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ORIGINAL PAPER

The DSM Diagnostic Criteria for Vaginismus

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Abstract Vaginal spasm has been considered the defining diagnostic characteristic of vaginismus for approximately 150 years. This remarkable consensus, based primarily on expert clinical opinion, is preserved in the DSM-IV-TR. The available empirical research, however, does not support this definition nor does it support the validity of the DSM-IV-TR distinction between vaginismus and dyspareunia. The small body of research concerning other possible ways or methods of diagnosing vaginismus is critically reviewed. Based on this review, it is proposed that the diagnoses of vaginismus and dyspareunia be collapsed into a single diagnostic entity called "genito-pelvic pain/penetration disorder." This diagnostic category is defined according to the following five dimensions: percentage success of vaginal penetration; pain with vaginal penetration; fear of vaginal penetration or of genito-pelvic pain during vaginal penetration; pelvic floor muscle dysfunction; medical co-morbidity.

Keywords DSM-V · Vaginismus · Dyspareunia · Sexual pain · Muscle spasm

Introduction

The most remarkable feature of the diagnostic literature concerning vaginismus is its lack of controversy. Vaginal muscle spasm has been the defining diagnostic criterion for vaginismus for approximately 150 years. This diagnostic criterion is currently formulated in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) (American Psychiatric Association, 2000) as follows:

A. Recurrent or persistent involuntary spasm of the musculature of the outer third of the vagina that interferes with sexual intercourse.

The other DSM-IV diagnostic criteria for vaginismus are identical to those for all of the other sexual dysfunctions:

B. The disturbance causes marked distress or interpersonal difficulty.
C. The disturbance is not better accounted for by another Axis I disorder (e.g., Somatization Disorder) and is not due exclusively to the direct physiological effects of a general medical condition.

Specify Type: Lifelong/Acquired
Specify Type: Generalized/Situational
Specify Due to: Psychological Factors/Combined Factors.

Involuntary vaginal muscle spasm (Criterion A) may constitute one of the most long lasting psychiatric diagnoses ever. While longevity suggests utility and validity, it can also suggest neglect. Unfortunately, it appears that the latter is the case. An examination of the history and development of the diagnosis of vaginismus will set the stage for understanding the very recent empirical work that has challenged this very durable muscle spasm conceptualization.

History of the Muscle Spasm Diagnosis of Vaginismus

The central role of vaginal muscle spasm as the defining feature of vaginismus has a very long history. A 1547 work, entitled

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"The Diseases of Women" (Trotula of Salerno, 1940), may have been the first to allude to this by describing "a tightening of the vulva so that even a woman who has been seduced may appear a virgin" (p. 37). Huguier (1834) was the first to describe the syndrome, which Sims (1861) later named vaginismus and described as an "involuntary spasmodic closure of the mouth of the vagina, attended with such excessive supersensitiveness as to form a complete barrier to coition" (p. 362). In fact, Sims' definition was reinforced by modern authorities no less than Masters and Johnson (1970), who vividly described a "spastic" and an "involuntary reflex" of the pelvic musculature, "… affecting a woman's freedom of sexual response by severely, if not totally, impeding coital function" (p. 250). This muscle spasm definition first appeared in the third edition of the DSM (American Psychiatric Association, 1980) and has remained essentially unchanged through DSM-IV-TR.

Sims (1861) also suggested that vaginismus constituted a "distinct affection" (p. 361), laying the groundwork for the DSM's and all other classification systems' categorical conceptualization. Although there have been suggestions (e.g., Lamont, 1978) that vaginismus and dyspareunia ("Recurrent or persistent genital pain associated with sexual intercourse in either a male or female," p. 556 in the DSM-IV-TR) overlap and that vaginal penetration difficulties can be "partial" or "total," vaginismus has traditionally been conceptualized as a distinct syndrome and different from dyspareunia. For reasons that are not justified, the DSM-IV-TR (American Psychiatric Association, 2000) does not allow for joint diagnoses of vaginismus and dyspareunia (see p. 557).

Method of Diagnosis

Masters and Johnson (1970) insisted that a reliable diagnosis of vaginismus could not be made by mental health professionals unless they were able to carry out a pelvic examination. The DSM-IV-TR does not deal with this issue directly though it does acknowledge that many diagnoses of vaginismus are made during gynecological examinations (American Psychiatric Association, 2000, p. 557). It also suggests that some women may suffer from situational vaginismus where they may be able to tolerate gynecological examinations but not penile penetration. There is no explanation given for how this pattern of symptoms is to be diagnosed. It is my impression that it is very rare for current day psychiatrists to carry out pelvic examinations. If this is correct, then the diagnosis of vaginismus is typically made today either by a gynecologist during a pelvic examination or by a mental health professional based on the client's self-report.

