



THE UNIVERSITY OF TOLEDO  
**MEDICAL CENTER**

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THE UNIVERSITY OF TOLEDO MEDICAL CENTER

# ORTHOPAEDIC MONTHLY

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## Raising the Bar

The Orthopaedic Center is raising the bar and decreasing the wait time for the patients. Despite the long, hard road, we ease the experience by providing accurate and fast results.

The Orthopaedic Center prides itself on providing access, service, convenience and quality patient care. The Orthopaedic Center provides treatment from neck to toe, treating all types of fractures and dislocations and patients of all ages. This specialized team treats all orthopaedic conditions including the sick and elderly.

This has been accomplished by hard work, perseverance, and commitment for years. Recently the Orthopaedic Center has raised the bar by updating its services to include unmatched access, same day patient visits, and even walk in appointments.

If you call this number, 419-383-3761, you walk into the center, you will be seen that day! Our goal is to provide every patient with quick access and quality patient care. When you call, the phone will be answered in three rings or less 95% of the time.

The entire visit from registration to discharge, for a routine visit, will occur within one hour for the majority of patients.

A few months ago we began monitoring the entire clinic visit for the patient from beginning to end. We engage a well organized plan with one major goal; to make the health care process easier for patients; the flow of the visit smooth and uninterrupted. We want an outstanding, unmatched patient care system and we are determined to provide it.

Another goal of the Orthopaedic Center is to improve and expand Saturday morning clinics, which makes it easier for some patients. Some patients prefer Saturday morning appointments.



During the patient's visit we can provide same day consultations from other services, if it is deemed necessary.

The Orthopaedic Center sees the most difficult and complicated cases. It is the team that makes orthopaedics great. The attitude of the employees, the tone of their voices, quickness of their responses and the sparkle in their eyes that makes the Orthopaedic Center great.

A great team knows exactly what they want and they are determined to achieve it. No matter how long it will take or at which price they will pay, the goals of the Orthopaedic Center will be achieved. Our team is an inspiration to all who come in contact with them or the center.

## Spine Concepts

Lumbar Spinal Stenosis is the narrowing of the spinal canal and narrowing of the intervertebral foramen (nerve root canal). There are two types of lumbar spinal stenosis: central and lateral. Hypertrophy of the facet joints, hypertrophy of the ligamentum flavum, disc degeneration, or arthritis are all examples of conditions which constrict the nerve root canals causing compression of the spinal

nerves and sciatica. The patient will have back pain that will be worse with extension of the back. Leaning forward increases the foramen size by about 12%. Leaning backwards reduces the foramen size by about 20%. Neurological exam is normal in about 50% of the patients.

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**CENTRAL CANAL STENOSIS:** •Central stenosis is responsible for giving neurogenic claudication. •Patient may have leg pain, back pain, buttock pain, weakness, cramps of the calf, and a heavy sensation. •Grocery cart sign (flexion of the back). •The patient's history is key for making the diagnosis of spinal stenosis.

**LATERAL RECESS STENOSIS:** •Will give radicular symptoms. •Can occur in the nerve root canal.

**NEURAL FORAMINAL STENOSIS:** •Occurs in the intervertebral foramen.

Look for other conditions such as hip problems, metastatic tumors, or vascular conditions. Always examine the pulses.

Neurogenic claudication and vascular claudication may coexist. Sitting will relieve the symptoms in both neurogenic and vascular claudication. Stopping and standing still is good for the vascular claudication but may still cause symptoms of lumbar spinal stenosis. In vascular claudication, the pain starts within the calf and leg. In neurogenic claudication, pain starts proximally and then spreads distally. Vascular claudication will be affected by muscle movement or muscle function, such as walking or riding a bicycle. In neurogenic claudication, leaning over while riding the bicycle will relieve symptoms in the same way as the shopping cart sign.

**TREATMENT OF SPINAL STENOSIS:**•Central canal stenosis – do a decompression by laminectomy. •Lateral recess stenosis – do a medial facetectomy. Add fusion for instability or if more than 50% of the bilateral facets are removed. •Look at the x-rays or MRI! If there is a slip of the vertebrae, do a fusion in addition to the laminectomy.

The risk of pseudoarthrosis is increased 500% by smoking. Depression and other comorbidities can affect the outcome.

If you have a patient with low back pain and gait disturbance (hyperreflexia), then you have an upper motor neuron lesion. You need to get an MRI of the cervical spine after you examine the patient.

There are five categories of tests included in the Waddell's sign:

•Simulation tests •Tenderness test. •Flip test. •Nonanatomic weakness and sensory findings. •Overreaction

**Burst Fracture:** If the burst fracture is stable and there is no neurological deficit, the orthosis and the surgery are equivalent in clinical outcome. Place the orthosis and ambulate the patient. The absolute indication for emergency surgery is progression of neurological deficit with spinal canal compression. When you have a low lumbar burst fracture and a laminar fracture, you may have trapped nerve roots. There may also be a dural tear. Treatment is laminectomy, reduction and fixation.

