

BRIEF REPORT

THE BIOMECHANICAL LINKS BETWEEN PELVIC FLOOR DYSFUNCTION AND TESTICULAR PAIN: A CLINICAL REVIEW

Cody Jackson, OMS-IV¹; Lubayna Fawcett, PhD, PT²

¹A.T. Still University School of Osteopathic Medicine, Mesa, AZ

²Mayo Clinic Arizona, Phoenix, AZ; Arizona State University, Phoenix, AZ

KEYWORDS

chronic scrotal content pain

pelvic floor dysfunction

OMT

pelvic floor manual therapy

male pelvic floor

ABSTRACT

Chronic scrotal content pain affects 100,000 men in the United States annually. Up to 50% of these cases do not resolve by following conventional treatment algorithms and are deemed to be idiopathic. There is little peer-reviewed literature supporting the specific cause and effect relationship between pelvic floor dysfunction and chronic scrotal content pain. Additionally, the specificity of the physical exam in these types of patients is not present in the literature. Overall, the literature is deficient in proposed treatment algorithms that address the large number of cases that are deemed to be idiopathic. Patients presenting with chronic scrotal content pain may benefit from an osteopathic diagnostic and treatment approach. In these types of patients, we recommend osteopathic manipulative therapy (OMT) or pelvic floor manual therapy prior to surgical intervention. This conservative approach may reduce the large portion of cases that are deemed to be idiopathic. The emphasis on structure and function within osteopathic medical education places osteopathic family physicians in a unique position to be able to properly diagnose and treat this type of pain. Since most cases of chronic scrotal content pain are initially addressed in the primary care setting, it is important for osteopathic primary care physicians to remain vigilant in considering musculoskeletal dysfunction when evaluating these types of patients. This clinical review is underscored by a unique case presentation of a male collegiate athlete who helps demonstrate the larger gap that is present in the literature on male pelvic floor and scrotal content pain.

INTRODUCTION

Research on male pelvic floor dysfunction is sparse when compared to that of women. Up to 5% of males presenting with symptoms associated with pelvic floor dysfunction also report chronic scrotal content pain (CSCP).¹ CSCP affects about 100,000 men per year, with up to 50% of cases presenting with an idiopathic etiology.^{2,4} Unfortunately, there is very little peer reviewed literature showing a direct cause and effect relationship between pelvic floor dysfunction and CSCP.^{1,5} Furthermore, there are few diagnostic algorithms proposed in the testicular pain literature; none have been validated and most exclude the pelvic floor and biomechanical dysfunction altogether.^{3,6-9} It is common for patients experiencing CSCP to also present with varying degrees of hypertonic pelvic floor musculature, but it is also

often unclear which issue came first.¹⁰ As a result of this, it is too often assumed to be a symptom of pain rather than a cause of pain.

CASE REPORT

A 21-year-old Caucasian male patient, who was a Division I collegiate track runner, presented with a 12-month history of severe testicular pain. The onset of his pain was sudden following a morning distance run at practice. He presented to numerous urologists and pain specialists prior to treatment at Mayo Clinic Arizona. He received multiple magnetic resonance imaging (MRI) and computed tomography (CT) scans, which were unremarkable. Sexually transmitted infection (STI) and urine testing was negative. Complete blood count (CBC) and comprehensive metabolic panel (CMP) were also unremarkable. Throughout his 12-month history, six diagnostic scrotal ultrasounds were performed showing evidence of small bilateral hydroceles, bilateral varicoceles (grade III), left scrotal wall thickening (3–4 mm), bilateral epididymal cysts, and minor epididymal head calcification. An abdominal ultrasound was performed showing no urinary abnormalities or obstructions. He had no traumatic or surgical history to the groin

CORRESPONDENCE:

Cody Jackson | codyjackson@atsu.edu

or scrotal contents. The patient had not experienced pain during ejaculation but thought he did notice postejaculatory testicular pain. A semen analysis was performed showing normal sperm motility. Other significant medical history included severe anxiety (GAD-7 score of 18) and moderately severe depression (PHQ-9 score of 15).

The patient was prescribed a 3-week course of doxycycline, followed by an additional 2-month course of ciprofloxacin, with no pain resolution. Several rounds of amitriptyline (100 mg qd), then nortriptyline (10 mg qd), in conjunction with hydrocodone/acetaminophen (10/325 mg prn), failed to terminate the pain. Additionally, the patient took gabapentin (300 mg tid) for 3 months with no resolution of symptoms. A bilateral genitofemoral/spermatic cord nerve block was performed, using 8 mg of dexamethasone and 0.25% Marcaine, without complication. The patient presented with worse scrotal content pain 2 weeks after the procedure. He was eventually referred to pelvic floor physical therapy (PFPT) only after his case was discussed at a Mayo Clinic national conference. In the initial physical therapy assessment, the patient presented with point tenderness and hypertonicity of the right levator on digital rectal exam. He had an anterior pelvic tilt and decreased sacroiliac joint mobility. His initial pain level was 9/10. The patient was treated with PFPT for 1 hour, two to three times per week. Treatments included soft tissue release of the pelvic floor musculature, neuromuscular retraining, and sacral manipulation. Within 2 weeks of therapy, the patient subjectively felt improvement. At 6 weeks, the patient's pain level reduced to 2/10. At 8 weeks, the patient was able to return to running without pain.

