

## WOMEN'S SEXUAL HEALTH

## Case Series: Redefining Severe Grade 5 Vaginismus



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## ABSTRACT

**Introduction:** Vaginismus is poorly understood and relatively unknown among health care providers. For those who understand and treat vaginismus, few make an assessment of the severity of this condition. The importance of classifying the severity of vaginismus impacts the clinician's ability to diagnose and treat vaginismus, and understanding of the patient's experience.

**Aim:** The aims of this paper are to identify the distinguishing features of severe grade 5 vaginismus, determine if vaginal spasm is present in severe grade vaginismus, and to establish qualifications for the Pacik grade 5 classification.

**Methods:** Assessment of 553 referred or self-referred women who were unable to tolerate intercourse completed a comprehensive pretreatment questionnaire. Of those women, 391 underwent a vaginal examination in a certified surgicenter using sedation and anesthesia as needed.

**Main Outcome Measure:** The main outcome measures were to detect the presence of a visceral reaction with an intended or actual gynecologic examination in Grade 5 patients, and to identify vaginal spasm on examination.

**Results:** A visceral response reaction to routine gynecologic examinations, as well as spasm of the bulbocavernosum, occurred in patients with severe vaginismus.

**Conclusion:** Severe vaginismus with visceral response manifestations to routine gynecologic examinations, inability to have intercourse, and spasm of the bulbocavernosum is newly defined as severe grade 5 vaginismus.

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**Key Words:** Vaginismus; Severe Vaginismus; Secondary Vaginismus; Vaginal Muscle Spasm; Painful Sex; Painful Intercourse; Female Sexual Pain Disorder; Female Sexual Dysfunction; Dyspareunia

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## INTRODUCTION

Vaginismus is defined as a penetration disorder in which any form of vaginal penetration is often painful or impossible. It has traditionally been referred to as an involuntary contraction of the pelvic floor muscles due to actual or anticipated pain associated with vaginal penetration. The definition of vaginismus recently changed, and the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders characterizes it as a subset of “Genito-Pelvic Pain/Penetration disorder” rather than vaginismus.<sup>1,2</sup>

The findings of vaginal muscle spasm may help differentiate vaginismus from other sexual pain disorders. Diagnosis of this disorder is primarily made through a comprehensive history and physical examination. In an effort to stratify the severity of vaginismus, Lamont described 4 grades of vaginismus based on

- First degree vaginismus** as spasm of the pelvic floor that could be relieved with reassurance and the patient could relax for her examination.
- Second degree vaginismus**, generalized spasm of the pelvic floor as a steady state despite reassurance, and the patient was unable to relax for the exam.
- Third degree vaginismus**, the pelvic floor spasm was sufficiently severe that the patient would elevate her buttocks in an attempt to avoid being examined.
- Fourth degree vaginismus**, the most severe form of vaginismus described by Lamont, the patient would totally retreat by elevating the buttocks, moving away from the pelvic exam, and tightly closing the thighs to prevent any examination.

**Figure 1.** The Lamont Scale. Descriptions of Lamont grades 1–4.

the patient's history, their behavior during a routine gynecologic examination, and "physical demonstration of perineal muscular spasm" (Figure 1).<sup>3</sup> Classification of the severity of vaginismus is important as it assists in the determination of treatment. Mild forms of vaginismus may respond to modalities, such as physical therapy, biofeedback, or psychotherapy, whereas severe forms require more interventional therapies, including the use of botulinum toxin for treatment of vaginismus.<sup>4–11</sup>

Clinical experience argues, however, that there should be an even higher grade of vaginismus to reflect both a woman's extreme anxiety of a gynecologic examination and their reactions

during those procedures. These reactions extend beyond Lamont's grade 4 classification, with an additional visceral response, which may include any of the following: trembling, shaking, extreme anxiety, crying, screaming, sweating, palpitations, hyperventilation, nausea, vomiting, and syncope. Many of these patients insist on sedation or anesthesia prior to physical examination and treatment. Unfortunately, this fully relaxes the vaginal muscles complicating the diagnosis of vaginal spasm on physical examination.

