Chronic Pain Conditions
The Usual Suspects
7:30am – 8:30am

Jeremy A. Adler, DMSc, PA-C

Pacific Pain Medicine Consultants

Encinitas, CA

Low Back Pain

- Extremely Common – Prevalence between 20-30% of population
- Peak incidence between 45-65 y.o.
- Leading cause of activity limitation / work absence
- Risk Factors:
  - Age
  - Possible, but inconsistent across studies
    - Female > Male
    - Lower educational status
    - BMI > 30
    - Hereditary (More influential than occupation or sport)
- Most episodes resolve in 1-2 weeks, 90% by 6-12 weeks

Hoy, Damian, et al. "The epidemiology of low back pain." *Best practice & research Clinical rheumatology* 24.6 (2010): 769-781.

Factors Associated with Chronic Low Back Pain

- Psychological Factors: stress, anxiety, depression
- Workplace Factors:
  - Job dissatisfaction
  - Monotonous tasks
  - Poor work relations
  - Lack of social support
  - Physical demands
    - Prevalence 39% in manual workers
    - Prevalence 18.3% in male sedentary workers

Hoy, Damian, et al. "The epidemiology of low back pain." *Best practice & research Clinical rheumatology* 24.6 (2010): 769-781.

Some Etiologies of Low Back Pain

- Vertebral & Paravertebral (± radiculopathy
  - Herniated Disc
  - Degenerative (disc, facet joints, sacroiliac joints, spinal stenosis
  - Neuropathic (arachnoiditis, post-surgical)
  - Myofascial/Musculoskeletal (sprain, strain, spasm, myofascial pain, hip joint)
  - Malignancy (primary, metastatic, multiple myeloma)
  - Infectious (epidural abscess, vertebral osteomyelitis, zoster)
  - Bleeding (epidural hematoma)
  - Rheumatologic (ankylosing spondylitis)
  - Fibromyalgia
- Referred Sources
  - Vascular (abdominal aortic aneurysm)
  - Biliary
  - GI
  - Pancreatic
  - Uterine
  - Renal

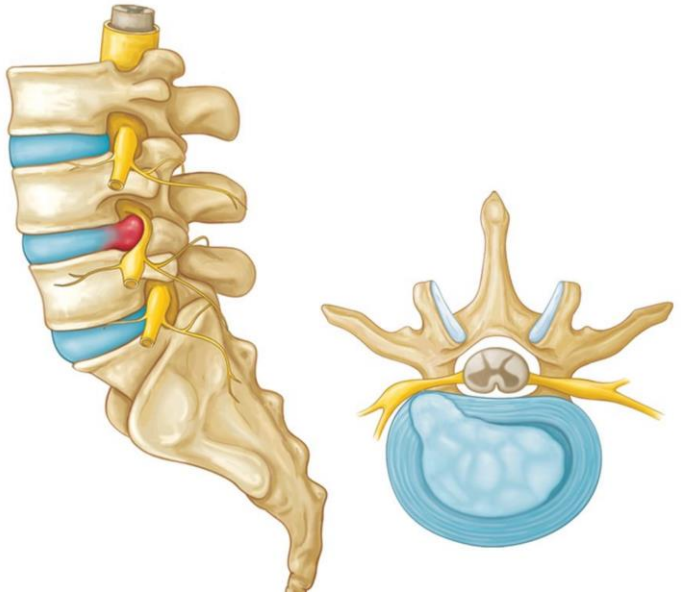
Red Flag Considerations

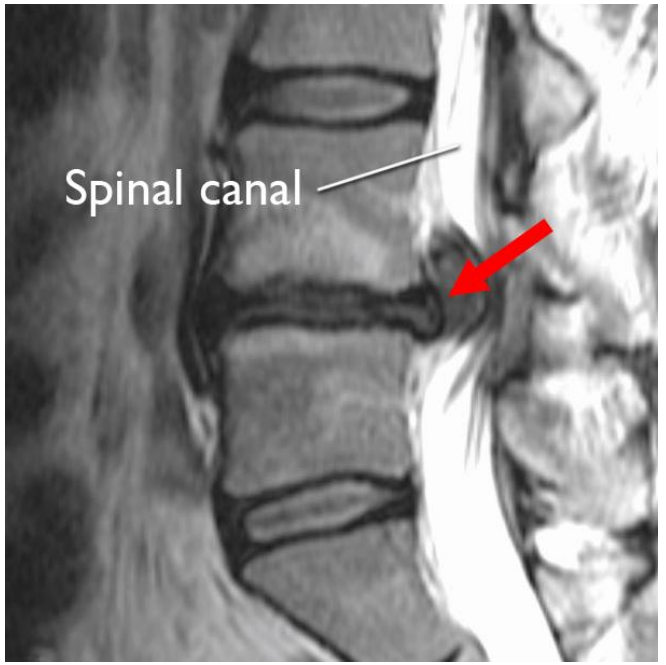
- History:
  - Cancer
  - Unexplained weight loss
  - Immunosuppression
  - Intravenous drug use
  - Urinary tract infection
  - Fever
  - Significant trauma relative to age
  - Bladder or bowel incontinence
  - Urinary retention (with overflow incontinence)
- Physical Exam
  - Saddle anesthesia
  - Loss of anal sphincter tone
  - Major motor weakness in lower extremities
  - Fever
  - Neurologic findings persisting beyond one month or progressively worsening

https://www.spine.org/Portals/0/assets/downloads/ResearchClinicalCare/Guidelines/LowBackPain.pdf

Lumbar Herniated Disc

- Inner nucleus:
  - Collagen secretion with proteoglycans to facilitate water retention – absorb shock
- Outer annulus fibrosis:
  - Retain nucleus in center of disc
- Estimated 75% genetic predisposition
  - Genes encoding structural proteins, matrix metalloproteinases, apoptosis factors, growth factors, and SNPs in Vit-D receptor affecting inflammatory cytokines





Lumbar Herniated Disc

- Radicular pain, sensory changes, and weakness in distribution of nerve root
- Exam may have pain with flexion, twisting, straining, coughing, sneezing
- Forward flexion increases disc pressure by 100-400%
- May impact exiting nerve (far lateral) or transiting nerve (paracentral)
- Guidelines recommend SLR with 3 out of 4 (dermatomal pain, sensory deficits, reflex deficits, and/or muscle weakness)

Cauda Equina Syndrome

- Risk Factors:
  - Diabetes
  - Acute onset of symptoms
  - L3-4 herniation
  - Sequestered discs
  - Superiorly migrated discs
  - Posterior herniation
  - Primacy canal stenosis
  - Greater canal compromise
- If ≥ 4 than Sensitivity 74%, Specificity 77%

Krishnan V, Rajasekaran S, Aiyer SN. Clinical and radiological factors related to the presence of motor deficit in lumbar disc prolapse: a prospective analysis of 70 consecutive cases with neurological deficit. Eur Spine J. 2017. 10.1007/s00586-017-5019-5.

Lumbar Disc Herniation

- Inflammation and Pain
  - Intervertebral disc in “immunoprivileged” area -> immunoreactive
  - Disc in the epidural space:
    - Increased vascular permeability
    - Vasodilation
    - Inflammatory cytokine signaling
      - Increased COX-2, Follistatin-like protein 1, TNF-α
  - *Propionibacterium acnes* (gram positive, anaerobic bacteria)
    - One study – 53% severe radiculopathy at gram positive anaerobes and 85% were *P. acnes*
    - Rabbit study demonstrated *P. acnes* could induce disc degeneration
    - Data remains inconclusive

Amin, Raj M., Nicholas S. Andrade, and Brian J. Neuman. "Lumbar disc herniation." *Current reviews in musculoskeletal medicine* 10 (2017): 507-516.

