BRIEF REPORT

Osteopathic Consideration of Pelvic Girdle Pain in the Postpartum Patient: A Case Study

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KEYWORDS

pain

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ABSTRACT

Pelvic girdle pain (PGP) during and after pregnancy can present diagnostic and therapeutic challenges. In our case, a 31-year-old Asian American woman developed PGP and lower back pain that was not relieved 3 months' postpartum. She was treated with over-the-counter analgesics and physical therapy for 12 weeks with minimal and temporary improvement. The patient was offered OMT and examined nine months' postpartum. A full osteopathic structural exam was performed along with treatment, and exercises were recommended. OMT was focused on sacroiliac and pelvic techniques. A significant reduction in pain was reported posttreatment, followed by complete pain resolution, indicating great benefit of incorporation of OMT into the treatment plan.

INTRODUCTION

Pelvic girdle pain (PGP) is a common issue during pregnancy, affecting 15% to 25% of pregnant individuals, with a higher prevalence of 20% to 30% overall and up to 50% in some cases.[1] It typically arises from increased uterine pressure, lumbar lordosis, and relaxation of pelvic ligaments.[1] Specifically, PGP is a type of pain that affects the pelvic region, typically centered around the joints connecting the hip bones to the spine and surrounding muscles.[2] Symptoms include lower back pain, especially between the posterior iliac crest and the gluteal fold, and around the sacroiliac joint, which can radiate to the thighs and hips and worsen with weight bearing.[3] PGP diagnosis is primarily clinical, involving physical examinations to assess pain and mobility in the pelvic region.[2] Imaging, such as ultrasound or magnetic resonance imaging (MRI), is occasionally used, especially if a diagnosis is unclear, but physical exams remain central for most cases.[2] Regarding delivery methods, studies have found mixed results. Some suggest that women who experience PGP during pregnancy may have lingering symptoms postpartum, but there is limited evidence specifically comparing pain outcomes between those who deliver vaginally and those who have cesarean sections.[2] Common management options encompass nonpharmacologic approaches like heat therapy, physical therapy, braces, osteopathic manipulative techniques, and pharmacologic interventions such as acetaminophen.[4] While most cases resolve within 12 weeks' postdelivery, approximately one in four women may experience chronic postpartum pain.[5] Various risk factors contribute to PGP development, including prior low back pain, pelvic trauma, stress, multiparity, and low job satisfaction, while nonrisk factors include contraceptive use, time since past pregnancy, height, weight, and smoking.[6] Persistent pain may necessitate individualized exercise prescription following guidelines.[6] In our study, we considered the use of osteopathic treatment and a continuous exercise program for the treatment of PGP in postpartum patients.

CASE DESCRIPTION

The patient is a 31 year-old gravida 1 para 1 Asian American woman who presented with PGP and persistent lower back pain despite multiple trials of Tylenol and nonsteroidal anti-inflammatory drugs three months' postpartum after her first vaginal delivery. The patient was questioned to evaluate potential risk factors, including prior low back pain, pelvic trauma, stress, multiparity, and low job satisfaction, all of which she denied. The patient reported that the lower back pain occurred

