



Pregnancy Massage

A comprehensive
handbook for
pregnancy, labor
and postpartum
massage

By Eric Brown, Massage Therapist

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Introduction

Many people know me as a marketing expert, but what many people don't know is that I've taught over a thousand massage thereapists in comprehensive 2,200-hour college massage programs in Canada and thousands more in workshops across North America.

Some time ago a large American publisher asked me to participate in the writing of a research-based massage textbook. This report is an unpublished chapter on Pregnancy Massage that I thought I'd share.

The process of pregnancy and childbirth creates some unique opportunities for the massage therapist. This comprehensive report looks at the role massage can play in assisting a woman through this time. It must be remembered that pregnancy is not a pathological condition, so the focus of treatment is primarily on maintaining wellness and preparing the woman's body for the rigors of childbirth.

This report outlines the normal process of pregnancy and discusses how the massage therapist can assist the client with musculoskeletal complaints and other common problems. It also examines the use of exercise, hydrotherapy, and relaxation. Because massage therapists may have the opportunity to assist a client through childbirth, the role of the massage therapist through this process is also explored.

Enjoy,

Eric Brown, MT

<http://www.bodyworkbiz.com>

Pregnancy and the massage therapist

Overview of changes through pregnancy

A woman's body undergoes significant changes during the 40 weeks of pregnancy. These physical changes are the result of hormonal changes as well as the growth of the fetus and the resulting metabolic demands. The external manifestations only give a hint of the profound internal transformation which is taking place. Consider just a few of these (Kisner and Colby, 1990):

- the uterus increases 5-6 times in size and about 20 times in weight by the end of the pregnancy
- maternal blood volume gradually increases 35 to 50 percent
- cardiac output increases 30 to 60 percent
- there is a 15 to 20 percent increase in oxygen consumption and the respiratory rate increases to meet this need

The psychological and emotional impact of pregnancy and motherhood may be equally dramatic. The woman will need to adjust to her changing role in the family, especially in regards to her relationship with her mate. She may also have to cope with a changing self-image, the uncertainty of a new experience, and the financial and emotional difficulties associated with quitting a job or taking maternity leave.

General guidelines for massage therapy

Massage is used to help the pregnant woman feel more comfortable throughout the pregnancy. This is accomplished primarily by managing common musculoskeletal complaints and other symptoms. Because you will

often have ongoing contact with the prospective mother, you can develop a long term treatment plan and play an important role in preventing potential problems from occurring. This can include helping to resolve "weak spots" such as old injuries or surgeries, optimizing biomechanics to prevent posture-related dysfunction, and preparing your client's body for labor by assisting her in keeping her body in top physical condition. Since pregnancy can also be a very emotional and stressful period in a woman's life, emotional support and relaxation may be vital elements in your treatment strategy.

Because you may have ongoing contact, it is important to be aware of the normal changes that take place during pregnancy so that you can refer your client to her medical practitioner when unusual signs and symptoms occur. Your role will also be that of educator, answering her questions and offering professional advice when necessary.

It is important to be sensitive to your client's feelings and needs. Because the process of pregnancy can be stressful she may experience a wide range of emotions. Do not assume that this is always a joyful experience for the mother-to-be. Also bear in mind that her desire for touch or massage will vary throughout pregnancy and labor. Make no assumptions and communicate clearly and openly.

Pregnancy is a normal physiological process and not a pathology. Most pregnant women are not physically fragile so there is no need for an overly cautious approach to massage.

Positioning is not usually problematic until the fifth or sixth month of pregnancy. Until then, your pregnant client can be positioned in any way that a non-pregnant client would be. After that point in the pregnancy, the prone position is usually uncomfortable because of the size of the abdomen and therefore should not be used. Many therapists will also avoid the supine

position in the second half of the pregnancy because in this position the weight of the fetus compresses the inferior vena cava (a major vein which returns blood to the heart) and to a lesser extent the aorta. As she becomes larger, the supine position may also put undue stress on the spine. However, these are not usually serious concerns for the short periods of time that the woman will be on her back for the massage. Elicit feedback from your client frequently and use her comfort level as a guide. You will generally find that many women will begin to feel uncomfortable after 10 or 15 minutes on their back. Towards the end of term, they may not feel comfortable lying on their backs at all.

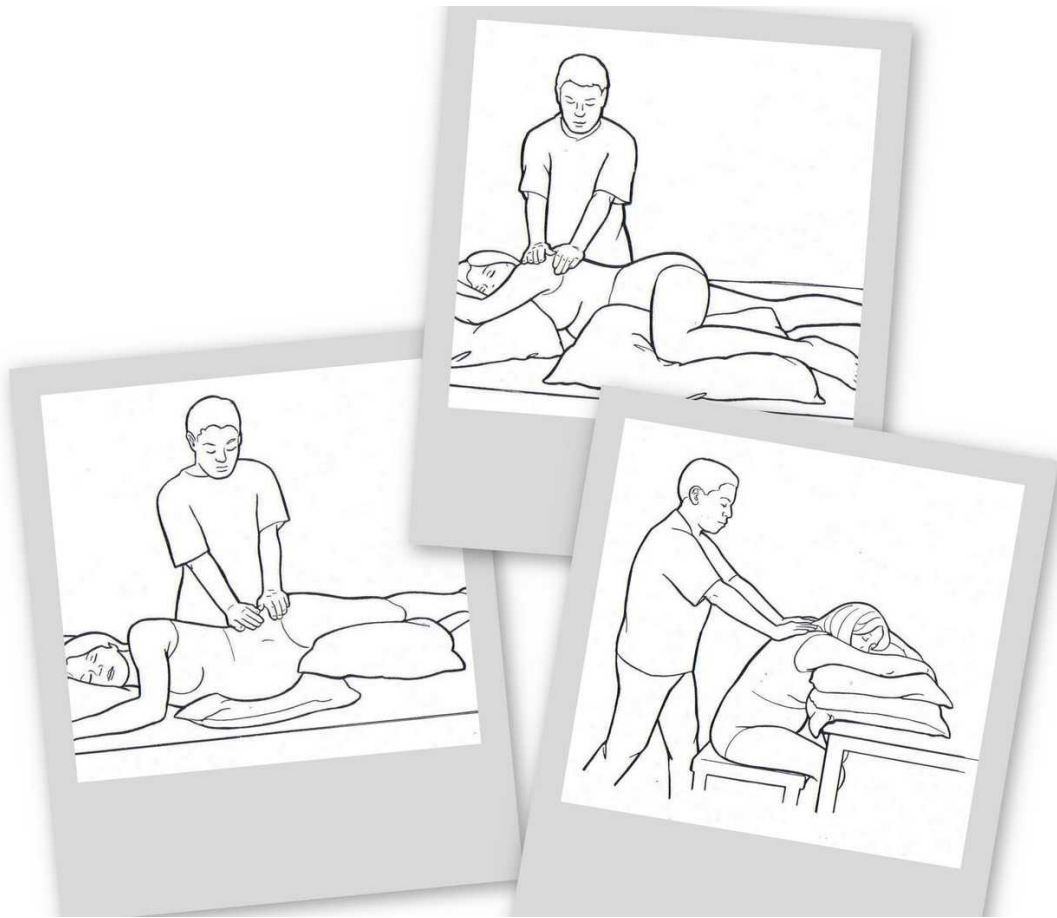


Figure 1. Find positions for your client that are comfortable for her while allowing you good access to the areas of the body you wish to massage. Note the use of pillows to support the client in a sidelying, semiprone, and sitting position.

You may have to be creative in finding a position which is both comfortable for the woman and which allows you good access to the part of her body you wish to work on. Try sidelying, semiprone, sitting in a chair, or sitting with legs elevated. Illustration below shows some of these. Make generous use of pillows for support. For example, if you are using a sidelying position use pillows under her head, under her abdomen, and between her legs. Oftentimes, the massage will have to be shortened or the client may require frequent changes of position.

Avoid any positioning or technique that involves strong compression to the abdomen. Deep abdominal massage performed over the fetus should be avoided through all stages of pregnancy. (See *Constipation and Discomfort at Ribs* sections for more specific guidelines.)

The hormones estrogen and relaxin cause ligaments (and other connective tissue structures) to relax. This allows for greater movement at the sacroiliac joints and the symphysis pubis which aids the passage of the baby through the birth canal. However, all joints are affected by this generalized laxity and as a result some modifications will be necessary in treating your client. No aggressive joint mobilization techniques should be performed. As well, positioning and handling of the joints must ensure that they are not stressed excessively. Also be aware that sacroiliac joint dysfunction and irritation of the symphysis pubis are seen frequently in pregnant women.