Lumbar Disc Herniation

- Workup
  - Xray, MRI, CT (multidector), CT/myelography
- Conservative Treatment
  - Anti-inflammatory medications
  - Education
  - Physical Therapy (core strength)
  - Acupuncture, spinal manipulation, traction
- Interventional Pain
  - Corticosteroids – Epidural
  - Platelet-rich plasma nad mesenchymal stem cell therapy
- Surgical
  - Microdiscectomy, Minimally invasive discectomy (endoscopic)
  - Open discectomy

Lumbar Internal Disc Disruption

- May represent pain of 26-42% of those with disc hernation
- Lumbar spine tearing peaks in middle age
- Asymptomatic Age-related disc degeneration (especially >50 y.o.)
  - Age 20: 37%
  - Age 80: 96%
- Pain is generally midline, close paraspinal
- Aggravated by: sitting, standing, lumbar flexion
- Alleviated by: lumbar extension, laying down
- Exam findings poorly predictive

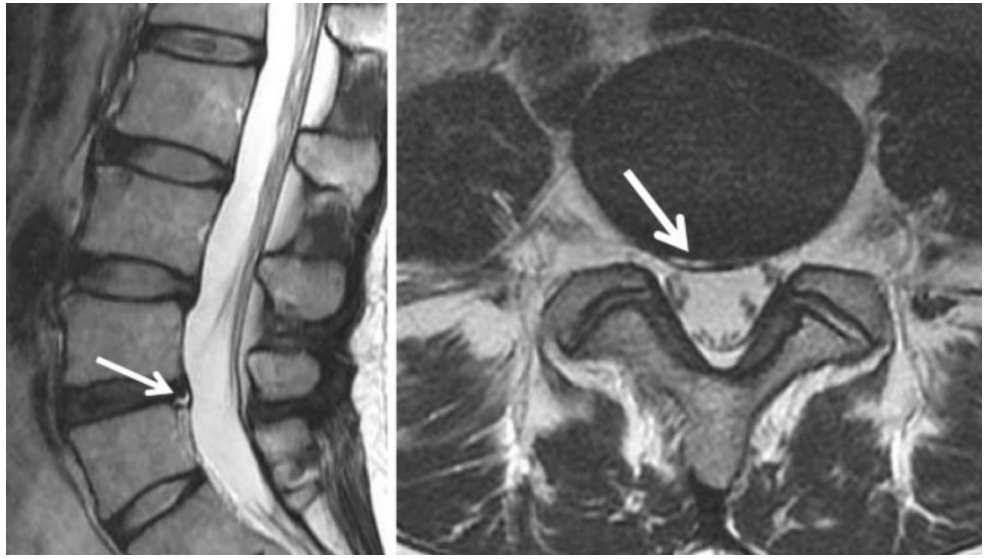
Pathak, Sanket, and Till Conermann. "Lumbosacral discogenic syndrome." (2020).

Lumbar Internal Disc Disruption

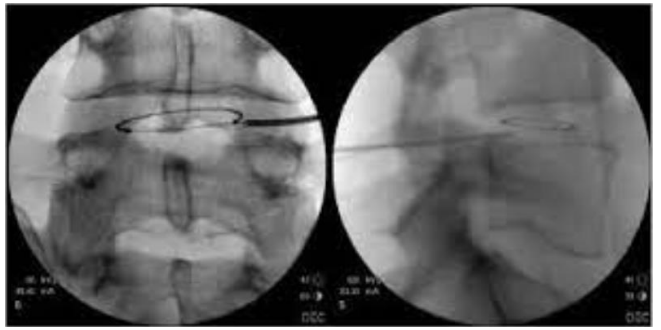
- Nerve supply – sinuvertebral nerve
  - Penetrates 3mm in posterior annulus
- Little vascularization in nucleus and inner annulus
- Limited ability to heal from injury
- Age related degeneration results in stiffer dehydrated discs
- Structural failure includes genetic factors, older age, and loading history
- Findings may include endplate fractures, radial fissuring, and herniation
  - Shear stress -> circumferential tear
  - Trauma -> peripheral tearing
  - Degeneration -> radial tearing

Lumbar Internal Disc Disruption

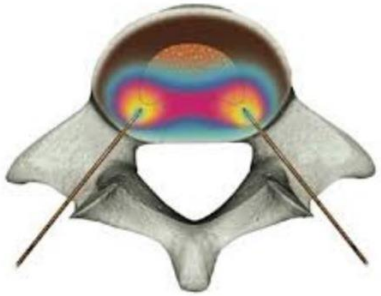
- Xray:
  - “Vacuum phenomenon” – nitrogen in degenerative fissures
  - Disc space narrowing
  - Endplate sclerosis
  - Osteophytes
- MRI:
  - High-intensity zone (T2 in posterior annulus)
  - Modic Changes
- Discography:
  - No gold standard to compare
  - High risk: discitis, worsened degeneration
  - Generally only performed if it will make a definite change in treatment

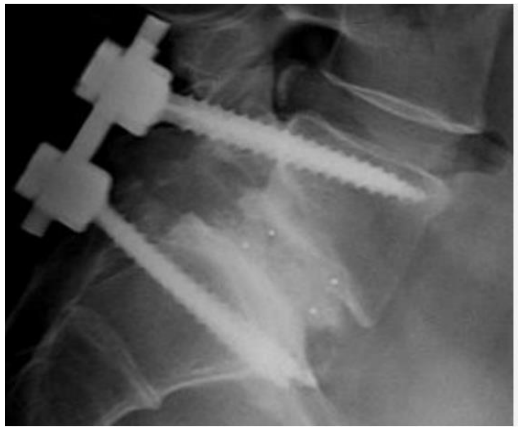


Lumbar Internal Disc Disruption



- Conservative Treatment
  - Physical Therapy (core strength)
  - Home exercise program
  - NSAIDs
- Interventional Pain
  - Epidural steroid injections, nuceoplasty, intradiscal injections, intradiscal electrothermal annulopasty, and biacuplasty
  - Intradiscal stem cells / PRP
- Surgical
  - Lateral posterior element fusion
  - Open spinal fusion
  - Artificial disc replacement





Lumbar Spinal Stenosis

- Reduction in space in spinal canal (Often Degenerative)
  - Facet hypertrophy, ligamentum flavum hypertrophy, discs
- Central, lateral recess, neuroforamen
- Typically Neurogenic Claudication Symptoms
  - Back, buttock and intermittent leg pain with walking short distances
- Can occur with/without spondylolisthesis
- Most frequent etiology for back surgery in those >65 y.o.
- Prevalence estimated 47.2% of those 60-69 y.o.

Predictive Clinical Findings

- Age > 60
- Positive 30 second extension test
- Negative straight leg raise
- Pain in both legs
- Pain relived with sitting, leaning forward, or flexing spine
- “shopping cart sign”

Genevay et al. "Clinical classification criteria for neurogenic claudication caused by lumbar spinal stenosis. The N-CLASS criteria." *The Spine Journal* 18.6 (2018): 941-947.