In 2012, Pacik received U.S. Food and Drug Administration for the use of onabotulinumtoxinA treatment for vaginismus (NCT 01352546). In this context, we performed this study to identify distinguishing features of grade 5 vaginismus, presence of vaginal spasm in severe grade 5 vaginismus, and to further elucidate qualifications for the Pacik grade 5 classifications in order to better inform treatment decisions for patients afflicted with this disorder.

## AIMS

The aims of this article are to identify the distinguishing features of severe grade 5 vaginismus, determine if vaginal spasm

**Primary** (intercourse has **always** been extremely painful or impossible) Yes No

Duration:

Details:

Does attempted intercourse feel like "hitting a wall"? Yes No

Details:

**Secondary** (Intercourse without pain at some time, onset of pain later) Yes No

Details (When did this begin and do you recall onset after yeast infection, childbirth, genital trauma, menopause, unknown, etc?)

**Painful Intercourse** (Dyspareunia – Intercourse possible but painful) Yes No

Is any form of vaginal penetration (including tampons) possible? Yes No

Details:

Level of pain with attempted intercourse? (1-10: 1=No pain, 5=Moderate, 10=Severe Pain, Impossible)

Symptoms: Burning? Yes No Duration of burning

Details:

Other symptoms? Yes No Details:

**Figure 2.** Inclusion criteria questionnaire. Questions differentiate into primary or secondary vaginismus.

Historical data included:

1. Age
2. Duration of symptoms
3. Medical and social histories
4. Distinction between dyspareunia (painful intercourse) and vaginismus (severe pain with attempted intercourse or intercourse is impossible)
5. Tampon usage
6. Self-assessment of the severity of their vaginismus as well as the question "Does intercourse feel it is like hitting a wall" (this question was added to the 2012 questionnaires)
7. Assessment of primary versus secondary vaginismus
8. Self-assessment of vulvodynia and/or vestibulodynia
9. Psychosexual history including sexual molestation, strict family or religious upbringing, fear of sex in regard to: first time intercourse: vagina too small, penis too large, pain, tearing (ripping) of vagina, bleeding, pregnancy, fear of childbirth, fear of HIV or STD's
10. Whether past GYN exams were painful or rough
11. History of genital trauma
12. Whether prone to depression, anxiety or phobias
13. Family history of vaginismus
14. Penetration history with pain and anxiety scores (anxiety scores added 2012)
15. Type and duration of treatments attempted
16. Relationship history
17. Completion of the Female Sexual Function Index

**Figure 3.** Historical data questionnaire. GYN = gynecologic; STD = sexually transmitted disease.

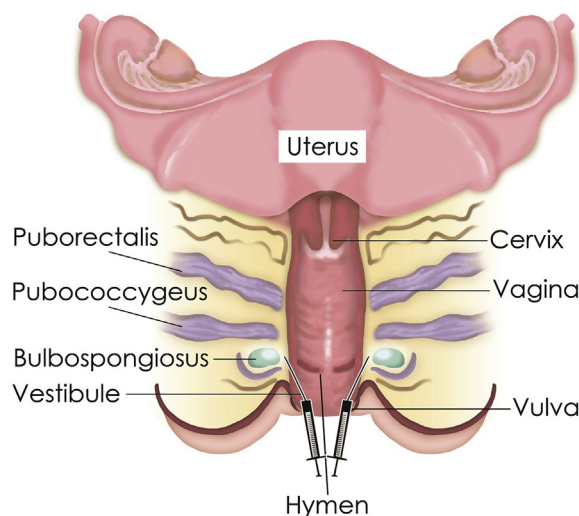
is present in severe grade 5 vaginismus, and to establish qualifications for the Pacik grade 5 classification.

