



THE UNIVERSITY OF TOLEDO
MEDICAL CENTER

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THE UNIVERSITY OF TOLEDO MEDICAL CENTER

ORTHOPAEDIC MONTHLY

VOLUME 3, ISSUE 2 FEBRUARY 2009

UTMC to Renovate Sixth Floor of Hospital for Musculoskeletal Disorders, Orthopaedic Surgery & Rehabilitation



Orthopaedic Center

When the Orthopaedic Center opened in 2007, a new standard was set for elegance in a health-care setting. To match the Orthopaedic Center's elegance, UTMC will be renovating the sixth floor and dedicating it to musculoskeletal disorders, orthopaedics and rehabilitation.

Several people have been instrumental in moving forward with the plans including: VP and Executive Director of UTMC Mark Chastang; Director of Rehabilitation Services David Kujawa; Associate VP and

Associate Director of UTMC Norma Tomlinson; Orthopaedic Center Manager Laura Frost; and Orthopaedic Nurse Practitioner Colleen Taylor

According to Chairman and Professor of Orthopaedic Surgery Dr. Nabil Ebraheim, the goal is to provide the same comfortable, friendly atmosphere that has been created in the ambulatory setting of the Orthopaedic Center.

There will be many benefits to a dedicated floor for these services. It will be staffed with a group of nurses dedicated specifically to movement disorders and orthopaedics. We will also be able to admit pediatric patients according to the University's policy and have a geriatric trauma area as well. This way, we will continue to be able to treat the young, the old, the sick and the injured. Physical therapy and rehabilitation admission procedures will also be streamlined. The dedicated floor will be supported by in-house consultants from different services including neurology, vascular, pulmonary, cardiac and rehabilitation.

Referring physicians will also benefit from the ease of patient transfers as they will be able to call the same number as they do to refer patients. The Orthopaedic Center will facilitate the transfer and the admission of patients to ensure an easy and expeditious process.

The sixth floor will mirror the comfortable and friendly atmosphere of the newly opened Orthopaedic Center. There will be an area for families to share a cup of coffee or a snack and an area for kids to play games or have internet access.

The sixth floor presents a great educational opportunity for University nurses as they will be able to focus on patients with musculoskeletal disorders and care for injuries from neck-to-toe. They will be able to hold seminars and learn from hands-on training.

This is truly a great step for the University and the departments treating patients with musculoskeletal disorders. Patients will be safe and comfortable in this "hospital within a hospital." There is expected growth for the Department of Orthopaedic Surgery which saw roughly 38,000 patients last year. The specialized sixth floor will help the ambulatory Orthopaedic Center continue providing patients the highest access, service and convenience.

Simple Tests for Diagnosis of Orthopaedic Conditions

Part 1

Before studies are done or medications are prescribed, an orthopaedist begins with a thorough physical examination of the patient. During this process, the physician investigates the patient's body with a series of tests to locate areas of pain or concern. Once the tests are completed, imaging is often used to confirm physical examination findings.

Many tests are used to diagnose conditions of the hand and wrist, including Finkelstein and Phalen tests, Froment's sign, "ok" sign and wrist drop.

Finkelstein's Test

Used to diagnose DeQuervain's syndrome, an inflammation of the tunnel or sheath that surrounds two tendons controlling movement of the thumb, often caused by repeated motion of the wrist and hand. To perform the test, a patient is asked to make a fist with the thumb far enough inside to touch the little finger. Next, the patient is instructed to move the wrist in the direction of the little finger. If a patient experiences pain during this movement, DeQuervain's tenosynovitis may be the cause.

Faber Test

An acronym for flexion, abduction, external rotation, this test examines the sacroiliac joint and evaluates back pain. During this test, a physician forces external rotation of the affected hip in the supine position which causes pain in the sacroiliac joint. In addition, there would be tenderness over the sacroiliac joint.

Phalen Test

An alternative test used to identify carpal tunnel syndrome. Here, the physician bends the patient's wrists downward and pushes the backs of the hands together for approximately one minute. A positive test is indicated by numbness, pain or tingling along the median nerve. This test increases the pressure in the carpal tunnel and has the affect of pinching the median nerve between the proximal edge of the transverse carpal tunnel ligament and the anterior border of the distal end of the radius.

Froment's Sign

Another exam of the wrist and hand is the Froment's sign. Patients are asked to hold an object (usually a piece of paper) between the thumb and palm (which is flat); the object is then pulled away. A patient with a negative Froment's sign will be able to maintain a hold on the object without problem. A patient with a positive test, however, will have trouble holding the paper and will compensate by flexing the flexor pollicis longus of the thumb. This test is used to identify ulnar nerve palsy -- paralysis caused by damage or compression of the ulnar nerve.



