
IDENTIFICATION AND MANAGEMENT OF PREGNANCY-RELATED LOW BACK PAIN

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ABSTRACT

Back pain is a common complaint of women during pregnancy. It is frequently dismissed as trivial and inevitable. This article gives an overview of recent research on pregnancy-related back pain that documents the impact of this pain on women's lives, during and beyond the childbearing year. It argues for a more active approach to the prevention and management of back pain during pregnancy. Two common back pain types, lumbar pain and posterior pelvic pain, are described and basic management techniques for the woman and her primary caregiver are suggested. Red flag findings that necessitate specialist referral are also highlighted, as are suggestions for further research. © 1998 by the American College of Nurse-Midwives.

Low back pain (LBP) is one of the more common musculoskeletal complaints of pregnant women. An estimated 50–90% of women will experience some type of back pain during their pregnancies (1–8), making this experience so ubiquitous that “treatment” will often consist of counseling women to be patient and wait for postpartum recovery. So closely linked are the concepts of pregnancy and back pain that women with pre-existing back pain may fear becoming pregnant (9). Some authors suggest that the incidence of generalized as well as pregnancy-related back pain may be on the rise within contemporary society (10,11).

In view of the significant negative impact that back pain can have on women's functioning and well-being during pregnancy, dismissing it as inevitable and trivial is simply not acceptable (4,5,7,11). In fact, recent research has documented the severity of back pain and shown that the back pain of pregnancy may impact the entirety of some women's lives. Not only does the problem persist well beyond pregnancy in a significant number of women, but many women with chronic back pain link its onset to a pregnancy (12,13,14). Moderating or preventing back pain thus becomes an issue of importance for all concerned with women's health and not just an issue for those working with women during pregnancy.

The purpose of this article is to review some of the recent literature on LBP in pregnancy and synthesize

guidelines to assist the primary contact practitioner, who is in the best position to offer early intervention and individual advice. It is limited to back pain affecting the lower portion of the spine and pelvis and excludes the special cases of nocturnal-only back pain and the back pain associated with severe diastasis recti. It includes information on differentiating between two common back pain syndromes and management suggestions for these syndromes. Treatment suggestions are geared toward low-technology interventions with a focus on active prevention and self-management. Key “red flag” findings that may indicate serious pathology requiring specialist intervention are also covered.

CAUSES OF BACK PAIN IN PREGNANCY

Although the high frequency of back pain in pregnancy has been acknowledged for almost as long as there have been writings about pregnancy, there is surprisingly little validation of hypotheses regarding causes. This may proceed from the common perception that the back pain of pregnancy is a normal part of pregnancy and something that must simply be endured. When women report back pain to their caregiver, treatment given is often limited to reassurance (5,15,16). Explanations are linked to “common sense” analyses of the “obvious” hormonal and biomechanical changes of pregnancy. The limited work examining these explanations has shown that the traditional explanations are incomplete and at times inaccurate (17).

During pregnancy, some women may gain as much as a quarter of their body weight. Their center of gravity shifts, requiring changes in posture to maintain balance. These changes are not the same in all women. The postures of pregnancy have been divided into two broad classes: an anterior posture where the weight of the uterus is carried anterior to the normal center of gravity and a posterior posture where the weight of the uterus is carried posterior to the normal center of gravity. It was found that at the end of pregnancy 75% of women will have a posterior posture and suggested that an anterior posture may be associated with pubic symphysis problems (18). Unfortunately, studies that actually measure postural changes through pregnancy are rare, making it impossible to predict shifts in an individual client. Not surprisingly, biomechanical changes have been sug-

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gested as a cause of back pain, either because of added strain imposed on weightbearing structures, the alterations in posture, or muscle fatigue related to the extra work required to move and balance the altered body.

It is noteworthy that back pain often begins well before significant weight and body shape changes occur and does not correlate directly with weight and posture changes (9,15). Peak onset is between the fifth and seventh months (4,5,12,15), before the period of greatest increase in weight, and prevalence of pain plateaus or decreases toward the end of pregnancy (19). In addition, the frequently hypothesized postural alterations of anterior tilt of the pelvis and increased lumbar lordosis have not been consistently observed and have not been shown to correlate with back pain (5,20). While some studies have shown an increase in lumbar lordosis over pregnancy, others have not or have shown a variable effect related to parity (21–24). One study has made the tentative suggestion that women with a deep lumbar lordosis prior to pregnancy may be more prone to back pain in pregnancy but was unable to document a change in lordosis depth during pregnancy (8). Studies that looked at factors aggravating back pain during pregnancy have noted that the pain tends to increase over the day and be eased with rest, a finding that offers support for the hypothesis of muscle fatigue (9). The effects of muscle fatigue may be further aggravated by the muscle imbalances of pregnancy (25).