Imaging

- Plain X-ray (Flexion/Extension)
  - Spondylolisthesis
  - Scoliosis
  - Osteophyte
  - Disc Space Narrowing
  - Segmental instability
- MRI
  - Central Stenosis <100mm^2
  - Facet/Ligamentum Flavum Hypertrophy
  - Lateral and Neuroforaminal narrowing
- CT myelogram
  - Bone abnormalities
  - Narrowing central, lateral and neuroforaminal

https://radiopaedia.org/articles/spinal-stenosis-1?lang=us

Grading of Stenosis

- Normal

  Nerve roots are freely distributed, without crowding; the anterior margin of the thecal sac is flat or convex

- Mild spinal stenosis

  Slight crowding of the nerve roots; the anterior margin of the thecal sac is flat or slightly concave; the nerve roots remain distinguishable from the CSF

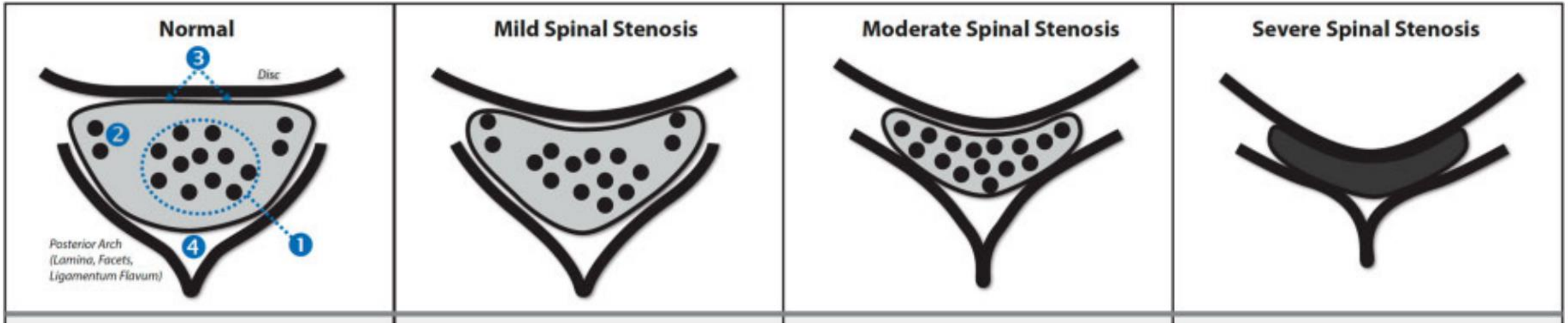
- Moderate spinal stenosis

  Crowding of the nerve roots, resulting in a homogeneously “speckled” appearance of CSF interspersed with nerve roots; the anterior margin of the thecal sac is concave

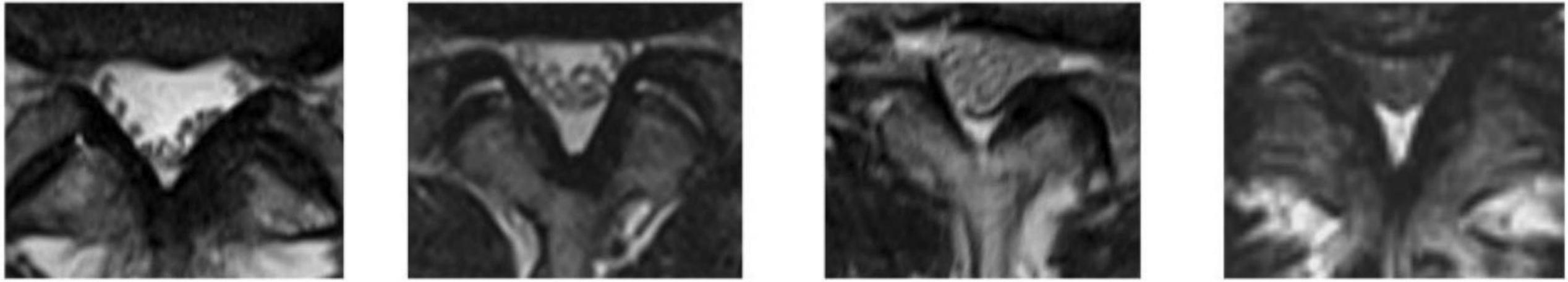
- Severe spinal stenosis

  Complete effacement of CSF, resulting in nerve roots being not individually distinguishable; the anterior margin of the thecal sac is concave or not discernable

Miskin et al. Simplified Universal Grading of Lumbar Spine MRI Degenerative Findings: Inter-Reader Agreement of Non-Radiologist Spine Experts. Pain Med. 2021 Jul 25;22(7):1485-1495.



Axial T2-weighted image examples



Miskin et al. Simplified Universal Grading of Lumbar Spine MRI Degenerative Findings: Inter-Reader Agreement of Non-Radiologist Spine Experts. Pain Med. 2021 Jul 25;22(7):1485-1495.

Non-Surgical Guideline

- **Recommendation 1**
  - *Multimodal care nonpharmacological therapies with education, advice and lifestyle changes, behavioral change techniques in conjunction with home exercise, manual therapy, and/or rehabilitation (moderate-quality evidence), traditional acupuncture on a trial basis (very low-quality evidence), and postoperative rehabilitation (supervised program of exercises and/or educational materials encouraging activity) with cognitive-behavioral therapy 12 weeks postsurgery (low-quality evidence).*
- **Recommendation 2**
  - *Consider a trial of serotonin–norepinephrine reuptake inhibitors or tricyclic antidepressants. (very low-quality evidence).*
- **Recommendation 3**
  - *Recommend against the use of the following pharmacological therapies: nonsteroidal anti-inflammatory drugs, methylcobalamin, calcitonin, paracetamol, opioids, muscle relaxants, pregabalin (consensus-based), gabapentin (very low-quality), and epidural steroidal injections (high-quality evidence).*

Bussières et al. "Non-Surgical interventions for lumbar spinal stenosis leading to neurogenic claudication: a clinical practice guideline." *The journal of pain* 22.9 (2021): 1015-1039.

Lumbar Spinal Stenosis

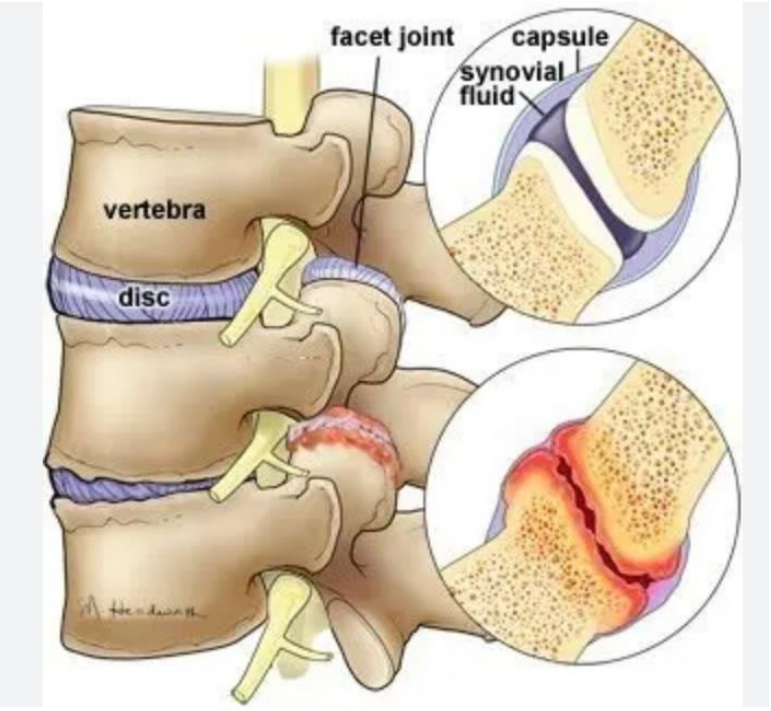
- Interventional Pain
  - MILD
  - Superion
  - Lateral intraspinous fusion
- Surgical
  - Coflex
  - Laminectomy

