



Severity and bother of prolapse symptoms in women with pelvic floor myofascial pain

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Abstract

Introduction and hypothesis Our aim was to assess severity and bother of pelvic organ prolapse (POP) in women with pelvic floor myofascial pain (PFMP).

Methods We conducted a retrospective chart review assessing new patients within a hospital-based multispecialty group from January 2010 through September 2014 using the *International Classification of Diseases*, 9th edition, diagnosis codes for POP. Data from Pelvic Organ Prolapse Quantification (POP-Q) system assessment, Pelvic Floor Distress Inventory-20, (PFDI-20), and clinical assessment of pelvic floor muscles were collected.

Results Of 539 patients identified with POP, 174 (32%) had PFMP on physical exam. The mean stage of prolapse in those with PFMP was 2 [standard deviation (SD) ± 0.93] vs 3 (SD ± 0.80) in those without pain. There was a difference in the presence of prolapse beyond the hymen, with 98 (56%) of those with PFMP having their most dependent point above the hymen (Ba, Bp, or C) and 276 (76%) of those without PFMP having their most dependent point beyond the hymen ($p = .000$). Women with PFMP were predominantly white, had less-advanced prolapse, and more reported pain or discomfort (adjusted p value = .011, prolapse beyond the hymen $p = .000$, PFDI -20 $p = .003$).

Conclusions One in three women with a diagnosis of POP were found to have PFMP. On average, when pain was present, women had a lower stage of prolapse and were more severely bothered by their pelvic floor symptoms. Although limited by its nature as a retrospective analysis, this study suggests alternative etiologies, and thereby treatments, for symptom bother in women with mild prolapse.

Keywords Pelvic organ prolapse · Pelvic floor myofascial pain

Introduction

Pelvic organ prolapse (POP) is a prevalent condition with many different treatment modalities varying from observation

to surgical correction. In and of itself, it is not typically a dangerous condition, and the decision to intervene is often based on a patient's subjective report of being bothered by the condition [1]. This becomes particularly relevant as pelvic floor muscle pain (PFMP) is seen in conjunction with other urogynecologic conditions. A recent study by Adams et al. suggests a prevalence as high as 24% in a tertiary university-based urogynecology practice and 9% in a community-based urogynecology practice [2]. If treatment is determined by bother, and one in four of our patients is experiencing PFMP, we would do well to better understand how PFMP impacts their perceptions of bother and symptom severity.

Bother can present as pain, discomfort, and bowel or bladder symptoms. In and of itself, a sense of bother does not appear to correlate well with the severity of symptoms seen on exam, and given that bother can be a motivating factor for proceeding to surgery, we sought to evaluate the relationship between severity of POP and degree of symptom bother in patients with and without PFMP. While previous research

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has described the relationship of POP with symptom bother, these studies have not evaluated the relationship of PFMP with POP or symptom bother. The objective of this study was to evaluate the self-reported severity and bother due to prolapse in women with and without PFMP. Our hypothesis was that women with PFMP would have greater bother and less severe prolapse.

Materials and methods

Approval for this study was obtained from the Loyola University Chicago Health Sciences Division Institutional Review Board. We performed a retrospective analysis, querying our electronic medical records for all new-patient visits from January 2010 through September 2014. Inclusion criteria were new patients >18 years who spoke English. Excluded were returning patients and women who did not complete the questionnaires or undergo a fully documented physical examination. The study flow diagram is depicted in Fig. 1. Patients had a diagnosis code of POP of 70.4, 70.50, 70.51, 70.52, 70.53, 70.54, 70.55, 70.61, 70.62, 70.63, 70.64, 70.77, 70.78, 70.79, 70.8, 70.91, 70.92, 70.93, 70.94, or 70.95 [3]. Of the 1490 records that matched search criteria, 852 were new-patient visits. Three hundred and thirteen (37%) records were incomplete and thus bother or degree of prolapse was not assessable. The remaining 539 charts met inclusion criteria according to the Pelvic Organ Prolapse Quantification system (POP-Q) assessment, the Pelvic Floor Distress Inventory Short Form 20 (PFDI-20), and clinical assessment of PFMP. Prolapse assessment consisted of a formal POP-Q documented in the chart and was performed by, or under the supervision of, a fellowship-trained, board-certified urogynecologist. Though there is no standardized definition for PFMP, it can be described as eliciting pain during a gynecologic exam when pressure is placed on muscles of the pelvic floor [2]. For the purposes of this investigation, if the patient responded “yes” when asked if she appreciated pain on light palpation of the iliococcygeus, obturator internus, or pubococcygeus muscles (to one or any of these muscles), the patient was classified as PFMP present. If exam did not produce pain, the patient was classified as PFMP absent. Basic patient demographics

