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Pelvic Floor Spasm: The missing link in chronic pelvic pain

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Acute or chronic pelvic pain is often due to musculoskeletal disorders, which may go unrecognized during a traditional pelvic examination. Proper evaluation facilitates the diagnosis of spasm or trigger points, and physical therapy often achieves a major improvement in quality of life for these women.

Pelvic floor musculoskeletal disorders are common in women and too often go unrecognized during the evaluation of pelvic pain syndromes. Although well described in the literature, these disorders cause diverse symptoms that may be missed by a traditional examination of the cervix, uterus, and adnexa. Screening the inferolateral pelvic floor musculature during a routine pelvic examination is very useful for identifying spasm and trigger points contributing to, or resulting from, a patient's pelvic pain. A brief palpation of the posterior and lateral pelvis to identify spasm in the levator ani (pubococcygeus, iliococcygeus, and puborectalis) often identifies components of pelvic pain that may be dramatically improved by physical therapy and other interventions. We present a case series and review describing the successful identification and management of these acute and chronic syndromes.

PREVALENCE AND CAUSES OF PELVIC PAIN

Pelvic pain is relatively common among women, with a prevalence of at least 3.8%.^{1,2} Symptoms of pelvic pain may require frequent use of medical resources and a significant number of surgical interventions. It is estimated that 40% of diagnostic laparoscopies and 12% of hysterectomies are performed for pelvic pain.³ Unfortunately, some of these patients have a diagnosis that is not surgically correctible or have a multifactorial etiology for their pain, which therefore persists despite surgery.

The pelvic floor musculature is well recognized as a potential cause of acute and chronic pelvic pain, but it is too often neglected during the evaluation of pelvic pain. Musculoskeletal etiologies for acute and chronic pain should be included in the initial assessment of such patients.¹ Unfortunately, criteria for diagnosing musculoskeletal pain of the pelvis have not been established or validated.⁴

The pelvic floor consists of striated muscles, ligaments, and connective tissues that support the pelvic organs against gravity and intraabdominal pressure. The pelvic diaphragm is composed of the

coccygeus muscle posteriorly and the levator ani anterolaterally. Although they are not fully distinct, the components of the levator ani consist of the iliococcygeus, the pubococcygeus, and the puborectalis muscle group. The pelvic floor must allow relaxation of this support at the urogenital hiatus during voiding and parturition while maintaining the anatomic position of pelvic structures. The complex mechanics of its bimodal function and frequent insults to the integrity of the pelvic diaphragm from gravity, daily activities, and vaginal birth contribute to the pelvic musculature's vulnerability to damage and injury. Lying within the pelvic cavity are the piriformis, and obturator muscles, which are not elements of the pelvic diaphragm but may contribute to pelvic pain when injured.⁵

Pelvic floor hypertonus may be the primary cause of pelvic pain in some patients; in others it may simply be a response to the underlying pelvic disorder.⁶ Several mechanisms of injury may lead to spasm of the pelvic floor. These include, but are not limited to, traumatic vaginal delivery, pelvic surgery, positional insults such as prolonged driving or occupations that require prolonged sitting, gait disturbances, traumatic injury to the back or pelvis, and sexual abuse. Malalignment of the pelvis, especially in the sacroiliac joint, due to trauma, poor posture, pelvic floor deconditioning, muscular asymmetry, or excessive athletics also may contribute to muscular dysfunction of the pelvis.

Injury leading to myofascial pain begins with an acute phase, characterized by inflammatory and immune responses. The injury may perpetuate itself with spasm promoting further inflammation, neurotransmitter release, and central nervous system sensitization. As the injury evolves, the second stage is the musculodystrophic stage, during which fibrosis develops and the process favors a chronic syndrome.

