

# Low Back Pain in Pregnancy

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# Objectives

- Describe differential diagnoses of low back pain in pregnancy
- Articulate anatomy and pathophysiology of various causes of low back pain in pregnancy
- Discuss medical management options
- Discuss Osteopathic management options

# BACKGROUND

- 50-90% occurrence during pregnancy
- Lower lumbar spine and sacro-iliac joints most commonly involved
- Risk factors: advanced maternal age, # of pregnancies, previous history of back pain
- No relationship between presence of back pain and size of baby
- No relationship between amount of pain and maternal weight gained during pregnancy

# DIAGNOSIS

- Cause of pain may be unclear and multifactorial
- Pain radiates to thighs and rarely has radicular quality
- If disk herniation strongly suspected, a non-contrast MRI can be performed safely during pregnancy

# Causes for Pain

- Increased relaxin levels produce increased ligamentous laxity
- Biomechanics are altered by anterior displacement of the center of gravity, producing anterior pelvic tilt and increased lumbar lordosis
- May be result of development of spondylolysis or progression of spondylolisthesis

- Multiparity may have higher incidence of L4-5 spondylolisthesis (recurrent bilateral anterior sacral base somatic dysfunction)
- Vascular compression by gravid uterus when supine
- Disk herniation - existing or pre-existing – can produce pain in any trimester

# MEDICAL MANAGEMENT

- Maternity support binder
- Acetaminophen is drug of choice
- NSAID's are contra-indicated because they can cause premature closure of patent ductus arteriosus in the fetus.
- Cyclobenzaprine, oxycodone, and prednisone have been prescribed "when necessary"
- Interlaminar epidural steroid injections and surgery for disk herniation can be performed safely in pregnancy if necessary (= progressive neurologic deficits)

# OSTEOPATHIC MANAGEMENT

- Exercise pre-pregnancy and during pregnancy helpful to address postural imbalances, psoas tightness
- “Butt belt” to reverse pelvic tilt and decrease lumbar lordosis
- Palpatory structural exam (“TART”) to identify somatic dysfunction; perform stork, flexion tests
- Address L/S restrictions, sacral dysfunctions, gait problems, unlevel sacral base as it influences leg length discrepancies

# STRAINS AND SPRAINS

- Most common causes of acute low back pain
- Acute muscle **strain** usually results from single event of macrotrauma with severity of injury directly proportional to amount of force applied.
- Tissue trauma occurs when muscle undergoes forceful, passive elongation
- Muscle **sprain** may result from pathologic ligamentous elongation or tear
- Both strains & sprains occur after unaccustomed physical exertion

# Diagnosis

- Pain appears within 24-48 hours after physical activity and completely abates within several days
- Pain described as sharp or dull ache; exacerbated with passive stretching
- Ligamentous sprains are produced by forceful, passive stretching beyond physiologic range; or with strong muscular contractions. Thicker ligaments are less prone to injury
- Patients may have antalgic gait, postural shifting, decreased L/S range of motion
- There may be local tissue swelling, edema, erythema, bruising, warmth and tenderness; palpable mass with full thickness muscle rupture
- Sonography evaluates soft tissue changes at a joint; spinal imaging is indicated to rule out fracture, segmental instability, nerve root impingement, cord injury

# Pathophysiology

- Tearing of muscle fibers occurs at musculotendinous interface with belly of the muscle involved less frequently
- Trauma produces local tissue necrosis, cellular death, contusion, and inflammatory response

# Medical Management

- “RICE”
- Anti-inflammatories
- Physical therapy

# Osteopathic Management

Same as medical management; add gentle manipulative techniques (indirect initially, progress to muscle energy or other direct techniques) to *stabilize* structure before incorporating PT to make structures “flexible”

# MYOFASCIAL PAIN

- May be caused by local formation of trigger points
- Ubiquitous among chronic pain sufferers
- May be aggravated by pregnancy

# DIAGNOSIS

- Pain of trigger points may be dull, deep and aching, with a pain referral pattern
- Intensity of pain can change from day to day and exacerbated by maintenance of static posture, repetitive movement, stress, lack of sleep, nutritional imbalance
- Complaints of decreased range of motion, local tenderness, dysesthesias
- Physical exam – taut and tender muscle band which produces referred pain with applied pressure. A local twitch response elicited by snapping the trigger point manually
- Involved region may exhibit decreased range of motion and some pain-related *local* muscle weakness

# Pathophysiology

- Abnormally active motor end-plate in which excessive and continuous release of acetylcholine produces a constant state of myofibril contraction
- Prolonged contraction causes local tissue hypoxia with edema. If not reversed, leads to ischemic muscle pain
- Trigger points do not have abnormal histologic findings
- EMG of muscle affected by myofascial pain is normal

# Fibromyalgia

- Chronic and complex pain syndrome, presenting with *diffuse* body pain involving the spinal region. (Whereas myofascial pain may involve only 1 or 2 body regions)
- Initial symptom onset in women in the 2<sup>nd</sup> or 3<sup>rd</sup> decade of life