Lumbar Facet Syndrome

- Unilateral or Bilateral low back pain with radiation into the buttocks, groin, thighs (generally above the knees)
- May represent 15-45% of low back pain
- Degenerative, repetitive overuse -> microinstablity
- May lead to synovial joint cysts -> radicular pain
- Risk increases with age
- Co-exists with degenerative discs

Lumbar Facet Syndrome

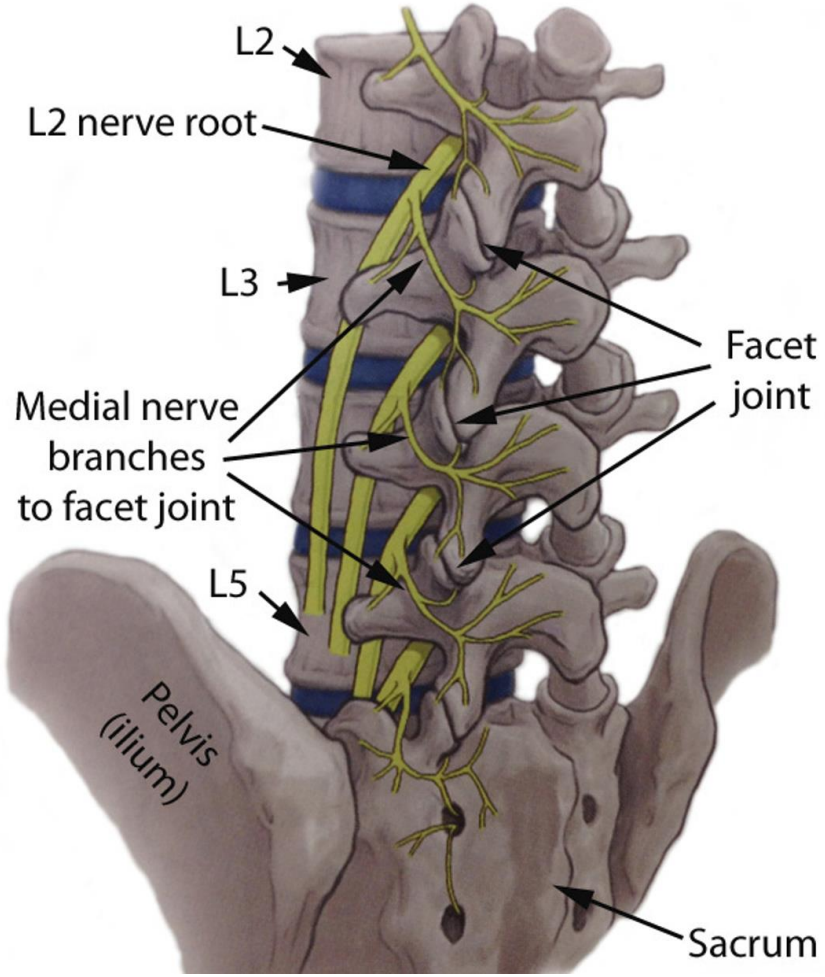
- May result in segmental failure -> spondylolisthesis
- Imaging poorly correlates> Xray, CT, MRI
- Diagnostic blocks may help
- Inflammatory arthritis
- Hx:
  - Worse in morning, gelling
  - Worse with extension, rotation, sitting, standing
- Physical:
  - Facet joint tenderness
  - Facet joint loading – extend and rotate



Alexander, Christopher E., Darren P. Sandean, and Matthew Varacallo. "Lumbosacral facet syndrome." (2017).

Lumbar Facet Syndrome

- Conservative Treatment
  - Weight loss if needed
  - Physical Therapy (core strengthening)
  - NSAIDs
- Interventional Pain
  - Medial Branch Nerve Block
  - Radiofrequency Neurotomy
  - Stem Cell / PRP
- Surgical
  - Laminectomy with decompression (large synovial cyst)
  - Facetectomy, decompression, instrumented fusion



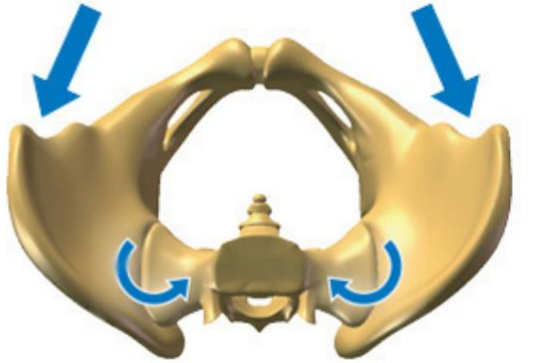
Sacroiliac Joint Dysfunction

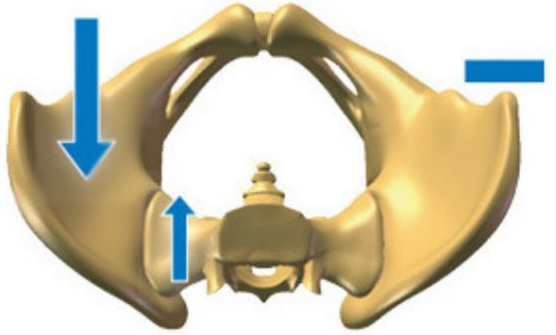
- May be etiology of 15-30% of low back pain
- Pain may results from capsular disruption, ligamentous tension, muscular inflammation, shearing, fractures, arthritis, and infection
- May be trauma or repetitive shear
- Risk Factors
  - History of lumbar fusion
  - Scoliosis
  - Leg length discrepancies
  - Sustained athletic activity
  - Pregnancy
  - Sero-negative HLA-B27 spondyloarthropathies
  - Gait abnormalities.

Barros, Guilherme, Lynn McGrath, and Mikhail Gelfenbeyn. "Sacroiliac joint dysfunction in patients with low back pain." *Federal practitioner* 36.8 (2019): 370.

