

THE PREGNANT PELVIS

AN INTRODUCTION TO SAFE, EFFECTIVE PRENATAL MASSAGE THERAPY

Carole Osborne-Sheets

The following article is intended to present the massage therapist/bodyworker safe, effective guidelines for addressing the most common pregnancy complaint, lumbar and pelvic pain. Sections of this article are excerpted from the textbook, *Pre- and Perinatal Massage Therapy*, which elaborates on these topics.

PELVIC AND LUMBAR PAIN DURING PREGNANCY

In a 1994 survey of prenatal massage therapists, they cited relief from pregnancy aches and pains as a primary motivator for their clients seeking therapy.¹ Studies conducted in Sweden reported 48-56% of all pregnant women experience backache during pregnancy. They described this pain as generalized fatigue, tightness, and achiness with concentrated areas of pain. Half of these women suffered discomfort in the sacroiliac area. Another 25% complained about the lower back while the upper back was most problematic for another quarter of these subjects. Many women found months 5-9 most uncomfortable, and many reported their first incidence of chronic pelvic and back pain during a pregnancy.²

Back and pelvic pain secondary to pregnancy is the result of: improper posture created by the anterior weight load of enlarging breasts, uterus, and fetus; muscle strain and imbalance; myofascial trigger points; fetal positioning; hormonal effects on ligaments; referred pain from uterine ligaments.³

PRENATAL POSTURE AND STRUCTURAL INTEGRITY

The shift in center of gravity created by more anterior weight in the breasts and abdomen challenges a pregnant woman's structural integrity. As pregnancy progresses her pelvis will inevitably rotate anteriorly, spilling the uterus forward against the abdominal walls. This misalignment increases the lumbar curvature and stretches and weakens all of the abdominal muscles. Pressure against the interior abdominal walls subsequently both separates the rectus abdominis at the linea alba (diastus recti) and incites hyperirritable, tender points (myofascial trigger points) in the abdominal muscles that characteristically refer pain posteriorly. In compensation for lumbar and pelvic misalignment, her head and neck jut forward anterior of the optimal vertical line; she leans her upper ribcage more posteriorly; and her pectoral girdle sags into forward rotation.

Pregnancy structural rebalancing

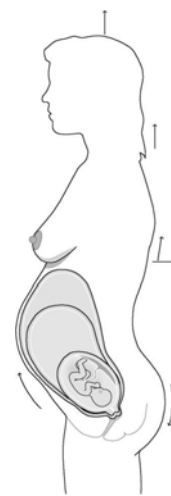
Vertical alignment of the head, spine, and pelvis reduces lumbar and pelvic pain as well as many other prenatal musculoskeletal and physiological discomforts. Encourage balanced, effortless alignment in daily activities with the following guidance:

Occipital lift

1. Verbally guide the standing client to imagine a string attached to the crown of her head and extending upward toward the sky.
2. Instruct her to imagine that the string is pulled further skyward, lifting the crown of her head with it and allowing the cervical spine, ribcage, and pelvis to follow.

Pelvic and lumbar alignment

1. Ask the client to imagine a long monkey tail attached to her tailbone and pulled between her legs, with the end at chest level where she can grasp it.
2. Verbally guide her to imagine pulling her tail to stretch it over her head, then releasing it back to the beginning position at chest height.
3. After she imagines this movement several times, request that she allow this movement to happen, coordinating the realignment of her pelvis with her exhales. Repeat for 1-3 minutes.
4. Encourage her to inhibit her use of the gluteals, hamstrings, rectus femoris, and upper abdominals, seeking instead more intrinsic movement through use of the iliopsoas.



Realignments

Struggling against the increasing weight, all of her posterior musculature becomes fatigued, tight, and fibrotic, and posterior trigger points flourish. Increased abdominal and overall weight also encourages external rotation of her hip joints and loss of iliopsoas function in walking, resulting in pregnancy's characteristic waddling gait. To prevent falling forward with the increased anterior weight, her knees hyperextend, and her calves frequently cramp. She tends to collapse her increased weight into the medial arches of her weary feet.⁴ A fetus with a left or right preference in uterine position often overburdens the favored side of the back making it tired and sore with the unbalanced weight load. Some women develop temporary or permanent scoliosis from fetal positioning preferences.