# Diagnosis

- Tender points differ histologically from trigger points and lack trigger point pain referral
- Predisposing factors include physical trauma, psychological stress, and a history of physical or sexual abuse
- Patients present with constant, debilitating, bilateral widespread pain with axial distribution
- Pain exacerbated by physical activity, stress, lack of sleep, cold and damp weather
- Patients may complain of generalized weakness, daily fatigue, muscle and joint stiffness, generalized tenderness
- Additional symptoms include unrefreshed sleep, depressive moodiness, anxiety, urinary frequency, irritable bowel, and multiple chemical sensitivities
- Physical exam – decreased range of spinal motion, pronounced pain behaviour, psychomotor retardation, slowed mentation and somnolence
- Although normal neuro exam, 11 of 18 tender points palpated bilaterally
- May take years to diagnose – rule out endocrinopathy, myopathy, other musculoskeletal disorders, rheumatic disease, electrolyte or nutrient abnormalities
- Refer for sleep study if associated with sleep apnea or restless legs syndrome

# Pathophysiology

- May have a genetic predisposition
- Altered central processing of nociceptive stimuli leading to heightened pain response
- Spinal fluid may have abnormal elevation of substance P
- Decreased levels of excitatory amino acids
- Systemic deficiency of serotonin
- Associated conditions = chronic fatigue, sleep disturbance, myofascial pain, irritable bowel/bladder, cognitive dysfunction

# Facet Joint Pain

- Facet joints make up posterior elements of the spinal column
- Provide stable intervertebral bridging, affording restrictive degrees of spinal mobility
- L5/S1 have greatest degree of mobility and “wear & tear” pathology
- Diffuse, nonfocal nature of symptom production due to multisegmental innervation of single facet

# DIAGNOSIS

- No known pathognomonic findings on history or physical exam
- Pain described as aching, deep, and dull with aggravating factors of standing, walking, flexion/extension
- Lumbar facet pain can be referred to groin, buttocks, thigh, and distal to knee
- Decreased range of spinal motion, localized muscle spasm, paraspinal muscle tenderness, and usually normal neuro exam, unless there is facet joint hypertrophy to cause radiculopathy or stenosis
- MRI best test at present to evaluate anatomy

# PATHOPHYSIOLOGY

- Traumatic capsular tears
- Age-related osteoarthritic changes

# SPONDYLOLYSIS

- Structural defect of pars interarticularis, which connects the superior articular facet to its lamina
- Can be unilateral or bilateral
- Is most common at level of L5
- Major concern of spondylolysis is progressive spondylolisthesis

# DIAGNOSIS

- X-rays – oblique “scotty dog” view
- CT – gold standard for spondylolotic defect
- When the fracture is an active or acute lesion, pain is in low back with intermittent radiation into gluteal and proximal lower extremity areas
- Physical exam – hyperlordotic lumbar spine, tight hamstrings, tenderness of affected lumbar segment; pain reproduced with lumbar extension and ipsilateral rotation
- Normal neuro exam

# PATHOPHYSIOLOGY

- Genetic predisposition or fatigue stress injury of neural arch – most commonly of repetitive extension type (as seen in cheerleaders, gymnasts, weightlifters, and football players)
- Initial occurrence in pre-school years and peaking in early adulthood. Most frequent in adolescent growth spurts
- Bilateral condition may lead to spondylolisthesis
- Most people with confirmed diagnosis are asymptomatic or have neuro compromise from severe L5 anterior slippage on S1.

# Sacroiliac Joint Pain

- Although they provide an extremely stable articulation between sacrum and ilia, the SI joints are a frequent source of pain
- Possess extensive multi-segmental L2-S3 sensory innervation to present with a variety of pain referral symptoms (somato-visceral)
- Provocation studies by intra-articular injections have produced pain in groin, thigh, calf and foot
- Pain often present in individuals with inflammatory conditions, or post-traumatic setting

# DIAGNOSIS

- Complaints of dull, aching gluteal pain – especially with weight-bearing and ipsilateral hip and lumbosacral extension/flexion
- Distal but not proximal pain referral pain patterns
- Physical exam – antalgic gait on affected side, low sacral base, leg length discrepancy; no neuro deficits
- Palpatory exam – joint tenderness, motion restriction
- Patients favor painful side while sitting
- X-rays assess arthritis – not done in pregnancy
- MRI evaluates anatomy for inflammation, sacral insufficiency fractures, abscess, or tumors

# COCCYGDYNIA

- Produces functionally limiting pain

# DIAGNOSIS

- History of fall on buttocks
- Difficult childbirth with joint derangement
- Pain exacerbated by direct pressure on coccyx by palpation; inability of patient to sit
- Passive internal hip rotation or straining during bowel movement may increase the pain
- X-rays detect alignment problems

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