Pelvic Examination

Masters and Johnson (1970) provided a vivid clinical description of a typical vaginismic woman's behavior during a pelvic examination:

> The literature has remarked on an unusual physical response pattern of a woman afflicted with vaginismus. She reacts in an established pattern to psychological stress during a routine pelvic examination that includes observation of the external genitalia and manual vaginal exploration. The patient usually attempts to escape the examiner's approach by withdrawing toward the head of the table, even raising her legs from the stirrups, and/or constricting her thighs in the midline to avoid the implied threat of the impending vaginal examination. Frequently this reaction pattern can be elicited by the woman's mere anticipation of the examiner's physical approach to pelvic examination rather than the actual act of manual pelvic investigation. (pp. 250–251)

The difficulty in performing such a diagnostic examination has resulted in the understandable reluctance of many gynecologists to carry them out. Some have suggested that such examinations should be delayed for fear of traumatizing the woman and making therapy more difficult (Bollapragada & Melrose, 2008; Crowley, Goldmeier, & Hiller, 2009; Crowley, Richardson, & Goldmeier, 2006; Drenth, 1988; Pedersen & Mohl, 1992; Reamy, 1982). The net result appears to have been that an unknown number of women were diagnosed with vaginismus based on their self-reported difficulty in achieving vaginal-penile penetration and their avoidance of pelvic examinations.

Self-Report

There are no published instruments or algorithms that translate self-report into the DSM-IV-TR diagnosis of vaginismus. Neither the Structured Clinical Interview for DSM Disorders (First, Spitzer, Gibbon, & Williams, 1997) nor the Diagnostic Interview Schedule (Robins, Helzer, Croughan, & Ratcliff, 1981) has included a section on sexual dysfunction. Although there are a large number of psychometric instruments that have been developed to assess sexual dysfunction, only one commonly used one, the Golombok Rust Inventory of Sexual Satisfaction (GRISS) (Rust & Golombok, 1998), specifically assesses vaginismus. The GRISS includes a vaginismus scale that is made up of the following four questions rated on a five-point response scale ranging from "never" to "always":

1. "Do you find that your vagina is so tight that your partner's penis cannot enter it?"
2. "Is it possible to insert your finger into your vagina without discomfort?"
3. "Is it possible for your partner's penis to enter your vagina without discomfort?"
4. "Do you find that your vagina is rather tight so that your partner's penis can't penetrate very far?"

While these questions are definitely relevant, they overlap with those that would be used by a mental health clinician trying to

diagnose vaginismus. They are not sufficient to make a DSM IV-TR diagnosis since the diagnosis requires confirmation of spasm. They are also not sufficient to differentiate vaginismus from dyspareunia. For example, a woman who answers "usually" to Questions 1 and 4 and "hardly ever" to Questions 2 and 3 might be reasonably diagnosed with either vaginismus or dyspareunia.

Non-Spasm Based Features of Vaginismus

Masters and Johnson's (1970) description of a pelvic examination suggests a number of other possible clinical characteristics of vaginismus, including pain and fear of vaginal penetration. In their view, these characteristics were secondary to vaginal spasm. However, other clinical investigators and some classification systems have stressed these non-spasm related features. For example, several classification systems have emphasized the role of experienced or anticipated pain in vaginismus. These systems include those proposed by the World Health Organization (ICD-10) (1992), International Association for the Study of Pain (Merskey & Bogduk, 1994), American College of Obstetrics and Gynecology (1995), and Lamont (1978). Unfortunately, the descriptive characteristics of the pain were never specified nor was the relationship of the pain to muscle spasm. Moreover, pain never supplants muscle spasm as the crucial diagnostic factor. The DSM-IV-TR does acknowledge the role of pain in vaginismus in two ways: (1) vaginismus is subclassified with dyspareunia as a sexual *pain* disorder; (2) pain is also mentioned under "associated features and disorders" as the possible result of intense and long-lasting muscle contraction/spasm. Nonetheless, pain is not assigned any crucial diagnostic significance.

