near the wrist and is the only wrist extensor that lies within its own fibro-osseous tunnel. The ECU tendon passes through a groove on the ulnar side of the distal ulna which is covered by an annular ligament. The ECU acts to extend and ulnar deviate the hand at the wrist. It helps the extensor carpi radialis longus and the extensor carpi radialis brevis in wrist extension. The ECU is innervated by the posterior interosseous nerve.



Subluxation of the tendon is secondary to rupture of the ECU sheath and it usually subluxes in a volar to ulnar direction. Recurrent dislocation will have a painful snap over the ulnar-dorsal aspect of the wrist—especially during forearm rotation. With supination and ulnar deviation, the tendon leaves the sheath and the groove. The patient will have pain with an audible "snap" and this will cause tendonitis. With supination, the tendon dislocates. With pronation, the tendon relocates. The ECU is more palpable with the patient's wrist extended and ulnarly deviated.

There are two conditions that are clinically important and related to the extensor carpi ulnaris. The first condition is the rupture of the ECU sheath which in turn, causes the second condition, the subluxation of the ECU tendon. With this condition, the tendon will dislocate with supination and relocate with pronation.

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*The Extensor Carpi Ulnaris continued*

This condition can be confused with recurrent subluxation of the distal radioulnar joint. The extensor carpi ulnaris subsheath is critical to the extensor carpi ulnaris tendon stability and is part of the triangular fibrocartilage complex (TFCC). In ECU subluxation, an MRI may show tendonitis, a tear, or a Triangular Fibrocartilage Complex (TFCC) tear. The diagnosis is usually a clinical one. Attention should be given to the possibility of a TFCC tear which occurs in about 50% of the cases as shown by arthroscopy.

The distal radioulnar joint stabilizers are the volar and dorsal radioulnar ligaments. This joint is most stable in supination. In cases of irreducible dislocation of the DRUJ by closed means, the ECU may block the reduction, especially in the Galeazzi fracture. The surgeon should check for a palpable ECU and an empty tendon sulcus. An open surgical reduction is needed.

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