were assessed, as were questions 1–3 and 20 from the PFDI-20, to assess the presence (yes/no) and amount (not at all, somewhat, moderately, quite a bit) of bother relative to their pelvic floor. Questions assessed bother secondary to pressure, heaviness, sensation of bulge, and pain or discomfort. These questions were analyzed after patients were determined to be PFMP present or absent based on clinical exam. Furthermore, the determination of PFMP was made independent of assessment of a patient’s response to the question: “Do you usually experience pain or discomfort in the lower abdomen or genital region?” We categorized prolapse into two groups based on clinical significance, as patients with stage ≤ 2 are less likely to be surgical candidates. Independent *t* test was used for continuous variables and chi-squared analysis for categorical variables. A manual linear regression was used to investigate the relationship between PFMP and the presence of prolapse beyond the hymen.

Results

Baseline characteristics of the 539 patients determined to have prolapse by diagnosis code is depicted with regard to presence (174) or absence (365) of PFMP are reported in Table 1. There were no significant differences in demographic variables, with the exception of age and race, between groups. Mean age of all participants was 64.17 years (SD \pm 11.04), and most were white (80%), not current smokers (82%), with mean body mass index (BMI) of 27.96 (SD \pm 5.47), and median parity of three (range 0–12). Patients without PFMP were significantly older than patients with PFMP ($p < .001$), with a mean age of 65.3 years (36–91; SD 10.80) in patients without PFMP compared with 61.71 years (27–87, SD 11.16) in patients with PFMP. Additionally, those who were white were statistically less likely to have PFMP [odds ratio (OR) 0.58, 95% confidence interval (CI) 0.38–0.89; $p = .01$].

Baseline medication usage is reported in Table 2. There were no significant differences in use of nonsteroidal anti-inflammatory drugs (NSAIDs), opioids, neuropathic pain medications, muscle relaxants, sleep aids, antidepressants, benzodiazepines, or anticholinergic medications between groups. In all women diagnosed with prolapse, those with

Fig. 1 Study design. POP-Q = Pelvic Organ Prolapse Quantification system, PFDI = Pelvic Floor Distress Inventory, PFMP = Pelvic Floor Myofascial Pain