The use of medications, both prescription and non-prescription, is generally contraindicated during pregnancy. Drugs are easily passed to the fetus through the placental circulation and can often have a negative impact on fetal health. Even in the postpartum period, some medications can be passed on to the infant through breast milk (Rylance and Plant, 1991). Aspirin, for example, which is commonly used for numerous musculoskeletal problems, is passed to the infant through breast milk and if present in sufficient quantities can cause *salicylism* or *metabolic acidosis*. When appropriate, alternative

treatments such as massage, hydrotherapy, or therapeutic exercise should be explored. Bear in mind, however, that as a massage therapist it is beyond our scope to advise clients regarding their medication. Any decisions to forego drug treatment must be made by the woman in consultation with her attending physician.

Stages of pregnancy

1st trimester

physiological changes

The fetus develops from a single cell to become very human looking in these first three months. At the end of the third month the fetus is about three inches long and weighs about half an ounce. The woman will start to feel that her clothes are getting a little tight around the waist and bustline. The abdomen may appear slightly enlarged.

Because of significant hormonal changes that take place, the woman may experience a variety of symptoms in the first trimester. The presence and degree of these symptoms varies greatly from individual to individual. Some women will go through their pregnancies virtually symptom free, whereas for others the symptoms can be quite debilitating. The most common symptom of the first trimester is fatigue. Also experienced are nausea, heartburn, indigestion, bloating, and constipation, as well as heat, tenderness, and heaviness of the breasts.

common 1st trimester problems and their management

fatigue

Given the extent of bodily changes which occur in pregnancy, it is not surprising that fatigue is the most common complaint throughout pregnancy. This is particularly true in the first trimester as the mother's body manufactures the baby's support system. However, fatigue is extremely common in the last trimester as well. It is essential that the woman takes time for rest and relaxation on a daily basis. Many women find that moderate

exercise helps maintain their energy level. Extra sleep is almost always necessary. During these periods, relaxation should be a key component of the massage.

morning sickness

Morning sickness is the nausea and vomiting that many women experience during pregnancy. Although it is called morning sickness, it can occur at any time during the day or night. It has a variety of physical and psychological causes. Physical causes include high levels of certain hormones in the blood, the rapid stretching of the uterine muscles, and the relaxation of the muscles of the digestive tract. These physical occurrences are common to every pregnancy but not all women suffer from nausea. In fact, only about one third to one half of all pregnant women experience any morning sickness. Because of this, it is thought that stress may play an important role.

There are numerous research findings that support this idea. For one thing, morning sickness is virtually unknown in most primitive cultures. For another, women who suffer hyperemesis (excessive vomiting) will recover quickly if placed in a relatively tranquil environment away from their families and the problems of day-to-day living. Also interesting is the fact that some women are more likely to experience morning sickness with unwanted, unplanned, or first pregnancies than in subsequent pregnancies, or planned pregnancies (Eisenberg et al, 1991).

Because stress appears to play a significant role in morning sickness, women should take time for relaxation and reduce daily stresses as much as possible. Massage has been found to reduce the incidence of nausea (Ueda, 1993) and vomiting in other situations, for example, persons undergoing chemotherapy (Scott and others, 1983). The mechanism behind this seems to be relaxation (Clarke 87), so that regular massage with a focus on relaxation would likely have the same effect in cases of morning sickness.

Additional suggestions to reduce morning sickness include: eating frequent small meals; avoiding an empty stomach; taking food to bed so that a snack can be had before getting up in the morning; and avoiding foods or odors that cause queasiness.

breast changes

The breasts will undergo a number of significant changes during pregnancy. These changes are usually more pronounced during the first pregnancy. The breasts will grow in size in preparation for providing the baby with food. They may feel hot, swollen, and tender to the touch, but this usually does not last beyond the third or fourth month. The areola (the pigmented area around the nipple) will spread and darken and small bumps may appear as the sebaceous (sweat) glands enlarge. As well, veins may become more prominent throughout the breasts. These are normal changes and the breasts will return to their normal state after nursing is discontinued. Because of the extreme tenderness of the breasts, breast massage is best avoided during the first trimester. Even the lightest touch can be very uncomfortable. However, a cold hydrotherapy application to the breasts such as a cold compress or a cold towel wrap would be indicated. This will assist in minimizing the tenderness and swelling.

constipation

Constipation is a common complaint of pregnancy. Gentle massage to the abdomen, using techniques such as effleurage and stroking, may help relieve constipation and poses no danger to the fetus. Stimulation of the skin over the abdomen is thought to stimulate movement of the intestines (peristalsis) through the activation of a cutaneous reflex. Rocking or passive range of motion to the torso and hips may also be beneficial.

However, aggressive or deep abdominal massage which is often used to relieve constipation in non-pregnant clients should not be employed as this may pose a significant risk to the health of the fetus. Vigorous abdominal massage has been associated with a high incidence of still births (Becroft and Gunn, 1985). In some cases, abortionists have used deep abdominal compression to terminate a pregnancy (Maiai, 1985).

Also beneficial is regular exercise, increased fluid intake, the consumption of whole foods including whole grains and whole grain products, legumes, fresh or dried fruits, and vegetables. If constipation is prolonged, a medical doctor should be consulted. Likewise, bouts of diarrhea should be investigated promptly.

headaches

Headaches tend to become more frequent in pregnancy. They are most commonly the result of hormonal changes, fatigue, hunger, and stress. Non-drug treatment is by the far the best management approach to headaches. Aspirin and ibuprofen (Advil, Nuprin, Medipren) may interfere with fetal growth and cause other problems including prolonged pregnancy and labor, and increased risk of hemorrhage. Although acetaminophen (Tylenol, Datril, Anacin III) does not appear to pose any problems, it should not be taken indiscriminately (Eisenberg). All non-prescription drugs should only be used under the guidance of a physician.

Massage has proven to be extremely useful in the management of headaches (Puustjarvi et al., 1990) and should be considered a preferred treatment choice. Even migraine headaches can be markedly reduced with relaxation therapy in pregnant women (Hickling, 1990).

Other headache prevention measures may include taking regular time for relaxation, getting adequate sleep, stretching muscles that are tense or that

contain trigger points, eating regular and frequent meals, and maintaining good posture. If a headache is unusually severe and lasts longer than several hours, or if the headache is accompanied by fever, visual disturbances, and puffiness in the hands or face, the woman should consult her doctor immediately and should not be massaged.

2nd trimester

physiological changes

By the end of the sixth month, the fetus likely has grown to over a foot in length and weighs close to two pounds. Its body systems are sufficiently developed so that if the fetus is born it could possibly survive with intensive care. The movements of the fetus will be forceful enough to be felt by the mother.

The breasts and the abdomen will enlarge significantly in this trimester. The weight gain and change in posture will likely cause the prospective mother to feel some aches and pains, such as back pain, or tightness and achiness in the lower abdomen. The nausea and extreme tenderness of the breasts experienced earlier usually subside. The woman may notice a number of skin changes including stretch marks, more visible veins, and pigment changes in some places. Minor swelling may occur in the feet and hands and she may experience occasional faintness or dizziness.

During this trimester, the pregnant woman may start to experience contractions of her uterus. These contractions which are usually irregular and which often stop with a change of position or activity are called *Braxton-Hicks contractions*. They prepare the uterus for labor and will occur more frequently towards the end of the pregnancy.

common 2nd trimester problems and their management

stretch marks

Most Caucasian women -- about 90% -- will develop stretch marks. They occur less frequently in black and Asian women (Parmley and O'Brien, 1990). These marks, also known as *striae gravidarum*, are pink or reddish streaks

which are slightly indented and oftentimes itchy. They are most common on the abdomen, breasts, and hips.

As the name implies they are caused by stretching of the skin which occurs with rapid growth or weight gain. With the stretching of the abdomen, the woman may experience itching and dryness of the abdominal skin. Stretch marks are more common in heavier women and less common when birthweight is low (Davey, 1972). Hormonal changes may also contribute to their development. Within months after delivery they fade to become a white color.

