Physical therapy for chronic scrotal content pain with associated pelvic floor pain on digital rectal exam

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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.

Introduction: *Chronic scrotal content pain (CSCP) is a common condition that can be challenging to manage definitively. A cohort of patients with CSCP have referred pain from myofascial abnormalities of the pelvic floor and therefore require treatment modalities that specifically address the pelvic floor such as pelvic floor physical therapy (PFPT).*

Materials and methods: *Retrospective chart review of all men with a pelvic floor component of CSCP presenting to our tertiary care medical center and undergoing PFPT from 2011-2014. Patients with CSCP and pain/tightness on pelvic floor evaluation with 360° digital rectal exam (DRE) were referred to a physiotherapist for PFPT. CSCP was defined as primary unilateral or bilateral pain of the testicle, epididymis and/or spermatic cord that was constant or intermittent, lasted greater than 3 months, and significantly interfered with daily activities. Long term follow up was conducted by office visit and physical therapy chart review.*

Results: *Thirty patients, mean age of 42 years (range 18-75), were followed for a median of 13 months (range 3-48). Median pre-PFPT pain score was 6/10 (range 2-10). After a mean of 12 PFPT sessions (IQR 6-16), pain improved in 50.0% of patients, median decrease in pain was 4.5/10 (range 1-10). Complete resolution of pain occurred in 13.3%, 44.0% had none to minor residual pain. Following PFPT, fewer subjects required pain medication compared with prior to PFPT (44.0% versus 73.3%, $p = 0.03$).*

Conclusions: *For men with CSCP and a positive pelvic floor exam with DRE, we recommend a trial of PFPT as an effective and non-operative treatment modality.*

Key Words: orchalgia, physical therapy, pelvic floor, digital rectal exam

Introduction

Chronic orchialgia is a complaint seen by nearly all practicing urologists, representing 2.5% of urology clinic visits.[1] Men with chronic orchalgia are most commonly in their mid to late thirties and are often otherwise healthy. However, these patients are presented with a debilitating condition that often involves multiple office visits and repeat procedures with associated significant healthcare costs.[2,3]

Accepted for publication October 2016

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The definition of chronic orchialgia involves at least 3 months of constant or intermittent pain localized either unilaterally or bilaterally to the testicles that significantly interferes with daily activities, thus necessitating initiation of prompt medical attention.[4-6] Because the diagnosis of chronic orchialgia can involve other structures including the epididymis, vas deferens, and paratesticular structures, chronic scrotal content pain (CSCP) has been suggested as a more encompassing term.[7]

The most common etiology of CSCP is idiopathy as seen in 50% of cases. Other common etiologies include trauma, varicocele, spermatocele, torsion, tumor, infection, and iatrogenic following inguinal hernia repair and vasectomy.[6,8] Additionally, pain may be referred to the scrotal content structures from the pelvic floor. Therefore the pelvic floor may be the source of or contributor to pain in a subpopulation of CSCP patients.

Previous literature has described the concept of chronic pelvic pain syndrome, which involves pelvic floor tension and tenderness that results from myofascial abnormalities associated with poor posture, chronic injury, and neurological aberrancies.[9] Pelvic floor physical therapy has been evaluated in multiple small studies for patients with pelvic pain syndromes with promising results.[10-12] While largely empiric, a specialized pelvic floor physical therapist can offer connective tissue manipulation and biofeedback-mediated pelvic floor re-education that can lead to improvement in pelvic floor tenderness or hypertonicity.[9]

In the current study, we review our experience with the management of CSCP patients with identified tenderness or hypertonicty of the pelvic floor via 360° digital rectal exam (DRE). We further describe pain outcomes for these patients following subsequent referral to specialized pelvic floor physical therapy (PFPT).

Materials and methods

This study was designed as an unfunded retrospective review of a prospectively developed database involving all men presenting with CSCP to our tertiary care medical center between 2011 and 2014. We defined CSCP as intermittent or constant pain that unilaterally or bilaterally involved the testes, vas deferentia, epididymides, and/or the paratesticular structures, lasting at least 3 months in duration, and significantly interfering with daily activities to the point at which medical attention was initiated.[4-7]

Urologic evaluation included an extensive demographic and clinical history, and physical examination of the scrotal content structures including the testes, vas deferentia, and epididymides, along with the penis, prostate, and inguinal area. Duplex scrotal ultrasound was performed on all patients. Individuals with anatomic abnormalities including varicocele and hydrocele were excluded. Urinalysis, urine, and semen culture was collected if indicated. Patients with evidence of infection were excluded from analysis. All patients included in the analysis had a positive 360° DRE, which involved application of gentle pressure to the pelvic floor muscles. Patients were requested to note areas of particular tenderness or radiation of pain to the scrotal contents that resembled the pain noted at initial presentation.