Another factor commonly implicated in the development of back pain is the effect of hormones, particularly relaxin, which increases ligamentous laxity thereby decreasing joint support. This would help explain the early onset of pain in many women; however, while there is some support for the role of relaxin, including correlations between mean levels of relaxin and complaints of

pain or positive results in pain provocation testing (26), pain patterns and intensity do not fully correlate with relaxin levels (9,26).

A special case is pain that is present only at night and unrelated to position changes. Although this nocturnal pain is poorly understood, it is thought to be linked to hypervolemia and possible pressure on the inferior vena cava in supine lying (17–22,23). This type of pain is beyond the scope of this review; however, caregivers who identify this pain pattern in their clients may be able to offer advice on avoiding supine sleeping positions based on this hypothesis (23).

Unfortunately, broad survey studies are rarely able to distinguish between types of back pain. Neither biomechanical stress on ligaments and joints, muscle fatigue, nor joint laxity can alone explain back pain in pregnancy (8). Similarly, no one structural component (joint, muscle, or ligament) is likely to be the sole source of pain (3). Although there are several common presentations, the pain women experience in pregnancy is likely to be multifactorial (9,15), with one or more factors dominating in an individual case. Therefore, it would be beneficial to seek common patterns that may be addressed with focused treatment.

PATTERNS OF LBP

A number of authors have identified two major subtypes of back pain affecting the lower portion of the spine in pregnancy. While the terminology varies, as at times does the proposed mechanism, there is fairly broad agreement on the description and presentation of two main types of lower spinal pain. In this article, the terms *lumbar pain* (LP) and *posterior pelvic pain* (PPP) will be used, following the suggestion of Östgaard and colleagues (11), who feel that the uncertain or multifactorial etiology of the latter pain presentation makes the term PPP more acceptable than other options. While many features of the PPP syndrome are suggestive of sacroiliac joint problems, referring to it as sacroiliac pain would obscure the more complex etiology (7).

After screening for nonmusculoskeletal problems that might require specialist referral, the primary care practitioner can proceed with an examination to differentiate between LP and PPP. Uncomplicated LP occurs over the area of the lumbar spine and occurs with or without radiating pain into the leg. Its presentation is not dissimilar from that of LP experienced by women who are not pregnant and is aggravated by activities such as prolonged standing or sitting (11,13,27).

PPP is approximately four times as prevalent as LP during pregnancy (27). The pattern seen in PPP is similar to that described by other authors as sacroiliac pain, ligamentous laxity pain, or pelvic insufficiency pain. It is described as a deep pain felt distal and lateral

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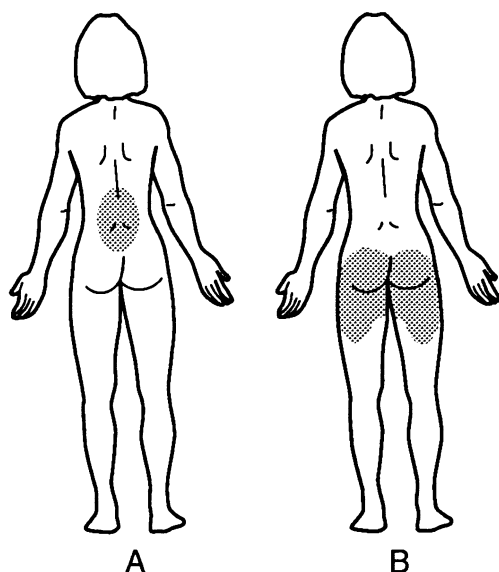


FIGURE 1.
Typical pain distribution of lumbar pain (A) and posterior pelvic pain (B).

to the L5/S1 vertebrae, over the sacroiliac joint and posterior superior iliac spine; the pain may also radiate to the posterior thigh or knee (7,10,13,23,27). It may be unilateral or bilateral and is aggravated by such things as prolonged postures, particularly at the extremes of hip or spinal movement, and asymmetrical loading of the pelvis, leading to problems with walking, prolonged sitting, stair climbing, and turning at night (10,11,

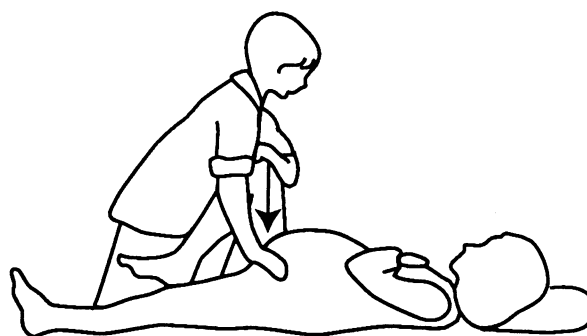


FIGURE 2.
The posterior pain provocation test.

