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The Pelvic Pain Puzzle: A Case Report on a Physical Therapist's Role in the Treatment of Dyspareunia

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Abstract

Background: Dyspareunia affects two-thirds of women throughout their lifetime and can be caused by a multitude of diagnoses or musculoskeletal problems including but not limited to chronic pelvic pain, lichen sclerosis, interstitial cystitis/bladder pain syndrome, irritable bowel syndrome, obesity, depression, and anxiety. The purpose of this case report is to demonstrate the complexity of dyspareunia and explore the role of physical therapy in a multifaceted, pelvic health case. It will also show an evidence-based relationship between pelvic diagnoses and dyspareunia as well as pelvic floor physical therapy's efficacy in treating an area previously managed exclusively by medical interventions. **Case Description:** A 30-year-old female presenting with chief complaint of dyspareunia as well as bladder dysfunction including pain with storage, high frequency, and urge incontinence. Due to pelvic floor symptoms, patient is struggling to participate in work duties. The patient's main goal is to become pregnant with her current partner. **Intervention:** The therapist focused the treatment on internal pelvic floor manual therapy following the Thiele Technique with focus on left obturator internus to reduce pain and urinary symptoms. Additional treatments included neuromuscular re-education, therapeutic activity, and therapeutic exercise. **Discussion:** Internal pelvic floor manual therapy is among the leading interventions for many of the patient's pelvic diagnosis. The patient had a significant improvement in symptoms after therapy intervention and home exercise prescription. More pelvic floor research is required to ensure a "gold standard" practice for pelvic floor rehabilitation.

Keywords: pelvic floor physical therapy; dyspareunia; chronic pelvic pain; physical therapy; rehabilitation

Background

Dyspareunia is defined as pain with intercourse in the pelvis¹ for any gender but is more common in persons with a vagina than those with a penis. In fact, Alimi et al¹ reports that approximately two-thirds of women will be affected by dyspareunia in their life-time. The definition is further categorized into primary and secondary dyspareunia and entry versus deep pain. Primary dyspareunia is pain present with intercourse since initial coitus while secondary dyspareunia follows a period of coitus without pain.¹ The causes of dyspareunia are so broad that the management and/or treatment can depend on the examination and subjective findings. The nexus of diagnoses connected to dyspareunia is large and each requires consideration during treatment planning.

One diagnosis that could play a significant role in dyspareunia is pelvic pain. Pelvic pain is defined as “pain located in the pelvis, lumbosacral region, pelvic floor and anterior abdominal wall at or below the umbilicus”.² Furthermore, chronic pelvic pain (CPP) is defined as a pain syndrome present in that region for at least six months and reported to be present in 25% of women and 2-10% of men.² The cause of CPP is not fully understood but can include urological, urogynecological, gastrointestinal, musculoskeletal, neurological, and psychosocial causes. Chronic pain syndromes are multifactorial and therefore difficult to treat, and chronic pelvic pain is no different. Typical treatments include but are not limited to patient education, pharmacotherapy, exercise and physical therapy, behavior therapy, injections, and acupuncture. In reference to the connection with dyspareunia, it is found that sexual dysfunction can cause chronic pelvic pain and chronic pelvic pain can cause sexual dysfunction. Studies have proven that women suffering from CPP are more likely to also endure female sexual dysfunction.³

Dyspareunia could also be caused by Interstitial Cystitis also known as Bladder Pain Syndrome or Painful Bladder Syndrome (IC/BPS). IC/BPS is an extremely difficult diagnosis as it is considered a diagnosis by elimination and consists of a constellation of symptoms most notably pelvic pain and urinary symptoms.⁴ These symptoms must be present in the absence of infection or other pathologies and can affect persons with a vagina or persons with a penis.⁵ IC/BPS causes a sensory dysregulation of the bladder and thus leads to urinary urgency and urinary frequency. Within the umbrella of IC, there are two subcategories - Hunner lesion IC and Non-Hunner lesion IC. Hunner lesion IC consists of disrupted mucosal areas within the bladder seen during a cystoscopy while Non-Hunner lesion interstitial cystitis presents with the typical symptoms but lack the bladder lesions.⁶ Interstitial Cystitis/Bladder Pain Syndrome is a diagnosis whose treatment consists most of symptom management which is an important point to convey to the patient. Treatment can include avoidance of behaviors or foods that exacerbate the pain and frequency. Symptoms are aggravated by stress, constrictive clothing, sexual intercourse, and certain parts of diet including citrus fruits, caffeinated beverages, alcoholic beverages, and spicy dishes.⁵ Stress specifically can lead to a vicious cycle causing a further decrease in quality of life.⁷ During pelvic floor examination, patients with IC/PBS will present with tight and tender muscles and complain of deep dyspareunia.⁶