**METHODS**

In this study, 553 vaginismus assessments over a 10-year period from 2005–2015 with the primary objective to identify distinguishing features of grade 5 vaginismus, presence of vaginal spasm in severe grade 5 vaginismus, and to elucidate qualifications for the Pacik grade 5 classifications. Inclusion criteria included a diagnosis of primary or secondary vaginismus. Exclusion criteria included a diagnosis of vulvodynia. Inclusion criteria were determined by patient-completed questionnaires

(Figure 2). All patients completed a comprehensive, researcher-generated questionnaire to assess historical data related to patients' vaginismus, including age, duration of symptoms, severity of vaginismus, tampon usage, psychosexual history, history of genital trauma, and type and duration of attempted treatments, among others (Figure 3). Patients were asked to respond with yes/no answers for the psychosexual history, or on a 1–10 numeric scale, with 10 being the worst possible pain or the worst possible anxiety. Each entry was followed by a request for a description of details. Consultation with the patient was conducted either in the office or by telephone or Skype for patients unable to be evaluated because of geographic considerations. All information was entered into a Microsoft Excel file (Microsoft, Redmond, WA) by the senior author. Patients also completed a Rosen questionnaire.<sup>12</sup>

Of 553 patient assessments, 391 patients met inclusion criteria and underwent examination in a certified surgicenter by the primary author (P.T.P.). All examinations were



**Figure 4.** Schematic of vaginal and pelvic floor musculature.

**Table 1.** Degree of vaginal muscle hypertonus and spasm during physical examination

Degree of vaginal muscle hypertonus/spasm	
1–2	Minimal/mild degrees of vaginal hypertonus/spasm
3	Considerable vaginal hypertonus/spasm. Finger penetration possible, but vaginal musculature is tight. Patient is uncomfortable with examination.
4	Presence of vaginal muscle spasm. Bulbocavernosus seems like a tightly closed fist and digital penetration is difficult to impossible without sedation.



**Figure 5.** Pacik Pyrex borosilicate dilators. Sizes 3–6 presented.

performed with an American board-certified anesthesiologist in attendance. Women who were unable to tolerate any contact in their pelvic area or experienced high levels of anxiety were pretreated with intravenous Midazolam. Patients with high levels of anxiety or unable to tolerate physical examination required Propofol anesthetic. All patients signed an informed consent prior to treatment. All examinations were conducted in the operating room.

The procedure began with a physical examination of the vulva and cotton-tipped testing of the vulva and vestibule.<sup>13</sup> This was followed by digital examination of the vaginal musculature using 50% Surgilube mixed with 2% xylocaine jelly, to determine the degree of hypertonus or spasm of the bulbocavernosus, pubococcygeous, and puborectalis (Figure 4). Each muscle was examined separately and recorded on a numeric scale of 1–4 as determined by the examiner

**Table 2.** Postprocedure counseling

- Recommendations for effective dilation, anxiety management for dilation.
- Experiment with different positions for dilation. Use a mirror.
- Finger penetration prior to dilation.
- Importance of keeping a dilation diary. This will keep the patient accountable for her dilation as well as keeping the clinician informed.
- Use of aids, such as vibrators, to overcome the clinical aspect of dilating.
- Lubricants: Water soluble, silicone, and oils, such as coconut and olive oil.
- Sensate focus exercises.
- Transitioning from dilators to intercourse. Night out. Dress up, “dress down”; shower together; setting the stage for romance. 30–60 minutes of prior dilation with #5 or #6 or similar sized dildo.
- No time limit to attempt intercourse.
- Penile tip only, minimal penetration, no thrusting during the early attempts at intercourse.
- Managing setbacks. Anxiety management.
- Overcoming involuntary thigh adduction (“Leg Lock”) when transitioning to intercourse. Coital positions of pelvic floor relaxation, such as spooning.
- Validating the need to “catch up emotionally to where I am physically.” Patients tend to make progress more quickly with dilators (physical) than transition to intercourse (psychologic).
- First time intercourse to celebrate birthdays and anniversaries are prone to failure.
- Management of low libido/anorgasmia, and relationship problems. Further sex counseling can be valuable.
- Management of erectile dysfunction, male hostility.
- Overcoming fears of the “dreaded” gynecologic examination.
- Overcoming fears of childbirth.
- Menopause-importance of lubes and dilation because of dryness and tearing.

Note: This list is incomplete. Patients may require considerable postprocedure support for about 6–12 months. Consider sex counseling for emotional support and relationship problems; physical therapy to help with dilation. Customized counseling for individual needs is helpful.