Abdominal massage with oil has been found to be associated with fewer stretch marks (Davey 1972; Wierrani et al, 1992), although the reason for this is not clear. It is possible that massage of the abdomen stretches the skin and subcutaneous adherences in a slow and gradual manner, thus minimizing the possibility of stretch marks. Skin rolling, used in the first and second trimesters before the skin becomes too taut, would be a particularly appropriate technique.

other skin changes

Changes in skin pigmentation are the most common type of skin change and are experienced by over 90% of pregnant women (Parmley and O'Brien, 1990). The areas most commonly affected are the thighs, perianal and labial skin, the abdominal midline, the areolas, and the face. The darkened areas of skin usually return to normal or near normal in the postpartum period.

Skin tags, small growths of skin, often start to appear in the second trimester. They occur on the sides of the neck, under the arms, and below the breasts. They are harmless, and like the pigmented skin areas, usually disappear postpartum. About two thirds of white women and one third of black women experience vascular changes which give rise to red, blotchy,

and sometimes itchy marks on the palms. Vascular sensitivity to cold can be a problem for some pregnant women.

These vascular changes usually vanish within two weeks after birth. All the skin changes mentioned here are normal aspects of pregnancy. If you notice changes or growths not described above be sure to send your client for appropriate assessment.

backache

Many postural changes occur in pregnancy, largely in response to the weight gain that occurs in the breasts and abdomen. This causes an anterior shift of the center of gravity and generally results in increased lordosis of the cervical and lumbar spine, protraction of the shoulders, and other compensatory changes through the lower body.

Add to these postural stresses a generalized laxity of the joints caused by the hormone relaxin and it is easy to see why about 50% of pregnant women experience some form of back pain at some point in the pregnancy (Mower, 1993). The pain may result simply from fatigue and stress to the lumbar musculature, or it may reflect lumbar or sacroiliac joint dysfunction.

Massage can help by minimizing muscular imbalances, relaxing tight muscles, improving blood flow through muscles, and by evoking general feelings of relaxation. A massage therapist with appropriate training may assess and treat joint dysfunction with joint mobilization techniques. Otherwise, if joint dysfunction is suspected, a referral to a chiropractor, physiotherapist, or osteopath would be advisable. The massage therapist can help minimize episodes of back pain by educating the client regarding her posture and developing a home exercise program to help correct muscle imbalances (see *Exercise and Pregnancy* below).

As well, the client can be given some basic advice regarding activities of daily living. For example, you can suggest the use of good biomechanics when lifting, sleeping on a firm mattress, placing a pillow between the knees when lying on the side, wearing low heels, avoiding long periods of standing or sitting, placing one foot on a small step if standing for any length of time, and placing a lumbar roll or small pillow in the small of the back when sitting.

blood pressure

Blood pressure changes throughout pregnancy. It normally decreases in the first trimester, reaches its lowest point in the second trimester, and gradually rises in the third trimester [reference]. The downward fluctuations are likely the result of lowered peripheral vascular resistance caused by a number of hormones. The decreased peripheral resistance may result in reduced blood flow to the brain and cause temporary lightheadedness or dizziness, especially when standing from a lying position. These changes are generally not a concern for the massage therapist, although you may wish to assist the woman in getting up from the table or advise her to get up slowly and sit briefly before standing.

High blood pressure (hypertension) occurs in about 10% of all pregnancies (Porth). The cause is usually unknown, although it is postulated that stress and anxiety may play a significant role, especially during a first pregnancy. For this reason, researchers studied regular relaxation in hypertensive pregnant women and found that relaxation decreased blood pressure significantly and decreased the rate of hospital admittance (Little et al, 1984). Because massage evokes a relaxation response similar to that obtained with relaxation exercises, it will likely have a similar effect. Although in most cases high blood pressure is not a concern, it can in some cases be dangerous for both the mother and the fetus. For this reason, blood pressure should be monitored by the massage therapist on an ongoing basis. The therapist should also watch for any signs of pre-eclampsia. Pre-eclampsia,

also known as pregnancy induced hypertension, can be a fatal condition for both the fetus and the mother. It usually develops after the 20th week of pregnancy and is recognized by a sudden or marked increase in blood pressure, sudden weight gain not associated with food intake, and severe edema of the hands, face, and ankles. Symptoms in the later stages include blurred vision, headaches, scanty urine output, confusion, and severe abdominal pain. Pre-eclampsia occurs primarily in first pregnancies, and in pregnancies in women with chronic high blood pressure, diabetes, or kidney disease. The massage therapist should monitor blood pressure carefully for women with these conditions. If there is any reason to suspect that your client may have pre-eclampsia do not massage her, but make sure that she gets immediate medical attention.

carpal tunnel syndrome

The vascular changes which cause swelling in pregnant women often give rise to carpal tunnel syndrome. Fluid accumulation in the wrists and hands is aggravated by the effects of gravity. As the fluid builds in the narrow carpal tunnel of the wrist, the median nerve becomes compressed and the woman may experience pain or numbness in the wrist and hand. The condition can usually be effectively managed with massage. Focus on effleurage and petrissage to the arms to encourage better venous and lymph return. Try using petrissage techniques and joint mobilization techniques to stretch the fibrous connective tissue around the wrist. If the pain wakes your client at night have her raise the arm and shake it vigorously. If the pain becomes sufficiently uncomfortable, her medical practitioner may prescribe the use of wrist splints. Drug therapy for the condition is not usually indicated in pregnancy. Even without treatment, the symptoms of carpal tunnel syndrome usually resolve after delivery.

Other compression syndromes often occur with pregnancy, usually as the result of altered biomechanics. These include thoracic outlet syndrome and piriformis syndrome.

3rd trimester

physiological changes

The fetus continues to grow and begins to deposit fat in its body. The lungs mature through this trimester. At term the baby is about 20 inches long and weighs about 8 pounds on average. Because the growing fetus is confined in a very small space, fetal movements may diminish as it increases in size and the mother's abdominal contents will be compressed leading to many of the symptoms described below. Typically, the mother's physical discomfort increases and her abdomen begins to feel hard and tight.

Figure 2. The fetus which probably weighs about eight pounds by the end of the ninth month fills the abdominal cavity to capacity. This compresses the abdominal organs causing a variety of odd symptoms.



The mother's breasts begin to produce colostrum which may occasionally leak. Colostrum is a thin yellowish fluid that is high in protein and calories. It contains numerous antibodies and lymphocytes which confer the immunity of the mother to the baby.

common 3rd trimester problems and their management

discomfort at ribs, heartburn, indigestion, shortness of breath

These seemingly unrelated symptoms are all caused by the growing fetus and expanding uterus. Women often report ribcage discomfort. It may be a general feeling of tightness, or it may feel as though the baby actually has a foot between the ribs. Massage of the intercostal spaces and at the costal borders may help relieve some of the discomfort by stretching and relaxing the intercostal and abdominal muscles. If the baby's position is causing the discomfort, advise the mother to move or change her position. Doing so may alter the position of the fetus somewhat. For example, it may be useful to have the woman go on her hands and knees and tilt the pelvis anteriorly (sway back) and posteriorly (arched back) several times. Although heartburn and indigestion may be partially caused by hormonal changes, they are exacerbated by the pressure of the fetus on the stomach and intestines. Likewise shortness of breath results from an upward pressure of the fetus on the diaphragm. These symptoms will be aggravated if the woman lies in a supine position for any length of time. In all these cases, massage to the intercostal and abdominal muscles as outlined above may be helpful. In addition, it may be helpful for the woman to eat smaller, more frequent meals. She should wear loose fitting clothes around the waist, and when bending, should bend at the knees instead of the waist. Raising the head of the bed when sleeping at night may also be useful.

incontinence

Incontinence (leaking urine), like the symptoms described above, is often the result of pressure of the growing fetus on the bladder. It is most likely to occur if the pelvic muscles (perineum) are weak. Most often, the incontinence occurs when the woman coughs or sneezes. This is referred to as *stress incontinence*. An important tool in managing this problem is Kegel's exercise which should be started as early in the pregnancy as possible (see *Exercise during pregnancy section*). Kegel's exercise may not only help control stress incontinence during pregnancy, but will also prepare the perineum for delivery and minimize the incidence of incontinence in the postpartum period.

edema of ankles and feet

Edema of the ankles and feet occurs in about 75% of pregnant women (Eisenberg, 1991). If the swelling is mild and is not accompanied by signs and symptoms suggesting pre-eclampsia, it is normal. If the swelling is uncomfortable or bothersome, it can be managed with a self care routine that includes elevating the legs or lying down occasionally, wearing comfortable shoes, and avoiding elastic top socks or stockings. Some hydrotherapy applications may also be effective. Try either a cold or contrasting bath for the lower leg, moderating the temperatures if necessary. The doctor may suggest support hose which are put on before getting up in the morning.