Irritable Bowel Syndrome (IBS) is a gastrointestinal disorder that is portrayed as abdominal pain or discomfort that is present without another specific pathology.⁸ Like IC/BPS, irritable bowel syndrome can lead to the experience of dyspareunia. This syndrome is the most commonly diagnosed gastrointestinal disorder, more common in women but affecting 10-15% of people worldwide.⁹ The cause is not fully understood but it does include an intimate connection between the GI system and the central nervous system thus causing the painful symptoms. Proposed explanations include visceral hypersensitivity, inflammation, psychosocial dysfunction, dysregulation of gut motility, postinfectious, microbiomes, food sensitivity, and genetics.⁹ The management of IBS is classically rooted in medications including antidiarrheals, antidepressants, antispasmodics, bulking agents, and osmotic laxatives.¹⁰ However, exercise has been proven to significantly improve symptoms¹¹ and, with cognitive behavioral therapy,

benefits the patient most with pain management.⁹ Exercise-based studies have shown that exercise interventions improve quality of life, IBS symptom severity, depression and anxiety.¹²

Another diagnosis that may lead to dyspareunia is lichen sclerosis and, more specifically, vulvar lichen sclerosis. This disease process is a skin condition affecting the external genitalia that has been reported in conjunction with many bladder and bowel symptoms. As the disease progresses, it can cause erosions, introital stenosis and scarring that can lead to increased vulvar pain and dyspareunia. A common treatment for vulvar lichen sclerosis is topical immunomodulators but research has shown many women continue to report sexual dysfunction even after vulvar pain relief.¹³

As shown, dyspareunia be caused by a host of diagnoses therefore complicating the treatment. The purpose of this case report is to demonstrate the complexity of dyspareunia and explore the role of physical therapy in a multifaceted, pelvic health case. It will also show an evidence-based relationship between pelvic diagnoses and dyspareunia as well as pelvic floor physical therapy's efficacy in treating an area previously managed exclusively by medical interventions.

Case Description

History

A 36-year-old female was referred to pelvic floor physical therapy with complaints of dyspareunia insertional and deep thrusting, chronic pelvic pain, and voiding dysfunctions for both bowel and bladder. She had experienced severe aching and stabbing pelvic pain for 11 months with an insidious onset. Patient's urinary symptoms included urge incontinence that required her to empty her bladder every hour. Patient reported if she is made to hold her bladder, she had increased pelvic and lower abdominal pain. Her bowel symptoms included constipation along with pain and straining with bowel movements. The patient shared she was referred to pelvic therapy within the scope of a workman's compensation case and she was extremely anxious about being able to afford therapies when she was unable to work.

This patient had an extensive relevant past medical history. She was diagnosed with Lichen Sclerosis seven years ago which induced the common symptoms of burning pain and dyspareunia but also led to what the patient stated was vaginal tearing post-insertional intercourse at that time. However, the patient reported she was in remission of LS at the time of the initial evaluation. Additionally, the patient had a history of gastrointestinal disorder Irritable Bowel Syndrome and urinary disorder Interstitial Cystitis. Supplemental apparent musculoskeletal complaints included two hip injuries in the last five years and at least three years of low back pain. Furthermore, the patient suffered five head injuries within the last year. The first head injury occurred at work and was due to an object falling on her head followed the next day by hitting her head on a clothes rack. The patient received three nerve blocks that discontinued the cranial pain and constant migraines. The patient again suffered a head injury only four days after the nerve blocks that caused a return of all symptoms. Due to the many head injuries, the patient complained of memory loss, difficulty concentrating, generalized fatigue and pain as well as migraines. Her medical history also included Graves' disease, hyperthyroidism, and obesity.