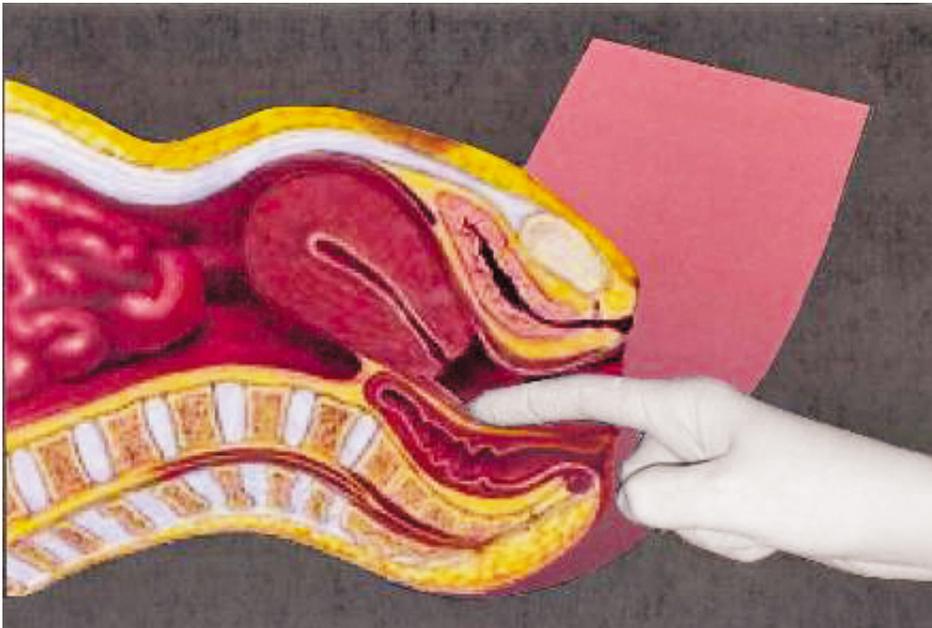
Pelvic floor dysfunction can also arise in response to other common chronic pain syndromes, such as endometriosis, irritable bowel disease, vulvodynia, and interstitial cystitis. A prospective evaluation of patients with chronic pelvic pain of various etiologies found abnormal musculoskeletal findings in 37%, versus 5% of controls.⁷ For this reason, the pelvic floor should be included in any evaluation regardless of the suspected source of pelvic pain.

As the 3 cases described on page 46 demonstrate, clinicians must maintain a high index of suspicion for musculoskeletal sources of pelvic pain to determine the appropriate diagnosis. Pelvic floor myalgia and other disorders of the pelvic floor musculature, such as piriformis syndrome, are often identified by a medical history and single-digit examination of the pelvic floor. Simply inverting the examining digits to assess the posterior and lateral pelvic musculature often provides a prompt clinical diagnosis. The 3 cases in the sidebar on page 46 illustrate the diversity of presentations and the ease of diagnosis when proper attention is paid to the pelvic floor musculature.

EVALUATION OF CHRONIC PELVIC PAIN

Identification of a myofascial syndrome as a cause or contributing factor is a critical step in management of patients with chronic pelvic pain.⁸ Failure to recognize pelvic floor dysfunction could certainly contribute to the 24% to 40% negative laparoscopy rate in patients with chronic pelvic pain. A detailed history often suggests a pelvic floor component of a patient's pain, with pressure, heaviness, and aching as prominent complaints. Pain may be exacerbated by exertion, elimination, sitting, and coitus. Postcoital pain may persist for hours or days. Pain radiating to the hip or lower back is not uncommon, although this symptom is obviously not limited to pelvic floor dysfunction.

Pelvic examination to investigate acute or chronic pelvic pain should always include single-digit palpation of at least the levator ani and piriformis muscles (Figure, see p 42). Begin by palpating the introitus to rule out vaginismus and then move to the iliococcygeus and pubococcygeus muscles bilaterally, with specific attention to findings of banding, spasm, or tenderness.^{1,9} Spasm of a portion of the levator ani is often detected as a palpable band resembling a guitar string within the muscle or focal trigger points. Examine the piriformis with the finger pressed posterolaterally and superior to the ischial spine.¹ In the patient with normal pelvic floor musculature, palpation of the levator ani and piriformis typically elicits a sensation of pressure, whereas a patient with pelvic floor myalgia will report significant pain. The discomfort elicited in such patients often reproduces the primary complaint. Another typical finding during examination is a distinct asymmetry between the right and left elements of the pelvic diaphragm. This shortening or contracture will be ipsilateral to the patient's pain.