Fear of pain or fear of penetration also features prominently in many clinical descriptions (e.g., Blazer, 1964; Byford, 1902; O'Sullivan & Barnes, 1978; Ohkawa, 2001; Walthard, 1909; Wijma & Wijma, 1997). For example, Kaplan (1974) described this in the following way:

> In addition to the primary spasm of the vaginal inlet, patients with vaginismus are also usually phobic of coitus and vaginal penetration. This phobic avoidance makes attempts at coitus frustrating and painful. It is often a secondary reaction to the primary vaginismus, but sometimes the penetration phobia antedates the vaginismus. (p. 412)

Although Kaplan and others emphasized the fear/phobic aspect of vaginismus, they did not exclude spasm as the primary diagnostic feature. There do not appear to be any formal diagnostic systems that characterize vaginismus as a phobic state. The DSM-IV-TR may have relegated this aspect of vaginismus to sexual aversion disorder, which is characterized by "extreme aversion to, and avoidance of…genital sexual contact with a partner" (American Psychiatric Association, 2000, p. 542). In the DSM-IV-TR "diagnostic features" section of sexual aversion disorder, it notes that there are women who manifest fear, anxiety, and/or disgust to vaginal penetration specifically (see p. 541). In principle, the DSM IV-TR allows for the joint diagnosis of vaginismus with sexual aversion disorder, though it is my impression that this is rarely done because there is only a very small literature on this diagnosis, which suggests that it may not be made frequently.

Summary

The vaginal muscle spasm diagnostic formulations for vaginismus were almost entirely based on expert clinician opinion. By the date of publication of the DSM-IV-TR in 2000, no one had ever empirically demonstrated that vaginismus was characterized by pelvic muscle spasm, was differentiable from dyspareunia or was reliably diagnosable. Non-muscle spasm diagnostic characteristics, such as pain or fear, were often acknowledged indirectly in the DSM or other classification systems but not deemed essential.

Why there was so little controversy and empirical research is not clear. Researchers may have been deterred by a variety of factors, including the presumed low prevalence of vaginismus, the difficulty associated with carrying out gynecological examinations, and the worry that the examinations themselves might be iatrogenic. There was probably also the tacit but invalid assumption that the diagnosis was reliable because treatments modeled after the Masters and Johnson (1970) approach were thought to be highly efficacious. Perhaps most important was the fact that vaginismus is the only DSM-IV-TR diagnosis that relies primarily on non-psychiatric clinicians. Mental health professionals could not actually do a diagnostic reliability study without a participating gynecologist and few gynecologists appeared to be interested.

The diagnostic requirement of a physical examination suggests another unique aspect of the definition of vaginismus. It is the only DSM-IV-TR sexual dysfunction (and possibly Axis I) diagnosis that relies on a physical symptom that is not based on self-reported or observed behavior and/or internal states. Although the DSM-IV-TR sometimes mentions "associated physical examination" or "associated laboratory" findings for other disorders, these are not typically crucial for making a diagnosis. It is strange that there is no suggestion that women be directly asked if they experience spasm during attempted penetration. This question would not be an uncommon one for a physician to ask a patient concerning spasms experienced elsewhere in the body.

The DSM-IV-TR not only specifies "vaginal muscle spasm" as the defining symptom, it treats this symptom as the "cause" for the interference with intercourse ("Recurrent or persistent involuntary spasm of the musculature of the outer third of the vagina that interferes with sexual intercourse," p. 558). This mechanistic type language is not in line with the general strategy of the DSM-IV-TR to classify by symptoms rather than by

presumed cause or mechanism. This exception is an unfortunate one, in my view, since there appear to be little data (see below) to support vaginal muscle spasm as the defining symptom or as the exclusive cause for interference with intercourse. Recently, these and other classification issues related to vaginismus have been examined empirically. This research is reviewed under three overlapping categories examining the following questions: (1) Does muscle spasm characterize vaginismus? (2) Is vaginismus a "distinct affection"? (3) Can non-muscle based symptoms differentially diagnose vaginismus from dyspareunia?

Empirical Studies of the Diagnosis of Vaginismus

Does Muscle Spasm Characterize Vaginismus?

Because of the 150 year consensus concerning the nature of vaginismus, most clinical reports and etiological studies take for granted that women diagnosed with vaginismus exhibit vaginal muscle spasm upon attempted vaginal penetration. The actual existence of this vaginal muscle spasm, however, had never been empirically examined prior to the publication of DSM-IV-TR. It had also never been empirically determined that two independent gynecologists could reliably diagnose vaginal spasm. This situation has resulted in a problematic research situation where any woman who could not experience vaginal penetration and did not experience spasm could not receive a DSM-IV-TR diagnosis of vaginismus and, therefore, could not be included in any study based on DSM-IV-TR criteria. Since it is very difficult to publish research in a reputable journal that does not use DSM IV-TR criteria, this circularity may have helped to impede the necessary diagnostic research.