The patient expressed many short-term goals including pain-centered aspirations such as decreasing pelvic, hip and back pain. As for urinary symptoms, the patient expressed she wanted to decrease urinary frequency to a "normal amount", decrease pain with bladder filling, and decrease urge incontinence. The patient expressed the one goal she had about her bowels would be to have no pain or straining with her daily bowel movements. She reported her pelvic pain and high urinary frequency was disrupting her job and the severe symptoms often lead to her calling in sick or taking vacation leave. Therefore, she expressed the goal of returning to work with a manageable symptom level.

The multitude of symptom-based goals were important to the patient but her biggest functional goal was to become pregnant and start a family with her partner. The focus on pregnancy thus moved dyspareunia to the focus of treatment. The patient became emotional and weepy when describing her dreams of becoming a mother and expressed her hope in pelvic floor therapy as the avenue to achieve that target.

Physical Therapy Examination and Evaluation

To ensure a full picture of the patient, an external to internal approach was taken to assess any possible musculoskeletal causes for the patient's symptoms. Throughout treatment session, she constantly fidgeted with her hands and readjusted her clothing. Posture analysis revealed comfortable sitting posture to be crossing left lower extremity over right lower extremity placing left obturator internus on stretch. Standing posture of the patient presented with a left lateral shift of the pelvis leading to adduction of left lower extremity that, again, placed left obturator internus on stretch or strain. Pelvic bony alignment was assessed¹⁴ and found to be within normal limits. This was followed by analysis of femoral alignment which led to the finding of increased femoral internal rotation in the left lower extremity that was increased in single leg stance and decreased with glute activation. In conjunction, patient presented with decreased bilateral gluteal activation. Gross trunk and hip range of motion was performed without significant findings in this patient.

Table 1. Pelvic Floor Contraction grading.

Grade	Explanation
0	No contraction
1	Flicker
2	Weak
3	Moderate with lift
4	Good with lift
5	Strong with lift

The internal examination occurred vaginally and the start of the internal examination revealed narrowing of the introitus. Palpation for tenderness revealed grade 2 tenderness throughout pelvic floor musculature including bilateral levator ani and coccygeus as well as right obturator internus. Palpation of the bladder was also grade 2 and the patient subjectively reported it was as if the therapist were "poking it with a pen". A healthy bladder palpation should simply increase urgency. Grade 3 tenderness was discovered at left obturator internus. Palpation also revealed tone to be increased throughout the pelvic floor muscles. This was further reflected with digital muscle test findings of 2 out of 5 strength limited by short length.¹⁵ Strength testing of the pelvic floor is different than external manual muscle testing and is described in table 2. Patient had a delayed relaxation of pelvic floor musculature and was unable to fully relax between contractions. The final portion of the internal assessment included forced relaxation or lengthening of the pelvic floor to screen for prolapse which was found to be negative in this patient.¹⁶

Table 2. Summary of pelvic floor examination findings.

Examination		Pelvic Floor Musculature	
		Left	Right
Tenderness	Levator Ani	2	2
	Coccygeus	2	2
	Obturator Internus	3	2
	Bladder	2	2
Contraction		2/5 limited by short length	
Relaxation		Delayed and partial	

Clinical Impression

The selected primary problem for the patient was pain with insertional and deep thrusting sexual activity. Insertional pain could be caused by increased tissue sensitivity, decreased

tissue mobility, or skin irritation. In the patient's case, insertional pain could be due to her narrow introitus caused by a history of vulvar lichen sclerosis or the high-tone pelvic floor discovered with palpation. As for the deep thrusting pain, it could be explained by increased muscle tone, bladder irritation, or central nervous sensitization - all found during the patient examination. Therefore, the working diagnosis for this patient, based on the subjective history and examination, was high-tone pelvic floor dysfunction.

A query about previous sexual history was discussed as it was important to parse out if the patient had primary or secondary dyspareunia. This patient presented with secondary dyspareunia as she had performed pain-free insertional activity prior to the initiation of her current symptoms. This means the tissues could accommodate the sexual activity at one point and may suggest a better prognosis.