Sacroiliac Joint Dysfunction

- Pain may be localized to buttock or extend posterior leg or groin
- Diagnosis:
  - Pain in sacroiliac joint area
  - + provocative maneuvers
    - Distraction Test (Most specific)
    - Thigh Thrust Test (Most sensitive)
    - Others (Compression, Gaenslens, Sacral Thrust)
  - Relief with sacroiliac joint anesthetic injection
  - Imaging (Xray/CT) / SPECT-CT
  - Treatment – Injection, RFN, Fusion
  - Stem Cell / PRP





Piriformis Syndrome

- Entrapment of Sciatic Nerve at Ischial Tuberosity Level
- 0.3-6% of low back pain and sciatica (peak incidence middle age female)
- Gluteal pain shooting down leg +/- tingling
- Pain with sitting, getting out of bed
- Etiology
  - Trauma to the hip or buttock area
  - Piriformis muscle hypertrophy
  - Prolonged sitting
  - Anatomic anomalies (Bipartite piriformis muscle)

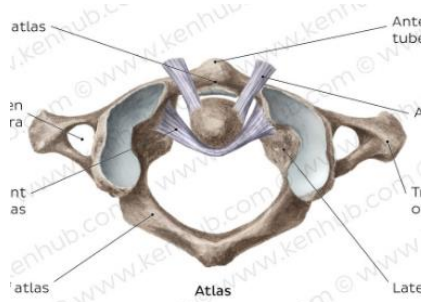
Piriformis Syndrome

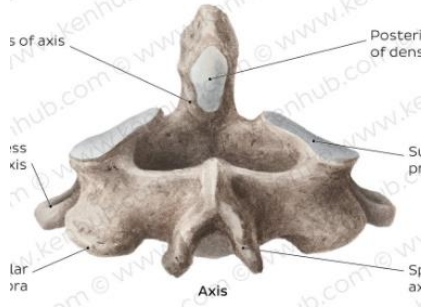
- Exam:
  - Tenderness at sciatic notch
  - FAIR (Flexion Abduction Internal Rotation)
  - Freiberg (forceful internal rotation of the extended thigh)
  - Pace (resisted abduction and external rotation of the thigh)
  - Beatty (deep buttock pain produced by the side-lying patient holding a flexed knee several inches off the table)
- Imaging - ?Magnetic Resonance Neurography
- Treatment – PT, NSAIDs, Muscle Relaxants
- Piriformis Muscle Steroid Injection
- Surgical nerve decompression

Hicks, B. L., J. C. Lam, and M. Varacallo. "Piriformis syndrome. StatPearls." (2022).

Neck Pain

- Lifetime prevalence of 50% with point prevalence of 13%
- 3 atypical vertebrae (C1, C2, C7)
- Mechanical Pain
  - Axial Spine:
    - Degenerative Spondylosis
    - Discogenic
    - Facet Joint Pain
    - Myofascial Pain
  - Radicular:
    - Cervical Radiculopathy
    - Spondylotic myelopathy
  - Post-surgical
- Non-mechanical





Cervical Spine Red Flags

- Trauma: (bone/ligament injury)
- Rheumatoid Arthritis: (atlanto-axial disruption)
- Infection (fever/meningism/IVDA/immunosuppression): Abscess, discitis
- Generalized Constitutional (fever, weight loss, anorexia, h/o CA): CA, PMR, RA
- Neurological Abnormalities: cord compression, demyelinating
- Ripping/Tearing Sensation: Arterial dissection
- Concurrent chest pain, shortness of breath, diaphoresis: MI

Teichtahl, Andrew J., and Geoffrey McColl. "An approach to neck pain for the family physician." *Australian family physician* 42.11 (2013): 774-778.

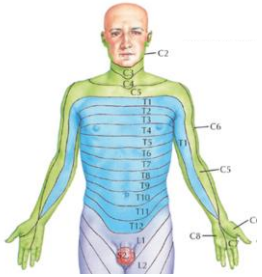
Cervical Spine Labs and Imaging

- Labs:
  - ESR, CRP (RA, PMR)
  - CBC (Infection/Malignancy)
- Imaging
  - Age >50, Constitutional symptoms, Infection risk, >6 weeks duration, neurological findings, h/o CA
  - Xray
    - Degenerative findings common
  - MRI
    - CA, infection, compression, disc herniation
  - CT
    - Bony pathology

Cervical Disc Herniation

- Acute or chronic, typically axial neck and ipsilateral arm pain (C5-6 and C6-7)
- Most common 51-60 y.o. and 60% female and most resolve in 4 weeks
- Herniated disc induces inflammatory cytokines:
  - IL-1, IL-6, sub P, bradykinin, TNF-α, prostaglandins
- Immobilization, traction, PT, manipulation
- Medications
  - NSAIDS
  - Steroids
    - Prednisone 60-80mg/d X 5 days, then tapered
    - Methylprednisolone pack (24mg – 0 over 7 days)
  - Muscle relaxants, antidepressants, anticonvulsants
- Interventional
  - Epidural steroid injections, selective nerve root blocks, neuromodulation
- Surgery

Exam Findings



- **C2 Nerve** – eye or ear pain, headache. History of rheumatoid arthritis or atlantoaxial instability
- **C3, C4 Nerve** – vague neck, and trapezial tenderness, and muscle spasms
- **C5 Nerve** – neck, shoulder, and scapula pain. Lateral arm paresthesia. Primary motions affected include shoulder abduction and elbow flexion. May also observe weakness with shoulder flexion, external rotation, and forearm supination. Diminished biceps reflex.
- **C6 Nerve** – neck, shoulder, and scapula pain. Paresthesia of the lateral forearm, lateral hand, and lateral two digits. Primary motions affected include elbow flexion and wrist extension. May also observe weakness with shoulder abduction, external rotation, and forearm supination and pronation — diminished brachioradialis reflex.
- **C7 Nerve** – neck and shoulder pain. Paresthesia of the posterior forearm and third digit. Primary motions affected include elbow extension and wrist flexion. Diminished triceps reflex
- **C8 Nerve** – neck and shoulder pain. Paresthesia of the medial forearm, medial hand, and medial two digits. Weakness during finger flexion, handgrip, and thumb extension.
- **T1 Nerve** – Neck and shoulder pain. Paresthesia of the medial forearm. A weakness of finger abduction and adduction.

Sharrak, Samir, and Yasir Al Khalili. "Cervical disc herniation." (2019).

Provocative Testing

- Spurling's Test (Radicular Pain)
  - Maximally extend neck, rotate to involved side, compress head
- Hoffman Test (Myelopathy)
  - Hold long finger, flick distal tip down (+ flexion, adduction of thumb)
- L'hermitte Sign (Myelopathy)
  - Flex neck (+electrical sensation down spine and extremities
- Shoulder Abduction Relief Sign
  - Rest hand on top of head (+relief of radicular pain)

Cervical Internal Disc Disruption

- Generally axial neck pain
- Prolonged sitting with neck flexion or protruded head posture
- Frequent flexion of neck, sudden unexpected movements
- Degenerative
- Generally improved when lying down
- Exam shows poor posture and restricted range of motion
- Provocative discography positive
- PT, NSAIDs, posture and body mechanics
- McKenzie protocol
- Possible cervical epidural steroids, surgery (fusion)