These postural adjustments to pregnancy result in strain and pain in the following muscles and muscle groups: levator scapulae, sternocleidomastoid, trapezius, and supraspinatus; pectoralis major and minor; abdominal group; erector spinae, multifidi, rotatores, quadratus lumborum, iliopsoas; pelvic floor muscles; hip rotators, adductors, quadriceps group; gastrocnemius, soleus, and peroneals.

Stressed by the anterior load and an average weight gain of 25 to 35 pounds, the weight-bearing joints and associated myofascial structures of pregnant women are strained and compressed. Greatest impact is felt in the intervertebral and facet

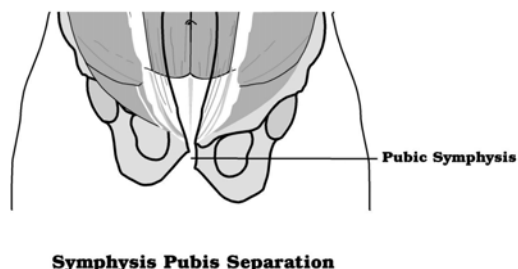
joints, particularly in the lumbar spine; lumbosacral joint; sacroiliac joints; pubis symphysis; and hip joints. All of these strains are multiplied if a woman exceeds this recommended weight gain.

Most importantly, the relationship of the ilea and sacrum at the sacroiliac joint shifts when the enlarged abdomen protrudes anteriorly. As the pelvis anteriorly rotates, the ligaments of these deep pelvic joints are compressed, strained, and can become hyper or hypomobile in response. Sacroiliac pain is typified by a chronic achiness in the upper, medial quadrant of the buttocks, across the iliac crest, or at the posterior iliac spine of the pelvis, and radiating for several inches. Prolonged periods of standing or sitting, high heels, and poor seated back support, can all create additional strain to these joints. Occasionally one sacroiliac joint's hypomobility will result in excessive mobility in the other. A sharp, stabbing posterior pelvic pain is then often experienced when rolling from a supine position, particularly on hard surfaces.⁵ The lumbosacral junction is similarly affected by increased anterior weight load. Achiness in the center of the sacral and lumbar areas often indicates strain and compression of the lumbosacral joint.

HORMONAL INFLUENCES ON BACK AND PELVIC PAIN

As early as the tenth week, the pregnancy hormone, relaxin, begins softening connective tissues in preparation for labor. Intended to increase the parameters of the pelvic outlet, relaxin is, however, systemic in its effect. The resulting laxity in all ligaments, tendons, and fascia throughout the body contributes to joint instability and more strain on weightbearing structures, especially in the lumbar spine and pelvis.

Probably relaxin's most detrimental prenatal effect is on the symphysis pubis. Softened by relaxin, this pelvic junction of the pubic bones is vulnerable to horizontal sheering strains that are excruciating when one side of the pelvis is elevated or depressed. Sharp, stabbing pain in the center of the anterior pelvis occurs particularly when rolling over in bed or on a therapy table, climbing stairs, or any movement creating unilateral strain to the pelvis or requiring one leg to move differently than the other.⁶

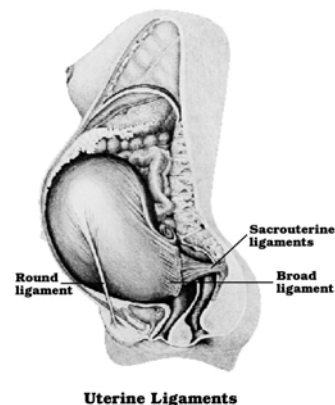


UTERINE LIGAMENT STRAINS

Over the 40 weeks (nine lunar months) of pregnancy the uterus blossoms from a plum sized pelvic organ to watermelon proportions. The fundus, or superior aspect, reaches xiphoid process level by term. It is suspended by the supportive structure of its ligaments. Formed of thickened external connective tissue of the uterus, these ligaments include: two broad ligaments extending laterally to attachments in the internal pelvic cavity walls at the ilea (these also support the fallopian tubes and ovaries); two round ligaments arising from the anterior, superior surface of the uterus and attaching in the connective tissue of the mons; the sacrouterine ligament continuing from the posterior uterus to attach on the posterior pelvic cavity wall at the anterior sacral surface.