(Table 1). Patients were questioned throughout the examination if they were experiencing pain, anxiety, or both, and if they were unable to distinguish between the two as the various areas of the vulva were tested. As expected, a high degree of anxiety made it difficult for patients to distinguish between pain and anxiety specifically. Testing of the vestibule was performed last as it could result in higher levels of anxiety and, therefore, more withdrawal. An assistant was present throughout the examination to record the patient’s answers. All results of the examination were entered into a Microsoft Excel spreadsheet by the senior author.

Patients were then treated with 100 units of Botox. 50 units were injected from 7–9 o’clock on the patient’s right bulbocavernosus muscle, and from 3–5 o’clock on the patient’s left bulbocavernosus muscle, as marked by the residual hymenal fragments. Bupivacaine 0.25% with 1:400,000 epinephrine was injected along the right and left lateral walls of the vagina. A #5 Pacik Pyrex dilator was then placed in the patient’s vagina (Figure 5). Patients were then brought to the recovery room to practice moving the dilator in and out until they were deemed clinically stable prior to discharge. Patients were seen the following day for comprehensive postprocedure counseling. This included discussion on how to advance with the dilators, creating a score card, positions of comfort during early coital attempts, and corresponding with the staff (Table 2).

Graphs were created using Microsoft Excel to analyze various historical data collected, including self-assessment of vaginismus severity, age of discovery, age of consultation, duration of symptoms, and tampon use. The association between the severity of muscular spasm/hypertonus in the 3 main vaginal muscles and level of self-assessed vaginismus was assessed by fingertip examination.<sup>14</sup> This data was analyzed using the standard statistical method of Spearman’s Rank Order Correlation to determine strength of association. Standard statistical methods were used to determine statistical significance.

**RESULTS**

Of the 553 patient assessments, 57.4% of patients self-assessed their severity of vaginismus as grade 5, with 83.4% of self-assessments noted to be grade 3 or higher (Figure 6). Most patients, therefore, placed themselves outside of the severity of the vaginismus scale from Lamont’s original study (Figure 7). 487 patients (89.6%) were in the primary vaginismus group and 58 (9.4%) were in the secondary vaginismus group. For women who noted an aversion to penetration prior to discovering their vaginismus, the average age was 21.1 years old (Figure 8). Patient-reported age of discovery of vaginismus was most commonly noted between the ages of 10 and 19 years old (Figure 9). The average duration of symptoms was 7.95 years (range 3 months to 44 years), although approximately 30% of

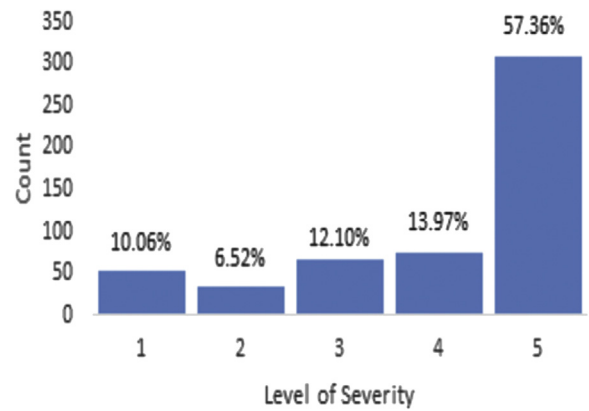


Figure 6. Self-assessment of severity of vaginismus symptoms.

patients reported duration of symptoms > 10 years (Figure 10). There is a clear negative correlation between severity of vaginismus and tampon use, with 73% of women noting no tampon use with grade 5 vaginismus (Figure 11). Sexual molestation was identified in 100 women (18.3%) with vaginismus.

The association between the severity of muscular spasm of the vagina and the level of severity of self-assessed vaginismus was also assessed. There is a clear, noted increase in the prevalence of spasm in patients with severe vaginismus. Spasm is most often observed in the bulbocavernosus, with the grade 5 vaginismus group the most common group of patients presenting with this finding. However, in higher levels of severity of vaginismus, spasm in the pubococcygeous and puborectalis are also observed (Figure 12). In all muscles, there is a direct correlation between the degree of hypertonus and the severity of vaginismus experienced by the patient. This relationship is strongest for the bulbocavernosus muscle, and weakest for the puborectalis.