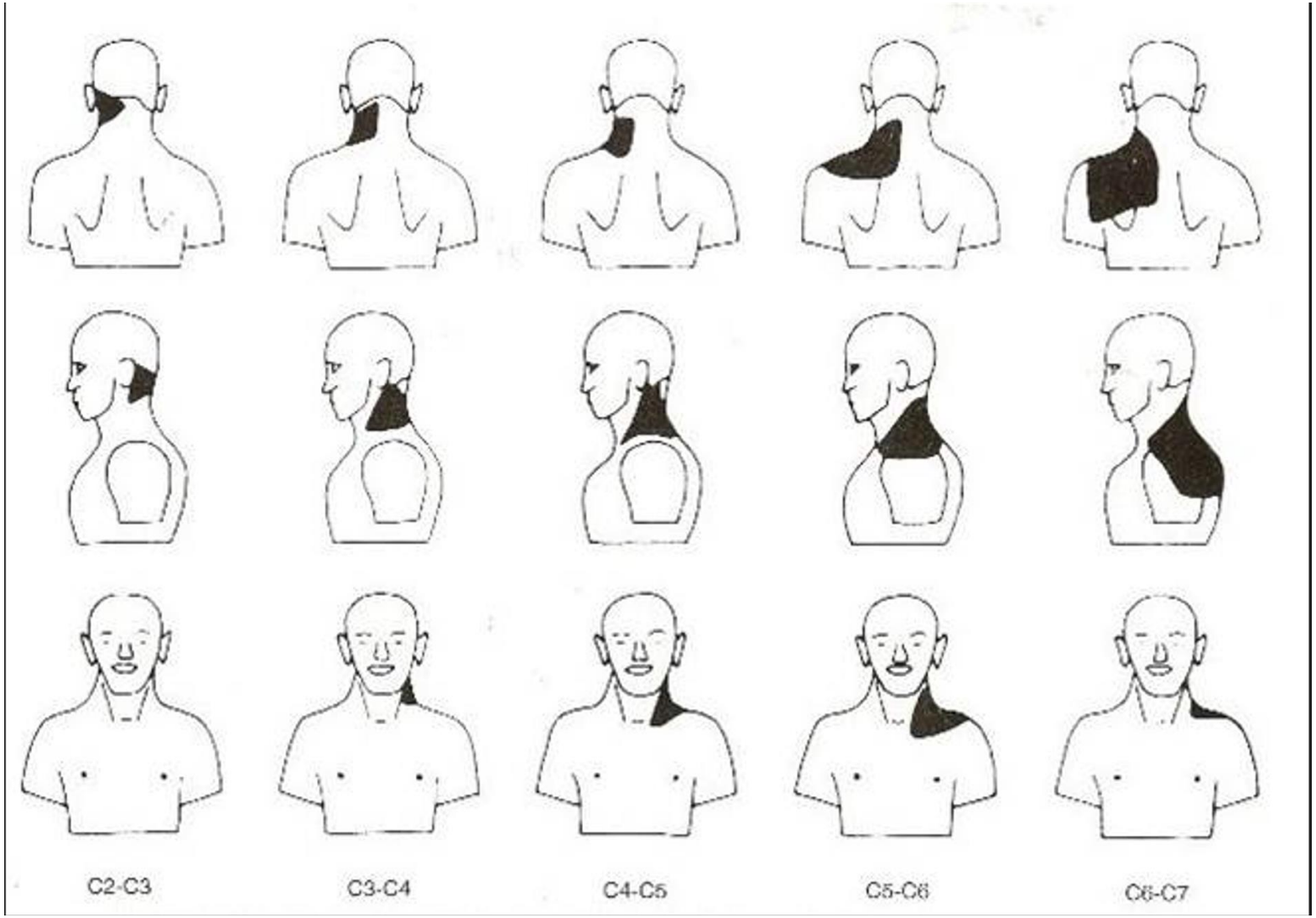
Saini, Amanpreet, and Taif Mukhdomi. "Cervical Discogenic Syndrome." (2020).

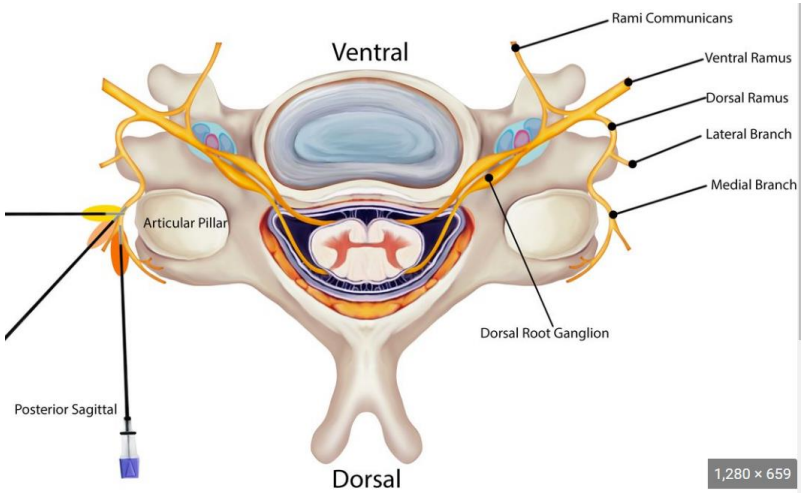
Cervical Facet Syndrome

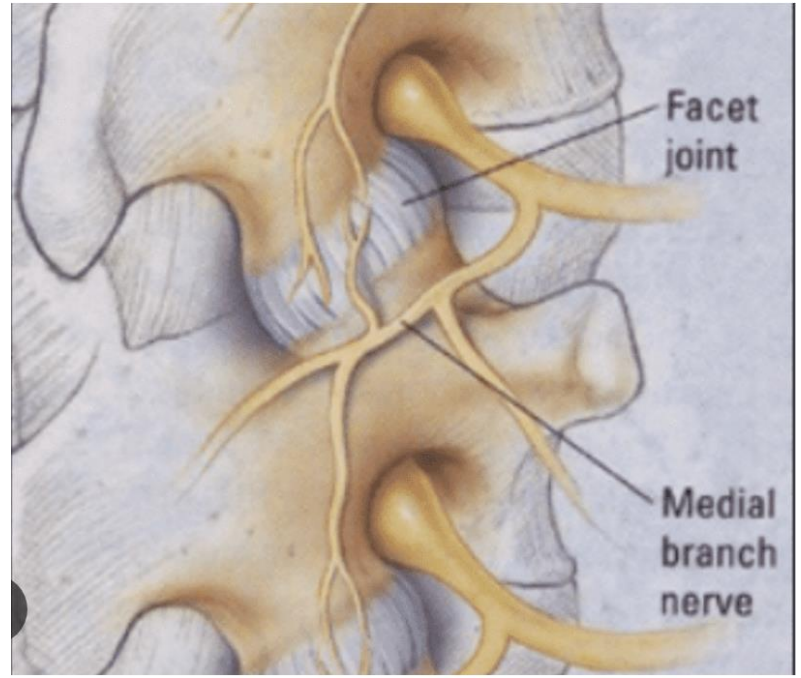
- Joint pain of the spine between superior/inferior articular process
- Synovial joints with capsule
- Most common cause – osteoarthritis degeneration (spondylosis)
- Following whiplash – 29-60% prevalence
- May advance to subluxation (spondylolisthesis)
- Osteophyte development
- Typically unilateral and non-radicular
- Worse upon awakening, extension and rotation of spine
- NSAIDs, PT
- Medial Branch Block / Radiofrequency Neurotomy
- Surgery for Spondylolisthesis

Curtis, Lindsay, Neal Shah, and Devang Padalia. "Facet Joint Disease." (2019).

