Pregnancy-Related Back Pain: When should I Worry?

ABSTRACT

Clinicians are often unsure if back pain during pregnancy is due to a musculoskeletal condition, an abnormality with the pregnancy or merely part of the common discomforts associated with gestational changes. Low back pain guidelines do not include pregnant women in their criteria and there have been no randomized clinical trials to determine specific causes of low back pain during pregnancy. This article will provide the clinician with a framework for identifying pregnancy-related back pain using a high yield history and key physical examination techniques to differentiate between mechanical back pain, sacroiliac instability and symphysis pubis separation. Risk factors for low back pain and warning signs for pregnancy complications will be identified. Appropriate management strategies will be provided for the management of pregnancy-related low back pain.

KEYWORDS: Pregnancy-related Low Back Pain, Pregnancy, Pelvic Pain, Physical Examination, Management

CME Pre-test Quiz

Background

Common pregnancy-related musculoskeletal complaints include; mechanical low back pain, sciatic radiculopathy, sacroiliac hypermobility, pelvic pain, rectus diastasis, symphysis pubis disruption, carpal tunnel syndrome and de Quervain's tenosynovitis.[3] Between 50%-75% of women experience some element of back and pelvic pain during pregnancy. Although it is seldom serious or incapacitating it is the leading cause of time off work during pregnancy.[1,2,5,15, 17] Low back pain occurs most frequently during the second trimester (45%) and the third trimester (55%), is usually intermittent in nature and perceived to be worse at night.[2] Approximately 25-35% of women with pregnancy-related back pain receive physiotherapy treatment and 45% report

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a decreased quality of life.[5,15] The three most commonly postulated sources of low back pain during pregnancy are mechanical low back pain, sacroiliac hypermobility and pelvic ligament instability. The term pregnancy-related back pain refers to the presence of any or all the three conditions since they often occur together.

Understanding the anatomical and physiological changes of pregnancy that affect the musculoskeletal system from the first trimester onwards, may help the clinician understand the high incidence of low back and pelvic pain during pregnancy. The two hormones, relaxin and progesterone, play a major role in increasing joint laxity by causing softening of the connective tissue promoting relaxation of ligaments that results in potentially painful hypermobility and instability.[2,15] In addition, weight gain changes a woman's centre of gravity leading to postural changes by increasing the degree of lordosis and anteriorly shifting the abdominal load. The accumulation of edema can put additional stresses on the joints and contribute to musculoskeletal discomfort.

CLINICAL PEARL

Patients who have low back pain, in any trimester, associated with vaginal bleeding, uterine contractions, fever or hematuria should be immediately referred for obstetrical consultation.

Warning Signs of Pregnancy Related Complications presenting with Back Pain

Although most back pain during pregnancy is benign there are some symptoms that are worrisome and warrant immediate obstetrical consultation. Uterine contractions should be considered regardless of trimester if the back pain is cyclical and associated with tightening in the abdomen or back. Unless the practitioner is aware of an emerging pattern of contractions, tightening and/ or pressure that occurs at regular intervals premature labour may be mistaken for low back pain.

The presence of fever associated with the onset of low back pain can be indicative of kidney or bladder infection requiring immediate antibiotic treatment. Symptoms often include painful urination, hematuria, back and flank pain. It is important to take a functional history in conjunction with a low back pain history to consider the possibility of urinary or renal infection.

Although low back pain is common in the first trimester; severe, escalating or persistent pain between weeks four to twelve raises the specter of an ectopic pregnancy, spontaneous or missed abortion, particularly with associated bleeding and cramping.

Systemic inflammatory joint disease, commonly Rheumatoid

Arthritis, can occur or exacerbate during pregnancy and the lumbar spine is often the first area to flare. It is always important to screen for warning signs and ask about multiple joint pains, especially small joints, prolonged morning stiffness and constitutional symptoms. Women demonstrating these symptoms should be referred to a rheumatologist; treatment can safely be initiated during pregnancy.