This patient is a good candidate for the case report due to the complexity of dyspareunia and pain presentation. The patient reports to the clinic with a host of pelvic region diagnoses that may all play a part in the symptom exhibition. The patient's prognosis was documented as fair due to the chronicity and complexity of pelvic symptoms. In addition, the patient was limited in physical therapy treatment sessions by financial stressors. Therefore, the patient's self-selected plan of a 10 week follow up was not the ideal plan of care. Anticipated treatments included manual therapy, therapeutic activity, therapeutic exercise, neuromuscular re-education and gait training.

Intervention

Treatment Session 1

The typical physical therapy interventions for dyspareunia include sexual education, anatomy and physiology education, pelvic floor physical therapy, and dilators. In addition, clinicians should apply the biopsychosocial model and note the role of psychological factors in the cause of painful sexual activity. As a physical therapist, therefore, it was the responsibility to address all aspects within the scope of practice.

The first phase of the interventions included extensive anatomy and physiology education. The pelvic floor is often a region of mystery for many patients due to lack of anatomical education and fear of offending the clinician or oversharing sensitive details. Comparing the pelvic floor muscles to other more familiar, skeletal muscles helped to normalize the use of physical therapy in pelvic floor dysfunction. Patient was also educated on the role of the pelvic floor for bowel, bladder, and sexual function. Becoming more familiar with the anatomy and physiology of the pelvic floor gave the power back to the patient as she became more aware of the cause of her symptoms. This also included education on what was found during the examination. The connection between pelvic floor and the brain was difficult for the patient to make and therefore education was used as a tool for neuromuscular education.

Internal manual therapy was chosen as an intervention due to examination findings of high-tone pelvic floor. Moreover, there is research in support of transvaginal therapy for multiple of the patient's medical diagnoses.¹⁷ The technique used was adapted from the Thiele Technique which includes massage from origin to insertion along the muscle fibers as well as ischemic compression of trigger points.¹⁸ This approach has been proven to be a promising intervention for high-tone pelvic floor dysfunction as well as interstitial cystitis. The research states the spastic pelvic floor may perpetuate the bladder symptoms through the central nervous system resulting in neurogenic inflammation.

The patient required origin to insertion massage on levator ani, obturator internus, and coccygeus as well as ischemic trigger point release of the left obturator internus. The patient dictated pressure from therapist to maintain less than 5/10 pain throughout treatment to prevent muscle guarding that would decrease the efficacy of treatment. During manual interventions, the patient required many verbal cues for relaxation of glutes and lower extremity musculature. Therefore, diaphragmatic breathing was partnered with manual therapy to stretch pelvic floor

musculature through intra-abdominal pressure changes. Research has proven that the pelvic floor muscles relax during inspiration as the diaphragm moves inferiorly.¹⁹ The patient's history of anxiety led to many years of chest-centered breathing that was also improved with focused diaphragmatic breathing, and decrease anxiety of the patient. The therapist continued with manual interventions until decreased tone was achieved.

Although manual therapy of the pelvic floor musculature is important to decreased dyspareunia symptoms, proper introitus tissue accommodation is also required for pain free insertional sexual activity. The patient, upon examination, presented with narrowed vaginal entrance that benefited from single digit introitus stretching during transvaginal manual therapy interventions. Introitus stretching increases the flexibility of the pelvic floor muscles as well as decreases sensitivity to stretch. Introitus stretching requires long treatment times and is supplemented well with a home dilator program. Research has shown that a successful dilation program consists of two sessions of 2 minutes every other day without exceeding 4/10 pain rating then progressing to the next size bigger.²⁰ The patient thus received education on a potential home dilator program and received free dilators.

The next intervention provided was gluteal strengthening due to the delayed and weak gluteal activation noted in the examination. The purpose of this intervention was to improve neuromuscular connection with gluteal musculature as well as improve strength. Strengthening of the gluteal musculature would also improve static position of femur to decrease hip adduction and internal rotation. To reverse this posture would also decrease stress on obturator internus and decrease pelvic floor irritation. Due to the patient's poor activation of gluteal muscles in standing, an isometric hip external rotation exercise was selected in the gravity-minimized position of prone.