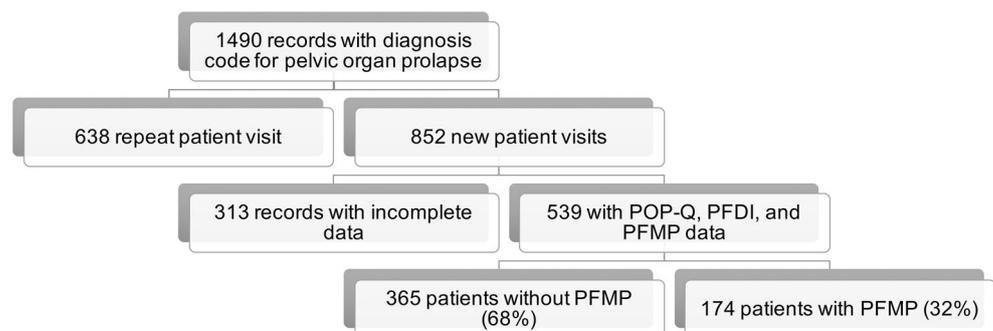


Table 1 Demographics and baseline characteristics

	PFMP status		Total (n = 539)	P value*
	Absent (n = 365)	Present (n = 174)		
Mean age (SD)	65.3 (10.80)	61.71 (11.16)	64.17 (11.04)	<.001 ^a
Race				.11 ^b
White	301 (83%)	127 (73%)	428 (80%)	
Black	17 (4.67%)	11 (6.36%)	28 (5.21%)	
Hispanic	24 (6.59%)	15 (8.67%)	39 (7.26%)	
Asian	3 (0.82%)	3 (1.73%)	6 (1.12%)	
Other	19 (5.22%)	17 (9.83%)	36 (6.70%)	
Race recoded				.01 ^c
White	301 (83%)	127 (73%)	428 (80%)	
Nonwhite	63 (17%)	46 (27%)	109 (20%)	
Current smoker				.52 ^c
Yes	67 (18%)	28 (16%)	95 (17%)	
No	298 (82%)	146 (84%)	444 (82%)	
Mean BMI (SD)	27.66 (5.18)	28.57 (6.01)	27.96 (5.47)	.09 ^d
Median parity (range)	3 (0–12)	3 (0–7)	3 (0–12)	.92 ^e

BMI body mass index, SD standard deviation, PFMP pelvic floor myofascial pain

^aIndependent samples *t* test with observed normality and homogeneity

^bFisher's exact test

^cPearson's chi-square test for association

^dIndependent samples *t* test with Satterthwaite correction for observed heterogeneity

^eWilcoxon rank-sum test due to nonnormality

PFMP were significantly less likely to have prolapse beyond the hymen compared with those without PFMP. As demonstrated in Fig. 2, there was a statistically significant difference between groups, with 276 (76%) patients without PFMP having their most dependent point beyond the hymen [≥ 0 at Ba (67%), Bp (37%), or C (39%)] and 98 (56%) patients with PFMP having their most dependent point above the hymen [≥ 0 at Ba (43%), Bp (30%), or C (26%)]; OR 0.42, 95% CI 0.28–0.61; $p < .001$. In 27% of patients, the anterior and posterior compartments were equivalent. All compartments were equivalent in 15% of patients.

Women with PFMP were more likely than women without to report symptoms of bother in the validated Pelvic Floor Distress Inventory-20 (PFDI-20), which is demonstrated in Fig. 3. Those with PFMP were 2.69 (95% CI 1.93–3.76) times more likely to have more frequent pressure in the lower abdomen than those without PFMP ($p < .001$). Similarly, those with PFMP were 2.58 (95% CI 1.85–3.60) times more likely to have more frequent heaviness or dullness in the pelvic area than those without ($p < .001$) and 2.95 (95% CI 2.09–4.15) times more likely to have more frequent pain or discomfort in the lower abdomen or genital region ($p < .001$). Conversely, those with PFMP had a comparable response to PFDI question 3 regarding the sensation of bulge in the vaginal area when compared with those without ($p = .82$), even though their aggregate POP-Q was more likely to be above the hymen.

Discussion

The findings of our study indicate that in women with a clinical diagnosis or presenting symptom of POP, one in three have PFMP. These women have a lower stage of prolapse and yet are more severely bothered by their pelvic floor symptoms. Thus, the extent of prolapse may not be the driving factor in a patient's subjective reporting of the severity of symptoms, as those with PFMP and greater bother had lower stages of prolapse. This was the case even when specifically reporting the symptom of "something falling out of the vagina." This was consistent with our hypothesis, that PFMP indicates more severe pelvic floor bother without indicating a severe degree of prolapse. The findings also suggest what we have often surmised: that prolapse is not painful, and that in patients presenting with prolapse and severe bother, prolapse may not be their only etiology of bother. Given the significantly complex etiology of PFMP, when symptoms reported and the bother caused by them are not correlated with the degree of physical exam findings, other possibilities should be further investigated, particularly prior to proceeding with a surgical repair.