Spermatic cord block was utilized when pain was elicited both upon palpation of the scrotal content structures and the pelvic floor musculature to identify whether the pain signal pathway was through the spermatic cord. This was performed by injection of 20 mL bupivacaine (0.25%) without epinephrine into the spermatic cord at the level of the pubic tubercle.[13] Consistent with the conclusions of Masarani and Cox, blockage of the spermatic cord or the scrotal and spermatic branches of the genitofemoral and ilioinguinal nerves should relieve pain that is truly derived from the testicle rather than referred from another source.[14] Satisfactory response to spermatic cord block prompting microdenervation of the spermatic cord (MDSC) was defined as greater than 50% temporary reduction in pain.[15]

Patients with positive tenderness and/or hypertonicity noted on DRE by a single urologist were referred to a single pelvic floor specialist physician for confirmation and further evaluation of pelvic floor muscle abnormalities. Patients with a positive pelvic floor muscle exam including tenderness and/or hypertonicity were subsequently referred for specialized PFPT.

For consistency, a single pelvic floor physician specialist established the PFPT regimen and coordinated appropriate referral to physical therapists. PFPT involved manual muscle testing, biofeedback, relaxation techniques, medical management of constipation, and the development of a home pelvic floor exercise program.

Patient follow up with the urologist was conducted according to patient need. Patient data including pain medication use were collected during each PFPT session and urology clinic visit. Pain severity was evaluated using an 11-point numeric rating scale (0-10) at each urology clinic visit and PFPT session. Pain was categorized as none to mild if pain was rated from 0-3.[16] Complete data were available for all subjects.

Data analysis was conducted using PASW Statistics 18 software (SPSS, Inc., Chicago, IL, USA). Continuous variables were reported as mean and standard deviation, with analyses conducted via a two-sample t-test. For continuous variables that did not follow a normal distribution, median and range were reported, with analysis conducted using a Mann-Whitney test. Categorical data were shown as counts and percentages. Univariate analyses were conducted to test for associations between pain improvement following PFPT and selected baseline characteristics. For all analyses, variables are considered significant predictors if the p value associated with the appropriate test statistic is < 0.05.

Results

Between 2011 and 2014, 30 patients presented with CSCP to our specialized center and were noted to have pelvic floor tenderness and/or hypertonicity by subjective evaluation involving 360° DRE and palpation of the pelvic floor. The mean age of these men was 42.4 years (range 18-75) and the median duration of pain at the time of presentation was 24 months (range

3-300). The median pre-PFPT pain score was 6/10 (range 2-10). Prior to the onset of pain, 23.3% of patients underwent surgical interventions to scrotal content structures including vasectomy, hydrocelectomy, and varicocelectomy. Ten percent had a history of genital trauma. Psychiatric disorders including depression, anxiety, and patient reported sleep difficulties were noted in 26.7% of men. Prior to the first office visit at our specialized clinic for CSCP, pain medication was utilized by 73.3% of patients while 46.7% of men had been previously treated with antibiotics for suspected epididymitis. Additionally, a coexisting chronic pain condition lasting greater than 3 months including back pain, extremity joint pain, chronic headache, and muscular pain was present in 36.7%, Table 1.

TABLE 1. **Baseline presenting characteristics (n = 30)**

Age, (yrs), mean (SD)	42.4 (16.1)
CSCP duration, (mos.), median (range)	24 (3-300)
Scrotal content surgery prior to pain onset, # (%)	
Vasectomy	3 (10.0)
Varicocelectomy	2 (6.7)
Hydrocelectomy	1 (3.3)
Multiple VIU and urethroplasty for bulbar stricture	1 (3.3)
Any	7 (23.3)
History of genital trauma, # (%)	3 (10.0)
Psychiatric disorder, # (%)	
Depression	6 (20.0)
Anxiety	2 (6.7)
Difficulty sleeping	3 (10.0)
Any	8 (26.7)
Chronic pain, # (%)	
Back	7 (23.3)
Extremity joint	3 (10.0)
Chronic headache	1 (3.3)
Muscle pain	1 (3.3)
Any	11 (36.7)
History of pain medication use, # (%)	
Opioid	6 (20.0)
NSAID	9 (30.0)
Anticonvulsant	6 (20.0)
Antidepressant	3 (10.0)
Any	22 (73.3)
History of antibiotic use for treatment of pain, # (%)	14 (46.7)