Seatbelt Lumbar Spine Injuries may have abdominal injuries such as colon injuries in children.

Anterior surgery can cause retrograde ejaculation and it can be caused by surgery due to sympathetic (shoot). Erectile dysfunction usually does not occur due to anterior surgery because the parasympathetic (Point) is deep within the pelvis. It can be found from a fractured pelvis with urethral tears.

The dominant contributing factor with intravertebral disc degeneration is genetics. The risk factors for the development of adjacent segment degeneration is laminectomy adjacent to the fusion. The adjacent segment disease can be a slipped instability disc herniation, facet arthritis or a fracture. 30% of lumbar fusions will develop adjacent segment degeneration 10 years after surgery.

**THORACIC SPINE DISC PROBLEMS:** •Usually occurs in males. •Radicular pain that radiates to the ribs and anteriorly at the same level. •Will have gait disturbance. •Normal upper extremity examination. •Lower extremity examination will show upper motor neuron findings (clonus & Babinski). •Get plain x-rays before getting an MRI (MRI will have a high false positive rate). •Surgery is done if the patient has myelopathy, laminectomy is contraindicated.

**LOW BACK PAIN AND URETHRAL DISCHARGE: REITER'S SYNDROME:** •HLA-B27 is positive in over 80% of cases. •Sedimentation rate may be high. •Check for small joint arthralgia, Achilles tendonitis or plantar fasciitis.

## Ankle Fractures

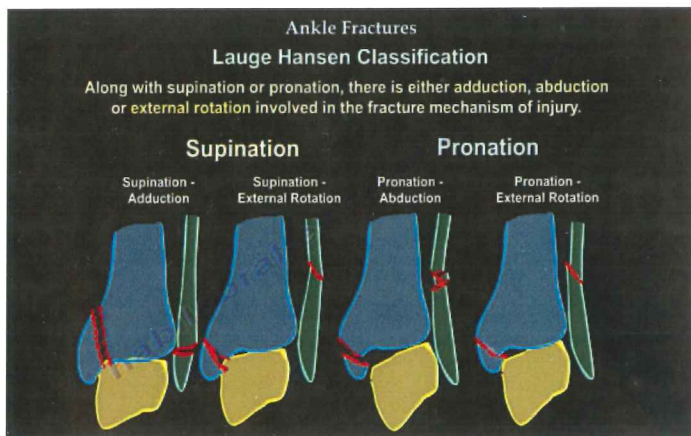
There are two common classifications used for ankle fractures; the Weber Classification and the Lauge Hansen Classification.

The Weber classification categorizes fractures of the ankle according to the level of the fibular fracture.

**Type A:** The fracture occurs below the level of the syndesmosis. It is rarely unstable and is also rarely associated with a syndesmotom injury.

**Type B:** This is a common injury and the fracture occurs at the level of the syndesmosis. The fracture may be unstable.

**Type C:** The fracture occurs above the level of the syndesmosis. This type of fracture is usually unstable. A Type C fracture with a deltoid ligament injury will most likely require syndesmotom screws because the syndesmosis will be unstable. The higher the fracture level, the more likely it will need syndesmotom screws.



The Lauge Hansen Classification categorizes depending on the mechanism of injury.

**Supination-Adduction Injury:** Vertical medial malleolus fracture associated with injury to the talus and tibial plafond. Movement of the talus medially. Possible anteromedial tibial plafond impaction. It is a transverse fracture of the distal fibula. Treatment includes screws parallel to the ankle joint or an anti-gliding plate. Check for loose bodies in the joint due to possible tibial plafond impaction. May also need to elevate and restore the joint surface. Fixation for this injury type may need to be started medially rather than laterally (routinely done laterally first).

**Supination-External Rotation:** Most common injury. When looking at a fracture that you want to classify, check the fibula on the lateral x-ray. On the lateral x-ray, if you find a fibular fracture that starts from anterior/inferior going posterior/superior, then this is a supination-external rotation injury. This is the injury type that can give you trouble if the fibula appears to be the only bone that is fractured because you want to prove that this is a supination-external

rotation injury Type 2, not a Type 4 injury. Make sure that you are not missing a Type 4 fracture of the medial malleolus or injury to the deltoid ligament. This injury has four stages: 1. Anterior Tibiofibular Ligament. 2. Fibula Fracture. 3. Posterior Tibiofibular Ligament. 4. Medial Malleolus or Deltoid Ligament. Deltoid ligament injury may not show up clearly on x-rays. Need to get stress view x-rays! Injury with a stage 2 injury alone is treated with a boot and weight bearing as tolerated. Injury with stage 4 will need surgery.

**Pronation-External Rotation:** On lateral x-ray, the fracture goes anterior/superior to posterior/inferior. The fracture of the fibula is usually above the joint level (Weber Type C). This fracture has 4 stages starting medially. The fracture pattern moves in a circle similar to the supination-external rotation injury.