Although previous studies have characterized the relationship between POP and symptom bother, they—unlike our study—failed to take into account the role of PFMP [1, 4]. PFMP is well known for its contribution to chronic pelvic pain

Table 2 Medication use in patients with and without pelvic floor myofascial pain (PFMP)

	PFMP status		Total (n = 539)	P value
	Absent (n = 365)	Present (n = 174)		
NSAIDs	91 (25%)	39 (22%)	130 (24%)	.52 ^a
Narcotics	25 (6.85%)	9 (5.17%)	34 (6.31%)	.45 ^a
Neuromodulators	15 (4.11%)	3 (1.72%)	18 (3.34%)	.15 ^a
Muscle relaxants	11 (3.01%)	3 (1.72%)	14 (2.60%)	.56 ^b
Sleep	6 (1.64%)	5 (2.87%)	11 (2.04%)	.34 ^b
Antidepressants	27 (7.40%)	14 (8.05%)	41 (7.61%)	.79 ^a
Benzodiazepine	24 (6.58%)	13 (7.47%)	37 (6.86%)	.70 ^a
Anticholinergics	0 (0%)	1 (0.57%)	1 (0.19%)	.32 ^b
Cyclobenzaprine	5 (1.37%)	4 (2.30%)	9 (1.67%)	.48 ^b

^a Pearson's chi-square test for association

^b Fisher's exact test

and is present in ~60% of patients with self-reported chronic pelvic pain [5, 6]. PFMP has been linked with other pain syndromes, such as fibromyalgia and irritable bowel syndrome, and has an established association with bothersome symptoms such as urinary and defecatory dysfunction, dyspareunia, vulvodynia, and painful bladder syndrome [2, 6, 7]. PFMP is seen in conjunction with other urogynecologic conditions, and our findings are consistent with those of Adams et al., which demonstrated a prevalence as high as 24% in a tertiary university-based urogynecology practice and 9% in a community-based urogynecology practice [2].

Our work is consistent with other retrospective studies [8]. For example, a retrospective study by Ghetti et al., whose purpose was to characterize the relationship between symptoms related to POP with POP severity, noted that symptoms of vaginal bulge positively correlated with prolapse severity, yet urinary and defecatory symptoms did not, although urinary and defecatory dysfunction are traditional indications for prolapse surgery [1]. Notably, in Ghetti et al.'s study, POP reaching at least 1 cm below the hymen was associated with symptom bother by 84–87% of patients, and an even greater number (90% of patients) reported symptom bother with prolapse 3 cm outside the hymen [1]. Interestingly, ~30% of

patients with severe prolapse that extended >5 cm beyond the hymen reported no symptom bother [1], which supports other pathophysiologic processes contributing to symptom experience. While it seems natural that patients would be bothered by more severe prolapse, the role of urinary and defecatory symptoms is not well explained [1] and points to a role for assessment of PFMP, which certainly does impact these pelvic floor symptoms [2, 6].

A prior prospective study by Ellerkmann et al. had similar aims: to describe the relationship between pelvic floor dysfunction symptoms and the location and severity of POP, hypothesizing that the greater degree of prolapse would be associated with an increasing severity of symptoms. Ellerkmann et al. found similar results to Ghetti et al. in that there was a moderate correlation between bulge symptoms and prolapse severity, while bowel and bladder symptoms were weakly correlated [4]. In a study by Kinman et al., the POPDI score for women with stage 2 prolapse was 51.9 ± 25.9 compared with 46.4 ± 20.3 for women with stage 3 prolapse, a nonsignificant statistical difference but interesting in that a higher stage of prolapse was not found to correlate with a higher level of bother [9]. This further supports our hypothesis that pelvic floor dysfunction and bother is likely multifactorial. Now, with the emphasis on shared decision making and patient satisfaction, investigations such as prior studies and our own, which seek to determine the etiology of patient symptoms prior to undergoing the risk of surgery, seem even more relevant.