13,23,27). It should be noted that the pain felt with PPP at night is linked to the stress of turning in bed, distinguishing it from the cramp-like nocturnal back pain of pregnancy (10,17,27). Some authors report that PPP is often found in concert with pubic symphysis pain, but further research is needed to clarify any linkages (1,10,11). PPP may also involve morning stiffness (23).

PPP and LP are distinguished by their location (Figure 1), by their characteristic presentation (Table 1), and through the use of pain provocation testing (Figure 2). The best test to distinguish the two is the posterior pelvic pain provocation test (PPPT) (3,10,28). Although additional pain provocation testing may increase accuracy (3,9), the PPPT provides a simple test accurate enough for routine clinical practice. It is performed with the woman supine and the hip on the affected side flexed to 90°. The examiner stabilizes the opposite iliac crest

TABLE 1
Characteristic Features of Lumbar Pain and Posterior Pelvic Pain

<i>Features</i>	<i>Lumbar Pain</i>	<i>Posterior Pelvic Pain</i>
Pain location	Pain over and around the lumbar spine With or without radiation to leg or foot	Unilateral or bilateral pain in buttocks and low back Distal and lateral to the lumbar spine May radiate to posterolateral thigh, occasionally to knee and rarely to calf Does not radiate to the foot
Functional limitations	Pain is related to prolonged weight-bearing in standing or sitting and repetitive lifting	Difficulty/pain with activities like turning in bed, climbing stairs, running, walking, getting out of cars and low chairs, lifting and twisting, getting in and out of a bathtub
Clinical features	Pain may resemble episodes of low back pain experienced before pregnancy Erector spinae muscles may be tender on palpation Posterior pain provocation test negative	Aggravation by jarring activities or strain at extremes of hip and back range of motion Prolonged postures near the limits of hip and lower back range of motion aggravate pain (eg, sitting and leaning forward while using a computer, sitting in a deep chair seat) May be acute episodes of pain precipitated by above activities, with pain peaking some time after precipitating event Posterior pain provocation test reproduces pain May be associated with pubic symphysis pain

while applying vertical pressure through the flexed thigh (Figure 2). A positive test reproduces the client's pain.

Common features of LP and PPP are presented in Table 1.

PREVALENCE OF PAIN

Numerous studies have looked at how common back pain is during pregnancy. Rates range from 25% to almost 90%, being lowest in population surveys that ask about back pain retrospectively and highest in those that follow women through pregnancy asking about any level of pain (1–8). The majority of studies report that over one half of women will experience back pain during a pregnancy and that for about one third the pain will be severe enough to have a substantial impact on their daily lives (4–7). One study found that back pain was the most common cause of sick leave during pregnancy (19).

Although back pain may begin as early as the 12th week of their pregnancy (7,27) or even earlier, for most women it will begin between the fifth and seventh month (4,5,12,15). Duration is variable, with some women experiencing only brief periods of pain and others having many months of severe pain. A longer duration of pain is associated with more severe pain (4) and back pain during pregnancy is the best predictor of postpartum back pain (17,29). For the majority, the pain will resolve within 4 months of giving birth; but for others the pain will persist for months to years. Of women with chronic back pain, 10–20% report that the pain began with a pregnancy, making back pain during pregnancy a risk factor for general or chronic back pain (13,14,25).

Given the high frequency of complaints of back pain in the general population, some of the pain experienced by women during pregnancy may not be related to the pregnancy at all (5,19); this is particularly true for LP. Although there are a few women who find that back complaints disappear with pregnancy (5,16), there is no doubt that there is an increased incidence of back pain in pregnancy; moreover, there are particular patterns of pain that are specifically linked to pregnancy.

RISK FACTORS

Although there are some accepted risk factors for back pain in pregnancy, it is not possible accurately to predict who will be at greatest risk (30). Consistently found risk factors for back pain in general include back pain in a previous pregnancy and any history of back pain (7,10). A general history of back pain is also predictive of pain of longer duration and severity (19). While studies on parity and pain have been conflicting, multiparous

women who do experience pain are likely to have a longer duration of pain than primiparous women (19). Earlier studies tend to report more back pain and more severe pain in older women and in multiparous women (6); however, several recent studies have found higher rates of pain and more intense pain in younger women (4,7,19). One study that followed women throughout pregnancy reported that the difference in pain severity between older and younger women disappeared during the third trimester (19). The differences in studies may relate to difficulties in controlling for the combination of age and parity, or to how and when in pregnancy pain is measured.