Diuretic drugs are generally contraindicated through pregnancy, primarily because of possible side effects to the fetus. Massage, on the other hand, is safe and extremely effective at decreasing local edema. In this case elevate the woman's legs as much as possible and use effleurage and petrissage manipulations in a centripetal direction. Manual lymph drainage techniques and passive range of motion to the hips, knees, and ankles will also be

useful. The same techniques can also be used to reduce edema of the hands and arms.

Massage has also been shown to be useful in the treatment of more generalized types of edema during pregnancy that are the result of kidney disease (Kaaja and Tiula, 1989).

preparation of breasts for feeding

Some women report nipple pain and breast engorgement while nursing. This is a frequently cited reason for discontinuing breastfeeding in the early postpartum period since pain limits suckling time and inhibits the let-down reflex, resulting in poor milk flow. Many experts say that this can largely be avoided by proper positioning of the baby at the breast when nursing, and by frequent feedings. However, these problems may also be alleviated by the use of breast massage and nipple conditioning in the latter half of the 3rd trimester (Storr, 1988). These techniques are simple and the mother can be taught to use them on a daily basis.

Note that it would not be appropriate for a massage therapist to massage the nipple or areola. The conditioning techniques described below are for the woman to perform as part of her self care regime. If necessary, refer the client to her medical doctor or a lactation consultant for instruction or advice.

Conditioning the nipple results in toughened and thickened skin that may minimize pain and nipple damage once breastfeeding begins (Atkinson, 1979; Storr, 1988). This can be achieved by exposing the nipples to gentle friction and airing, for example allowing the nipples to rub against outer clothing for a few hours daily by removing the bra occasionally if support is not needed. The expectant mother may also rub the nipples for about 15 seconds with a terry cloth towel daily.

Some conditioning techniques will break down adhesions at the base of the nipple thus making the nipple more protractile so that it can be more easily grasped by the baby. One technique which is often used by expectant mothers involves a gentle rolling of the nipple between the thumb and first finger while applying gentle traction to the nipple. This is done for two minutes and is performed twice daily.

Another self-massage technique which can be used to break down adhesions at the base of the nipple and allow the nipple to protract normally is illustrated here (Applebaum, 1970).

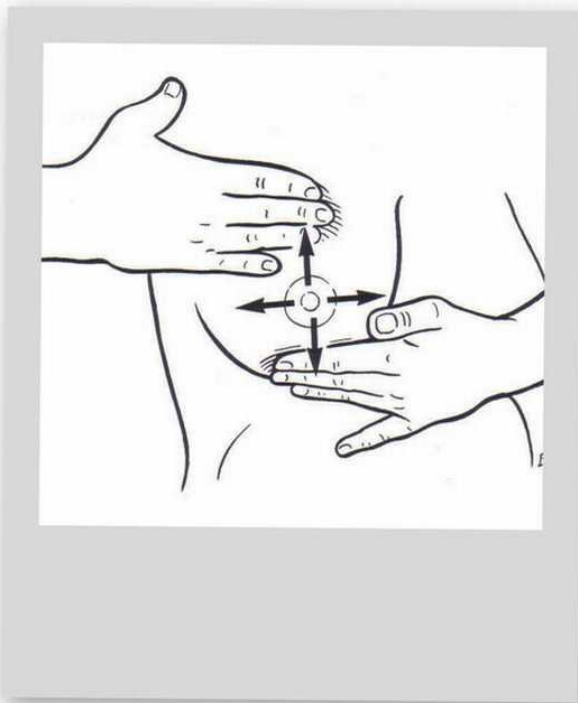


Figure 3. In about one third of mothers, the nipple does not protract normally, presumably because of adhesions at the base of the nipple. This self-massage technique is effective in releasing these adhesions. Have the woman place her fingers or thumbs at the areolar margin. Slowly and gently drag the tissues outwards. Repeat in a vertical plane. This can be performed for several minutes daily.

Breast massage is another conditioning procedure. The client can begin this as a self-massage technique (figure 4) six to eight weeks before the expected due date. When she massages her breasts colostrum may or may not leak from the nipples. The woman's body will continue to produce this substance so there is no reason for concern when small amounts are expressed.

Breast massage, like massage for the nipple, is thought to decrease adhesions around the nipple and improve protraction. The observation has been made that regular prenatal breast massage will reduce breast engorgement and improve milk flow (Iffrig, 1968).

In addition, it helps the woman feel more comfortable in handling her breasts. This nipple and breast conditioning work should be started at least 6 weeks prior to delivery. Shorter periods of conditioning may not allow sufficient time to achieve effective results (Brown and Hurlock, 1975).

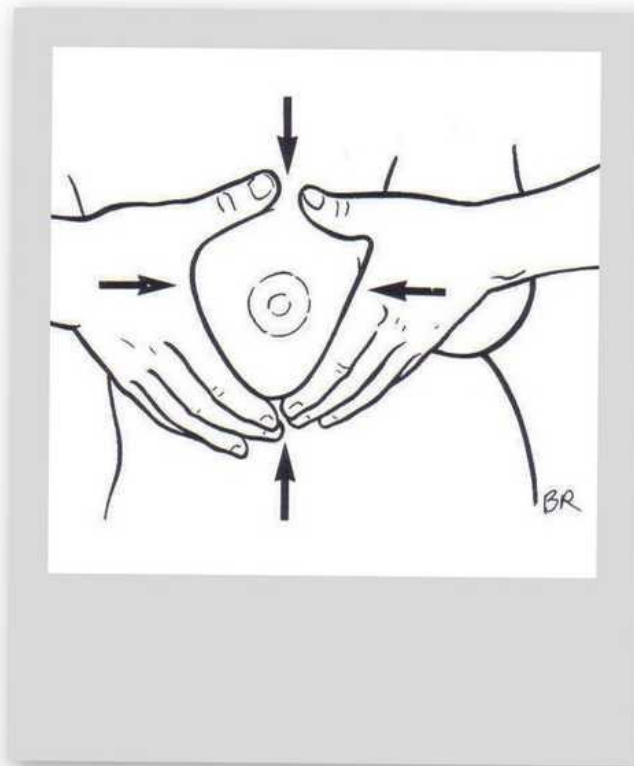


Figure 4. Self-massage for the breasts. Starting at the base of the breast, place a hand on each side of the breast. With moderate and even pressure around the breast, slide the hands toward the nipple. The circle formed by the hands will become smaller. Continue until you reach the areola. Repeat this procedure 4-6 times.

There are some contraindications to nipple and breast conditioning. Stimulation of the nipple causes the release of the hormone oxytocin which produces strong uterine contractions. Although this effect is limited until the woman reaches term, small amounts sufficient to cause some activity in the

uterus are still released with nipple stimulation during pregnancy. In fact, there is an increasing interest in replacing injected oxytocic drugs with nipple stimulation during the last trimester to produce uterine activity for the contraction stress test (a test of fetal health) (Curtis and Resnick 86; Curtis and others 86; Chayen and others 85; Chayen and Kim 88; Gantes 85; Huddleson 84; Lenke 84; MacMillan 84; Mashini 87).

Many of the researchers exploring the use of nipple stimulation for this test express concern over the possibility of inducing labor or producing contractions strong enough to compromise the baby's health. These concerns are not warranted in normal pregnancies as nipple stimulation has not been associated with an increased incidence of premature labor or detriment to the baby's health. However, as a precautionary measure, nipple conditioning and breast massage should not be used in the case where the woman has a history of either miscarriage or premature birth, or is at high risk for preterm labor because of premature rupture of the membranes. It should also be avoided in cases of multiple gestation, incompetent cervix, known uterine malformations, or third trimester bleeding (Freeman, 1982). (See *High risk or problem pregnancy* section.)

preparation of perineum

The episiotomy has been a common surgical procedure since the 1920's. Today, it is used in 80% to 90% of first births and about 50% of subsequent births (Eisenberg et al., 1991). The operation involves surgically enlarging the vaginal opening just before birth. An incision, beginning from the vagina and carried either posteriorly towards the rectum or in a posterolateral direction, is made to prevent laceration of the perineum (the area between the vagina and rectum) - a common occurrence during childbirth.