DISCUSSION AND REVIEW OF THE LITERATURE

It is possible that the patient's pain was deemed to be idiopathic due to minimal research on the intersection between CSCP and pelvic floor dysfunction. Most adolescent and young men who present with CSCP have either an STI or have experienced trauma to the scrotal contents.¹¹ It is unusual for someone so young to be experiencing idiopathic CSCP.⁹ Treating idiopathic CSCP has been a therapeutic dilemma because the published data regarding the diagnosis and treatment of reliable nonsurgical interventions are predominately derived from small studies and expert opinion.

The recommendation for men who present with idiopathic CSCP is to undergo surgical intervention when there are abnormalities within the scrotum.^{6,12,13} The patient in the case above did not undergo surgery even though there were multiple scrotal abnormalities present. These decisions are inconsistent with what is recommended in the literature for a patient exhibiting such abnormalities.^{2,3,6,12,13} The normal progression of treatment for a CSCP patient presenting with scrotal abnormalities, particularly varicoceles, is to undergo a varicocelectomy.⁶ Our patient presented with grade III varicoceles that were tender on palpation, but he had not undergone varicocelectomy due to his young age. There are no specific examples in the literature that support treatment modalities in men of his age who do not respond to conventional methods. It is our belief that this is the reason his pain had been deemed to be idiopathic in nature.

Upon examination by the physical therapist, it was discovered that this patient had an extensive history of lower-extremity biomechanical injuries. This finding was significant because it provided reason to believe that his pain could be a result of musculoskeletal dysfunction and that it may be simply unique in its presentation. Moreover, this finding helped to validate the use of PFPT to treat his pain. Within the literature, there are few diagnostic/treatment algorithms that include PFPT. An algorithm proposed in Tatem and Kovac suggests PFPT as an optional method if pain persists.⁶ In this algorithm, however, PFPT is not a requirement prior to surgery. Given the conservative and relatively inexpensive nature of PFPT, this recommendation should be a first-line treatment option, well before surgery. Another algorithm by Tan and Levine more adequately recommends PFPT as a required treatment step prior to surgery, serving as the only algorithm of its kind to consider pelvic floor dysfunction in this way.² Within both algorithms, however, there is no discussion on the specificity of the physical exam. It would be prudent to include a detailed structural examination of patients experiencing CSCP considering the number of cases deemed to be idiopathic.

Addressing biomechanics as a source of pain is not typically within the scope of urology, nor is it emphasized within the education of allopathically trained physicians. The relationship between structure and function is a crucial aspect to consider in CSCP patients. The contents of the pelvic floor are complex, and it is well known that musculoskeletal dysfunction can cause referral pain. While pelvic floor hypertonicity and tenderness have often been associated with CSCP, it is difficult to discern whether a dysfunctional pelvic floor is a cause of pain or a symptom of pain. This is particularly true when additional abnormalities are present, as was the case with our patient.

Review of the pelvic floor literature suggests that there is little research on men in general, as most pelvic floor complications are associated with women.^{14,15} In the available literature specifically related to men, few case reports and peer-reviewed studies address the direct cause and effect relationship between pelvic floor dysfunction and CSCP.^{1,5} A survey of 41 men with chronic idiopathic testicular pain showed that 93% reported a minimum of one symptom of pelvic floor dysfunction according to the Pelvic Floor Inventories Leiden (PelFIs) questionnaire. The PelFIs questionnaire is a 76-item instrument that measures the degree of pelvic floor dysfunction in men within nine different domains.¹⁶ Within the same group, 88% had evidence of a hypertonic pelvic floor on electromyographic testing (6.7 muV, normal < 3 muV).⁵ Consistent with this study, our patient presented with a hypertonic pelvic floor and CSCP with no other obvious-causing pathology present. However, the physical activity of the participants in this study was not reported. Our patient's level of physical activity could have been a significant factor in the development of his pain. Had he not been a competitive long-distance runner, his pelvic dysfunction may have never become severe enough to cause him testicular pain. Therefore, it may be worth considering the physical activity levels of CSCP patients.

A study by Farrell et al demonstrated that 50% of patients with CSCP and hypertonicity in the pelvic floor noted improvement in their symptoms after 12 sessions of PFPT.¹⁷ The progression of our patient is consistent with this literature. However, this study

did not reach statistical significance and the sample size (30) was small, demonstrating a further need for more conclusive research on this topic.

Using current treatment algorithms, our patient likely would have undergone surgery. Instead, after completing 8 weeks of PFPT with hourly sessions up to three times per week, the patient was found to have a complete resolution of pain. It is important to note that the patient was taught how to contract and relax his pelvic floor so that he may continue to complete home exercises as a management technique for future symptoms as needed.