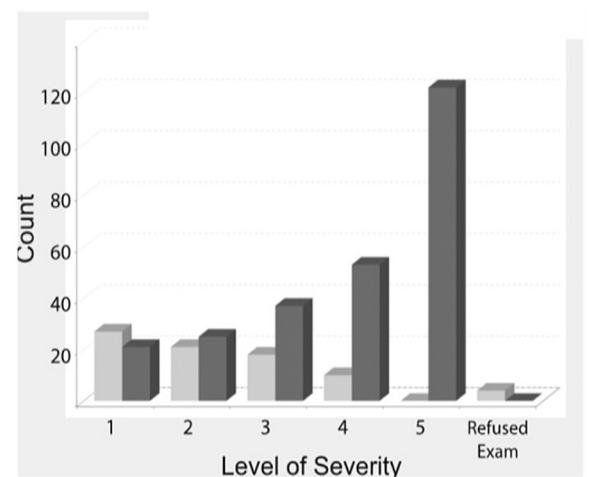


Figure 7. Patient self-assessment using the modified Lamont scale reported here (dark gray) compared to assessments from Lamont’s original study (light gray). Note that almost half of the patients placed themselves in grade 5, outside the traditional Lamont scale.

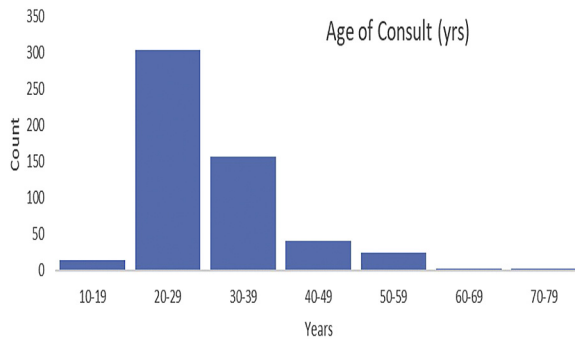


Figure 8. Age range at time of consultation.

## DISCUSSION

In this study, we determined distinguishing features of grade 5 vaginismus, presence of vaginal spasm in severe grade 5 vaginismus, and further elucidated qualifications for the Pacik grade 5 classification.

Early descriptions of vaginismus can be found in works of Hugier and Sims.<sup>15</sup> The extreme difficulty of examining the single patient reported by Sims in 1861 as well as the severe visceral reaction would be consistent with the grade 5 patients noted in this study. In his Clinical Notes, Sims<sup>15</sup> defines vaginismus as “hymeneal hyperesthesia with a spasmodic contraction of the sphincter vaginae.” In this article, we clearly show that there is a direct relationship between muscular spasm and the severity of vaginismus. Of the 3 vaginal muscles, we note the distribution of hypertonus or spasm at each level of severity of vaginismus, with spasm of the bulbocavernosus muscle most commonly observed. Spasm of the bulbocavernosus is noted to be involuntary in that the patient has no control over it. The spasm is often seen even under sedation (1–4 mg intravenous midazolam) or light anesthesia (100–200 mg intravenous propofol) where the bulbocavernosus looks and feels like a “tightly closed fist.” Patients who have involuntary and uncontrolled spasm of the vaginal musculature do not have the ability to respond to verbal requests to relax. In the patients with the more severe cases of vaginismus, they are usually unable to tolerate physical examination without some sedation.