Proponents say that episiotomy not only prevents damage to the perineal muscles, but is also easier to repair than a ragged tear. In addition, it can

shorten the pushing stage (2nd stage) of labor which can be advantageous at times when there is prolonged labor, maternal exhaustion, or fetal distress. However, the benefits of routine episiotomy have been largely presumed and not well researched (Bromberg, 1986).

Opponents of episiotomy say that the procedure is unnatural and largely unnecessary. Like other surgical procedures, it carries certain risks. These risks include blood loss, infection, complications of laceration, postpartum pain, dyspareunia (pain with intercourse), and poor restoration of the perineum (Varner, 1986).

Numerous factors can affect the need for an episiotomy. Many of these factors, such as fetal size, gestational age, pelvic structure, and labor patterns, cannot be controlled. However, many other factors exist which can be optimized. These include the woman's nutritional status, her pelvic floor muscle tone, her ability to relax and to control pushing, the delivery position, as well as the technique and skill of the birth attendant (Schrag, 1979).

Stretching of the vagina and perineum by a previous vaginal delivery is probably the most widely recognized factor in increasing the ability of the perineum to accommodate the fetus without tearing (Schrag, 1979). For this reason daily perineal massage in late pregnancy is often suggested since it stretches the perineal muscles and softens any scar tissue present from previous trauma or surgery. Performing this massage is beyond our scope of practice as massage therapists. However, it is a simple technique which can be easily taught to the woman and her partner (see box 1).

With stretching or softening of the perineal tissues, the resistance to delivery is decreased. This is supported by clinical observations and research. Studies have found that perineal massage practiced daily for the last six weeks of pregnancy decreases both the number of lacerations and the number of episiotomies required (Avery, 1986; 1987). Lacerations and episiotomies

occurred in 48% of the women who practiced perineal massage, as opposed to 77% of women who did not.

According to the participants in one study, perineal elasticity seemed to increase most dramatically in the first 2 to 3 weeks of massage; this was maintained but not significantly increased as the massage continued through the remaining weeks. So it may be possible to start the perineal massage closer than six weeks before the due date with similar results.

In addition to perineal massage, midwives and childbirth educators recommend several other techniques to reduce the need for episiotomy. These include use of the Kegel exercise, frequent squatting to condition the perineum (Zacharin, 1977), hot compresses to the perineum during second stage labor, and warm oil massage of the perineum during delivery. However, even at birthing centers where these techniques are employed regularly, between 15% and 25% of women have episiotomies, and 25% to 30% of the others tear badly enough to need repair (Eisenberg et al.,1991).

high risk or problem pregnancy

There are a number of conditions associated with pregnancy that place the mother and fetus at a higher risk for harm during the pregnancy or birth. These high risk or problem pregnancies can often be managed successfully with careful monitoring and appropriate action by the woman's physician. However, these conditions should be considered contraindications for full body massage. Seek advice from the woman's physician before performing any massage.

Here is a list of some conditions which could possibly be encountered:

- Preterm rupture of membranes: a rupture of the amniotic sac weeks or months before the delivery date

- Premature onset of labor: labor that begins after the 20th week and before the 37th week
- Incompetent cervix: a cervix that dilates prematurely because of the pressure of the fetus
- Placenta previa: a placenta which grows in the lower part of the uterus and covers or touches the opening of the uterus
- Pregnancy related hypertension or pre-eclampsia: high blood pressure related to pregnancy with no known cause. It is also called toxemia. - Multiple gestation: multiple fetuses. Sometimes if there are three or more fetuses the mother's body will not be able to support them all and as a result the health of the fetuses or mother suffers
- Chronic medical conditions: including diabetes, epilepsy, hypertension, multiple sclerosis, heart disease, and anemia

Besides these particular conditions, there are a variety of signs and symptoms that indicate that there may be a problem with the pregnancy. The massage therapist should be aware of these so that the woman can be advised to seek medical counsel. It would not be advisable to massage any woman with these symptoms until their cause has been investigated. They include the following:

Bleeding: although vaginal bleeding during pregnancy occurs frequently and does not necessarily indicate anything serious has happened, it may precede miscarriage and should therefore be reported to the woman's physician.

- Abdominal pain: especially if the pain is sharp, intense, accompanied by cramping, or continues for more than one day
- Severe nausea or vomiting
- Recurrent vomiting in the second or third trimester
- Sudden or unusual swelling or puffiness: especially if it appears in the face

- Severe headache that lasts for more than two or three hours. Visual disturbances
- Fainting or dizziness
- Fever
- Sudden changes in weight: especially if the changes are not related to food consumption
- Reduction in or altered fetal activity: more specifically radical slowdowns or cessation of activity for more than 24 hours
- Sudden increases in blood pressure
- Intense depression
- Sharp or burning sacral pain: which is referred to as *pre-sacral pain* may indicate a miscarriage

Exercise during pregnancy: General guidelines

It is common knowledge that moderate exercise through pregnancy is not only safe (Work, 1989), but can be extremely beneficial for both the mother and fetus. However, there are exceptions, and women, especially those with high risk pregnancies, should get explicit guidelines from their medical practitioner.

Having a baby is hard work. Keeping fit during pregnancy will reduce the incidence of musculoskeletal complaints and keep energy levels high. The work of childbirth will be easier and strains and cramping will be minimized. Being fit will also assist the mother in recovering faster after birth. The pregnant woman should be encouraged to continue exercising, or if she has been inactive and is unfit, to begin a gentle and progressive exercise program which addresses all three components of fitness: cardiovascular or aerobic fitness, strength, and flexibility. Monitor your clients' progress and take care that the type and degree of activity is appropriate to their fitness level.

Aerobic exercise will improve endurance and will enhance the health of the circulatory system thus helping prevent edema, varicose veins, hemorrhoids, and assisting the woman in coping with a lengthy labor. It also reduces fatigue, improves sleep, prevents excessive weight gain, and enhances the woman's ability to cope with the physical and emotional stresses of pregnancy. As well, pregnancy outcomes are more favorable for women who exercise (Hall and Kaufmann, 1987).

Pregnant women must be cautioned about getting too hot when doing aerobic exercise. Exercise that raises the core body temperature more than 2 degrees Fahrenheit can be dangerous to the fetus. The woman should be advised not to exercise in very hot or humid weather, or in a hot stuffy room. Being drenched in sweat or having a pulse that is still over 100 beats per

minute five minutes after completing a workout is a sign that the intensity of the exercise is excessive.

If the woman was not active before the pregnancy, loading of the cardiovascular system must be gradual. As a general guideline, vigorous activities, especially those that involve sudden, twisting, or jerky movements, should be avoided in favor of more moderate activities such as walking, swimming, cycling, low impact aerobics, and special prenatal exercise classes. Be aware that there is an added risk of injury in pregnancy because of joint laxity and a changing center of balance.

Stretching and strengthening exercises will be very useful. These exercises can be done to help counter the postural changes that normally occur through pregnancy. Since the weight of the abdomen and breasts tends to cause a swayback posture, stretching should focus on the hip flexors, low back extensors, hip adductors and lateral rotators, and the pectoral muscles. Strengthening exercises should be focused towards the abdominal muscles, gluteals, scapular retractors, and thoracic extensors. Stretching should not be forceful and any exercise performed while lying on the back should be avoided after the fifth or sixth month of pregnancy.

Some caution must also be applied to strengthening exercises. The Valsalva maneuver, a holding of the breath used in lifting heavy loads, decreases oxygen delivery to the placenta and should thus be avoided. As with aerobics, a moderate approach is best. Suggest less resistance (lighter weights) and more repetitions. It is safer to isolate muscle groups than to perform complex maneuvers. As well, weight machines are safer than free weights, especially if no spotter is available (Work, 1989). For example, to strengthen the quadriceps, it would be safer to do leg extensions on a machine than squat lifts with free weights.

Because the sacroiliac (SI) joints and the symphysis pubis are lax, they are especially vulnerable to irritation and dysfunction. Exercises that force the hips into extremes of flexion and extension should be avoided. As well, avoid exercises that involve weight bearing on one leg only as these stress the joints considerably.