The final intervention the patient received was posture training to reduce strain on the obturator internus. She was educated and practiced proper standing technique with feet slightly wider to prevent lateral trunk shift toward the left hip. A review of proper sitting posture was also demonstrated and performed to reduce a cross-legged strain on the pelvic floor musculature.

Treatment Session 2

The patient returned to therapy 10 weeks after the initial evaluation. She presents a new complaint of bilateral proximal hamstring and iliotibial band pain that is made worse in standing. The patient reports she has improved her weight distribution evenly between her feet. Upon re-examination, patient presented with decreased lateral shift but increased sway back posture. The patient received postural education and correction to reduce the static trunk extension that may be contributing to the new hamstring and iliotibial band pain. Patient was then instructed in a seated hamstring stretch and tennis ball massage medial to ischial tuberosity to assist in symptom management.

Manual therapy of the pelvic floor continued at this appointment and consisted of introitus stretching as well as left levator ani stretching and ischemic pressure. She states she began the dilators and they were not painful but presented with some discomfort. The patient reports dilators to be better than she expected.

Outcomes

The patient's outcomes are somewhat limited by the patient's low frequency of physical therapy treatment sessions. Nevertheless, the patient made improvements between the initial evaluation and follow up appointment. She presented to clinic with a 50-75% reduction in tenderness of the pelvic floor muscles. During the second treatment, the patient was much more tolerant of internal manual therapy. Her strength was unchanged over the 10 weeks at 2/5 with continued delayed and limited relaxation. In addition, the patient presented with increased muscle tightness throughout posterior region. She reported she continues to "clench" her pelvic floor while stressed.

Patient also improved upon muscle recruitment during gluteal activation. Therefore, patient's home exercise program changed to include prone isometric external rotation with knees flexed and heels touching rather than straight lower extremities.

Discussion

The purpose of this case report was to explain evidence-based relationships between dyspareunia and pelvic diagnoses and then prove the efficacy of pelvic floor physical therapy in the treatment of a region previously treated exclusively by medical interventions. High-tone pelvic floor dysfunction is a diagnosis like that of dyspareunia in that it is used as a catch-all diagnosis with multiple causes and, by nature, has a more ambiguous path of treatment. In addition, pain studies are an ever-developing field and the biopsychosocial makeup of chronic pain could also be the soul culprit of all presenting symptoms.

Many of the diagnosis described for the patient included pain of some sort in the symptoms and thus pain management was the first line of treatment. The diagnoses the patient had that could have been playing a role in her dyspareunia included chronic pelvic pain, lichen sclerosis, interstitial cystitis/bladder pain syndrome, irritable bowel syndrome, obesity²¹, depression²², and anxiety. Therefore, it was imperative to understand how each of these play a role in dyspareunia, their possible causes, and current available treatments.

The power over chronic pain was returned to the patient through anatomical and pain education. If the pelvic pain or dyspareunia were caused by myofascial pain, transvaginal pelvic floor physical therapy has been proven to improve symptoms proportional to the number of visits. More specifically, 51% of the cohort in the study with chronic pelvic pain complained of dyspareunia and 45% reported improvement with the use of, at minimum, six transvaginal pelvic floor therapy interventions.²³ Upon examination of CPP patients, it is found that 60-85% present with trigger points within the pelvic floor musculature, supporting possible musculoskeletal involvement in the underlying cause and upholding reason for physical therapy. In addition, it has been found that myofascial pain is present in 14-78% of CPP cases.²

In this case, the patient received internal manual therapy to address CPP due to the high correlation between CPP, myofascial pain and trigger points. Furthermore, the patient was receiving medical treatment for chronic pain with NSAIDS, opioids and antidepressants therefore decreasing the role of chronic pelvic pain in dyspareunia. (VURAL or KIM) Therefore, the patient's CPP was being managed with patient education, internal manual therapy, and with medication. This physical therapist also referred the patient to a pain psychologist in hopes of expanding the interdisciplinary treatment team and addressing psychosocial factors of chronic pain.¹