Cervical Facet Syndrome







Cervical Spinal Stenosis

- Narrowing centrally or in neural foramina
- Multiple etiologies
- Symptoms attributable to location – radiculopathy versus myelopathy
- With >30% central narrowing – cervical spondylotic myelopathy
  - Clumsiness in arms, gait disturbance, lower extremity weakness, ataxia
- MRI – can show cord pathology
- Symptom management, PT, Interventional Pain
- Surgery

Myofascial Pain

- Local or regional disorder of the muscles or fascia
- Trigger Points
  - Sensitive to touch and refer pain
- Acute or chronic
- Generally overuse, postural problems, trauma
- Estimated 80% of patients in pain management have some myofascial pain
- Mechanism Theory
  - Increase in acetylcholine, forming taut bands, constricted blood vessels, hypoxia, activating nociceptors
- PT, trigger point injections (dry, saline, anesthetic, steroid, botulinum toxin), NSAIDs, muscle relaxants, antidepressants
- Osteopathic manipulation

Peripheral Neuropathies

- 2.4% of population, with 8% of older population

- Diabetes mellitus
- Chronic alcoholism
- Nutritional deficiencies (e.g., B1, B6, B12, and vitamin E)
- Inflammatory conditions (e.g., vasculitis)
- Hypothyroidism
- Autoimmune disease (e.g., Sjogren syndrome, lupus, rheumatoid arthritis)
- Infections (e.g., Lyme disease, Epstein-Barr virus, hepatitis C, shingles, leprosy, HIV)
- Guillain-Barre syndrome
- Toxins (heavy metals, chemicals)
- Chemotherapy agents
- Medications (antibiotics, cardiovascular medications)
- Tumors (secondary to compression or associated paraneoplastic syndromes)
- Inherited conditions (e.g., Charcot-Marie-Tooth disease, familial amyloidosis)
- Trauma/injury
- Multiple myeloma
- Monoclonal gammopathy of undetermined significance (MGUS)

Hammi, Claudia, and Brent Yeung. "Neuropathy." *StatPearls [Internet]*. StatPearls Publishing, 2022.

Pathophysiology of Peripheral Neuropathy

- Segmental Demyelination (better prognosis through remyelinating)
  - Degeneration of nerve sheath myelin, not axon
  - 20% of symmetrical neuropathies - genetic
- Wallerian Degeneration (poorer prognosis)
  - Degeneration of axon from lesion or compression
  - Distal axon likely not receiving nutrients from cell body
- Axonal Degeneration (poorer prognosis)
  - “Dying back” of nerve - metabolic
  - Often symmetrical polyneuropathy

Peripheral Neuropathies

- No standard workup
- Labs, electrodiagnostic testing, imaging
- Treatment
  - Disease state optimization (diabetes)
  - Avoidance of toxins (alcohol)
  - Replace nutrient deficiencies
  - Improve strength/balance – PT
  - Immunosupression
  - Neuropathic pain medications
  - Topical high dose capsacisin
  - Neuromodulation

Compression Neuropathies

- Carpal Tunnel
  - Numbness/Pain at night, thenar atrophy, Tinel's, Phalen Test
- Cubital Tunnel
  - Palmer small finger/ulnar half of ring finger, hypothenar atrophy, finger abduction weakness, weak pinch
- Tarsal Tunnel
  - Medial ankle radiating to plantar foot, tight fitting shoes, lots of other etiologies, Tinel's test, dorsiflexion-eversion test with 10 sec hold (82% positive)
- Workup
  - Electrodiagnostic studies, xray, MRI, Ultrasound
- Treatment
  - Splinting, NSAIDs, PT, Steroid injection, Surgical release

Sharrak, Samir. "Hand Nerve Compression Syndromes." (2019).

Kiel, John, and Kimberly Kaiser. "Tarsal tunnel syndrome." (2018).

Joint Pain (Mono/Poly Arthralgia)

- Inflammatory
  - Septic, Gout, Pseudogout, Lyme, Autoimmune
- Non-inflammatory
  - Trauma, hemarthrosis, osteonecrosis
  - Osteoarthritis, ischemia, cancer
- Treatment
  - PT, NSAIDs, SNRI
  - Steroid Injections
  - Surgery

Joint Pain of the Shoulder

- May be referred from neck, brachial plexus, Pancoast tumor
- Rotator Cuff
  - Tendinitis: Pain in deltoid region with overhead use, pain sleeping on shoulder
  - Tear: Injury – FOOSH, weakness in abduction
- Bicipital Tendinitis
  - Overuse, repetitive lifting
  - Anterior shoulder pain
- Subarachnoid Bursitis
  - Secondary to RTC tendinitis, fluid filled bursae
- Adhesive Capsulitis
  - Decreased GH range all directions (diabetes, MI, stroke, Parkinson's, hypothyroid)
- Acromioclavicular and glenohumeral joint

Joint Pain of the Hip

- May be referred from lumbar spine or sacroiliac joint
- Femoral-acetabular joint: Groin pain and possibly knee pain
- Trochanteric Bursitis
  - Lateral hip pain, increased with walking, squatting, climbing stairs, laying on hip
- Ischiogluteal Bursitis
  - Pain with sitting
- “Rotator Cuff” of hip injuries
  - Tendinitis/Tear of Gluteus muscles

Joint Pain of the Knee

- Osteoarthritis
- Internal disruption
  - Meniscus, ACL, PCL, LCL, MCL
- Prepatellar bursitis
  - Kneeling history
- Pes anserine bursitis
  - Medial knee, 2 in inferior to joint line, tender, worse with stair climbing

Fibromyalgia

- Widespread pain, fatigue, cognitive disturbance, psychiatric and multiple somatic symptoms
- Theory: neurosensory disorder of pain processing
- Noxious stimuli painful at lower stimulation
- Repetitive short noxious stimuli, exaggerated pain perception
- 6.4% prevalence, 20-55 y.o., F > M
- Some abnormalities identified:
  - Increased glutamate & substance P
  - Decreased 5HTP, NE in descending spinal cord
  - Dysregulation of dopamine
  - Alternation brain endogenous opioids

Bhargava, Juhi, and John A. Hurley. "Fibromyalgia." (2019).

Fibromyalgia

- 1990 ACR – trigger point (≥11/18)
- 2016 ACR Criteria:

A patient meets the diagnostic criteria for fibromyalgia if the following 3 conditions are met:

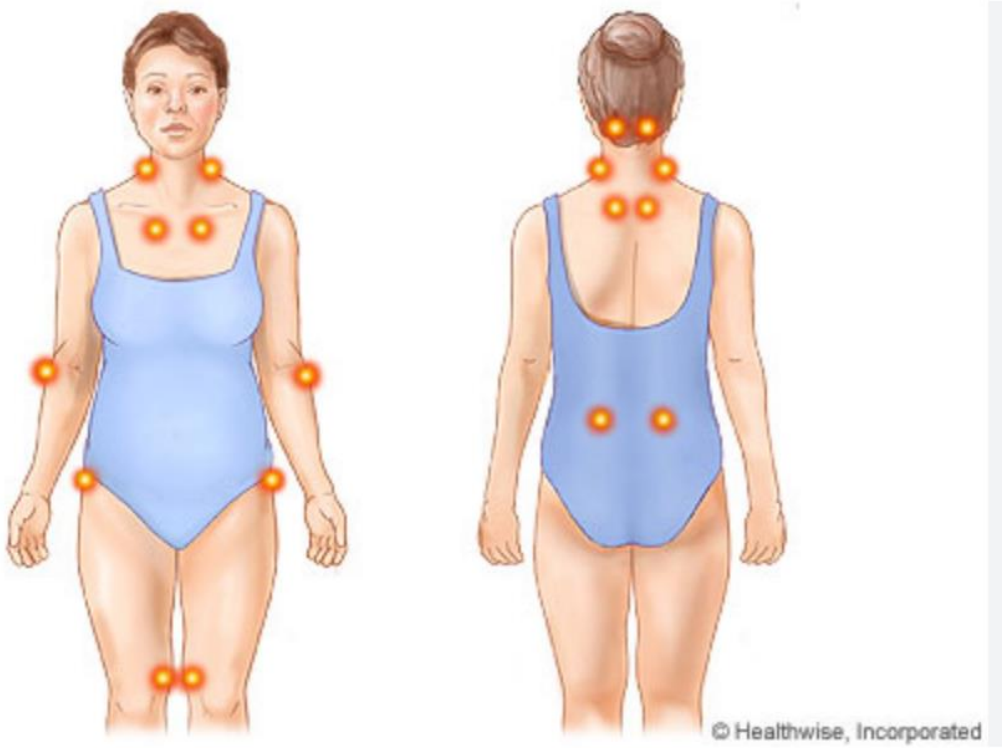
1a. The WPI score (Part 1) is greater than or equal to 7 **AND** the SS score (Part 2a & b) is greater than or equal to 5

OR

1b. The WPI score (Part 1) is from 3 to 6 **AND** the SS score (Part 2a & b) is greater than or equal to 9.