The link between job demands and pain is even less clear. While work has been shown to be a risk factor in some studies (1), others have shown that the link is less with overall work or job demands than with specific features of work, such as sustained postures, having to twist or bend several times in an hour, lifting with twisting, and inability to pace work or take breaks (7,10). PPP risk is increased with work postures involving flexion of the upper part of the body (10), perhaps because this may stress lower parts of the spine and pelvis by placing them near the limit of their range. PPP has also been particularly associated with work involving lifting with twisting (1), perhaps because it loads the spine asymmetrically. Some authors have speculated that the current idea that healthy women should be able to maintain their maximum working capacity throughout a pregnancy causes women, their partners, and their employers to have unrealistic performance expectations that may increase their risk for problems (5,23).

Recent surveys have examined the links between the subtypes of back pain mentioned above, various risk factors, and level of disability. PPP, which is more likely to be triggered by pregnancy, is more common than LP during pregnancy and also regresses more readily postpartum than LP (11,13). However recent studies have shown that, on average, PPP is more disabling during pregnancy than LP and that with both types of pain a high pain intensity during pregnancy is predictive of persistent pain up to one year postpartum (1,8,13). Sick leave for back pain correlates with both pain intensity and with PPP (8). It has been suggested that if PPP has not resolved within three months of delivery a very slow recovery will usually ensue (10).

LP shows a stronger link with back pain prior to pregnancy (1,10,11). Relative risk of LP and related sick leave are lower in women with higher levels of fitness prior to pregnancy (1,10,11), making this analogous to back pain in the general population. On the other hand, fitness does not appear to protect women from PPP (11).

GENERAL BACK CARE FOR PREVENTION OF BACK PAIN

While prevention of all pregnancy-related low back pain is unlikely to be possible, advice on back care should be available to all pregnant women and their active participation in daily back care activities should be encouraged. First, it is important that women maintain proper posture, which can prevent unnecessary mechanical stress on the low back. Secondly, an exercise program that improves the strength and flexibility of supporting soft tissue structures and includes moderate intensity aerobic conditioning should be prescribed, preferably prior to a planned pregnancy. Health care providers can, for example, instruct their pregnant patients to perform physical activities in the neutral spine posture and then observe them while simulating daily movement patterns.

In general, women should attempt to pace work, using breaks to vary static body positions and physically demanding tasks. For example, a clerk in a large store may be able to alternate check-outs to balance muscle work involved. Bending with spinal rotation should be avoided, with activities such as vacuuming and mopping being possible sources of this type of stress. Simple backache from muscle fatigue may be avoided or minimized if a midday rest is possible to give tired muscles a chance to recover.

Women should strive to use seats that support their spine and begin early to use cushions to support the top leg and abdomen for sleep in side-lying to avoid twisting and stress on the spine. In a soft bed, a towel roll or cushion at the waist may provide additional support and comfort. Comfortable sleep is important. Of equal importance is getting in and out of bed without straining the spine and pelvis; this can be done by rolling to the side with hips and knees bent, and then sitting up by using the arms to push up while lowering the lower legs over the edge of the bed.

Walking is better than static standing; however, if required to stand a woman may find that weight-shifting from one foot to the other or using a small stool for one foot (alternating feet periodically) helps. In any work situation, stooping should be avoided; raising the work surface or using a stool to lower the worker may help. Where work or home demands pose a problem, the primary practitioner's role may include advocacy as well as back care education.

Lifting advice is also important from very early in the pregnancy. If a woman does not begin to develop the habit of using her legs to lift early they may not be strong enough for her to adopt good lifting practices late in the pregnancy. If bending and lifting correctly becomes difficult, women should consider strategies that may minimize such efforts as their pregnancy advances. This may mean such things as reorganizing work surfaces to

minimize lifting or bending or rearranging a kitchen so that frequently used items are accessible without bending. In later pregnancy, as increasing size of the abdomen makes biomechanically sound lifting more difficult for many women, heavy lifting should be shared or discontinued. When carrying lighter loads such as shopping, it is also important to distribute the weight so that the load may evenly stress the spine.

Suggestions on back care and pain prevention for the pregnant woman are readily available. Those given are derived from a number of sources as well as from clinical experience; particularly useful sources for the clinician include Bookhout and Boissonnault (20), Mantle (5), Noble (31) and Polden and Mantle (16).

MANAGEMENT OF PREGNANCY-RELATED MUSCULOSKELETAL LOW BACK PAIN

Management of back pain during pregnancy should begin with acknowledgment that pain is not a trivial matter for many women. As presentation and particular circumstances vary, so should the treatment. When a woman complains of back pain a retrospective evaluation of aggravating and easing factors can help guide initial management suggestions (16). Early identification and treatment provide the best opportunity for good results (20) and simple comfort measures are often effective (22), both for relieving pain and giving the woman a sense of control over her situation, which in itself will assist in coping with pain.

