



THE UNIVERSITY OF TOLEDO
MEDICAL CENTER

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ORTHOPAEDIC MONTHLY

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Pumpkin Fun!

Happy Autumn from the University of Toledo Orthopaedic Department!

This month, in celebration of the autumn season, we decorated the Orthopaedic Center with several 250lb Pumpkins. We even designed a contest in which participants were invited to take photos of themselves with the giant pumpkins and share them on their personal social media websites. The two participants with the most likes would win the pumpkin!

It isn't all fun and games at the Orthopaedic Center, we continually strive for excellence. This month, we have added two new faculty members to our clinical staff in order to provide easy access for our patients. We want to extend a warm welcome to Michelle Lovett and Dr. Maged Hanna. Michelle is a Chief Clinical Dietitian and will be available at the Orthopaedic Center on Thursdays for patients with dietary needs. This will be especially useful for patients with diabetes, nutritional deficiencies, and patients needing guidance with weight management. Dr. Maged Hanna will be joining our staff, specializing in General and Pediatric Orthopaedics. We are very excited to have them on our team and we are happy to be making these changes to provide the best care to our patients here at the University of Toledo Medical Center.



The Bear-Hug Test

The "Bear-Hug" test is used to examine a patient for a possible tear of the subscapularis rotator cuff muscle, especially the upper part of the subscapularis. The patient is asked to place the palm of the hand onto the opposite shoulder with the elbow anterior to the body. The patient will maintain the internal rotation of the shoulder in this position and the examiner will then attempt to externally rotate the arm. A positive test result will occur when the patient shows weakness of the arm compared to the opposite arm.

Other tests used to diagnose and confirm the rupture of the subscapularis muscle or tendon:

- Lift-off Test

- Belly Press Test

During the exam, you may find an increased passive external rotation of the shoulder.

Some subscapularis tears may be missed! It can be a hard diagnosis and if it is missed, the patient will have a major disability. The condition becomes chronic with the treatment becoming more complicated and may require pectoralis major flap for reconstruction.

There is also an association between a subscapularis tear and a biceps tendon medial subluxation. Consider a subscapularis tear when they see subluxation of the biceps medially.



Distal Biceps Tendon Tear

The Hook Test is used to diagnose a distal biceps tendon rupture, avulsion, or a tear. The biceps tendon inserts into the proximal radius at the radial tuberosity at the elbow. When the biceps tendon ruptures, it will cause pain at the elbow. The patient will experience a sharp, sudden, painful “pop” at the elbow from unexpected extension force when the elbow is at 90 degrees of flexion. The condition occurs in middle aged men, usually involving the dominant extremity. It is a single traumatic event with eccentric force on the flexed elbow. There might be ecchymosis at the elbow and weakness of supination and flexion of the elbow. There may be a palpable defect with proximal retraction of the biceps muscle belly. If rupture of the tendon is not diagnosed and repaired, then there will be a loss of 40-50% of supination and 30% of flexion of the elbow.

The hook test is performed to diagnose rupture or tear of the distal biceps tendon. The examiner will use the index finger to hook the biceps tendon from the lateral side of the elbow.

To perform the hook test, the patient will need to flex the elbow at a 90 degree angle and fully supinate the forearm. Then, the physician will use their index finger to hook the lateral edge of the biceps tendon. If the tendon is intact or partially torn, the finger can be inserted below the tendon and “hook” it. If the tendon cannot be hooked, then this indicates a complete tear of the distal biceps tendon.

There may be false positives involved with the Hook test, such as with partial tears of the distal biceps, an intact lacertus fibrosus, or mistakenly hooking the brachialis tendon.

Another test to diagnose the distal biceps tendon rupture is the Squeeze Test, which is similar to the Thompson’s Test—a method used to diagnose an Achilles tendon rupture. For the Squeeze test, you will ask the patient to flex their elbow to 80 degrees and keep the forearm in some pronation, then you will squeeze the biceps with



one hand or with two hands. Supination of the forearm will occur if the biceps is intact. NO supination of the forearm will occur if the biceps is torn.