2. Symptoms have been present at a similar level for at least 3 months.

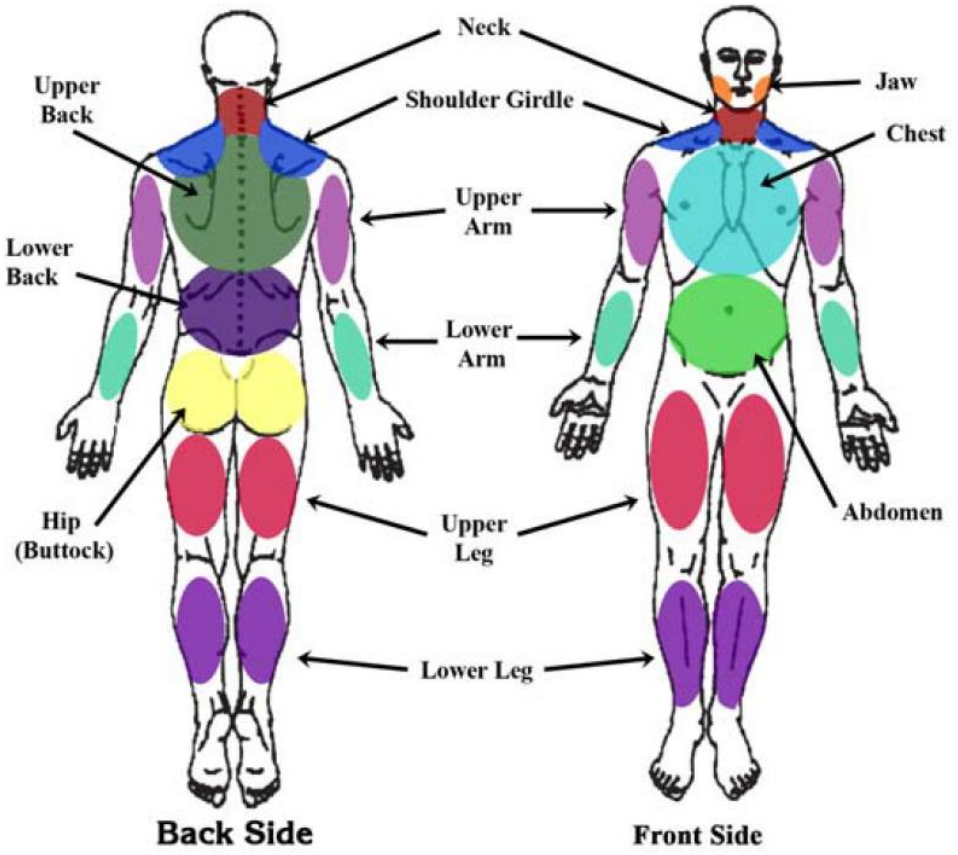
3. You do not have a disorder that would otherwise explain the pain.



Widespread Pain Index

Check each area you have felt pain in over the <u>past week.</u>

- ☐ Shoulder girdle, left
- ☐ Shoulder girdle, right
- ☐ Upper arm, left
- ☐ Upper arm, right
- ☐ Lower arm, left
- ☐ Lower arm, right
- ☐ Hip (buttock) left
- ☐ Hip (buttock) right
- ☐ Upper leg left
- ☐ Upper leg right
- ☐ Lower leg left
- ☐ Lower leg right
- ☐ Jaw left
- ☐ Jaw right
- ☐ Chest
- ☐ Abdomen
- ☐ Neck
- ☐ Upper back
- ☐ Lower back
- ☐ None of these areas



Count up the number of areas checked and enter your Widespread Pain Index or WPI score score here _____.

Symptom Severity

Indicate your level of symptom severity over the past week using the following scale.

Fatigue

- ☐ 0 = No problem
- ☐ 1 = Slight or mild problems; generally mild or intermittent
- ☐ 2 = Moderate; considerable problems; often present and/or at a moderate level
- ☐ 3 = Severe: pervasive, continuous, life disturbing problems

Waking unrefreshed

- ☐ 0 = No problem
- ☐ 1 = Slight or mild problems; generally mild or intermittent
- ☐ 2 = Moderate; considerable problems; often present and/or at a moderate level
- ☐ 3 = Severe: pervasive, continuous, life disturbing problems

Cognitive symptoms

- ☐ 0 = No problem
- ☐ 1 = Slight or mild problems; generally mild or intermittent
- ☐ 2 = Moderate; considerable problems; often present and/or at a moderate level
- ☐ 3 = Severe: pervasive, continuous, life disturbing problems

Tally your score for Part 2a (not the number of checkmarks) and enter it here _____.

Check each of the following OTHER SYMPTOMS that you have experienced over the past week?

- ☐ Muscle pain
- ☐ Irritable bowel syndrome
- ☐ Fatigue/tiredness
- ☐ Thinking or remembering problem
- ☐ Muscle Weakness
- ☐ Headache
- ☐ Pain/cramps in abdomen
- ☐ Numbness/tingling
- ☐ Dizziness
- ☐ Insomnia
- ☐ Depression
- ☐ Constipation
- ☐ Pain in upper abdomen
- ☐ Nausea
- ☐ Nervousness
- ☐ Chest pain
- ☐ Blurred vision
- ☐ Fever
- ☐ Diarrhea
- ☐ Dry mouth
- ☐ Itching
- ☐ Wheezing
- ☐ Raynauld's
- ☐ Hives/welts
- ☐ Ringing in ears
- ☐ Vomiting
- ☐ Heartburn
- ☐ Oral ulcers
- ☐ Loss/change in taste
- ☐ Seizures
- ☐ Dry eyes
- ☐ Shortness of breath
- ☐ Loss of appetite
- ☐ Rash
- ☐ Sun sensitivity
- ☐ Hearing difficulties
- ☐ Easy bruising
- ☐ Hair loss
- ☐ Frequent urination
- ☐ Painful urination
- ☐ Bladder spasms

Count up the number of symptoms checked above.
*If you tallied:

0 symptoms	Give yourself a score of 0
1 to 10	Give yourself a score of 1
11 to 24	Give yourself a score of 2
25 or more	Give yourself a score of 3

Enter your score for Part 2b here _____.

Now add Part 2a AND 2b scores, and enter ____.
This is your Symptom Severity Score (SS score), which can range from 0 to 12.

Fibromyalgia

- Patient Education
- Behavioral
- Sleep
- Exercise
- SNRI and anticonvulsants
- Low dose naltrexone