CSCP = chronic scrotal content pain; VIU = visual internal urethrotomy

TABLE 2. **Presenting pain location on physical exam (n = 30)**

Pain location, # (%)	Unilateral	Bilateral
Testicle	12 (40.0)	4 (13.3)
Epididymis	13 (43.3)	2 (6.7)
Spermatic cord	12 (40.0)	1 (3.3)

The most common presenting pain location, noted as tenderness elicited by physical exam, was in a unilateral epididymis (43.3%) followed by a unilateral testicle (40.0%) and a unilateral spermatic cord (40.0%). Table 2 further illustrates additional presenting pain locations. Pain was exacerbated by voiding in 40% of patients.

In 73.3% of patients, intervention prior to initiation of PFPT was attempted, Table 3. Spermatic cord block was performed in all patients (n = 30) and produced a satisfactory response prompting an attempt at pain improvement or complete relief with MDSC in nine men. CSCP persisted following MDSC in each of these subjects, which lead to treatment with PFPT.

Over a median follow up of 13 months (range 3-48 months), the median number of PFPT sessions for referred patients was 12 (interquartile range 6-16). Fifty percent of men experienced pain improvement following the complete course of PFPT. The median decrease in pain score was 4.5 (range 1-10). Complete resolution of pain was reported by 13.3% of patients, while 44.0% had none to minor residual pain. The proportion of patients reporting none to minor residual pain was not different between those with pain exacerbated by voiding (41.7%) and those without (44.0%; p = 1.00). The odds of pain improvement following PFPT was significantly associated with

TABLE 3. **Failed interventions prior to PFPT (n = 30)**

Medication, # (%)	
Alpha-1 antagonist	3 (10.0)
Antibiotic	4 (13.3)
Anticonvulsant	7 (23.3)
Antidepressant	9 (30.0)
Surgery, # (%)	
Scrotal exploration and lysis of adhesions	1 (3.3)
Unilateral radical orchiectomy	2 (6.7)
Microdenervation of the spermatic cord	9 (30.0)

PFPT = pelvic floor physical therapy

pain elicited at two or fewer scrotal content structures during initial physical exam (OR = 14.0, $p < 0.01$). At the last point of follow up subsequent to PFPT, significantly fewer subjects required pain medication including NSAIDs, narcotics, and anti-epileptics compared with prior to PFPT (44.0% versus 73.3%, $p = 0.03$).

Pain duration of less than 2 years was not associated with greater odds of pain improvement following PFPT (OR = 1.43, $p = 0.56$). Furthermore, there was no association between the odds of pain improvement following PFPT and a history of scrotal content surgery, trauma, psychiatric disorder, and coexisting chronic pain condition ($p > 0.05$).

Discussion

CSCP is a prevalent and debilitating condition that presents a particular challenge to urologists given its complexity and variable response to treatment. While the source of CSCP may arise from the scrotal contents themselves including the testicle, epididymis, and spermatic cord, a specific subpopulation of patients with CSCP have pain attributable to abnormalities of the pelvic floor.

Sinaki and colleagues previously described the concept of tension myalgia of the pelvic floor. In their study, patients presented with pain on palpation of pelvic floor muscles as noted via rectal examination. These patients were further found to have deconditioned postural musculature including the abdomen. Following pelvic floor physical therapy, over 83% of patients described some degree of pain improvement.[17] Additionally, pain originating from myofascial abnormalities of the pelvic floor may be referred to the scrotal content structures and therefore encompassed within the diagnosis of CSCP.