Our PFMP findings are also consistent with the work of Adams et al., which found objectively lower stage of prolapse in patients with levator myalgia and POP [8]. Our study also demonstrates that PFMP is prevalent in patients with POP, with 32% of patients with POP having clinically exhibited tenderness to palpation of the pelvic floor muscle groups. This prevalence is slightly higher than previously demonstrated in Adams et al. work, which found a 24% prevalence of

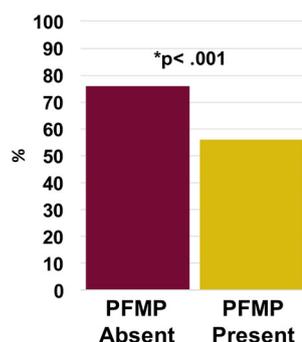


Fig. 2 Most dependent point beyond the hymen (Ba, Bp, or C > 0). PFMP pelvic floor myofascial pain

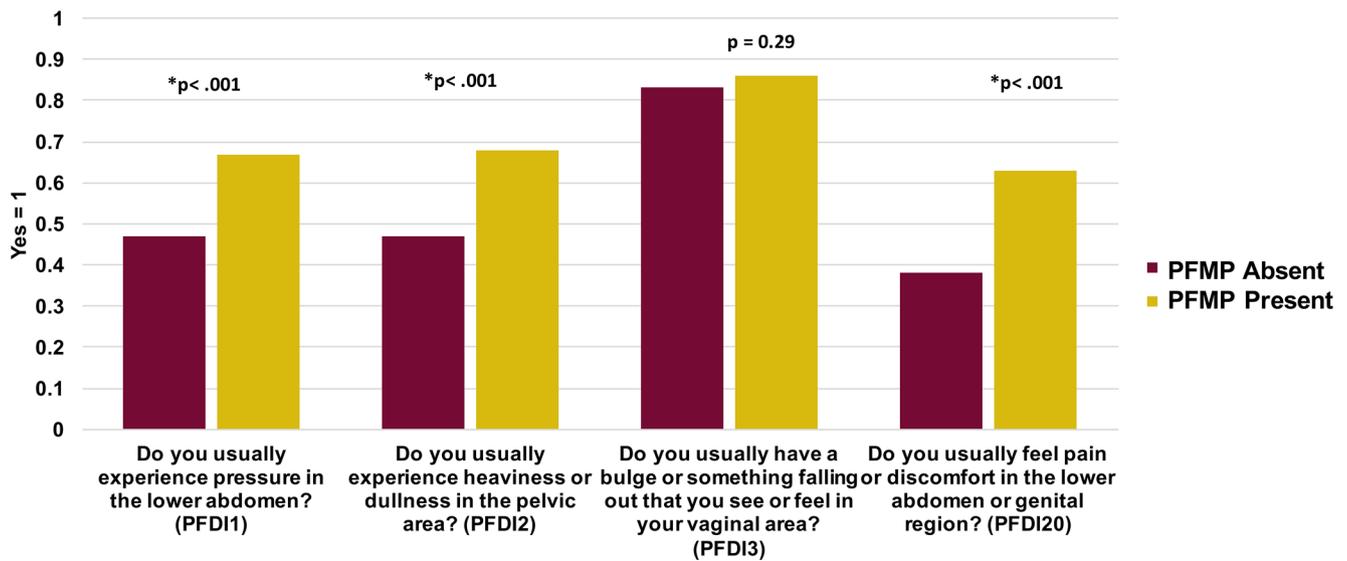


Fig. 3 Pelvic Floor Distress Inventory-20 (PFDI-20) scores in patients with and without pelvic floor myofascial pain (PFMP)

levator myalgia in the university-based setting [2]. The prevalence of PFMP is potentially higher in our tertiary-care setting, where patients may have more complex comorbidities. Prior data, combined with our results, suggest that patients with PFMP seeking surgical management for symptomatic prolapse at earlier stages of prolapse should be counseled regarding the benefit of nonsurgical options, such as pelvic floor physical therapy.