As uterine growth inexorably stretches these ligaments, they typically refer pain beyond their attachment sites as follows:

- Broad ligaments:* *low back, buttock and sciatic-like pain referral pattern, especially in the sixth month, and often disappearing in months seven or eight*
- Round ligaments:* *diagonal pain from the superior uterus to the groin; usually one sided, depending on fetal position; sometimes as extensively felt as the vulvar and upper thigh fascia*
- Sacrouterine ligament:* *achiness just lateral to or beneath the sacrum, especially in last three months.*



Pain in one or both buttocks that radiates down the posterior leg is occasionally not referred from the broad ligament. Severe postural imbalance in the lumbar spine and pelvis or chronic piriformis tension may entrap and compress the sciatic nerve. Sciatic nerve pain is usually burning and may be accompanied by tingling, numbness, and weakness in the legs of only 1% of pregnant women.⁷

PRENATAL MASSAGE THERAPY FOR LUMBAR AND PELVIC PAIN

Many touch therapies are effective for the pregnant pelvis. Promoting any one method or any procedural sequence as the maternity massage therapy would deprive women of the many benefits of the wide range of somatic practices available to the professional massage practitioner; however, the techniques described in the inset boxes within this article are essential procedures to include in most prenatal sessions.

Therapists should focus on the muscles and joints listed above utilizing techniques that reduce muscle spasms and fibrosis, relieve myofascial shortening and pain, extinguish trigger points, reduce uterine ligament strain, and reeducate efficient structural integrity and body use. Beneficial methods include:



- assisted resisted stretches, including proprioceptive neuromuscular facilitation and muscle energy techniques
- craniosacral therapy
- cross fiber friction
- deep tissue massage, myofascial release, and structural balancing (see technique inset)
- passive movements, including joint mobilizations, rhythmic movements or trepidations, strain counterstrain or positional release, stretching, traction, and Trager (see technique inset)
- reflexive massage, including *bindegewebsmassage*, foot zone therapy, trigger point or neuromuscular massage, and Oriental methods
- somato-emotional integration
- Swedish massage

Deep tissue/passive movement blended technique for sacroiliac relief

The following blend of deep tissue sculpting⁸ and rhythmic passive movement creates myofascial relaxation and reduces compression and rotation of the sacroiliac joint.

1. With client in sidelying position, stand at lumbar level facing her feet. Use fingertips or thumb to compress toward the SI joint of the higher hip. Sink just medial to the posterior iliac spine. Compress to a level of tissue resistance, but create an intensity no more than pleasure, on the borderline of pain.
2. While maintaining this pressure, place the palm of your other hand between the sacrum and greater trochanter. Initiate gentle traction toward her knee accompanied by subtle, small amplitude rocking that shifts her ilium away from the sacrum.
3. Maintain this simultaneous pressure, traction, and rocking for a minimum of 30 seconds.



Lumbosacral stretch

This passive stretch of the lumbosacral joint reduces pain from the lumbar structures, and from the sacrouterine ligament. Because this stretch creates a pelvic tilt, it is also helpful when teaching pelvic/spinal alignment.

1. Stand behind the sidelying client at lumbar level. Cover her sacrum with your fist or the palm of your hand nearest her feet. Place the other hand on her ASIS.
2. Stretch the lumbosacral joint and passively rotate the pelvis. Apply firm, anteriorly directed sacral pressure that turns the coccyx, as though tucking a tail.
3. Hold this stretch for 30 seconds to one minute. Add rhythmic, small amplitude rocking of her pelvis, if desired.

Educational activities also are effective interventions for reducing pain and decreasing stress on the weight bearing joints and other myofascial structures.⁹ Correct and safe abdominal strengthening activities and body-use guidelines for walking, sitting, sleeping, carrying, and other daily activities will further reduce strain in the neck, back, and pelvis.¹⁰ Introducing more efficient movement patterns, enhances and reinforces the effectiveness of hands-on therapy, including those listed above for pain and spasm reduction.