The abdominal muscles will not tolerate strenuous exercise as the pregnancy progresses. Occasionally a condition called *diastasis recti* will develop (figure 5). The stress on the abdominal wall caused by the growing fetus, along with a generalized laxity of the connective tissues of the body, will weaken the linea alba which is the central fibrous tissue of the abdomen. As a result a gap may develop between the two rectus abdominus muscles. This separation may be small or may be up to three or four inches in width. To prevent the condition from worsening discontinue strenuous abdominal exercises and exercises that rotate the hips or trunk.

Figure 5. As the central fibrous tissue of the abdomen becomes weakened, the rectus abdominus muscles may separate. This condition is called diastasis recti. You can palpate this gap easily when the woman contracts her abdominal muscles to sit up.



It is important to strengthen the pelvic floor muscles. Although it may seem odd to do strengthening exercises for these muscles, it is vital because a strong pelvic floor gives support to the pelvic organs and prevents stress incontinence. A strengthening exercise was first suggested by Kegel which he called the pubococcygeal exercise. Today it is simply called the *Kegel exercise*. It involves isometric contractions of the pelvic floor muscles. Many women are unaware that they have control over these and about 30% are unable to consciously contract them without training (Laycock, 1991).

To determine the degree of control your client has over her pelvic floor muscles ask her if she can control or stop the flow of urine when she is urinating. To assist the woman in becoming aware of them, have her place her hand on the perineum and feel the movement as she contracts them. Alternatively, when at home, she can insert one finger into the vagina and attempt to squeeze the finger or prevent its withdrawal. This method, which the woman can do in privacy at home, ensures that the muscles are actually contracting and the woman is not just bearing down, or tightening the gluteals and adductors. Once the woman learns to contract the muscles correctly, the exercise can be started.

The exercise needs to be performed regularly and consistently to achieve good results. Suggest to your client that she perform it at specific times of the day or accompanying certain activities (e.g. every time she brushes her teeth) to help improve compliance. Because the perineal muscles consist of both slow and fast twitch fibers, have the woman alternate sustained contractions (10 seconds or longer) with short, quick contractions to activate and strengthen the muscles effectively.

The contractions should be repeated for three to five minutes and performed several times a day. The exercises should not be done while urinating as this promotes incomplete emptying of the bladder. Since noticeable improvement

in strength takes weeks to months of training, it is best to start these exercises as early in the pregnancy as possible (Leaky bladders, 1992). Kegel's exercises should be continued after the delivery to facilitate the recovery of the pelvic musculature.

Here are several ways that the Kegel exercise can be performed:

1. **The basic Kegel.** Simply contract the pelvic muscles as tightly as possible and then relax them completely.
2. **The elevator.** This exercise can be done in any position. Imagine the pelvic floor as an elevator which is going from the first to the tenth floor of a building. Contract the pelvic muscles a little at a time, tightening them a little more at each floor until the tenth floor is reached at the count of ten. Gradually release the muscles as the elevator descends back to the ground floor.
3. **The wave.** Although this method can be performed in any position, try sitting on a firm chair with the feet on the floor and slightly apart. Now tighten all the sphincter muscles - anal, vaginal and urethral - from front to back, in succession. While it is difficult to separate these muscles from one another, it's much easier to contract them in succession. When all three are tightened, hold the position and then release the muscles in a wave-like motion from front to back.

Hydrotherapy during pregnancy: General guidelines

Hydrotherapy is generally safe and, like massage and exercise, is particularly useful when drug treatment is contraindicated. For example, local applications of cold or heat are useful for muscle soreness, and cold sponge baths are indicated for mild fever. Any full body heat treatment would be contraindicated. Do not use saunas, steam rooms, whirlpools, and hot tubs. As with exercise, raising the body's temperature in these ways can have a detrimental effect on the fetus.

Using these heat treatments for periods of less than ten minutes is probably not sufficient to cause significant changes in body core temperature. However, the evidence available is not conclusive, so it would be wise to avoid these modalities altogether. If the woman is accustomed to soaking in a hot bath, recommend that the water temperature be lowered to a warm level. Local heat applications pose no special risks.

Vascular sensitivity to cold may develop in some women. With a cold application, their skin may turn bluish and blotchy. Although this condition is painless and poses no risk to the mother, it may be wise to refrain from cold applications if the client has this reaction.

There are no particular contraindications to hydrotherapy in the postpartum period. Sitz baths are often recommended for perineal pain after childbirth. Although warm or hot sitz baths have often been suggested in the past, a cold sitz bath will be more effective for decreasing pain and inflammation (Droegmueller). A cold compress or ice packs to the perineum will also help decrease the soreness and swelling.

Stress management through pregnancy

Stress is not necessarily a bad thing. However, excessive stress during pregnancy can exacerbate many common complaints of pregnancy such as headache, backache, fatigue, insomnia, loss of appetite, and morning sickness. Stress and anxiety have also been related to a number of complications of pregnancy and labor including premature birth, decreased uterine efficiency, prolonged labor, poor infant health, and poor mother infant bonding (Beck, et al, 1980; Crandon, 1979; Farber et al, 1981; Gaffney, 1986; Lederman et al, 1978, 1979, 1981; Norbeck and Tilden, 1983; Norbeck and Anderson, 1989).

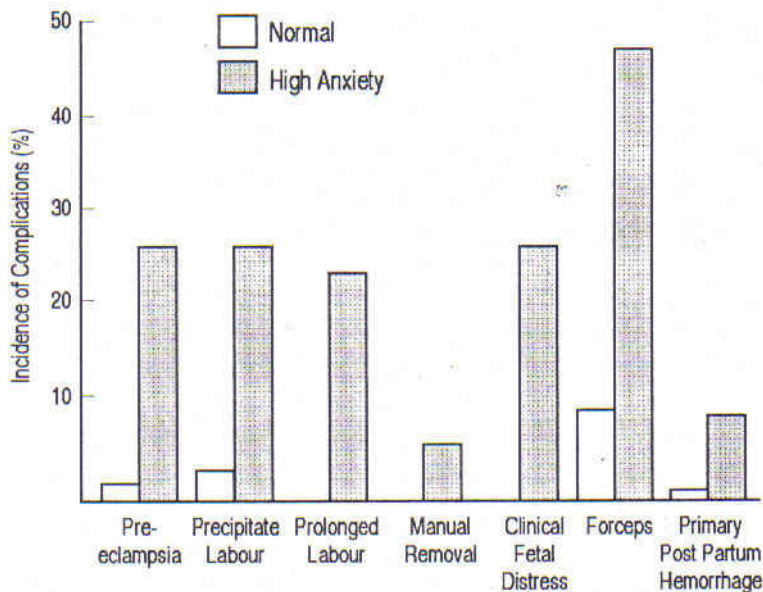


Figure 6. This graph illustrates the relative distribution of complications between high and normal anxiety groups(adapted from Crandon, 1979).

As well, animal studies show that stress or the presence of stress hormones decreases blood flow and oxygen transport to the fetus, and causes the fetal

heart rate to decelerate. The graph shown here compares the distribution of complications of delivery between women with normal and high levels of anxiety.

It is clear that excessive maternal stress or anxiety is potentially harmful and should be minimized as much as possible.

As massage therapists, we need to identify those clients with high stress levels and help them with its management. For these women, massage with a focus on relaxation combined with other forms of relaxation training is essential to their well-being.

In addition, we can provide appropriate emotional support for our clients if they want to utilize us in that capacity. Lack of social support has been strongly related to increased maternal anxiety. This can be particularly problematic when key sources of personal support, such as a partner or mother, are not available.

If your client does not have a primary support person or if she would like more than one to accompany her through labor and delivery, she may ask you to perform this role. This is an important role because support is vital during labor and delivery. Pregnant women will experience the most stress at this time, especially in an unfamiliar hospital environment. Anxiety can cause prolonged labor because adrenaline, a stress hormone, slows down the activity of the uterus. (Beck et al., 1980; Lederman et al., 1978).

Reassuring touch can decrease anxiety significantly (Sommers) and the presence of a support person can have a positive influence on the outcome (Norbeck and Tilden, 1983; Norbeck and Anderson, 1989). The presence of a supportive lay person has been found to result in shorter duration of labor and significantly fewer perinatal problems. Mothers are more awake and

smile and talk to their babies more (Sosa et al, 1980; Klaus et al, 1986). In addition, they do not require as much anesthetic (Bradley).

Even low-risk women who have attended prenatal classes and are accompanied by their husbands or partners have improved labor outcomes with the presence of a professional support person. Professional one-on-one support resulted in greater perceived control, along with less pain medication, and fewer episiotomies (Hodnett and Osborn, 1989).