Finkelstein's test used to diagnose DeQuervain's syndrome

"OK" Sign

Patients with an injury to the anterior interosseus nerve cannot perform the "ok" sign, opposing the second finger and thumb. The anterior interosseus nerve is a branch of the median nerve that supplies the deep muscles of the front of the forearm.

Wrist Drop

A patient with a wrist drop cannot extend or raise the wrist. It is typically caused by damage to the radial nerve, which stimulates the muscles in the forearm.

Adson Test

Another test used to evaluate upper extremity region, specifically for thoracic outlet syndrome, is the Adson test. Here, the physician palpates the radial pulse while moving the upper extremity in abduction, external rotation and extension. The patient is then asked to rotate his or her head toward the side being tested while taking a deep breath and holding it. If the patient shows a diminished or absent radial pulse, the exam is positive. Thoracic outlet syndrome refers to a group of disorders that affect the brachial plexus and subclavian artery. The brachial plexus refers to the nerves that pass into the arms from the neck.

Lift-Off Test

The Lift-off test is used to diagnose tears of the subscapularis tendon. The patient places the back of the hand on his or her back with the arm in internal rotation. The patient is then asked to lift the hand away from the back. The physician will push the hand toward the back to test the strength of the subscapularis if the patient is able to take the hand away from the back. If the patient is unable to lift the hand against the physician's resistance, a tendon rupture or injury to the subscapularis is present.

Straight Leg Raise Test

Another test used to evaluate back pain is the straight leg raise test. Which can determine whether a patient with low back pain has a herniated disk. The physician will place one hand under the ankle and the other hand on the knee. The physician then lifts the ankle and flexes the thigh relative to the pelvis. A positive test will yield reproducible pain in the patient's leg and lower back.

Thompson Test

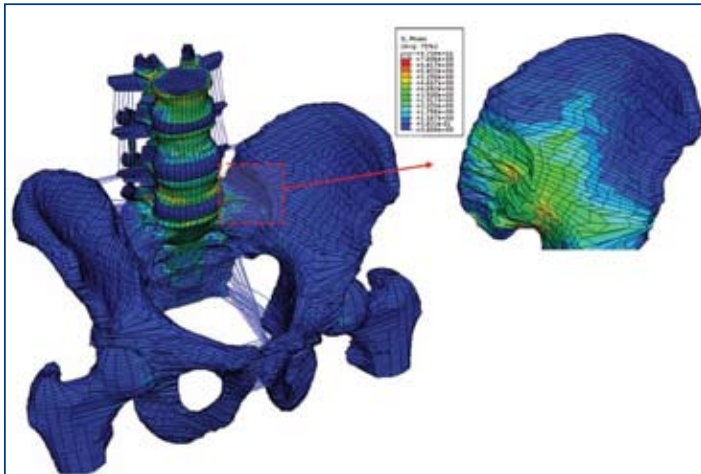
The Thompson test is used to examine the Achilles tendon. Here, the patient is asked to lie prone on the examination table with the foot extended beyond the end of the table. The physician will then squeeze the calf. A non-injured response to this maneuver is a slight plantar flexion (movement which increases the angle between the foot and the leg). Lack of movement can indicate a rupture of the Achilles tendon.

Look for part 2 of this article in the March issue of Orthopaedic Monthly.



Phalen test

Orthopaedic Center Finds Lumbar Fusion can Lead to Sacroiliac Joint Pain



Computer program used to quantify stress across the SI joint

Despite careful patient selection and advanced spinal fusion techniques, the frequency of failed back surgery syndrome still exists in 20 to 30 percent of patients. Patients with this syndrome share similar debilitating pain after surgical procedures. Prevalence of sacroiliac joint involvement in post-fusion low back pain ranges from 29 to 40 percent; however, the exact frequency of sacroiliac dysfunction in patients suffering from low back pain following lumbar fusion is unknown.

The sacroiliac joint connects the spine to the pelvis. It can be found between the sacrum (the triangular-shaped bone in the lower portion of the spine) and the ilium of the pelvis. Unlike other joints in the body, the sacroiliac joint performs little movement. It may only slide a couple of millimeters and may tilt and rotate only three or four degrees. However, it is essential in transferring the load of one's upper body to one's lower body.

Sacroiliac joint pain is typically difficult to diagnose and is usually caused by bone graft site; cluneal nerve injury; previous spine surgery; existing hardware; residual compression of the nerves; or presence of occult instability.

Diagnosis of sacroiliac joint pain is difficult during physical examination because there are few appropriate tests. The Faber test, or Patrick test, is often used. During this test, the physician forces external rotation of the hip to try to elicit pain. In addition, the physician will also try to locate pain with palpation over the sacroiliac joint unilaterally or bilaterally.