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SAFETY GUIDELINES IN PRENATAL BACK AND PELVIC MASSAGE THERAPY

Pain level

It is essential to maintain pressure, speed, and intensity, regardless of method used, to never exceed a pregnant client's experience of pleasure on the borderline of pain. This level of intensity allows for sufficient depth to accomplish most appropriate somatic practices' therapeutic goals. Maintaining a pleasure/pain level also assures that neither the mother nor the fetus is stimulated to sympathetic arousal. Pain activates adrenal production of the hormones that elevate blood pressure, heartrate, and respiratory rate and which lower immune function and blood flow to the uterus.¹¹ Since these hormonal signals diffuse into fetal circulation through the placenta, the fetus is similarly negatively impacted.¹² Certain techniques require lighter pressure to be physiologically effective, and tissue health, injuries, and other safety considerations discussed later in this article often dictate more superficial touch.



Abdominal pressure, technique modifications, and positioning

While the techniques listed above are effective in relieving back and pelvic pain, insure that application of these techniques will neither increase intrauterine pressure, decrease blood flow to the uterus, or create localized, deep pressure into the abdomen.

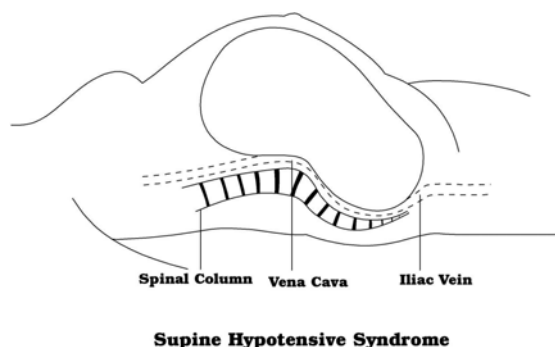
Increased intrauterine pressure probably is not a significant safety concern in most normal, uncomplicated, low risk pregnancies. It is of particular relevance when there are abnormalities in placental attachment or function, or higher risk of such conditions; any uterine or cervical abnormalities; and any of many factors associated with concerns for fetal blood supply, such as high blood pressure, multiples, or intrauterine growth retardation. Women who have been diagnosed with these conditions often are uninformed about their impact in relationship to receiving massage therapy. Also, some of these problems go undetected until bleeding, cramping, or other overt signs of problems have occurred to warrant further diagnostics.

While the effect of deep abdominal massage techniques on pregnancy has never been specifically studied, increased intrauterine pressure and deep, pointed, or abrupt pressure into the abdomen may increase the risk of miscarriage, premature labor, or placental dysfunctions.¹³ Thoroughly evaluate all massage therapy techniques contemplated for pregnant women to confirm that their performance will not directly or indirectly press into the abdomen. Many procedures, such as resisted assisted stretches and positional releases, are modifiable to avoid this safety concern. Further reduce the possibility of increasing intrauterine pressure by only massaging the pregnant abdomen at the skin and superficial fascia level. This precaution also applies to any techniques performed on the lateral abdomen, anterior of the quadratus lumborum. Light, full-handed pressure avoids any possibility of abdominal trauma that may provoke uterine contractions or injure the intestines.

Eliminate massage therapy in the prone position entirely after the first 13 weeks gestation, earlier if multiples or if the fetus is larger than normal gestational age. After the first three months, safe prone positioning for effective massage therapy is not possible, even with additional pillows, and/or tables and other equipment currently marketed for this purpose. Prone positioning with other equipment that doesn't elevate intrauterine pressure often further strains the taxed uterine and lumbar ligaments, exacerbating the very causes of many women's discomfort. The sacrouterine ligament is particularly vulnerable in prone position.

Supine positioning also involves safety considerations when working with pregnancy related sources of lumbar and pelvic

pain. In this position, the weighty uterus compresses against the inferior vena cava. Extended compression will result in low maternal blood pressure and decreased circulation both to the mother and her fetus (supine hypotensive syndrome).¹⁴ In second and third trimesters, mitigating measures for more extended supine positioning are prudent. Shift the uterus to the left side with pillow support under the right lumbar area (weeks 14-22), or, after 22 weeks, elevate the entire torso to a semireclined angle of at least 45 degrees. Use a densely cushioned therapy table, and provide sufficient supports for the lumbar area and the knees. When women are advised by their healthcare provider to never lie on their backs, always observe these restrictions.