Risk Factors for Low Back Pain in Pregnancy

There are been only two risk factors definitively identified to be associated with higher risk of pregnancy-related low back: previous low back pain and a history of back or pelvic trauma.[15] Other factors thought to increase the incidence of pregnancy-related low back pain include significant menstrual cycle pain, multi-parity and back pain during earlier pregnancies. There is a correlation between pregnancy at a young age and increased incidence of low back pain, possibly related to hypermobility of the spine and sacroiliac joints causing instability. Increased or excessive weight gain during pregnancy or prior obesity have been identified as risk factors for back pain by impacting the degree of mechanical lordosis. Previous pelvic trauma or pelvic bony abnormalities may increase the incidence of pain but there is little evidence that they inhibit carrying a pregnancy to full term. Poor physical conditioning before pregnancy may be a risk factor. Current guidelines for exercise recommend starting a regular exercise routine prior to becoming pregnant.

KEY POINT

Probable Risk Factors for Low Back pain during pregnancy include:

- Pre-pregnancy and past pregnancy low back pain
- Low Back and Pelvic Trauma
- Poor general physical condition
- Joint Hypermobility
- Increase body weight

Three Common Musculoskeletal Causes of Low Back Pain

CLINICAL PEARL

The three most common causes of low back pain in pregnancy are mechanical low back strain, sacroiliac instability and symphysis pubis separation; they often occur together.[1,2]

KEY POINT

Pregnancy related low back or pelvic pain is defined as intermittent or constant pain in the lumbar, buttock, pelvis, groin and/or upper thigh area lasting for more than one week.

There are many theories about the causes of pregnancy-related low back pain but few controlled research trials. In the literature, the term pregnancy-related low back pain refers to the presence of pain generators from many locations in the pelvic girdle, sacroiliac joints, symphysis pubis and lumbar spine.

The anatomy and functional movements of the pelvis and lumbar spine are closely interrelated. The pelvis is a symmetrical bony ring that has a ligamentous union anteriorly, the symphysis pubis, and a two more complex attachments posteriorly between the ilium, the sacrum and the lower lumbar spine. The sacroiliac joint produces very little motion, less than 5 degrees, and has a strong ligamentous structure much like the symphysis pubis. The sacral vertebrae (S1-S5) are fused into a triangular shaped bone which provides posterior stability to the pelvis. The L5 segment articulates with the sacrum and links to the rest of the spinal chain producing movement predominately in flexion and extension.

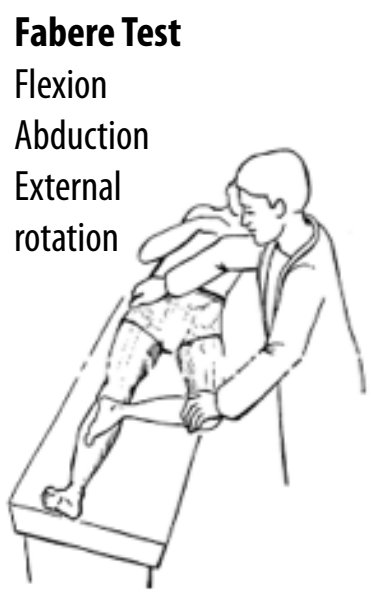
During pregnancy under the influence of hormonal changes, the ligamentous unions (sacroiliac and symphysis pubis) become laxer and this hypermobility potentially increases the load on the lumbar spine. By understanding these three points of anatomy, we can associate some symptoms, physical examination maneuvers and management strategies to each area of the pelvic girdle. It is useful to determine if pain is more pelvis related or lumbar spine related or the combination of both. This assessment can be done using the clinical history and physical examination.

CLINICAL PEARL

Assessment	Lumbar Dominant	Pelvic Dominant
History of Pain	Commonly aggravated by sitting and relieved with walking Back or Leg Dominant symptoms	Turing over in bed Standing on one leg Relief with sitting
Palpation Tenderness	Diffuse and non-specific	Symphysis Pubis Localized Sacroiliac
Physical Examination	Flexion aggravated pain Straight Leg Raise Positive neurological exam	Sacroiliac structural stresses Faber's Test localized to contralateral sacroiliac joint

Faber's Test localized to contralateral sacroiliac joint

Sacroiliac Joint Hypermobility



The sacroiliac joint can become hypermobile during pregnancy and this can lead to pelvic instability causing intermittent, usually unilateral, localized sharp pain, radiation into the buttocks and a generalized tenderness over the sacrum. One unproven theory is that the pain may be generated from one sacroiliac joint being more mobile causing a mild malalignment of the sacrum. Symptoms often occur with turning over in bed, with rotational trunk movements and/or direct pressure.