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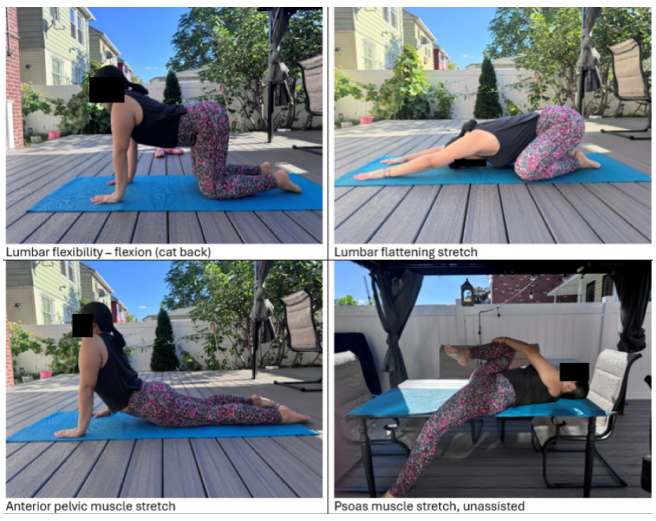
randomly during daily activities and denied any consistent correlation with specific times or positions. Osteopathic structural exam and treatment was performed by multiple OMS-IIs under osteopathic manipulative medicine (OMM) faculty member supervision. Examination of the pelvis revealed bilateral tenderness of the sacroiliac joint, a positive standing flexion test on the right, a superior left anterior superior iliac spine (ASIS) with a superior right posterior superior iliac spine (PSIS), pubic bones of the same height, and a shorter leg on the left. Diagnosis of a right anterior innominate somatic dysfunction was made. Further testing demonstrated a positive hip drop test on the right side with a rib hump on the right thoracic-lumbar region T11-L2. Examination of the patient's lower thoracic and lumbar regions were also conducted and revealed hypertonic muscles at thoracolumbar junction R>L, as well as three lumbar somatic dysfunctions: L1-L5 neutral rotated right side bent left, L5 flexed rotated right side bent right, and L3 flexed rotated right side bent right. The patient was negative for the straight leg test and Thomas test.

METHODS AND TREATMENT APPROACH

The patient was treated with muscle energy technique for the right anterior innominate somatic dysfunction[7] and articulation technique for sacroiliac joints. Following the treatment, the patient's pelvis was reexamined with the findings of more symmetrical ASIS and PSIS bilaterally, thus indicating improvement of the somatic dysfunction following the osteopathic treatment. A total of three treatment sessions were performed weekly by the same physician.

FIGURE 1: Examples of recommended stretches.



The patient was reevaluated 1 month after undergoing osteopathic treatment and maintaining a routine of persistent core exercises to assess the long-term effects of the interventions. Upon examination, bilateral tenderness of the sacroiliac joint was no longer present, and the ASIS and PSIS were symmetrical bilaterally, indicating the resolution of the right anterior innominate somatic dysfunction identified during the initial visit. Furthermore, the previously noted R>L hypertonic muscles at the thoracolumbar junction had resolved, as had the somatic dysfunctions at L3 and L5. Although the L1-L5 neutral, rotated-right, side-bent-left somatic dysfunction was still present, it was significantly reduced. Overall, the patient demonstrated marked improvement, including reduced lower back pain, a more symmetrical pelvis bilaterally, and improved postural balance.

DISCUSSION

OMT has been widely advocated for improving biomechanical function and, thus, for improving motion, with potential benefits such as pain reduction.[8] Analysis of current reports suggests that osteopathic treatments may produce clinically relevant benefits for postpartum women with lower back pain.[8] The benefits of core stability exercises have been implicated in postpartum women with lower back pain.[9,10] The two muscles most commonly affected and of primary concern are the transverse abdominis and multifidus, as persistent pain in these muscles has been associated with an increased chance of back pain recurrence.[9] Maintaining correct and stable posture is very important and aids in relieving pain, while improper posture may exacerbate pain or create new injuries.[9] Overall, current literature on persistent lower back pain in postpartum patients has reported significant effects in favor of osteopathic treatments for addressing pain and functional status in postpartum patients.[8] However, conclusions such as the aforementioned have been called into question upon further investigation. In their systematic review and meta-analyses conducted on lower back pain in pregnant and postpartum patients, H. Franke et al. have examined a multitude of studies exploring the effects of osteopathic treatments among both pregnant and postpartum patients.[8] While statistical analysis demonstrated a significant medium-sized effect on decreasing pain and increasing functional status in women during pregnancy, there is "low-quality evidence" that OMT had a significant effect on decreasing pain and increasing functional status in postpartum women with lower back pain.[8,11] Findings for postpartum women were largely attributed to inconsistencies in the study methods utilized by the examined studies. Multiple studies suggest that hormonal changes during pregnancy can contribute to postpartum PGP. Pregnancy-related hormonal changes,