For patients with CSCP, proper identification of the pain source can facilitate directed therapy and avoid unnecessary intervention. Physical examination of patients presenting with CSCP should include not only the testes, epididymides, and vas deferentia, but also a 360° DRE to subjectively screen for pelvic floor point tenderness, reproducible pain that may refer to the scrotal content structures, and muscle hypertonicity.[7] Our study identified increased odds of pain improvement following PFPT in patients that had pain elicited on two or fewer scrotal content structures at initial exam, which further speaks to the importance of a thorough initial physical exam in establishing patient and provider expectations for ultimate pain improvement or resolution.

Following PFPT, 50% of patients in our study noted improvement in pain, while 44% noted complete pain relief or only mild residual pain. It is difficult to compare our success with other studies given the paucity of literature on PFPT for CSCP. However, a larger study by Anderson et al involving 138 men with chronic prostatitis and chronic pelvic pain syndrome found that after myofascial trigger point therapy, 72% of patients reported improved or markedly improved pain that was felt to be clinically significant.[18] While we recognize that chronic prostatitis and chronic pelvic pain syndrome may be distinct from referred pain from the pelvic floor to the scrotal contents, the principle of treating pelvic floor myofascial abnormalities with PFPT applies.

Ultimately, the goal of treating CSCP is return to gainful activity.[19] A proxy to this benchmark of clinical significance in our study was mild or no pain (observed in 44% of patients) and a lack of need for analgesic medications at the last point of follow up – we found that significantly fewer patients required pain medication following PFPT as compared to pre-PFPT. Importantly, PFPT is a non-operative approach to CSCP that, unlike medical therapeutics, acts to treat the source of pain rather than temporize the perception of pain. PFPT is an option for management of this condition particularly in our study population that included patients who had often failed other management modalities.

In several small studies that include results from our own institution's experience, MDSC has resulted in complete pain relief in 76%-96% of CSCP patients.[20-22] However, in our current study, nine patients underwent MDSC, each with an unsatisfactory response. This further highlights the necessity of identifying pelvic floor abnormalities via DRE prior to surgical intervention in order to direct the therapeutic approach away from the cord structures and toward the pelvic floor.

Thirty percent of patients in our study had a satisfactory response to spermatic cord block, defined by greater than 50% temporary reduction in pain, and subsequently underwent MDSC without pain improvement.[15] This is perhaps attributable to a multitude of factors including an inadequate operation in which not all nerves were divided, psychological factors such as malingering, or development of central sensitization.[23] It is probable that there were multiple pain pathways including pelvic floor components to the pain that were not addressed completely by MDSC.

All patients in our study population presented with pain both in scrotal content structures as well as pelvic floor tension or tenderness, which added to the complexity of identifying the primary pain source. We suggest referral to a pelvic floor specialist for further evaluation, including more objective measures when indicated, if there is a component of pelvic floor myofascial abnormality on initial exam prior to pursuing surgical intervention.

Our initial findings suggest that pain with voiding is not associated with worse outcomes as measured by none to minor residual pain. Nonetheless, the evaluation of voiding and sexual dysfunction in this population may be considered in further studies to identify any possible contribution to the pain syndrome.

Although our study is generalizable to a population of men presenting with a pelvic floor component to CSCP and illustrates the possible utility of PFPT for these patients, there were several limitations. Despite involving 4 years of patient data, our small sample size limited statistical power. Furthermore, this was a retrospective investigation with a representative experience of a single tertiary care medical center. This study involved a median follow up of 13 months, however, it is possible that further longitudinal follow up after physical therapy may reveal recurrence of pain. In our cohort, zero patients returned to our clinic with recurrence of pain after initial benefit from PFPT indicating either sustained pain improvement or recurrence and possible further treatment from alternative providers. The numeric rating scale was utilized in our study given that it is easy for patients to understand along with it's benefit of assessing subjective perception of pain intensity at the time of evaluation, which is especially useful in the setting of recent intervention. However, it is possible that there are variations in pain ratings between patients and among individuals.[16] Further study on CSCP may consider utilizing more comprehensive pain scales such as the McGill Pain Questionnaire.

Conclusions

As one of the first studies to explore PFPT for CSCP, we highlight the necessity of a complete physical examination for patients with CSCP including a 360° DRE to identify individuals with a pelvic floor pain component. A multidisciplinary team including urologists, pelvic floor pain specialists, and physical therapists can utilize PFPT as a non-surgical and non-temporizing option for the management of this complex pain syndrome. Importantly, our cohort had a significantly reduced need for pain medication and 44% of patients had none to minor residual pain. □

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