**Pronation-Abduction:** The fracture of the fibula is usually transverse or comminuted. The fractured ankle may have injury only to the syndesmosis with nothing else appearing on the x-ray. Fracture starts medially and may cause injury to the deltoid ligament. Injury to the syndesmosis and fracture of the fibula will occur last.

## Cervical Myelopathy, Radiculopathy

Cervical spine myelopathy can occur due to compression of the cervical spinal cord. Patients with cervical spine myelopathy will have gait disturbance, which is an indication for surgery. The patient will also have upper motor neuron signs, upper extremity weakness and myelopathy of the hand (clumsiness of the hand).

The x-ray will show spondylosis and loss of lordosis. An MRI will show compression of the cervical spinal cord. Some of these patients will have lumbar spinal stenosis and they come to the doctor with an MRI and they have gait disturbance. Check the cervical spine and get an MRI!

The patient examination may be confusing. Ask about neck pain and stiffness, and also if the patient feels unstable when walking. Then examine the patient for upper motor neuron signs including spasticity, hyperreflexia, Hoffman's sign (the present of this reflex indicates an upper motor neuron lesion due to cervical spinal cord compression), Clonus, and Babinski reflex. Gait disturbances can also occur with thoracic disc problems, which occur more in males. There will be pain with radicular symptoms, with normal upper extremity exam and there will be upper motor neuron findings in the lower extremity such as clonus and Babinski reflex.

Usually surgeons will use the anterior approach of the cervical spine, especially when there is a kyphotic spinal segment. Go anterior, especially if there is cervical spine kyphosis more than 10° because this can be corrected anteriorly. The airway compromise occurs when the surgery takes more than 5 hour in the upper cervical spine, occurring at more than three levels, and more than 300 ml of blood loss.

The surgery may go posteriorly (laminectomy and posterior fusion), but kyphosis more than 10° is a contraindication to going posteriorly.

Complications of posterior approach: •Infection. •If performing a laminectomy alone, you will have progressive kyphosis. •C5 nerve root palsy may occur due to the anterior or posterior approach (unknown why it occurs, the nerve recovers but takes a long time to do so).

**Cervical Laminoplasty:** •Is not used when there is a fixed cervical spine kyphosis.

**Somatosensory Evoked Potentials (SEPs):** •Spinal cord monitoring technique. •Positive if there is a 50% decrease in amplitude or a 10% increase in latency.

**Recurrent Laryngeal Nerve (RLN):** •Vocal cord paralysis on one side will give you hoarseness.

**Superior Laryngeal Nerve (SLN):** •Will affect the high note phonation, it can affect singers, there will be no vocal cord paralysis. •Usually occurs when dealing with upper cervical spine surgical approaches.

50% of neck rotation is between C1 and C2. Flexion/extension mostly occurs at the level of C4-C5.

**Ankylosing Spondylitis:** •HLA-B27 positive. •Chest expansion is less than 1 inch. •Bamboo spine. •May have occult fractures, especially cervical spine fractures (suspect it, especially in patients with pain and a negative x-ray). •Need to get an MRI or CT scan to see it. •Need to admit these patients. •X-rays will show marginal syndesmophytes. •Need to recognize the difference between ankylosing spondylitis and Diffuse Idiopathic Skeletal Hyperostosis (DISH). •Involvement of the sacroiliac (SI) joint and the disc space favors ankylosing spondylitis.

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*Cervical Myelopathy, Radiculopathy continued*

In Charcot of the Shoulder the patient will have an x-ray of the proximal humerus that is clearly disappearing. Get an MRI of the cervical spine to check for syringomyelia.

Cervical Spine Radiculopathy is described as pain and/or neurological symptoms resulting from conditions such as a disc herniation that irritates a nerve in the cervical spine. Cervical spine and shoulder problems overlap. - Shoulder Abduction Test: The patient's symptoms are relieved by shoulder abduction and placing the hand over the head. The relief of the symptoms occurs due to decreased tension on the nerve roots.

In cervical disc problems, be aware of false positive MRIs. Cervical disc problems usually affect the lower nerve roots. With compression of the C7 nerve root, there will be middle finger numbness, triceps weakness and the triceps reflex will be affected.

The cervical nerve roots are horizontal in orientation. It does not matter if cervical disc herniation is central or foraminal, it will compress the same nerve root. The C7 nerve root runs above the pedicle of the C7 vertebra.

The patient will come to the doctor with unilateral arm pain that is relieved by arm elevation. The numbness and paresthesia will occur in specific dermatomes. When you examine the patient, do provocative tests such as the Spurling's test and shoulder abduction test.

Even if there is a bad cervical disc problem on an MRI, treatment is done conservatively for about 3 months. Give the patient therapy and nonsteroidal anti-inflammatory drugs (NSAIDs). 75% of the patients will improve with non-operative treatment.

When do you do surgery? Surgery will be performed when there is progressive pain for 6-12 weeks and a progressive neurological deficit.

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Dr. Ebraheim, Amanda Critton, Julie Anderson and Ellen Finch do not have any relationships with industry to disclose.

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