At a minimum, single-digit palpation for chronic pelvic pain should include the levator ani and piriformis muscles.

From the physical therapist's perspective, a thorough evaluation generally includes an orthopedic survey of the spine, pelvis, and hips; an intravaginal examination to quantify the resting tension of the pelvic floor and hip musculature; and biofeedback examination of the pelvic floor. The physical therapist seeks to quantify the degree of dysfunction and identify musculoskeletal or neuromuscular factors contributing to the patient's condition, such as pelvic obliquity, leg length discrepancy, hip mobility imbalance, sacroiliac joint subluxation, or sciatica, among others. Once these variables have been identified, a fundamental component of physical therapy is patient education. Most patients have little or no understanding of the musculature within the pelvis. Educating patients about the pelvic floor and how it

contributes to acute and chronic pelvic pain is essential.

MANAGEMENT OF CHRONIC PELVIC PAIN

The treatment of symptomatic pelvic floor hypertonus begins with rehabilitation of the neuromuscular unit or neuromuscular reeducation using biofeedback, muscle relaxation techniques, and soft-tissue manipulation. During the therapist's manipulation of the affected pelvic floor musculature, the patient is asked to contract and relax. Verbal and tactile cues are used to help the patient recognize when she has appropriately controlled the pelvic floor. External or intravaginal electrodes may be used to monitor the electrical activity of the pelvis and provide visual or auditory biofeedback as the patient attempts to contract or relax. A key objective of neuromuscular reeducation is to improve the patient's proprioceptive awareness of the pelvic floor. Once a woman is able to recognize contracted versus relaxed pelvic musculature, she is better able to control the pelvic floor.

Physical therapy modalities for chronic pelvic pain also include massage, ultrasound, and myofascial release. Therapists may perform intravaginal soft tissue work as well as manual stretching, although these techniques are most beneficial in the presence of trigger points, banding, or contractures. Massage tools allow self-treatment at home on a more frequent basis. A crystal wand is one of the most commonly used devices for independent therapy of the pelvic floor. In some cases, therapeutic exercise may address musculoskeletal imbalances, and neuromuscular stimulation is used to relieve persistent spasm.

No single modality for pelvic floor therapy has proved to be superior, perhaps because most physical therapists take a multifaceted approach to this complex disorder. Although most treatment options can be applied to almost any patient, our experience suggests that generalized hypertonus usually responds best to generalized therapy (such as strengthening, stretching, biofeedback, ultrasound), whereas trigger points and other focal anomalies more often require manual therapy (such as myofascial release, crystal wand manipulation, trigger point injection). Substantial overlap exists, and a multimodal approach is therefore typical. Some therapy options, such as intravaginal manual therapy, may not be acceptable to all patients.

Physical therapy is relatively successful for patients with chronic pelvic pain related to pelvic floor dysfunction, especially considering the typical outcome and persistence of symptoms for this patient population as a whole. Only a few prospective randomized trials have been conducted, but FitzGerald et al demonstrated a 57% response rate to myofascial physical therapy for urologic pelvic pain syndrome among patients presenting with pelvic floor tenderness.¹⁰ The same multicenter collaborative group later confirmed these results with a 59% response rate in women treated with myofascial physical therapy for interstitial cystitis and painful bladder syndrome.¹¹ In a study by Glazer et al, patients with vulvar vestibulitis and pelvic hypertonus also demonstrated a 50% response rate to physical therapy and biofeedback.¹²

Finding a physical therapist with the skill and interest to address pelvic floor dysfunction may pose a challenge in some geographic areas. Therapists familiar with women's health issues and chronic pelvic pain are listed at the American Physical Therapy Association Web site (<http://www.apta.org>) under the "Find a PT" link. The Herman & Wallace Pelvic Rehabilitation Institute (<http://hermanwallace.com>) specializes in pelvic floor rehabilitation training for physical therapists and maintains a database of practitioners.