The problem with diagnosing distal biceps tendon tears, is differentiating between partial and complete tears because both have the same clinical pictures. You could see a palpable defect with a complete distal biceps tear which could help confirm a diagnosis. Partial distal biceps tendon tears are rare and are frequently misdiagnosed and underdiagnosed. The patient will have pain in the elbow and the patient will have a normal Hook Test. In these cases, an MRI may be helpful in diagnosing a partial tear of the distal biceps tendon. An MRI may not be needed in all cases. An MRI will diagnose the tear, the degree of retraction, and if the tear is complete or partial.

Morton’s Neuroma—Interdigital Neuroma

Morton’s neuroma is a chronic irritation of the interdigital nerve, usually the one innervating the third web space. The irritation causes entrapment, compression, and perineural fibrosis rather than a neuroma. The involved nerve is compressed or pinched as it runs between the third and fourth metatarsal heads under the deep transverse metatarsal ligament on the plantar aspect of the foot. Focal swelling of the nerve occurs secondary to the perineural and intraneural fibrosis. It usually affects middle aged females. The patient will complain of pain in the third web space between the third and fourth metatarsals, radiating to the third and fourth toes.

Pain is worse with walking, weight-bearing, and with wearing narrow-toed shoes. The pain is better with rest, elevation, removal of the shoes and massaging the foot. The pain does not occur at night. The patient may complain of paresthesia at the bottom of the web space.

Squeezing the metatarsals together may cause shooting pain that will go into the third and fourth toes. The neuroma may be palpable and the Tinel’s sign may be positive.

Compression of the forefoot with one hand and simultaneously applying upward pressure on the affected web space with the thumb will produce pain and palpable click; the “click” does not occur in all cases. Ultrasounds may be helpful in the diagnosis. MRI’s are rarely used. The common digital nerve block may be confirmatory for the diagnosis.

Differential Diagnosis include: MTP Synovitis- The patient will not have relief from the digital nerve block, stress fractures, metatarsalgia, arthritis, and lumbar disc herniation- L5 nerve root distribution.

Continued on page 3

Conservative treatments are preferred—switching to wide toe box shoes, taking anti-inflammatory medications, and the injection of steroids. Surgery is only considered in cases where non-operative treatment fails.

If surgery is necessary, both the dorsal and plantar approach is acceptable, however, the dorsal approach is more popular. During

the surgical procedure, the neuroma will be excised with the release of the deep transverse intermetatarsal ligament. Resect the nerve as far proximal as possible to prevent recurrence of the neuroma and the symptoms. Complications of surgery include: a painful plantar scar and stump neuroma when resection of the nerve is not proximal enough.

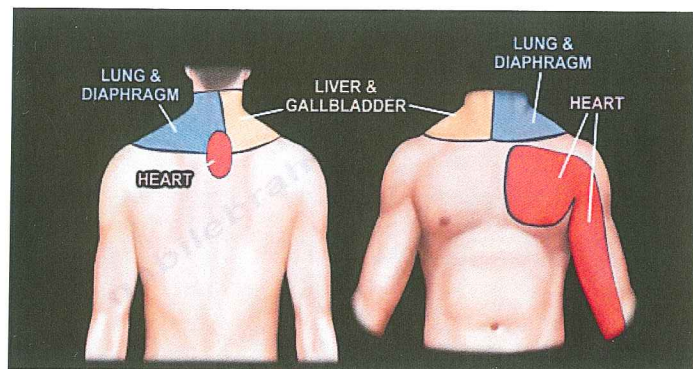
Referred Pain around the Shoulder

Shoulder pain is common. The presence of pain around the shoulder does not always mean it is a shoulder problem. Pain can come from the structures inside the shoulder or from the structures outside of the shoulder. The pain could be referred pain from neck problems (cervical spine pathology) or from other distant sites such as the elbow, heart, lungs, and diaphragm. Elbow pain is rarely transmitted to the shoulder. The shoulder is a common area for referred pain and examination of the shoulder should include examination of these other areas.

One of these areas that can cause pain referred to the shoulder is the neck, such as a herniated cervical disc or cervical spine pathology. The muscles and the nerves that arise from the neck area will pass through and around the shoulder on their way down the arm. The pain may radiate to the shoulder or scapula. The pain is usually at the superomedial aspect of the scapula. This is an example of the most common area of referred pain from neck pathology and is called a herniation. The pain originating from the neck region may overlap the shoulder. Usually, pain in the neck is felt on top of the shoulder, over the area of the trapezius muscle. Pain from the shoulder itself is usually felt at the top of the arm. If the shoulder moves freely without pain, then the neck is the source of the pain.