One clinical test to differentiate sacroiliac pain from hip pain is the FABER or Patrick's test. The FABER test (Flexion, ABuction, External Rotation) is a useful screen for hip joint or sacroiliac pain generation. If the test reproduces anterior hip pain on the same side as the manoeuvre this is suggestive of hip dysfunction; a full hip examination is indicated. If the pain is elicited posteriorly this is suggestive of sacroiliac dysfunction and further provocation tests can confirm this suspicion.[18]

Laslett[9] identified a a group of clinical examination tests (special test cluster) which are used to provoke the sacroiliac joint pain and facilitate clinical decision making and treatment by predicting the likelihood of the symptoms originating from the sacroiliac joint versus the lumbar spine. There are four provocation tests and if the examiner finds that two are positive,

CLINICAL PEARL

Sacroiliac Provocation Tests

Distraction	Pt supine. Examiner applies posterolateral directed pressure to bilateral ASIS. (Reproduction of pain)
Compression	Pt side-lying. Examiner compresses pelvis with pressure applied over the iliac crest directed at the opposite iliac crest. (Reproduction of symptoms)
Thigh Thrust	Pt supine. Examiner places hip in 90 deg flexion and adduction. Examiner then applies posteriorly directed force through the femur at varying angles of abduction/adduction. (Reproduction of buttock pain)
Sacral Thrust	Pt prone. Examiner delivers an anteriorly directed thrust over the sacrum. (Reproduction of pain)

producing unilateral localized pain that does not centralize to the lumbar spine, the sensitivity is reported to be 88% and the specificity is 78%.[9,10] If the examiner performs the tests in order (Distraction, Compression, Thigh Thrust and Sacral thrust) and the first two are positive then the criteria have been met and the pain generator is likely the sacroiliac joint.

Symphysis Pubis Dysfunction

The diagnosis of symphysis pubis dysfunction describes discomfort and pain occurring during or after pregnancy that is located in the anterior central pelvis with radiation to the upper anterior thighs and perineum. The symptoms are believed to be the result of increased mobility resulting from pelvic ligament relaxation. The severity can vary from mild discomfort (sprain) to debilitating pain (separation). If the gap between the sides of the symphysis pubis is larger that 10mm then this is categorized as a diastasis.[12] This can affect the function and stability of the pelvic floor muscles causing bladder stress incontinence, muscle spasm and pain during sexual intercourse. Symptoms can develop in the first trimester (75%) or later in the pregnancy (89%). A small percentage of women (<5%) will have their first signs in the immediately post partum with a diastasis occurring during a rapid and forceful delivery. Early in pregnancy women with symphysis pubis dysfunction often have difficulty walking or standing on one leg and are reported to have a "waddling" wide based gait. If presenting post partum, radiological imaging determines the degree of separation and rules out possible fracture. The only specific test for symphysis pubis dysfunction is direct palpation that elicits the typical pain lasting more than five seconds after the examiner's hand is removed.[11,12] This test is 99% specific and 60% sensitive and often correlates with a symptomatic history.

CLINICAL PEARL

Patient with Symphysis Pubis Dysfunction complain of significant pain during most of these activities:

- Walking
- Climbing Stairs
- Turning in Bed
- Standing on one Leg
- Rising from a Chair

Mechanical Lumbar Pain

Diagnosing mechanical low back pain during pregnancy follows the same assessment rules as for general population. The pain can be categorized as back dominant or leg dominant pain with the history identifying aggravating and relieving factors relating to flexion or extension movements. The physical examination should include a straight leg raise to confirm the

presence or absence of radiculopathy and a neurological assessment of nerve root levels L3,4,5 and S1.