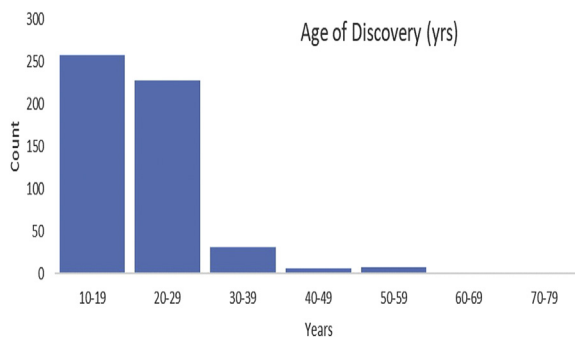
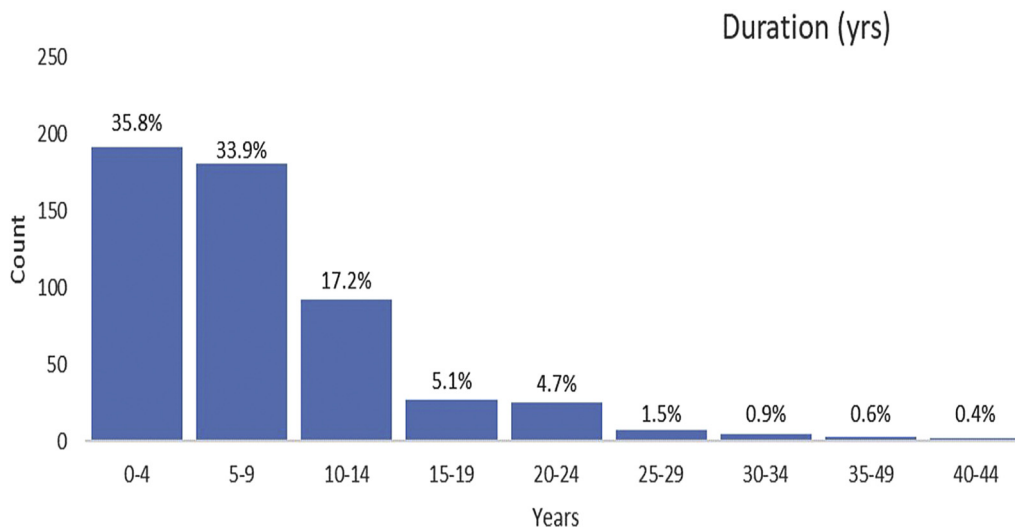


Figure 9. Age range at time of discovery of vaginismus symptoms.

By examining patients in a controlled environment, with access to sedation and anesthesia, physical findings can be observed and recorded. Nevertheless, it must be kept in mind that too much sedation, or the need for anesthesia, will eliminate muscular hypertonus and/or spasm. The balance, therefore, between keeping the patient comfortable and losing the opportunity to identify spasm is a critical one. This has been observed in patients who were noted to have severe spasm of the bulbocavernosus yet were told by their gynecologist that “nothing is wrong” when they were examined under anesthesia. This points to the importance of a careful history in diagnosing vaginismus, rather than diagnosing vaginismus by physical examination, which is either impossible in severe vaginismus, or not helpful under anesthesia because of the loss of spasm. Women who are highly anxious may not permit a vaginal examination even with sedation, and as the need for more sedation is required to maintain control, so too the landmarks of muscular spasm have been found to disappear. Lamont noted 4 couples who agreed that it felt like “the penis hits a brick wall” about 1 inch inside the vagina.<sup>4</sup> These women all refused pelvic examination. This “wall” or “block” is noted in the history of many of the patients with grade 5 vaginismus and has become an important diagnostic part of the history of severe vaginismus. The history “hitting a wall” is consistent with the physical finding of spasm of the entry muscle, the bulbocavernosus, as noted in Figure 8. The spasm of the bulbocavernosus may be sufficiently severe in these patients that the opening to the vagina seems to be absent.

Classifying patients with vaginismus according to the severity of the condition may be helpful in determining the best approach to treat patients who have higher levels of pain, fear, and anxiety. Patients who are a grade 1 often can relax enough to be treated with sex counseling, cognitive behavioral therapy, physical therapy, biofeedback, dilation, psychotherapy, and hypnotherapy. Patients with grade 2 vaginismus have more difficulty advancing with therapy because of their inability to relax. They listen to counseling but may be unable to incorporate the suggestions. Patients with grade 3 and especially grade 4 and grade 5 vaginismus are the most difficult to treat and often move from therapist to therapist and doctor to doctor seeking a diagnosis and treatment. Even patients with grade 5 vaginismus can be differentiated into those who are able to tolerate limited penetration (such as a finger or the use of a tampon) and those in whom any penetration is impossible. Patients with grade 5 vaginismus who have never had any form of penetration seem to carry enormous levels of anxiety and often demonstrate extreme fear at the time of treatment.