Sometimes, these conditions are confusing and difficult to differentiate (they usually overlap), especially when neck related shoulder pain causes weakness of the rotator cuff muscles, the shoulder to become stiff, or shoulder impingement. Pain arising from the acromioclavicular (AC) joint can radiate into the neck itself. Sometimes, an MRI is the only accurate study that helps in differentiating between neck pain and shoulder pain.

When cervical spine problems are suspected, the physician should examine the patient for findings of gait disturbance and long tract



signs which will indicate that the patient may have cervical myelopathy. A positive Spurling's Test will indicate neck pathology, especially nerve root irritation. A positive shoulder abduction test usually indicates neck pathology. The patient's symptoms are relieved by shoulder abduction, by placing the hand over the head. Heart problems such as myocardial infarction or angina may cause pain radiating to the left shoulder. Irritation of the diaphragm may present itself as shoulder pain. The diaphragm may share the same C4-C5 nerve root innervation.

The chest and upper abdomen should be carefully examined for possible pathology. A Pancoast tumor is another condition which causes referred pain in the shoulder region. A Pancoast tumor is a type of lung cancer that forms at the very top of the lung. This tumor may invade the brachial plexus, the ribs, the vertebral bodies, the pleura, and the chest wall, causing shoulder pain.

Sometimes, spine fractures may present as shoulder pain. The fracture may irritate the rhomboids muscles and transmit the pain to the scapula. The image below illustrates referred pain regions of the shoulder and neck.

Posterior Shoulder Instability, Jerk Test

The Jerk Test is a provocative test used to diagnose posterior shoulder instability. Traumatic posterior instability is less common than anterior instability and it is also underdiagnosed. Posterior instability of the shoulder is common in athletes such as football players (linemen in the blocking position) and is usually traumatic in the majority of patients. Flexion, adduction, and internal rotation of the arm is a high-risk position.

A posterior labral tear or detachment is common in this injury. This is called a Kim lesion, or a Reverse Bankart lesion. The patient will

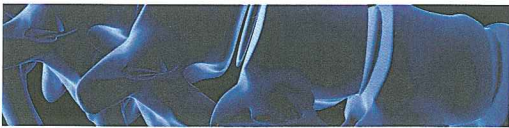
have pain with posteriorly directed force or pressure. The patient may also have the feeling like the shoulder is "slipping" out. There will be no apprehension in abduction and external rotation of the shoulder. There are several provocative tests used to diagnose posterior instability, such as: The Posterior Load and Shift Test, The Jerk Test, the Posterior Apprehension Test, and The Kim Test. A combination of the Jerk Test and the Kim test will give approximately 97% sensitivity.

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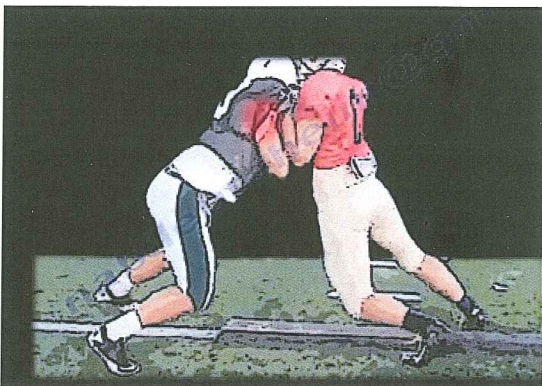


The Jerk Test continued

To perform The Jerk Test, the patient's arm should be abducted to 90 degrees and internally rotated with the elbow bent. The examiner will axially load the humerus while the arm is moved horizontally across the body. The arm at this point is adducted and the shoulder will be flexed. Axially loading will be continuously applied at this point. A positive test is indicated by sharp pain in the shoulder with or without a clicking sound. In some cases, the patient may have the sense of instability, but no pain.

Surgical treatments are either open or arthroscopic. Surgery is done for posterior labral repair, especially for recurrent posterior shoulder instability that does not improve with rehab.

The Jerk Test is used as a predictor for the prognosis of non-operative treatment to the posterior shoulder instability. A painful Jerk Test will have a higher failure rate with non-operative treatment for the posterior labral lesion.



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