Labor and delivery

overview

Braxton Hicks contractions will usually become more frequent as the end of the term nears. Oftentimes the occurrence of these contractions is confused with actual labor and is referred to as false labor.

Prior to actual delivery, the expectant mother will experience what is called *lightening*, or *engagement*, as the baby begins to descend into the pelvis. The shape of the abdomen changes as the baby drops into the birth canal. The woman will find breathing to be much easier, but may experience a variety of new symptoms including increased edema of the lower limbs and aches and pains in the groin or legs. This process usually occurs from a few days to up to four weeks before the onset of labor. Labor generally occurs in the 40th week of pregnancy. If the pregnancy goes beyond the 42nd week, the woman's physician will likely induce labor to prevent complications and minimize risk to both the mother and fetus.

The delivery process is divided into three *stages* (see box).

The first stage is the labor stage in which regular contractions of the uterus take place and the cervix dilates fully. This first stage consists of three *phases*. The contractions become more intense and the cervix dilates wider with each successive phase.

THE STAGES OF LABOR

Stage 1: Labor

Phase 1: Early or latent labor

Phase 2: Active labor

Phase 3: Transitional labor

Stage 2: Pushing and delivery

Stage 3: Delivery of placenta

The second stage involves the actual birth of the baby.

In the third stage, the placenta (afterbirth) is delivered. The whole process averages 14 hours for first time mothers and about 8 hours for subsequent births. Actual duration, however, can be anywhere from 20 minutes to 40 hours.

Many massage therapists will have the opportunity to assist a woman through labor; for some it is a regular part of their practice. The use of massage in labor has a long established history. Towards the end of the 19th century a noted anthropologist wrote that "There is hardly a people, ancient or modern, that do not in some way resort to massage and expression in labor, even if it be a natural and easy one." (Goldsmith, 1984) The massage therapist today can play the role of assistant to the birth professional, whether that be a medical practitioner or midwife.

The massage therapist also plays a secondary role to the woman's personal support person. The pregnant woman will almost always bring in a support person. This is usually the father, but not always. The support person knows the woman better than the massage therapist or the birth professional. He knows how best to respond to her needs, so it is imperative that he maintains close contact with her throughout the process. Take care that he does not feel displaced.

As a massage therapist you are regarded as a professional by the support person. This may cause him to feel intimidated and give up his role to you. Help him stay engaged in the process by showing him techniques that will keep him physically close to his partner and supplement your work. For example, you may show him how to massage the woman's temples and jaw while you manage the back pain she is experiencing. During labor, there is more than enough work for several people and you will likely find that you and your client's partner will be working in shifts.

For some couples, birth is a very intimate process. Have respect for the couple's privacy. Know that it may be more important at times to disengage yourself from the process and let the couple work together on their own.

The work of a massage therapist in the labor process consists largely of back massage or pressure to the back to relieve discomfort, supporting the abdomen during contractions, massage to various parts of the body for relaxation, distraction or pain relief, and oftentimes, simple hand holding for reassurance.

One of the most important roles the massage therapist has in any labor is that of helping the mother to relax. As has been stated earlier, stress and anxiety during labor can cause a variety of complications during labor. For this reason, the focus of massage and touch should be on relaxation. However, some massage therapists have noted that if the woman lies down for a long relaxing massage, the labor process can be slowed. This may or may not be beneficial depending on the physical and mental state of the client. For this reason, use a rhythmic, yet mildly brisk massage. Massage for short periods of time and have the client walk around or change positions once in awhile. As well, massage the client in a sitting or standing position occasionally.

When positioning the woman, avoid the supine position. Not only can this position compress major blood vessels, but it tends to slow labor. On the other hand, upright positions like standing or sitting can shorten labor by speeding dilation and fetal descent.

In general, women find that touch and massage helps them better cope with their labor and creates a more satisfying experience. Most women will say that massage helps decrease the pain they experience. Other effects of touch and massage that have been reported by women include enhanced comfort,

self-control, relaxation, endurance, and alleviation of uncomfortable physical sensations (Birch, 1986).

Note, however, that women giving birth will have very different responses to massage. The approach you take to massage at this time will vary greatly from client to client. What works for one woman may not work for another. As well, be prepared for the woman to be erratic in her requests. Sometimes she may want massage and at some points she may not want to be touched at all. Be sure to establish open communication early in the process and be prepared to adapt or discontinue your massage in response to your client's immediate needs.

Educate yourself regarding medical routines used in labor units if you plan on assisting your client in a hospital setting. IV's, lumbar epidurals, and fetal monitors are frequently used and will impact on the work you will be able to do. For example, if a continuous drip epidural is used the woman will remain in a sidelying position and the spine will be taped from T1 to the sacrum. Although pain sensation is blocked, she may still have tactile sensation so that massage to her legs or feet may be beneficial.

stage 1

Stage 1 labor consists of three *phases*. The first phase, called early labor, is the longest and easiest of the three. In this phase the cervix dilates to 3 cm in diameter. There may or may not be a consistent pattern of contractions at this time. The second phase, or active phase, lasts from 2 to 3 hours on average. During this time the cervix dilates to 7 cm. Contractions become stronger and more consistent than in the first phase, lasting for up to a minute and occurring every three or four minutes. The third phase is referred to as transitional labor and is characterized by full dilation of the cervix to 10 cm. Its contractions last for about a minute to a minute and a half and occur

every two or three minutes. This phase is short and may last from 15 minutes to one hour.

During the first stage of labor, the massage therapist can help keep the woman relaxed. This will prevent fatigue and ensure that she has as much energy as possible for the delivery. Breathing exercises or relaxation exercises are often helpful. Encourage the woman to walk and move around.

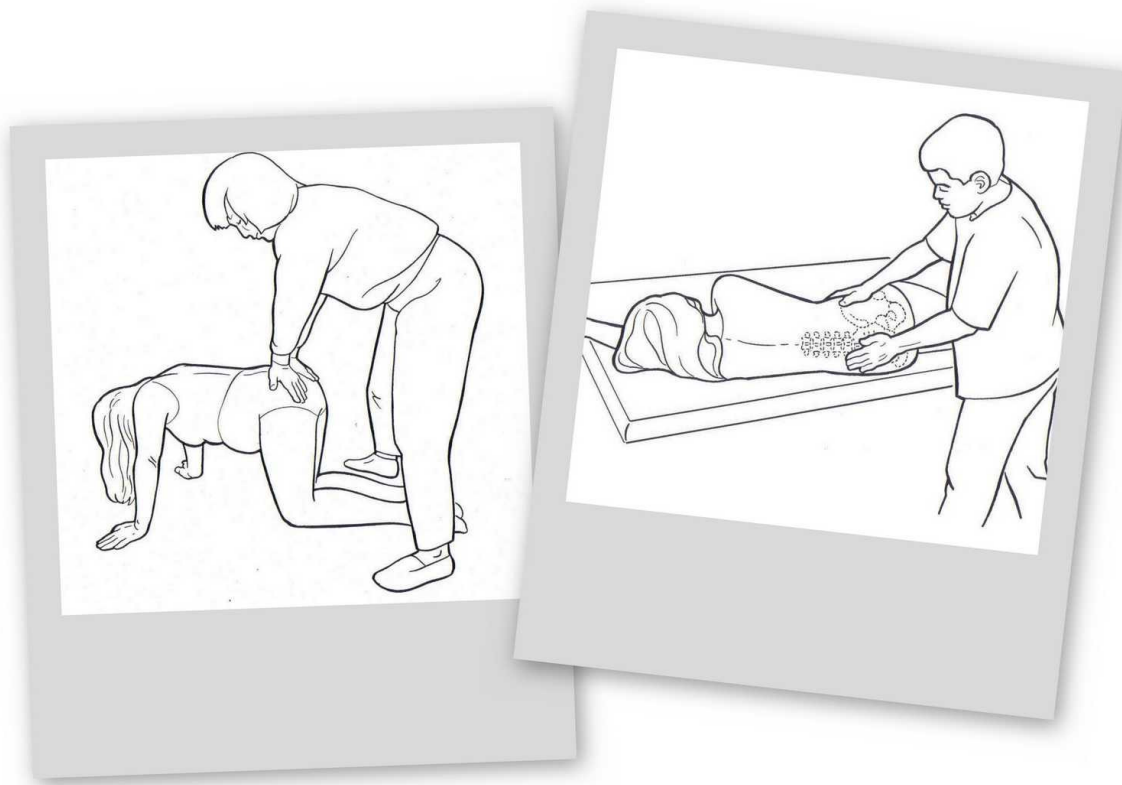
General massage may be useful early on, but as labor progresses it will be more beneficial to focus on areas of tension. It is very important to help the woman relax her abdominals. When contractions start becoming intense, use gentle massage on the abdomen between contractions. Sometimes simply touching the tense area is enough to make the woman aware of the tension so that she can release it.