Pharmacologic management options for pelvic floor dysfunction begin with nonsteroidal anti-inflammatory drugs, cyclobenzaprine, amitriptyline, or baclofen. Narcotics are tempting for patients in extreme discomfort but are a poor long-term solution. Gabapentin and pregabalin have shown promise in patients with pelvic floor myalgia.^{8,13} Injection of persistent trigger points with lidocaine, with or without cortisone, is also a successful approach to the myofascial component of pelvic pain.⁸ More

recently, purified botulinum toxin (Botox) has been used to treat pelvic floor muscle spasm, with proven success.^{8,13} Sacral nerve, pudendal nerve, and posterior tibial nerve stimulation are all developing modalities with therapeutic promise.⁸

SUMMARY

Even experienced practitioners may misdiagnose patients with pelvic pain if they do not specifically examine the pelvic diaphragm. Attention to the pelvic floor musculature during pelvic examinations is an effective and inexpensive diagnostic strategy that can be life-changing for patients with pelvic pain, yet requires minimal time and effort. These patients may have to undergo the usual chronic pelvic pain algorithm without the option of physical therapy if hypertonus goes unrecognized. Physical therapy with or without pharmacologic management offers many patients significant relief or even resolution. Educating patients and using physical therapy to make them active partners in their own care give women with chronic pelvic pain a sense of empowerment and benefit them physically and psychologically. Although the inverted single-digit examination of the pelvic floor musculature is well established in the literature, we again emphasize its use as a routine element of the pelvic evaluation. This simple technique may reduce cost and suffering in this patient population with minimal diagnostic effort.

Three Presentations of Chronic Pelvic Pain

Case 1: Postoperative pelvic pain in a 38-year-old

Patient 1 is a 38-year-old white woman with menorrhagia and a myomatous uterus treated by laparoscopic hysterectomy, which was uncomplicated. Routine intraoperative cystoscopy for ureteral patency demonstrated a suspicious mass in the bladder, which was later confirmed to be a transitional cell carcinoma. It was resected during a second surgical procedure and subsequently managed with intracystic chemotherapy. The woman's postoperative course was complicated by severe pelvic pain. Initial assessments including imaging and examination were nonspecific, and she was scheduled for repeat laparoscopy to rule out postoperative adhesions or injury. Her preoperative examination, however, clearly demonstrated a severe iliococcygeus spasm, which reproduced her symptoms. Her surgery was cancelled and her symptoms fully resolved after physical therapy.

Case 2: Unilateral hip pain in a 32-year-old

Patient 2 is a 32-year-old white woman with a 12-year history of unilateral hip pain. She reported a daily pelvic ache and severe dyspareunia. Her symptoms were exacerbated by exertion. Previous management included chiropractic manipulation, analgesics, and orthopedic evaluations with negative findings by imaging and physical examination. Pelvic examination revealed tenderness in the iliococcygeus and piriformis with severe spasm and palpable banding, which reproduced her symptoms. Physical therapy including biofeedback, intravaginal manipulation, and patient education. Amitriptyline reduced the patient's symptoms by a self-reported 60% and dramatically improved her activities of daily living.

Case 3: Post-collision pain in a 40-year-old

Patient 3 is a 40-year-old black woman who presented after a motor vehicle accident. A rear-impact collision resulted in severe neck and pelvic pain. She had been evaluated extensively with imaging and treated with routine physical therapy to injuries outside of the pelvis. Ultimately, presentation for gynecologic care demonstrated severe levator ani spasm with a classic V deformity. The muscular spasm and shortening brought the muscles to the midline in a narrow V, which nearly obliterated the urogenital hiatus. Palpation of this dysfunctional musculature reproduced severe pain and anxiety. Pelvic floor rehabilitation and physical therapy have returned the patient to normal function and resolved most of her pelvic complaints.

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