**Managing Pelvic Pain During Pregnancy**

**Introduction**

Hippocrates first recorded pelvic girdle pain during pregnancy in the 4th century BC.1 Unfortunately, despite its recognition centuries ago; pelvic girdle pain remains a poorly understood problem with limited recommendations for evidence-based treatment. Pelvic girdle pain during pregnancy has been found to impact 48-56% of pregnant women causing pain, decreased quality of life, and disability.2,3 Common symptoms include pain in the pubic region, sacroiliac joints, or low back when standing, walking and changing positions. Women may also experience “pregnancy sciatica”, a poorly defined term used to describe radicular symptoms extending into one or both lower extremities.2,3

Pelvic girdle pain during pregnancy can cause a significant impact on a woman’s life as painful symptoms create a limitation in her ability to perform activities of daily living, participate in social activates, and keep up with professional responsibilities.4  Unfortunately, these painful symptoms are not well understood and generally attributed to a variety of causes including pelvic ligament laxity, altered posture, hormonal changes, changes in body weight, and muscle weakness.2,4 Current medical management includes the use of a pelvic belt, prescribed bed rest, massage,3 acupuncture, physical therapy, and exercise.5 While bed rest has been largely discredited as effective management for pelvic girdle pain during pregnancy,3 interventions such as exercise and pelvic belting have proven effective for symptom management.6-12 The aim of this paper is to describe the etiology and pathophysiology of pelvic girdle pain during pregnancy and to appraise current evidence-based physical therapy interventions to address related pain and dysfunction.

**Epidemiology**

Current research indicates pelvic girdle pain impacts 48 – 56% of pregnant women2,3  and 25% of women experience postpartum pelvic girdle pain.13 It is estimated that up to 25% of women experience serious pelvic girdle pain13,14 with pain being described as severe and debilitating in approximately 8% of women. Pain generally begins around the 18th week of pregnancy,13 and symptoms generally increase over the course of pregnancy.4 Fortunately, for 93% of women pelvic girdle pain will resolve within the first three postpartum months.13

**Pathophysiology**

The pelvis is comprised of bones, ligaments, and musculature that create a pelvic ring with anterior, posterior, and lateral “walls”. The joints of the pelvis include the sacroiliac joints, sacrococcygeal joint, and the symphysis pubis. The sacroiliac joints are classified as synovial joints that connect the sacrum to the ilium with very strong ligaments. The sacrococcygeal joint and symphysis pubis are classified as cartilaginous joints that are also joined by ligaments. When compared to the male pelvis, the female pelvis is broader with a more oval shape. In additional, the female pelvis has slightly everted ischial tuberosities and a shorter, wider sacrum. These anatomical differences serve to create more space in the pelvic cavity, as is necessary for pregnancy and delivery.15

There are numerous anatomical changes that occur during pregnancy that may contribute to the onset of pelvic girdle pain. The pubic symphysis begins to widen at 10-12 weeks gestation due to the effects of relaxin, a hormone produced during pregnancy.1,16 Normally, pubic symphysis widening does not exceed 10mm. The position of the fetus combined with the forces of gravity and the action of the hormone relaxin can create a forward tilt of the pelvis, creating a lordosis in the lumbar spine and forward rotation of the sacrum.15 Relaxin causes increased laxity in the ligaments of the pelvic girdle.1,16 This ligamentous laxity, mechanical separation of the pubic symphysis, maternal weight gain during pregnancy, and postural change related to the weight of the fetus are factors that individually or combined can contribute to pelvic girdle pain.1,14-16 In fact, research indicates that a 20% weight gain during pregnancy may increase the force on the mother’s joints up to 100%.15

Surprisingly, the exact pathophysiology underlying pelvic girdle pain is not well understood. Researchers frequently lament the difficulty of distinguishing the cause of pelvic girdle pain during pregnancy.1-4,8,15  To make matters more complicated, there exists much confusion and poor differential diagnosis between pelvic girdle pain and low back pain during pregnancy. It is critical that providers differentiate between pelvic girdle pain and low back pain for improved treatment outcomes with pregnancy-related pelvic girdle pain.1 Understanding the risk factors for pelvic girdle pain during pregnancy may help healthcare providers in differentiating between pelvic girdle pain and low back pain. Multiparity, strenuous work activities such as repetitive bending, twisting, and lifting during pregnancy, history of pelvic girdle pain, and history of trauma to the pelvic girdle are all factors that increase risk of pelvic girdle pain in pregnancy.1,13,17 There is some evidence to suggest that smoking, stress and history of “poor” experience with a previous delivery are also risk factors for pelvic girdle pain,17 however, the evidence is conflicting concerning these risk factors. It is likely that pelvic girdle pain is multifaceted and related to a combination of physical, emotional, and psychosocial factors.17