Previous studies have recognized the difference in bother for patients with stage 2 POP, with some patients experiencing higher levels of bother than others with similar levels of prolapse [10]; however, in that work, the status of PFMP was unknown. Some studies have suggested ethnic differences in the levels of bother, with Hispanic and Native American women with stage 2 prolapse having higher levels of bother on the POP subset of the PFDI-20 compared with non-Hispanic white women with stage 2 prolapse [10]. Our study population, while predominantly composed of white women, did show that white women were significantly less likely to have PFMP than those who were nonwhite, which could contribute to higher levels of bother in a population with a lower stage of prolapse. This is similar to findings that showed black women with moderate urinary incontinence were more bothered than white women [11]. While the relationship between ethnicity and bother is not clear, it is clearly present and requires further examination.

Other studies have implicated conditions such as depression and fibromyalgia in relation to bother [1, 2, 8]. Kinman et al. evaluated the relationship between age and level of bother due to prolapse and found that women in the sixth and seventh decades of life experienced higher levels of bother due to POP than younger or older women with the same stage of prolapse [9]. While these studies point to a multifactorial

etiology, our study hones in on the link between bother and degree of prolapse and the presence of PFMP as another potential etiology.

Strengths of this study include the use of validated questionnaires: the PFDI short form was completed by all new patients. Also, both the presence of PFMP and the degree of prolapse were assessed by physicians. This was done systematically in all new patients during their first exam. Our study is limited by its very nature of being a retrospective chart review and the inherent selection bias associated with this type of investigation. Additionally, it is limited by incomplete data in the medical record. That is, we excluded patient records that did not include all points of analysis. Likely, those in whom there was no comment regarding degree of POP or presence of PFMP had none, as our practice is particularly sensitive to these issues. However, we opted to exclude these patients from our analyses, as we could not verify this. We also did not report on other mitigating factors or interventions that would change a diagnosis of prolapse or PFMP, such as prior surgeries or trauma. The diagnosis of PFMP was made by clinical assessment and was not an objective measure, since no such opportunity for precise measurement exists in clinical practice despite efforts to objectify the pelvic floor muscle examination in chronic pelvic pain research [12]. Additionally, a potential bias of our practice is in our approach to addressing myofascial pain prior to surgical intervention; thereby we have a heightened attention to these issues.

In summary, our investigation suggests that women with PFMP had less prolapse and more bother than their counterparts without PFMP. Future analysis could further investigate whether PFMP is relieved by use of a pessary, thereby mimicking surgical correction, or with further investigation of comorbid pain diagnoses in a prospective manner with more

objective and complete data regarding muscle tenderness, including other pelvic floor muscle findings such as resting tension, strength, and coordination of the pelvic floor musculature. This data could potentially prove relevant in duration of surgical repair or degree of prolapse progression. Additionally, other musculoskeletal exam findings of the pelvic girdle, hip, and lumbar spine could be assessed. In doing so, we would aim to contextualize bother and pain with other musculoskeletal complaints/diagnoses and determine the underlying potential etiology of PFMP. In doing so, we would further elucidate the role of PFMP in the context of a broader musculoskeletal assessment and its relation to pelvic floor symptom bother. Increasing knowledge and awareness of PFMP and its contribution to pelvic floor disorders and common gynecological conditions will help practitioners not only recognize but also appropriately treat the multifactorial diagnoses encountered in female pelvic floor medicine and reconstructive surgery and potentially inform surgical decision making.

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Compliance with ethical standards

Conflicts of interest None.

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