When sufficiently supported with firm pillows, bolsters, and/or a contoured bodycushion, sidelying position is the safest, most posturally neutral, and most comfortable position for most women to receive prenatal massage therapy. Even in the sidelying position, however, pressure must be applied without rolling the woman onto her abdomen, and her top leg must be aligned horizontally with her hip. This is most important during deep work on the posterior structures when addressing back and pelvic pain.

Blood clots

Avoiding deep, pointed, and/or ischaemic compression to the pregnant abdomen also eliminates pressure into one of the most dangerous locations, the inguinal area. Blood clotting capacity escalates four to five times higher than non-pregnant levels during pregnancy. As fibrinolytic activity, the clot dissolving capacity of the blood, decreases dramatically, women are protected from potential hemorrhaging during childbirth; however, they also are more likely to develop blood clots (thrombi).¹⁵

Clot formation is greatest in the veins where blood is most stagnant. The veins most likely to harbor clots during pregnancy are the iliac, femoral, and saphenous veins.¹⁶ This is due to restriction of iliac and femoral venous return by the weight of the uterus on these vessels and to hormonal influences on vascular smooth muscle and on blood and fluid volumes. Given the likelihood of clots and their potential harm if freely circulating, do not press deeply into the abdomen, especially in the inguinal area. Additionally, use only soft, whole hand pressure throughout the medial surface of the legs where these veins traverse. Perform no tapotement nor deep, pointed, or stationary (ischaemic) pressure, sufficiently sustained to restrict localized blood flow, regardless of the type of technique and its potential benefits.

Veins most at risk for thrombi formation

Miscarriage and prematurity

Miscarriage (spontaneous abortion) is a natural termination of pregnancy before the fetus has reached viability, most common in the first trimester. Preterm labor involves regular contractions that dilate the cervix after 20 weeks and before the end of 36 weeks gestation. Note that one of the most common symptoms of premature labor and miscarriage is low back/pelvic pain, referred from the contracting uterus; however, there are usually other identifying symptoms, such as bleeding or amniotic fluid leakage and abdominal cramping or regular uterine contractions. Remember that musculoskeletal back pain usually is relieved with a change in position or activity, while referred organic pain is not. Ask her physician to rule out miscarriage, preterm labor, or other possible causes of back pain, such as urinary tract infection, neurological dysfunctions, eclampsia, or prior, unresolved injuries. Take full prenatal and medical histories, and evaluate thoroughly at each massage therapy session.

Certain maternal conditions, high risk factors, and complications of pregnancy increase the risks of miscarriage and prematurity including:

- previous miscarriage or preterm labor
- altered nutrition leading to low maternal weight gain
- smoking and other teratogenic agents such as radiation, alcohol, etc.
- drug abuse, especially cocaine
- emotional stress
- heavy work load at home or on the job
- decreased blood flow to the uterus caused by:
 - placenta abrupto, placenta previa, diabetes, renal disease, cardiovascular disease, systemic lupus and other autoimmune factors, preeclampsia/eclampsia (GEPH), over distension of the uterus in multiple gestations and polyhydramnios
- abdominal trauma or surgery
- premature rupture of membranes
- diethylstilbestrol (DES) exposure in utero resulting in uterine abnormalities
- incompetent cervix and other uterine anomalies
- urinary tract or vaginal, uterine, or fetal infections
- fever
- maternal age over 36
- chromosomal abnormalities¹⁷

No one wants to have any doubt as to whether any massage therapy intervention was harmful nor have their protocols questioned. Some sobering facts of American maternity care are very relevant to massage therapy practitioners: more than 75% of obstetricians and gynecologists are sued; more than one third of them are sued more than three times; and nurses and other perinatal healthcare providers are more and more frequently being included in these lawsuits.¹⁸ Massage practitioners are wise to be aware of the litigious atmosphere in childbearing.