The value of good posture and regular exercise should be an integral component of any prenatal counseling. This can be supplemented by advice on resting positions for comfort. Lying with feet supported on a stool, sitting backwards in a chair with the chair back providing support, and standing and stretching back with the hands in the small of the back are all suggested to help ease tired back muscles (16). Low-heeled supportive shoes and use of props such as footstools for helping maintain a posterior pelvic tilt for lumbar and postural backache are frequently recommended. The use of supportive back cushions and brief periods of rest are also reported to be of benefit to many women (6,30). Hot or cold packs (but not whirlpools or saunas) and massage are other common measures suggested for back pain (27,32). Most prenatal education classes encourage pelvic tilt and pelvic floor exercises in a variety of positions, including sitting, lying, and on all fours. Relaxation exercises are also incorporated into prenatal exercise classes, and can be adapted for coping with pain in pregnancy and with many of the associated stresses that can enhance the experience of pain.

Although such general measures are useful for many women, aggravating and relieving factors differ among individual women (6). This means that caregivers cannot

rely on a cookbook approach to management of back pain. Some work has been done on the use of back education classes to manage back pain. A study that did not distinguish between types of back pain found that availability of two classes early in pregnancy that gave ergonomic advice and taught simple pain management techniques decreased the incidence of intense back pain significantly in women who attended both classes (30). Unfortunately, many women did not attend both classes. Perhaps reinforcement and individual advice from a primary caregiver could increase compliance or offer some benefit to women who are unable to fit classes into their schedule. This could also assist individual women in developing creative options for coping with environments or activities that aggravate their pain.

More recent work in Europe has examined a variety of treatment protocols for both LP and PPP. This research has supported some of the suggestions clinical experts have made regarding the management of pain and shown the importance of treating the different syndromes accordingly. In Sweden, the combination of routine education classes and individualized treatment including ergonomic advice has been shown to be a cost-effective way of reducing sick leave and associated costs (10). Another study has shown that while education can help, generic information is not very effective unless supplemented by specific information tailored to the individual woman's situation, particularly for women with PPP (11). The study found that although intervention could not eliminate the pain, it could reduce pain problems, decrease short-time sick leave, and reduce pain intensity postpartum, although this latter effect was seen more in LP than PPP (11).

TREATMENT OF LUMBAR PAIN

Lumbar pain commonly presents as similar to back pain experienced before pregnancy. Ideally, when planning a pregnancy women should try and resolve back pain through usual treatment methods and through maintaining or increasing fitness, as this may be a protective factor (1,10,11). While women are now encouraged to continue many fitness activities in pregnancy, it is not usually the optimum time to begin a program; however, recent guidelines suggest that interested women without complications may start an exercise program in the second trimester. Guidelines for exercise in pregnancy are available and should be followed (33,34), and specific exercises for the uncomplicated pregnancy are also readily available (31). When a pregnant woman presents with lumbar pain she can use the comfort measures and exercises mentioned above, in essence treating the problem as it would be treated in a nonpregnant population, with posture, exercise, and fitness (10). Pelvic tilts and rocking often are of benefit, as is the use of a footstool

TABLE 2
Basic Management of Lumbar Pain

Use of a back support such as a small pillow in sitting
Postural correction by "standing tall"—aim for a neutral spine rather than flattened lumbar spine or a hyperlordotic spine
Avoidance of prolonged sitting or standing—interrupting these activities with walking or stretching
Pacing activities by taking short breaks to rest in a position of comfort with spine supported
Taking a rest at midday to relieve tired muscles
Use of a small footstool for one foot in sitting or standing, alternate feet
Fitness activities such as walking or swimming at a level appropriate for the individual client
Pelvic tilting exercises in a variety of positions including supine lying, standing, sitting, and on hands and knees

for one foot in sitting or standing. An acute episode of lumbar pain may benefit from a period of decreased activity, either rest or avoidance of aggravating activities, followed by a gradual introduction of back exercises and activity, with pool exercises often being an enjoyable and comfortable option (16).

Back support in sitting is also encouraged. A small pillow or rolled towel offers a low-cost or trial option. Women should be encouraged to pace work to avoid muscle fatigue if possible, taking short breaks, during which they can use the comfort positions previously described. One position of comfort for many women late in pregnancy is sitting backward astride a chair and leaning onto the chair back for support (16). Changing posture frequently and avoiding prolonged sitting or standing may also help. General exercise such as walking or swimming within tolerance is likely to be of benefit. For a small number of women, maternity supports for the abdomen and spine may help with recalcitrant pain or when the abdominal muscles cannot control the position of the spine as long as needed.