The main strength of our study is a complete and substantial patient dataset, which allowed us to identify and further classify grade 5 vaginismus within our patient sample. We are able to identify spasm of the bulbocavernosus muscle as statistically significant in this group of patients. Further, all examinations were completed by a single examiner, which helps reduce



**Figure 10.** Distribution of duration of vaginismus at time of consultation and treatment. Note that over 30% of patients have suffered from unsuccessfully treated vaginismus for more than a decade.

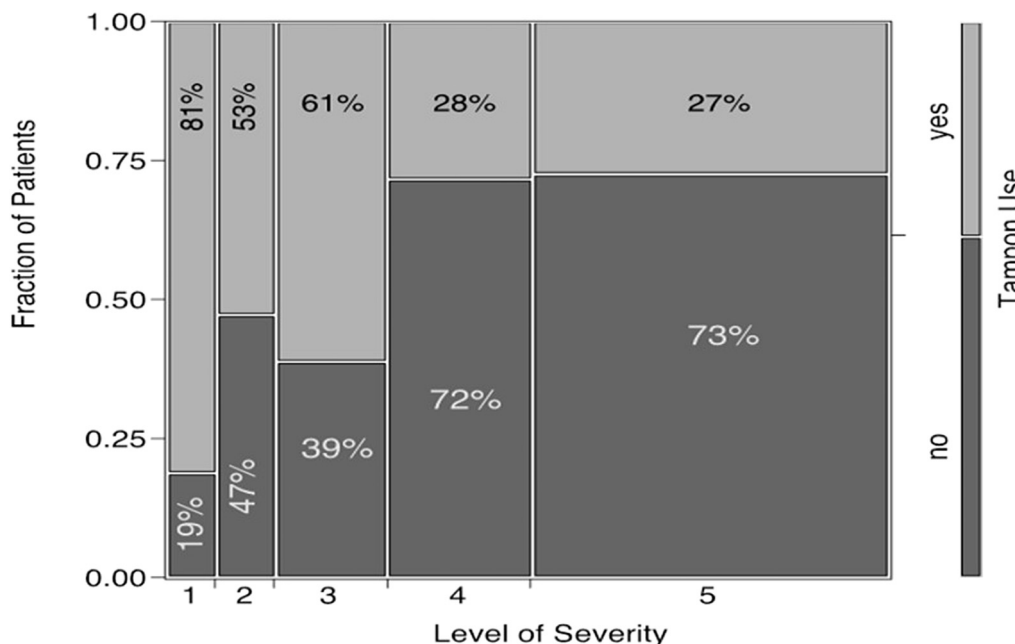
observer bias. Weaknesses include a lack of a quality of life questionnaire and an inability to attribute causation to grade 5 vaginismus. Additionally, there may be other patient characteristics that distinguish grade 5 vaginismus that this study did not consider.