Some added precautions that could avoid erroneous, but costly, legal questions:

Do not touch the abdomen of a first trimester woman or of one whose risk of miscarriage or preterm labor is high. (See list above and sections later in this article on complications and high risk factors.) Always ask permission to gently touch her abdomen. Strictly adhere to midwives' and physicians' restrictions regarding abdominal massage. If not comprehensively trained in prenatal massage therapy, a further precaution worth considering is to not work with first trimester women or those at higher risk of pregnancy losses or prematurity.

Ligament laxity precautions

Symphysis pubis separation demands several special considerations in choosing and performing massage therapy. First: rolling over is painful with this condition, so minimize position changes. Second: firm, reliable bolsters and other supports are essential in all positions to prevent extended tugging on the joint. Finally, eliminate any techniques creating traction on the pelvic and hip joints or that compress the pelvis unilaterally.

All of a pregnant woman's ligaments are easily overstretched due to the softening effect of relaxin. Overstretched ligaments result in joint instability and more pain. Minimally invested with elastic fibers, ligaments do not tighten after excessive lengthening. Modify assisted resisted stretches, positional release, Swedish gymnastic movements, range of motion, and other passive and active movements to avoid overstretching of joint structures.

Other complications and high risk pregnancies

In addition to miscarriage, premature labor, and placental dysfunctions, other physiologic complications to a normal gestation occur. These include: gestational diabetes and several types and severities of hypertensive disorders. When any complications arise, massage therapy is contraindicated until resolved or only with consultation with her healthcare provider. Cautious therapists will refer these women to more qualified prenatal massage therapists if not comprehensively educated in this work. If they do work with a complicated pregnancy, they will require written release from the woman's healthcare provider and practice ultraconservatively.


In high risk pregnancies, either the mother or the fetus has a significantly increased chance of disability or death. Most of these conditions will not be negatively impacted by massage therapy; in fact, it may be invaluable in reducing the negative effects of increased anxiety and the bedrest frequently prescribed. With the further risk involved, however, thorough training and a written release from the woman's healthcare provider are advisable.

Conclusion

The guidelines in this article are an introduction to effective, safe massage therapy for the pregnant pelvis. Pregnant women experience numerous other structural, physiological, and emotional changes and discomforts that respond well to specific, therapeutic techniques. Further study of the many other relevant intricacies of pregnant physiology and psychology and thorough, hands-on training and are highly recommended.¹⁹

Footnotes:

- 1 Unpublished survey of graduates of my former pregnancy training program, 1994.
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- 3 Artal, R., Friedman, M.J., McNitt-Gray, J.L. Orthopedic problems in pregnancy, *The Physician and Sportsmedicine*, 18: p. 93-105, 1990.
- 4 Noble, Elizabeth, P.T. *Essential Exercises for the Childbearing Year*. Fourth edition, p. 20, 225. Harwich, MA, New life Images, 1995.
- 5 Ibid., p. 54.
- 6 Ibid., p. 53.
- 7 Ostgaard, p. 54.
- 8 Osborne-Sheets, Carole. *Deep Tissue Sculpting: A Technical and Artistic Manual for Therapeutic Bodywork Practitioners*. Third Edition. Body Therapy Associates, 1995.
- 9 Ibid., p. 86-88.
- 10 Noble, p. 81-146.
- 11 Gorsuch, R. and Key, M. Abnormalities of pregnancy as a function of anxiety and life stress, *Psychosomatic Medicine* 36: p. 353, 1974.
- 12 Catz, Charlotte. Prevention of embryonic, fetal, and perinatal disease. *HEW*, p. 123, 1976.
- 13 Gilbert, Elizabeth Stepp and Harmon, Judith Smith. *Manual of High Risk Pregnancy and Delivery*, p.265, 416. St. Louis Missouri, Mosby - Yearbook, Inc., 1993.
- 14 Ibid., p. 40.
- 15 Ibid., p. 7.
- 16 Alexander, Doug. Deep vein thrombosis and massage therapy, *Massage Therapy Journal* 32, 3: p. 56, 1993.
- 17 Gilbert and Harmon, p. 265 and 416
- 18 Ibid., p.160.
- 19 Pre- and Perinatal Massage Therapy workshops taught by the author are offered throughout North America and in Scotland. For more information contact: Body Therapy Associates at www.bodytherapyassociates.com or (858) 748-8827 or (800) 586-8322.



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