Some management suggestions for LP are summarized in Table 2. These are likely to be of value as part of a general back care program for women during pregnancy and for an initial trial of management for LP without complicating features. This program, with its emphasis on lumbar support and lumbar flexion with pelvic tilting, may help with pain from strained lumbar facet joints in women who develop an increased lumbar lordosis, as well as women with pain from postural fatigue.

TREATMENT OF PPP

Women with PPP may find some of the above methods useful but may have to modify some and adopt other techniques. For these women, weight-bearing activities such as running, walking, and stair climbing are more likely to cause pain. The pain is often felt for some time

after the activity ends, so asking about activities over the past few days is useful in a woman presenting with PPP. As pelvic instability may be an important component of PPP, these activities may need to be modified to avoid excess stress on the pelvis. Asymmetric loading of the pelvis should be avoided, making use of a single leg footstool with standing less likely to be of benefit. Modification of fitness activities may be required, and after an acute episode a brief period of rest may be needed to resolve the pain and allow a return to normal activities (5,22). The woman may need to choose fitness activities that do not involve jarring and unbalanced loading of the pelvis. For example, a runner with PPP may find that swimming, an exercise machine, or a low-impact exercise class offers an acceptable way of maintaining fitness while minimizing pain. Exercises should also avoid extremes of hip and spine movement, which are likely to aggravate the problem. Aerobic routines that involve movements taking the hips to the limits of their range, particularly if momentum is involved are examples of exercises likely to give these women pain. When carrying weight such as shopping or a briefcase, dividing the load into a parcel for each hand may help decrease asymmetric loading of the pelvis (16).

Sacral belts are one of the most commonly suggested interventions for PPP. They have been shown to increase walking tolerance and decrease complaints of PPP (1,10,11). For a minority of women, they appear to increase pain. If a belt does not produce pain relief, its positioning may need to be adjusted. If this does not help, or if pain is increased, a belt should not be used as it may be adding stress to affected structures rather than supporting them. The belt can be used in any situation where activity that may aggravate the pain is anticipated, or to reduce pain from previous activity.

As with other back problems, pacing of work is likely to be helpful if this is possible. With PPP, any prolonged position may cause pain and so position changes as well as avoidance of extremes of posture should be encouraged. Support for the lower back in sitting may help some women, but not all. Another seating suggestion possible for those whose work requires sitting may be to tip the front of an adjustable seat downward so that hip flexion is decreased. A cushion raising the back of the seat slightly is another way of decreasing hip flexion in sitting. Twisting while lifting and sitting with the upper body flexed should also be avoided or interrupted with frequent short breaks. A practitioner can make additional suggestions based on the individual woman's aggravating factors and work situation.

Women with PPP may benefit from the general position of comfort suggested for pregnancy. For pain with position and turning stresses at night, emphasis should be placed on supporting the top leg and abdomen with extra pillows when side-lying to minimize strain on the

TABLE 3
Basic Management of Posterior Pelvic Pain

Minimize activities that exacerbate the pain (eg, high impact exercise; asymmetric spinal loading)
Use of a sacral belt for walking and other painful activities
Support legs in lying with pillows and squeeze the legs together for rolling
Brief rest may be indicated for acute episodes of pain
Modify seating to decrease overflexion of the hips and lower spine
Minimize stair climbing and single leg standing
Shift fitness activities to low-impact exercises
Avoid exercises at the limits of hip and spine range of motion
Consider avoiding a return to high impact activities for several months postpartum

pelvis. Squeezing the knees together while turning in bed has been suggested for decreasing pain (16), and the careful getting in and out of bed is also needed. Women may choose to avoid low, soft chairs because getting out of them causes pain.

One author suggests that in view of the probable connection between PPP and pelvic instability, women with severe PPP should be cautioned not to return to strenuous activity too early (10). Returning to asymmetric loading and overloading of the pelvis before recovery occurs may predispose a woman to persistent postpartum pain or provoke a relapse. Individual practitioners and their patients must decide how long this will be, either based on symptoms or on Östgaard's recommendation that women who have experienced PPP during pregnancy should avoid strenuous work for a minimum period of six months postpartum (10).

Basic management suggestions for PPP are summarized in Table 3.

ADDITIONAL TREATMENT MODALITIES

Some women will present with both PPP and LP. In general, if the woman presents with both pain syndromes, it is better to manage the pain with the approach used for PPP, as it requires a limitation of some of the exercise interventions that would be appropriate for pure LP (13).