**CONCLUSION**

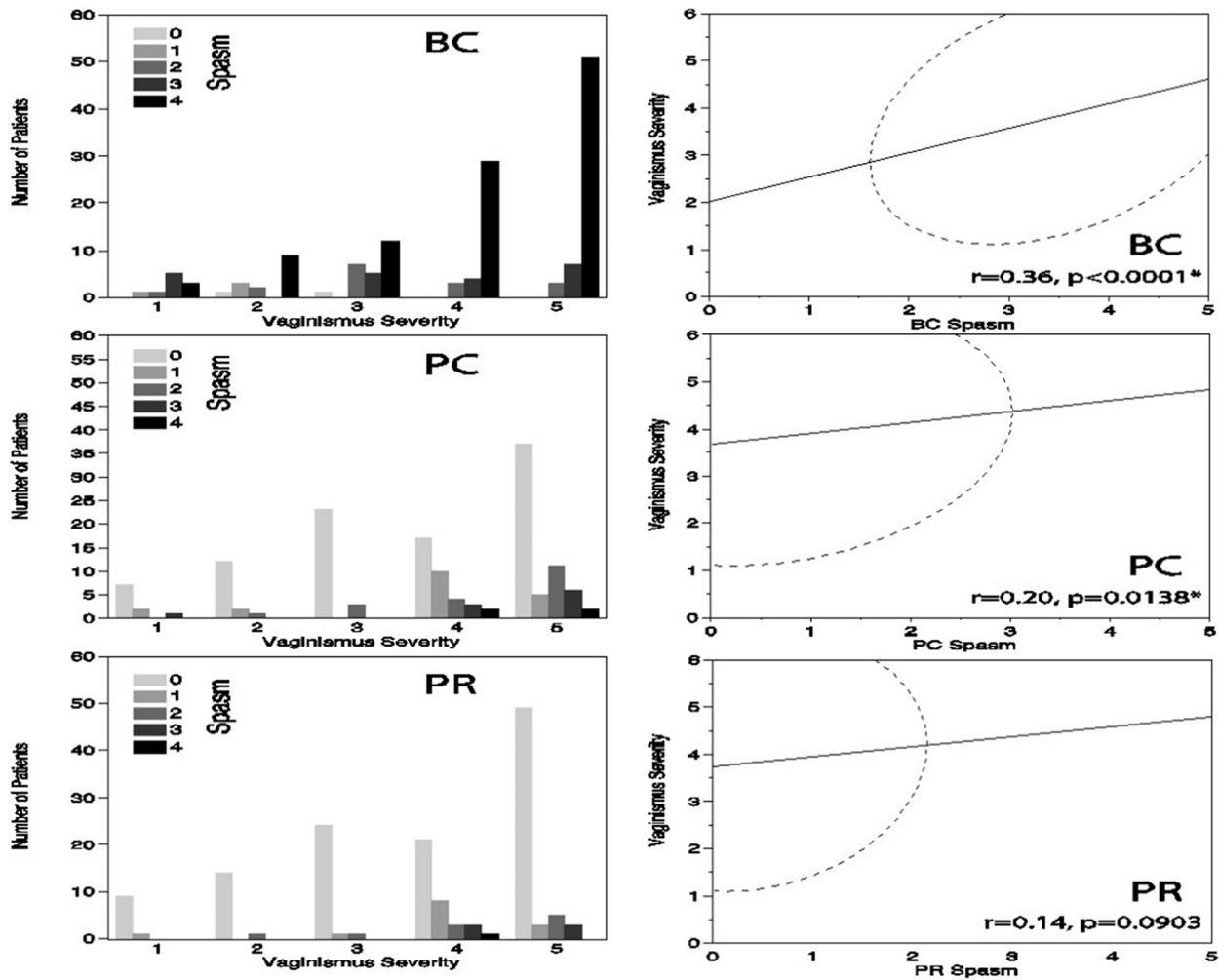
Severe vaginismus can be diagnosed by considering a constellation of both historical information and physical examination. Historically, the comment that intercourse is like “hitting a wall” is

consistent with the physical finding of vaginal spasm. Physical examination should be performed in a controlled environment in which the patient can be supported with proper sedation. However, due to the loss of muscle spasm with high degrees of sedation, grade 5 vaginismus may be diagnosed by a comprehensive history alone.

The Lamont-Pacik classification has been found to be helpful in allowing patients to participate in helping diagnose the severity of their vaginismus. This combined with an extensive questionnaire helps distinguish the more severe forms of vaginismus



**Figure 11.** Distribution of tampon use at the 5 severity levels of vaginismus. There is a clear decrease in the fraction of women using tampons at the higher levels of severity.



**Figure 12.** Bar charts on the left show the intensity of muscle spasm or hypertonus observed, stratified by level of severity. Severity of spasm or hypertonus is indicated by bars colored from light grey (no spasm or hypertonus) to black (spasm level 5). Black lines represent best fit linear regression through the data, whereas dashed ovals indicate the distribution of the densest 90% of data points. The strength of the correlation (Spearman) between the degree of hypertonus and the severity of vaginismus, the *P* value, and statistical significance are inset in each graph. Statistical significance ( $P < .05$ ) is indicated by asterisks. BC = bulbocavernosus; PC = pubococcygeus; PR = puborectalis.

from dyspareunia. A classification system continues to be useful as a common language among clinicians and researchers. It further allows physicians to better distinguish their patient's severity of vaginismus, which may better inform future treatment decisions.

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**Conflict of Interest:** C.R.B. is on the Speaker's Bureau for AMAG Pharmaceuticals, but reports no conflict of interest with this publication. All other authors report no conflicts of interest.

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