Imaging, such as MRI, x-ray or CT scan, is not typically effective in diagnosing sacroiliac joint pain. The only true way to diagnose it is an injection inside the joint. To provide temporary

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Commonly Missed Orthopaedic Injuries

Part 1

Despite the sophistication of imaging and the thoroughness of a physician's physical examination, some injuries remain difficult to diagnose. Obviously, it is imperative for the diagnosis to be made as soon as possible to yield the best possible results for patients.

Achilles Tendon Rupture

The Achilles tendon is the tendon of the posterior leg which connects the calf to the heel bone. Achilles tendon ruptures are often missed because they can be misdiagnosed, often as ankle sprains, peroneal injury, tibialis tendon injury, and calf and muscle strain. The presence of Achilles tendon rupture may be misleading because a patient may still be able to walk, flex the plantar muscle against resistance and lack pain. To correctly diagnose an Achilles tendon rupture, a physician should palpate the tendon along the entire length, perform a Thompson test and perform a Matles test. To confirm physical examination findings, MRI imaging is often utilized.

Posterior Shoulder Dislocation



Depiction of a posterior dislocation

While posterior shoulder dislocations are relatively uncommon, they are frequently missed and confused with rotator cuff injury or shoulder contusions. Patients may present with the affected arm in internal rotation and adduction and have limited external rotation at the shoulder.

Anteroposterior (AP) radiographs often show a normal shoulder -- axillary radiographs increase diagnostic accuracy. Posterior shoulder dislocations may be associated with lesser tuberosity fractures and humeral head defects. Missed diagnosis could lead to chronic posterior dislocation and degenerative shoulder disease.

Perilunate Dislocation

Perilunate dislocations are wrist injuries caused by enough force to tear the ligaments and displace the lunate. Physicians should look for median nerve injury. Early diagnosis can prevent long-term problems and complications. To avoid missing the diagnosis, x-rays should be taken for all hand injuries. Posteroanterior views will not show a perilunate dislocation, so a lateral view is needed as well.

Vascular Injury with Knee Dislocation

Knee dislocations are emergencies that require urgent reduction -- they run a high risk for neurovascular injury. Physicians should always check the distal pulse to rule out popliteal artery injury. The knee joint should be reduced first with the circulation assessed following. Patients with good distal pulse will need Doppler, while patients with diminished pulse need arteriograms. If the patient has no distal pulse, emergent exploration is needed for restoration of circulation and prophylactic fasciotomy.

Pneumothorax with Scapular Fracture

The scapula is surrounded by strong muscles and requires a lot of force to be broken. If the scapula is fractured, the injury may be associated with pulmonary complications. Physicians should always check to rule out pneumothorax. It is best to admit and observe these patients, as complications may arise.

Look for part 2 of this article in the March issue of Orthopaedic Monthly.



Lumbar Fusion

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relief to the pain, confirming the sacroiliac joint as the source of the pain. The sacroiliac joint is very close to the spine, making it a challenge to determine whether the source of pain is the spine or the sacroiliac joint. The clinician must divide the possible source of pain into two components (the spine and the sacroiliac joints) and work diligently to study both conditions to exclude or include either.

The UT Orthopaedic Center, in cooperation with Dr. Vijay Goel, endowed chair and McMaster-Gardner professor, as well as co-director of the Engineering Center for Orthopedic Research Excellence (E-CORE), recently conducted a study which added a new twist to the discussion.

The study showed that if a patient has undergone spine fusion there is increased movement and stress across the sacroiliac joints. To reach this conclusion, Dr. Nabil Ebraheim, Dr. Goel and master's student Dr. Alexander Ivanov simulated posterior fusion procedures across different levels of the lumbar spine and sacrum using a three-dimensional, non-linear, experimentally validated ligamentous lumbar spine-pelvis finite element model and

computed sacrum angular motion and average stress in sacroiliac joint articular surfaces in response to external loads.

The University's interdisciplinary team found that a small angular motion increase would not generate excessive stress at the joint surface; however, the ligaments around sacroiliac articulation are richly innervated. Therefore, even small motion increases (but with considerable percentile changes) may trigger pain syndrome. It's important for clinicians to understand this so they will include sacroiliac joint in the differential diagnosis which can prevent some back surgery.

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Editors: Dr. Nabil Ebraheim, department chairman and professor of orthopaedics, and Dave Kubacki, assistant to the chairman.

Department of Orthopaedic Surgery
3000 Arlington Ave
Toledo, Ohio 43614
For appointments, call 419.383.3761.

Neither Dr. Ebraheim nor Dave Kubacki have any relationships with industry to disclose.

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