While simple measures may enable many women to manage pain successfully, there are times when other intervention is indicated. For women with recurrent or severe episodes of pain not amenable to simple measures, referral to another practitioner with special skills in the treatment of the musculoskeletal complaints of pregnancy may be valuable. The muscle imbalances that accompany pregnancy may cause other pain syndromes (35), or the problem may require a different form of intervention. Treatment of tight or weak muscles, or

short-term joint mobilization (either administered by a practitioner or taught to the patient) may be effective options for some women (1,5,16,35–37).

A number of simple self-mobilization and pain relief strategies are suggested for PPP with a hypermobile sacroiliac joint. DonTigny (38) describes one mobilization for a rotated sacroiliac joint that has the person sitting or standing with the affected hip and knee flexed and the foot placed on a chair or stool. The person then rocks forwards onto the knee of the affected side and back. Other mobilizations or self-help stretches are referenced or described in a number of sources, including Polden and Mantle (16) and Mantle (5). Members of any of the professions in which the scope of practice includes manual therapy may be resources for women whose back pain does not respond to simpler measures. Other frequently overlooked possibilities for relieving discomfort include various forms of massage, mobilization, and relaxation exercises (5,16,32). These may be used as an initial approach to avoiding or reducing pain, or as an additional strategy to try with pain that does not respond to simple self-management techniques. Many professional groups have special interest groups in women's health that may be able to suggest a professional with expertise in women's health, who may be a valuable resource for the careprovider.

Alternative therapies may be useful adjuncts to basic back care with the pregnant woman. Here, a discussion with individual women regarding their preferred health care strategies may be invaluable. Acupuncture, acupressure, massage therapy, or other alternative therapies may be options some women are familiar with or desirous of trying. The careprovider's knowledge of pregnancy, in combination with the expertise of other practitioners, can help with the selection of safe treatment options. The relaxation aspect of many therapies may also be valuable. Stress and anxiety at work or in the home, or fears related to the pregnancy itself, can enhance the perception of pain. Comprehensive management should address these other issues that may contribute to the woman's experience of pain.

CLINICAL RED FLAGS

The first step in any evaluation of back pain should be the ruling out of nonmusculoskeletal dysfunctions that may require referral for evaluation by physicians with expertise in areas such as internal medicine or neurology. Details of this are beyond the scope of this article, but a basic screening form is provided in Table 4 and an algorithm to assist in structuring the evaluation and management of LBP in pregnancy is presented in Figure 3.

As previously mentioned, women who complain of back pain in pregnancy are frequently given reassurance

TABLE 4
Screen for Nonmusculoskeletal Causes of Low Back Pain (LBP) During Pregnancy

-
1. LBP that does not change with movement or changes of position
 2. LBP that does not improve with rest
 3. Persistent disabling pain that does not respond to conservative management
 4. Signs of vaginal-, uterine-, or pregnancy-related dysfunction:
 - Recent unexplained weight lost
 - Vaginal discharge or bleeding
 - Vaginal burning or itching
 - Back pain concurrent with prelabor contractions
 5. Signs of urinary disease:
 - Pain, difficulty, or urgency with urination
 - Unusual change in frequency or volume of urine
 - Incontinence other than mild stress incontinence
 - Cloudiness or blood in urine
 6. Signs of gastrointestinal disease:
 - Nausea and vomiting not characteristic of pregnancy
 - Changes in stool color or blood in the stool
 - Constipation beyond that characteristic of pregnancy or diarrhea
 7. Signs of cardiovascular disease:
 - Chest pain
 - Fainting or dizziness upon rising
 - Pulsating/throbbing LBP
 - Intermittent leg pain concurrent with LBP
 - Palpitations
 - Uncharacteristic shortness of breath
 - Persistent cough
 - Excessive fatigue
 - Excessive swelling of distal extremities
 8. Signs of neurological involvement with LBP:
 - Changes in sensation in the perineum, buttocks or lower limbs
 - Muscle weakness in the lower limbs
 - Bowel or bladder dysfunction
 - Change in lower limb reflex responses
-

and told to wait for the end of pregnancy for relief. While this article argues against such a laissez-faire approach for all pregnancy-related back pain, there are specific situations where more aggressive intervention is essential. One such case is that of disk herniation. There are few studies of the incidence of disk herniation in pregnancy. Recent studies using magnetic resonance imaging suggest that the incidence is probably higher than the 1 in 10,000 figure often cited (23). Rare as it may be, it is those very serious cases requiring surgery that are of greatest concern. Gamel et al (39) presented the case history of a woman whose back pain was severe enough to require a walking frame. It was dismissed by emergency room staff as being the "normal" pain of pregnancy. She subsequently required urgent surgery for neurologic complications, including urinary retention. Back pain associated with sensory or motor changes, reflex changes, or bowel or bladder dysfunction requires immediate specialist evaluation.