It may be useful to massage the tense proximal areas of the body: the thighs, gluteals, abdomen, or the low back. The hip adductors in particular tend to get very tense and it would be useful to use deep effleurage or petrissage to help these muscles relax. Passive range of motion to the hips and knees can be equally effective.

Sometimes it is more helpful to massage the distal areas. For example, massaging the hands or the feet may provide a useful distraction. Leg cramps occur frequently and massage can be used to help release the cramp and manage the associated discomfort. The most common muscles to cramp are the hamstrings, adductors, and calves.

Some educators stress the importance of keeping the jaw relaxed through labor. There is no physiological connection between the jaw and the uterus as some writers suggest, but relaxing the facial muscles and muscles of mastication may assist the woman in breathing more easily.

Sometimes the baby's position may not be ideal during descent. The back of the baby's head may be pushing against the mother's sacrum. This causes excruciating low back pain and is referred to as *back labor*, although severe back pain may be present even when the baby is in a good position. There are several things that can be done to provide relief. One of the most useful will be to apply *counter pressure*. Using the heel of your hand, or perhaps the back of your knuckles, push into the lower back or sacrum on or around the area of pain until you find a location that gives the woman some relief. This can be done with any positioning and will be particularly useful if you sustain the counter pressure for the duration of the contraction. This technique is illustrated in a variety of positions below.



Local deep petrissage may also provide some relief. In addition, hydrotherapy can be applied to the back. Use the modality that the woman feels is giving her the most relief, whether an ice pack or a heat pack. Some women may even enjoy taking a warm shower. Lastly, have the woman

change her position. Have her try squatting, going on all fours, or sidelying in a fetal position.

Obstetric literature often suggests that many women do not like to be touched in the transitional phase of labor, the reason being that this is the most intense and painful time of labor. Research, however, suggests that instead of aversion to touch there is often a strong desire to be touched in this phase (Birch, 1986). Since transition is the most difficult phase of labor the woman's anxiety may be at its highest and thus massage or even simple touching may be most beneficial at this time to help relax or comfort the woman. Bear in mind that the pregnant woman's needs and preferences must always form the basis for your decision to intervene or not intervene with massage and touch in this or any other stage.

stage 2

Stage 2 is the delivery stage. It can last from 10 minutes to three hours, although it typically lasts from about half an hour to one hour. The contractions become more regular and a little farther apart than in the transitional phase of stage 1. The mother must assist the contractions at this stage by actively pushing. As the baby passes through the vagina the mother will recognize the burning sensation that she felt while doing the perineal massage.

During the contractions you can either use firm counter pressure or massage at a rhythm that supports the breathing technique that the woman is using. As the actual delivery approaches, you will need to give way to the birth professionals. Support the birthing team and the woman in any way they feel is appropriate. You can apply cool compresses to the forehead or neck, use counter pressure, massage the back to ease pain, or just be nearby for support.

stage 3

This final stage involves delivery of the placenta, also called the afterbirth. The stage lasts anywhere from 5 minutes to one half hour or more, since it takes some time for the placenta to detach itself from the uterine wall. Mild contractions continue after the birth to push the placenta out of the body. Episiotomy or laceration repair is usually done after delivery of the placenta.

At this stage, most of the strenuous work is over for the mother and it is likely that her attention will be diverted from her discomfort and toward the baby. Massage for the mother is not necessary unless it is needed to assist uterine contraction and delivery of the placenta. Any direct massage, kneading, or squeezing of the uterus to expel the placenta is contraindicated as it may provoke abnormal contractions and interfere with normal progress.

However, after delivery of the placenta massage of the fundus, the top portion of the uterus, can be used to encourage involution (shrinking) of the uterus and reduce hemorrhage. Although the massage should be vigorous enough to stimulate contraction, caution must be used to prevent descent or inversion of the uterus. Placing a hand above the symphysis pubis to elevate the uterus during massage (figure 8) would be a good safeguard (Long, 1986). Even light stimulation of the skin of the abdomen may be sufficient to cause reflex contraction of the uterus (Curtis and others '86).

Massage for assisting involution can be continued for up to two weeks after the birth.



Figure 8. When massaging the abdomen after delivery, use one hand to apply gentle pressure above the symphysis pubis to prevent inversion of the uterus.

Postpartum

The birth of the baby does not mark the end of the mother's need for massage. On the contrary, massage can play an important role in helping the woman cope with the new stresses of motherhood and in rehabilitating birth injuries and surgery.

The birth process is exhausting. Many women feel completely drained and sore all over the next day. Some women describe the feeling of being hit by a truck or of finishing a marathon. A massage to release tension and help the woman relax is invaluable. In addition, the woman will probably have little sleep as she must attend to the baby constantly. The anxiety associated with having to take care of a newborn and the lifestyle changes that are imposed may be even further cause for stress. At this time, shortly after the birth, it is important that the mother take time for relaxation on a regular basis. Massage can be particularly fulfilling because the mother has attention focused on her alone at a time when her welfare seems to be placed in a secondary position to that of the baby.

You will often find that your client complains of achiness around the shoulders, mid-back and neck after giving birth. Initially this may be caused by her positioning for the birth or simply the tension which has developed from the process. Later, she may feel the discomfort because of carrying the child and holding the child for feeding.

Massage can play a key role in helping the mother recover post-surgically. Cesarean sections are extremely common. In the United States about one out of every four births is a cesarean delivery and this rate has been relatively consistent for a number of years (Taffel et al., 1992). If the woman has had a cesarean birth, massage can help restore peristalsis, prevent keloid formation, and reduce adhesions in the affected tissues (Javril 88).

The woman's physician must be consulted if you decide to do post-surgical massage.

If there are no complications, abdominal massage for cesareans can be started within a few days following delivery to reduce any swelling and promote movement in the intestines. Gentle effleurage and manual lymph drainage techniques can be used provided they do not stress the surgical incisions. Once the incision is fully closed, which usually occurs within 10 days, you can begin working into the scar and the deeper tissues to prevent adhering. At first you may use the gentlest petrissage techniques and as the healing continues you can incorporate more aggressive techniques like skin rolling. Again, care must be exercised not to place excessive stress on the healing tissues.

Summary

Pregnancy can be a time of excitement, but it can also be a stressful time for a mother-to-be. Massage is a great way to help women through this time of change. It is also invaluable for helping a woman manage the various uncomfortable symptoms she may experience – everything from back pain to swelling - as her body goes through some very dramatic changes.

While pregnancy is not a pathology, there are many special considerations that need to be taken into account when doing prenatal massage. This book has covered many of the most common ones and has provided you with guidelines for treatment. We've also looked at a number of issues regarding massage through labor and in the post partum period.

About the Author

Eric Brown, Massage Therapist, is one of the world's leading authorities on massage. He has taught thousands of massage therapists across North America. He speaks regularly at various massage conferences and his writings appear in trade publications across the world.

Here are some of the organizations he has founded to help massage professionals:

BodyworkBiz <http://www.bodyworkbiz.com>

Marketing and business resources for massage professionals. Everything you need to have a successful practice from ecourses and presentation kits, to business cards and client education newsletters. Sign up for the FREE marketing tips newsletter, chock full of valuable practice building tips:

<http://www.bodyworkbiz.com/newsletter.php>

Massage Therapy Radio <http://www.massagetherapyradio.com>

Join one of our upcoming broadcasts as we interview leaders in the field of massage therapy.

World Massage Conference <http://www.worldmassageconference.com>

This groundbreaking online conference was the first virtual conference in the industry and the largest event in the history of massage with close to 12,000 registrants from around the globe and a line up of about 70 international massage experts. Check out the current year's offering which promises to be even bigger and more exciting.

Thermal Palms <http://www.thermalpalms.com>

The soft alterantive to hot stone massage. Visit the site to watch the videos and find out why therapists are tossing their stones into the river and embracing this unique heat modality.