During evaluation of bladder symptoms, the differential diagnosis of an overactive bladder (OAB) needed to be taken into consideration. However, IC/BPS presents with an even greater frequency of urination than OB. In addition, the most important symptom of IC/BPS is suprapubic pain with the bladder cycle. If a patient has overactive bladder their main complaint with delaying urination would be incontinence while delaying with IC/BPS would cause a patient to complain of pain²⁴. Due to the complex nature of the IC/BPS diagnosis, it takes an average of 5 years for proper identification after the onset of symptoms.⁵ In addition, the younger the patient at diagnosis, the more likely the presentation of severe symptoms. Prevalence of this diagnosis depends on the wide array of definitions available and varies between 0.83-2.71%.⁵

Weiss et al looked at the connection between internal manual therapy and interstitial cystitis and found 70% had moderate to marked improvement in symptoms. In addition, the researchers further proved their point using electromyography on some of their patients and found the resting pelvic floor tension saw a 65% improvement after trigger point internal manual therapy.²⁵ Another study performed by FitzGerald et al, found internal manual therapy in conjunction with external tissue manipulation of the hips and abdomen produced a moderate or marked improvement in 60% of patients with interstitial cystitis symptoms.²⁶

An important measure of quality of life includes sexual satisfaction. Since IC/BPS has a detrimental effect on sexual function, it is assumed it has a detrimental effect on the quality of life. Female sexual dysfunction (FSD) is a broad term that includes dyspareunia along with hypoactive sexual desire, female sexual arousal dysfunction, postcoital syndrome, and painful orgasm, among others.³ There are varying reports on the correlation between FSD and IC/BPS and one study showed 87% of patients with a history of IC/BPS presented with female sexual dysfunction.⁶ It has also been noted that the more severe the IC/BPS, the higher the prevalence of FSD. Although the prevalence of FSD in the general population is high, 43% according to Bogart et al, those with IC/BPS are more likely to seek treatment for the sexual dysfunction than women in the general public.⁴

In this case, the patient's symptoms were improved from the initial evaluation to the 10 week follow up. The patient improved on motor recruitment and strength of gluteal muscles, increased tolerance to vaginal insertion, and decreased tenderness throughout pelvic floor musculature. In future visits the patient would benefit from strengthening exercises including pelvic floor contractions in supine, sitting, and standing. The pelvic floor contraction exercises will be partnered with breathing to ensure proper use of the intra-abdominal pressure system. The gluteal strengthening will also continue to be progressed into gravity-resisted positions. Manual therapies should also progress to two and three finger introitus stretching to monitor progress made with dilators and ensure tissue changes are occurring. In addition, it would be beneficial to perform a gait analysis to ensure the patient does not promote the "path of least resistance" during ambulation of hip adduction and femoral internal rotation. Finally, hip range of motion should be assessed to determine if the history of hip injuries continued and contributed to symptoms. Hip motion is made even more relevant due to the interdependence between the hip and pelvic floor. This is supported by the research result that 48% of patients with urinary urgency have a spine or hip diagnosis.²⁷

As primary medical providers, it is the duty of a physical therapist to perform a thorough systems review to ensure the proper treatment. It is not necessary for all physical therapists to proficiently treat pelvic floor dysfunctions, but it is important for all to recognize the signs and be better informed of the treatment options available. The American Physical Therapy Association is currently developing multiple Clinical Practice Guidelines for pelvic conditions yet there still lacks determination of a "gold standard" treatment approach for many diagnoses pelvic floor therapists will encounter.

Although many pelvic floor clinicians understand that a high-tone pelvic floor may be more common in patients already presenting as "clenchers" in their jaw and upper trapezius, future research should be done to prove this relationship. If explored, those with a myriad of high-tone symptoms may then receive more direct questioning about bowel, bladder and sexual function. Since patients are often hesitant about initiating conversations about these issues, it may lead to an earlier diagnosis, referral and treatment.

For a pelvic floor therapist, this report provided a concise account of treatments available for pelvic diagnoses if therapies are not improving symptoms. A crucial part of providing physical therapy is witnessing an enhancement in function and, if a patient is not progressing, know when to discontinue therapy and seek other treatment options. However, through this case study, it was discovered that physical therapy is among the leading interventions for many pelvic diagnoses and should be utilized to solve the pelvic pain puzzle and decrease dyspareunia.^{1,2,6,23,25,26}

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