**Review of Evidence for Physical Therapy Interventions**

A literature review was undertaken in order to learn more about evidence-based physical therapy interventions for pregnancy-related pelvic girdle pain. All relevant articles were found through a search of PubMed, CINAHL, and Cochrane Library. Search terms included: pelv\* pain\*, pregnan\*, phys\* ther\*, sacroiliac, dysfun\*, intervene\*. The search was conducted between February 2019 and March 2019. For inclusion in this review, studies had to meet the following criteria: involved women with pelvic girdle pain who were pregnant or </= six months postpartum, randomized controlled trials or systematic reviews. All articles were reviewed for suitability by the author. Eight articles were included in this literature review, five of these articles were randomized trials and three were systematic reviews.5-12

Three of the eight studies examined were randomized controlled trials (RCT) that included the use of a control group where no treatment outside of normal pre and postnatal care was provided. Of these three studies, one study utilized two intervention groups aiming to assess the use of a combination of sacroiliac bracing and stabilization exercise versus exercise alone.10 The next RCT compared two intervention groups who were given a sacroiliac brace, and patient education. One of these intervention groups, one group was given group exercise class and the other was given individualized therapeutic exercise sessions.8 The final RCT examined the impact of a supervised exercise program consisting of aerobic and resistance exercises.6  All three studies demonstrated a moderate to large effect size between pre and post intervention measures for the use of physical therapy exercise to reduce pain and disability during pregnancy.6,8,10 Two of these studies demonstrated a large effect size between pre and post intervention measures for the use of a sacroiliac brace to reduce pelvic girdle pain during pregnancy.8,10 Two of the studies utilized the Visual Analog Scale (VAS) to measure patient pain ratings,8,10 one of the studies utilized a numeric rating scale to analyze pain.6 The Pelvic Girdle Questionnaire (PGQ) was utilized in two of the studies to analyze pain and functional limitation.6,10 One study did not cite the specific functional outcome measure used to assess functional limitation/disability, instead the authors cite the use of a “questionnaire”.8

Two of the eight studies reviewed were randomized clinical trials and did not include the use of a control group. Of these studies, one sought to compare the difference between three differing physical therapy protocols aimed at addressing pelvic girdle pain. Researchers provided a sacroiliac brace, patient education, and home exercise program to three groups, respectively; the first group had no additional intervention, the second group had the addition of in-clinic group exercise, and the third group had the addition of an individualized in-clinic exercise program. This study demonstrated a small effect size when comparing pre and post intervention measures for the reduction of pain with use of a sacroiliac brace and patient education related to body mechanics and back safety.7 These authors utilized the VAS scale and a pain map to assess the participants’ pain levels. The final study compared physical therapy treatment utilizing stabilization exercises versus physical therapy intervention that did not involve specific stabilization exercises. This study demonstrated a large effect size for the use of “specific” stabilization exercises to reduce pain, improve function and quality of life.12 The author of this study utilized the VAS to assess pain, Modified Oswestry LBP disability scale to analyze functional limitation, and the SF-36 survey to assess participants perceived quality of life.

Three systematic reviews were also appraised.5,9,11 The AMSTAR 218 was utilized to determine the quality of these systematic reviews. The first review (cite so the reader knows which one you are referring to) analyzed 26 randomized trials and scored 15/16 on the AMSTAR 2, indicating excellent quality. The findings from this systematic review suggest there is moderate-level evidence that exercise reduces pelvic girdle pain and prevents lumbopelvic pain. The authors found only low-level evidence to support the use of a sacroiliac stabilization brace and the use of exercise to prevent pelvic girdle pain in pregnancy.5 Another systematic review9 included a total of 15 studies, 9 were randomized trials and the remaining 6 included case studies and case series. This systematic review scored 12.5/16 on the AMSTAR 2. The authors note moderate-level evidence when analyzing the results of all 15 studies. When analyzing the 9 RCTs separately, the authors reported there was high-level -evidence to support the use of stabilization exercises and the use of a sacroiliac belt.9 The final systematic review (cite) analyzed 22 randomized controlled trials and scored 12/16 on the AMSTAR 2. This systematic review found moderate to large effect sizes for the combination of exercise and patient education to reduce pelvic girdle pain during pregnancy. The authors cite moderate-level evidence to support the use of exercise to reduce pain and functional limitation during pregnancy.11