CONCLUSION

Patients presenting with CSCP may benefit from a more holistic osteopathic approach to diagnosis and treatment. This is especially true when considering the prevalence of CSCP that is deemed to be idiopathic in nature.^{2,3} There is little peer-reviewed literature supporting the specific cause and effect relationship between the male pelvic floor and CSCP.^{1,5} Additionally, biomechanics are often overlooked as a plausible source of CSCP since they are not within the scope of urology and are generally not emphasized by allopathic physicians. Coupled with this fact,

there are also no details in the literature regarding the specificity of the physical exam on CSCP patients. An osteopathic structural exam could prove to be beneficial in properly diagnosing this population. It is important for osteopathic family physicians to be aware of this issue and the gaps that exist in the current literature. Since most cases of CSCP are initially addressed in the primary care setting, osteopathic primary care physicians are at a unique advantage to more adequately help these types of patients. The focus on the relationships between structure and function within osteopathic medical education allows osteopathic physicians to be more equipped to assess and treat this issue efficiently. In patients presenting with CSCP, we recommend OMT or PFPT prior to surgical intervention (Figure 1). This conservative approach may reduce the large portion of CSCP cases that are deemed to be idiopathic. Moreover, it may resolve CSCP in a more cost-effective and less invasive manner. The aforementioned patient example illustrates the importance for osteopathic physicians to remain vigilant in considering musculoskeletal dysfunction when treating patients experiencing CSCP. While additional research is necessary, a greater focus on the relationship between structure and function during the initial examination may be just as important to address this issue more adequately.

REFERENCES

1. Ciftci H, Savas M, Yeni E, Verit A, Topal U. Chronic orchialgia and associated diseases. *Current Urology*. 2010;4(2):67–70. doi:10.1159/000253415
2. Tan WP, Levine LA. What can we do for chronic scrotal content pain? *The World Journal of Men's Health*. 2017;35(3):146. doi:10.5534/wjmh.17047
3. Gordhan CG, Sadeghi-Nejad H. Scrotal pain: evaluation and management. *Korean J Urol*. 2015;56(1):3–11. doi:10.4111/kju.2015.56.1.3
4. Patel BG, Levine LA. Chronic scrotal content pain: an updated review on diagnosis and management. *Current Sexual Health Reports*. 2019;11(2):115–124. doi:10.1007/s11930-019-00201-2
5. Planken E, Voorham-van der Zalm PJ, Lycklama à Nijeholt AAB, Elzevier HW. Chronic testicular pain as a symptom of pelvic floor dysfunction. *J Urol*. 2010;183(1):177–181. doi:10.1016/j.juro.2009.08.147
6. Tatem A, Kovac JR. Chronic scrotal pain and microsurgical spermatic cord denervation: tricks of the trade. *Transl Androl Urol*. 2017;6(suppl 1):S30–S36 doi:10.21037/tau.2017.05.17
7. Levine LA, Hoeh MP. Evaluation and management of chronic scrotal content pain. *Curr Urol Rep*. 2015;16(6):36. doi:10.1007/s11934-015-0510-1
8. Calixte N, Brahmhatt J, Parekattil S. Genital pain: algorithm for management. *Transl Androl Urol*. 2017;6(2):252–257. doi:10.21037/tau.2017.03.03
9. Sigalos JT, Pastuszak AW. Chronic orchialgia: epidemiology, diagnosis and evaluation. *Transl Androl Urol*. 2017;6(suppl 1):S37–S43. doi:10.21037/tau.2017.05.23
10. Curtis Nickel J, Baranowski AP, Pontari M, Berger RE, Tripp DA. Management of men diagnosed with chronic prostatitis/chronic pelvic pain syndrome who have failed traditional management. *Rev Urol*. 2007 Spring;9(2):63–72.
11. David JE, Yale SH, Goldman IL. Urology: scrotal pain. *Clin Med Res*. 2003;1(2):159–160. doi:10.3121/cmr.1.2.159
12. Levine L. Chronic orchialgia: evaluation and discussion of treatment options. *Ther Adv Urol*. 2010;2(5–6):209–214. doi:10.1177/1756287210390409
13. Abrol N, Panda A, Kekre N. Painful varicoceles: role of varicocelectomy. *Indian J Urol*. 2014;30(4):369–373. doi:10.4103/0970-1591.128497
14. Nygaard I, Barber MD, Burgio KL, et al. Prevalence of symptomatic pelvic floor disorders in US women. *JAMA*. 2008;300(11):1311. doi:10.1001/jama.300.11.1311
15. Hakenberg Karger OW, Wirth MP. Chronic pelvic pain in men. *Urol Int*. 2002;68(3):138–143. doi:10.1159/000048438
16. Voorham-van der Zalm PJ, Stiggelbout AM, Aardoom I, et al. Development and validation of the pelvic floor inventories Leiden (PelFIs). *NeuroUrol Urodyn*. 2008;27(4):301–305. doi:10.1002/nau.20514
17. Farrell MR, Dugan SA, Levine LA. Physical therapy for chronic scrotal content pain with associated pelvic floor pain on digital rectal exam. *Can J Urol*. 2016;23(6):8546–8550.

FIGURE 1:

Proposed evaluation of scrotal content pain for osteopathic primary care physicians.