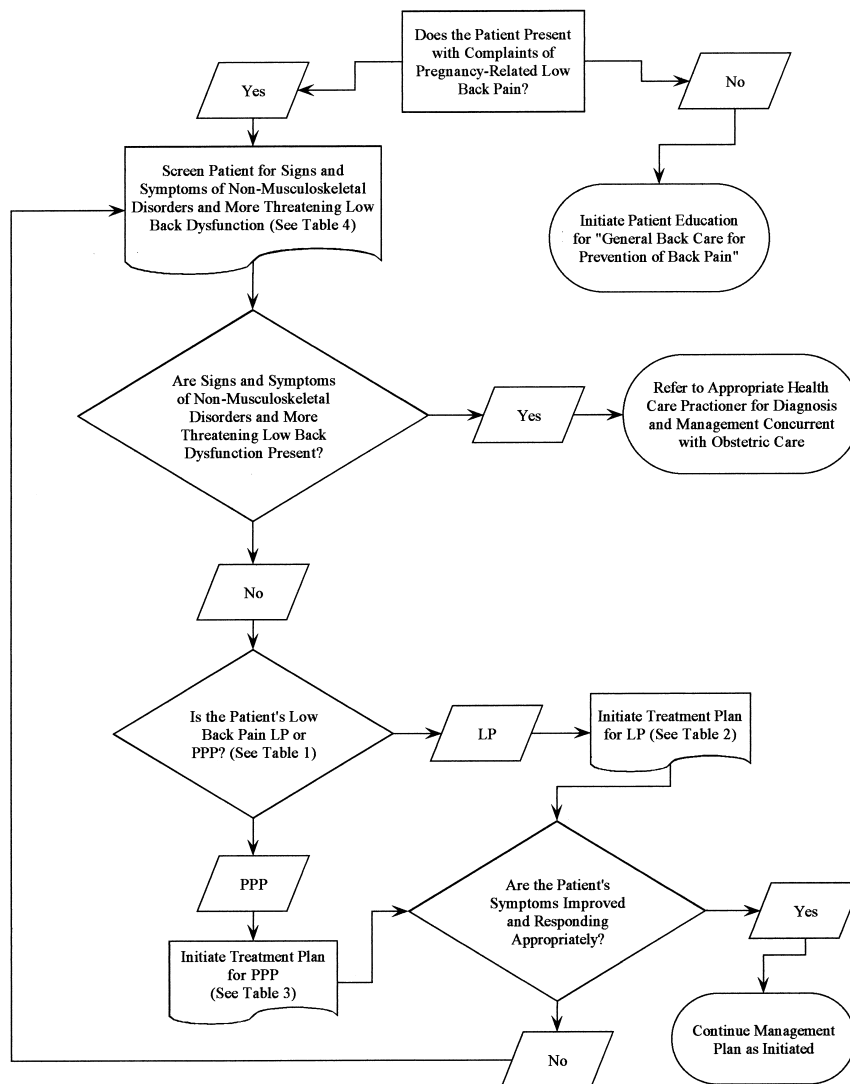


FIGURE 3. Identification and management of pregnancy-related low back pain.

In any evaluation of back pain, it is important to ask about changes in micturation or perineal sensation that do not fit with the common changes of pregnancy, such as frequency or stress incontinence. Changes in reflexes are also important. Either finding should lead to immediate referral for medical evaluation. In addition, persistent disabling pain that does not respond to conservative measures should lead to further investigation.

CONCLUSION

The back pain of pregnancy is not trivial. For some women it may be the beginning of lifelong chronic back pain; for others it may cause considerable disability and distress during and for a variable period after pregnancy. In light of newer research studies that document the

extent of back pain morbidity and begin to clarify diagnosis and treatment options, it is particularly important that pregnant women and their caregivers not ignore pregnancy-related back pain. The techniques suggested here are those that can readily be applied in the primary care setting, where uncomplicated pain problems can be identified early and treated with active self-management strategies. Pregnant women deserve to have their complaints taken seriously and their back pain assessed and treated. Although it may not be possible to eliminate back pain in susceptible women, the literature suggests that it is possible to reduce it and ameliorate its effects. A systematic approach is recommended in the evaluation and management of LBP in pregnancy. This is summarized in Figure 3.

Although research is beginning to yield data that

increases practitioners' understanding of common pain syndromes in pregnancy, much more study remains to be done on the management of back pain. Research needs to address the issue of prevention as well as treatment, and clients must be followed for longer periods of time to gain better understanding of the natural history of pregnancy-related back pain. Given the high incidence of pain, the primary care setting is optimum for this research. Although large studies are needed, there is also a need for case reports to capture the heterogeneity of the pregnant population and document treatments that may then be tested in broader situations.

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