Overall, of the eight studies reviewed, seven found a moderate to high level support for the effectiveness of exercise in reducing pregnancy-related pelvic girdle pain. 5,6,8-12 There is currently only moderate-level evidence to support the clinical efficacy of non-elastic sacroiliac belting to reduce pregnancy-related pelvic girdle pain.7-10 There is also moderate-level evidence to support the use of patient education to reduce pelvic girdle pain in pregnancy. 7-9,11 In terms of disability, four studies cited exercise interventions as effective in reducing disability6,8,10,12  Two studies provided low-level evidence for the use of manual techniques such as soft tissue mobilization, joint mobilization, manipulation, and muscle energy techniques to reduce pregnancy related pelvic girdle pain and functional limitation.5,9

**Discussion**

While the research supports exercise as an effective intervention in the treatment of pelvic girdle pain during pregnancy, there was not a specific, high quality, evidence-based exercise protocol for the treatment of pregnancy related pelvic girdle pain. Multiple studies cite non-descript “stabilization exercises”6-8,10-11 with some studies describing a full exercise program of aerobic exercise, general strengthening, stabilization exercise, and stretching.6,7,9,11 Despite the lack of a specific protocol for pregnancy-related pelvic girdle pain, other relevant findings did exist in the literature. One of the randomized controlled trials reviewed found that therapeutic exercise not only improved participants ability to cope with pain, it also increased their spontaneous activity levels outside of intervention sessions.6 While another randomized controlled trial found that an individualized program of exercise was more effective when compared to a generalized group exercise program.8

The lack of a specific evidence-based exercise program for the treatment of pregnancy-related pelvic girdle pain is disappointing. Most of the studies examined do not provide the specific exercises utilized for the intervention or experimental group. Multiple authors cite difficulties in addressing pregnancy-related pelvic girdle pain due to poor understanding of the underlying pathophysiology and difficulty differentiating pelvic girdle pain from low back pain.1-4,8,15,17 Despite these shortcomings, current evidence exhibits support for the use of stabilization exercise and non-elastic sacroiliac joint belting as effective interventions for reducing pain and disability related pelvic girdle pain in pregnancy. 5-12

**Limitations**

As noted previously, a major limitation of this literature review is that many authors do not cite the specific exercise program utilized for the intervention groups. It is frequently noted that “stabilization” exercises are used, however that is a very broad term that could indicate any multitude of activities. Additionally I was unable to find guidelines as to the use of a sacroiliac belt. It is unclear if there are specific parameters or criteria that women should meet prior to the utilization of a sacroiliac belt. The recommended dosage of the belt is also unclear. Patient compliance with use of the belt was not described, which is important since compliance may impact outcomes. Thus, many gaps remain regarding evidence-based practice guidelines to treat pelvic girdle pain in pregnancy. Another significant limitation to the results of this literature review is that each of the 5 randomized trials reviewed involved multiple treatment interventions being applied at the same time for the intervention groups. For example, one study compared outcomes between 3 intervention groups. All participants (each of the three groups) were provided with a sacroiliac brace, patient education, and home exercise program; the first group had no additional intervention, the second group had the addition of in-clinic group exercise, and the third group had the addition of an individualized in-clinic exercise program.7 While this approach can provide valuable information on the effects of the combined interventions (e.g., patient education plus group exercise), it is difficult to differentiate between the effects of individual interventions (e.g., patient education only) when multiple interventions are being applied simultaneously. Finally, many of the existing randomized controlled trials involve a small number of participants limiting the weight of the evidence found in the literature review and restricting the generalizability (external validity) of the study findings. The studies that do include larger numbers of participants tend to be retrospective and/or questionnaire based. Retrospective studies provide good data and background information on pelvic girdle pain in pregnancy, but do not provide adequate information for treatment recommendation.

**Conclusion**

In summary, pelvic girdle pain is a common condition in pregnancy and during the post partum period. Despite its relatively common nature, the pathophysiology of pelvic girdle pain in pregnancy is not well understood, and health care providers often have a difficult time distinguishing between symptoms of pelvic girdle pain and low back pain. Current evidence supports both therapeutic exercise and the use of a non-elastic sacroiliac brace as interventions to decrease pain and functional limitation related to pelvic girdle pain. However, specific recommendations related to these interventions are sparse, leaving it up to the individual physical therapist to determine the most appropriate course of implementing these interventions.

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