such as increases in relaxin, estrogen, and progesterone levels, are potentially linked to ligament hyperlaxity and joint instability, contributing to lumbopelvic pain.[17] After the postpartum period, relaxin levels drop significantly from 126.2 to 19.1.[17] Relaxin hormones can alter ligament mechanics due to their collagenolytic effects by releasing matrix metalloproteinases (MMPs),[13] collagenase,[14] and plasminogen activator.[15] During pregnancy, the increased levels of relaxin may cause permanent changes to the ligaments in the pelvic joints, leading to postpartum PGP. This is supported by evidence that relaxin is also involved in nonpregnancy-related fibrotic diseases.[16] If relaxin causes fibrotic changes and hardening of ligaments in incorrect positions leading to somatic dysfunction, then osteopathic manipulative techniques could be effective in correcting the somatic dysfunctions caused by the influx of relaxin during pregnancy. Biomechanical instability is a common cause of PGP during pregnancy. As the uterus enlarges and the compensatory lordosis of the lumbar spine increases, musculoskeletal strain is placed on the pelvic region. This strain is exacerbated by pelvic rotation around a fulcrum at the second sacral segment, which increases in tandem with the lordosis. Additionally, the center of gravity shifts anteriorly, producing further strain on the lumbar spine and sacroiliac joints.[18] During pregnancy, the sacroiliac joints become increasingly lax under the hormonal influence of relaxin, further contributing to instability and strain on the lower back and pelvis. Previous studies have shown that relaxin can cause fibrotic changes.[19] We hypothesize that the elevated levels of relaxin during the first three trimesters of pregnancy may induce fibrotic changes in the ligaments of the pelvic region. When relaxin levels decrease postpartum, these fibrotic changes may persist, potentially leading to permanent alterations in the lumbar spine and pelvic joints that were subjected to increased lordosis and rotation during pregnancy. These changes may result in altered permeability and function of the lumbar spine and pelvic region, contributing to somatic dysfunction and pain. In cases where somatic dysfunction specifically affects the pelvic region, OMT may be the only effective intervention to restore proper alignment and relieve pain.

TABLE 1: Relaxin levels during pregnancy and postpartum (first trimester, second trimester, third trimester postpartum)

	First Trimester	Second Trimester	Third Trimester	Postpartum
Relaxin (pg/mL)	129.7 5.8*	122.6 6.6*	126.2 7.7*	19.0 9.1†

*Statistically significant compared with postpartum value, P < .001.

†Statistically significant compared with the first trimester value, P < .001. (From Marnach ML, Ramin KD, Ramsey PS, Song SW, Stensland JJ, An KN. Characterization of the relationship between joint laxity and maternal hormones in pregnancy. Obstet Gynecol. 2003;101(2):331-5.)[20]

Furthermore, only three major studies were considered in examining postpartum pain due to the larger sample sizes of those studies. It is noteworthy that while the emphasis on the lack of sufficiently consistent and precise evidence for the effective treatment of lower back pain in postpartum women is important to keep in mind, it is even more important to report that, in general, there are still insufficient studies examining the effectiveness of osteopathic treatments on postpartum women.[11] While the effects of osteopathic treatment in reducing pain are well known, more research on the effects of osteopathic treatment in reducing lower back pain in postpartum women specifically still needs to be conducted, as current literature has focused more on pregnant women than on postpartum women. For this reason, authors aimed to demonstrate the effects of osteopathic treatment on a 31-year-old Asian American woman who presented with lower back pain that was not relieved 3 months' postpartum.

CONCLUSION

The presented case shows that OMT and a regimen of core exercises are suggested to play a critical role in reducing PGP in postpartum women. This is particularly important given the potential for ligamentous hardening and fibrotic changes caused by increased relaxin hormone levels during pregnancy. Although current studies have shown limited research and reports of the effects of OMT on postpartum women, our case shows that OMT in PGP reduction needs to be considered and studied more thoroughly, particularly in the postpartum population. This could potentially ensure that these women receive adequate support and care to treat their lower back pain. As a result, OMT could have a lasting impact on these patients' lives.

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