It can be challenging to identify specific patterns of mechanical low back pain in pregnancy since both lumbar and pelvic sources can generate symptoms in the same area. For example, symphysis pubis dysfunction can produce leg dominant pain aggravated with walking and eliminated by sitting down, superficially mimicking the picture of neurogenic claudication. However, in neurogenic claudication, simply bending forward will relieve the leg pain while with symphysis pubis pain this movement will aggravate the complaint. Due to the increased lordosis of the lumbar spine and the hypermobility of the sacroiliac joints in pregnancy, lumbar extension can aggravate both pelvic and lumbar pain making it difficult to clearly identify the site of the problem.

KEY POINT

Exercise, education and postural advice are the mainstays of treatment and can be enhanced by short term therapy with a rehabilitation professional.

Management

Education on body mechanics, lifting techniques, modified activities in addition to promotion of general exercise and reduction of sedentary positioning are the mainstays of treatment. The most common type of pregnancy-related low back pain is often flexion aggravated but the prone extension exercises used in the non-pregnant patient may be impossible to preform. Modified walking, standing or kneeling extension-based exercise are required. Less than 2% of women will experience true radiculopathy that does not respond to conservative measures and require delivery by caesarian section and/or surgical decompression.[17]

Non-pharmacological management aimed at pain reduction, increased functional mobility and strengthening of core and lower extremity muscle groups is recommended for pregnancy related low back pain. Recommendations include self-managed modification of activities, participation in general exercise, postural changes and a walking program. Research on walking programs for the general population has found increased cortisol levels, improved bone health and a reduction in overall muscle tension as well as benefits to the cardiovascular system. The 2019 Canadian Guideline for Physical Activity throughout Pregnancy recommends that women without contraindications participate in 150 minutes of moderate intensity physical activity per week.[14] The implementation of general exercise and activity early in pregnancy prior to onset of low back pain has been found to decrease general dis-

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Post-test Quiz

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comfort.[16] A randomized control trial published by Kokic in 2017, followed a control and an exercise group for the duration of their pregnancies. The exercise group participated in daily brisk walking of 30 minutes duration and a bi-weekly group exercise class. The results demonstrated the exercise group experienced reduced severity of pain and less functional disability.[13] Aquatic exercise, yoga and light aerobics have also been found beneficial.

In the first six months post-partum approximately 40% of women will continue to experience low back and pelvic pain. These symptoms have been shown to improve with the continuation of a regular exercise regime.[17]

Referral to a rehabilitation provider, a physiotherapist or chiropractor, for 2-4 treatments scheduled over 6-8 weeks can be beneficial.[5] The therapist can provide education on the body changes contributing to low back pain during pregnancy and prescribe postural training, activity modification and strengthening exercises. Modalities such as acupuncture, manual therapy, tissue massage and transcutaneous electrical stimulation are commonly used but must be evaluated for safety on an individual basis.[5] According to the 2015 Cochrane review, there is single study evidence suggesting that acupuncture, manual therapy and combined exercise, education and manual therapy are beneficial for the reduction of pregnancy-related back pain.[6] Therapeutic and relaxation massage has been found to reduce subjective low back pain complaints. Massage techniques may include Swedish, Shiatsu and acupressure. Treatment positions can be modified as the pregnancy progresses.

There is limited evidence on the benefit of lumbar supports and pelvic belts for pregnancy-related back pain. Nevertheless clinicians will often prescribe a flexible pelvic or lumbar support for pain control and activity management allowing the patient to determine the benefit.[7,8] There is no reported risk to the baby and for greatest comfort the devices should be used beginning in the second trimester. Pelvic belts for sacroiliac and symphysis pubis pain should be positioned at the level of the anterior superior iliac spine.[8] Flexible lumbar supports are contoured over the lumbar spine posteriorly and then secured over the pubis anterior to sling the abdominal cavity. It must be emphasized that lumbar and pelvic belts are adjuncts to exercise, education and therapy and should not be worn during prolonged periods of inactivity or at night.

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