Electromyography (EMG) Studies

One possible way of examining the muscle spasm hypothesis of vaginismus is through the use of EMG measurement. In surface electromyography (sEMG), a tampon-like probe is inserted into the vagina (and/or anus) and a global measure of pelvic muscle tension is recorded at baseline and in response to specific instructions to contract or relax relevant muscles. An alternative method, needle EMG, requires the insertion of needle electrodes into a specific muscle. Women suffering from vaginismus would be expected to demonstrate spasm (or muscle tone and strength differences from controls) as measured by EMG either at baseline or in response to contraction/relaxation instructions or to an external stimulus.

There have been seven EMG studies examining women suffering from vaginismus. Engman, Lindehammar, and Wijma (2004) found no significant differences in sEMG measures between women diagnosed with vaginismus and women suffering from dyspareunia or matched controls. Similarly, van der Velde (1999) found no significant sEMG differences between women diagnosed with vaginismus and normal controls. Reissing, Binik, Khalifé, Cohen, and Amsel (2004), however, found significant sEMG muscle tone but not strength differences between women diagnosed with vaginismus and matched normal controls but no significant differences at all between the vaginismus and dyspareunia/VVS (aka provoked vestibulodynia) groups. One needle EMG study (Shafik & El-Sibai, 2002) found that basal but not reactive (i.e., to possible penetration) EMG activity in the levator ani, puborectalis, and bulbocavernosus muscles was significantly higher in women diagnosed with vaginismus than in normal controls. A second needle electrode study measuring activity in the levator ani and external anal sphincter muscles (Frasson et al., 2009) also found significant basal hyperexcitability in addition to significant reactive (i.e., during "straining") EMG differences between a mixed group of vaginismus/VVS patients and controls. Two additional sEMG studies (van der Velde & Everaerd, 2001; van der Velde, Laan, & Everaerd, 2001) have been carried out in which women watched film clips of erotic, neutral or sexually threatening content. There were no significant EMG differences between women suffering from vaginismus and normal controls.

Overall, the evidence from EMG studies does not strongly support a vaginal muscle spasm mechanism specific to vaginismus. None of the existing studies report EMG evidence for spasm. In addition, there is little consistent evidence that muscle tone or strength differences can differentiate vaginismus from dyspareunia. Moreover, there are a variety of problems using EMG methodology in this context. Surface EMG can only give a global measure of muscle strength or tone and cannot determine which muscles are affected. Most important, perhaps, is that a large percentage of women diagnosed with vaginismus are not able or willing to insert an sEMG probe, making this type of measurement impossible. While the use of needle electrodes avoids this problem, it is not clear into which muscles to insert the needles and the process of insertion is in itself very painful.

Muscle Spasm Reliability Studies

A second empirical way of examining the muscle spasm hypothesis is to investigate whether gynecologists can reliably diagnose muscle spasm. This has been taken for granted in the vaginismus literature. In the context of a larger study, Reissing et al. (2004) asked two gynecologists and two pelvic floor physiotherapists to examine women suffering from either vaginismus or dyspareunia/VVS and normal controls and to assess whether these women also suffered from muscle spasm, heightened muscle tone or reduced muscle strength. Women in the vaginismus group were not required, a priori, to demonstrate reliable vaginal muscle spasm as required by the DSM-IV-TR since this would preclude testing the reliability hypothesis. In order to circumvent this circularity, Reissing et al. developed a detailed set of behavioral inclusion criteria for the vaginismus group that were similar to what mental health clinicians might

typically use in the absence of a gynecological examination. These included the following:

1. Never having been able to experience vaginal intercourse, despite attempts on at least 10 separate occasions or
2. Never having been able to experience vaginal intercourse despite attempts on at least two separate occasions and other interference with vaginal penetration (see below) or
3. A current inability to experience vaginal intercourse and other interference with vaginal penetration for at least 1 year, although vaginal penetration was experienced at least once before this period.

Other interference with vaginal penetration was defined as an average of less than one attempt at vaginal intercourse every two months over the past year despite adequate opportunity or being involved in a relationship, and also meeting one of the following two criteria: (1) never having seen a health professional for, or never having successfully completed, a pelvic exam; (2) never having used tampons.

The results of this study were striking. Based on the gynecological examination, women in the vaginismus group demonstrated a higher frequency of vaginal spasm than women in the dyspareunia/VVS and normal control groups. There were no significant differences in vaginal spasm between the dyspareunia/VVS and normal control groups. However, less than a third of women suffering from vaginismus were considered by the gynecologists to have experienced vaginal spasm during the examination. For gynecologists, the overall diagnostic agreement for assigning women into the three groups was "moderate" (kappa = .60). They had high percentages of diagnostic agreement for dyspareunia/VVS and for normal controls but they disagreed most of the time concerning the diagnosis of vaginismus.

There was a different pattern of diagnostic agreement for the pelvic floor physical therapists. Women in the normal control group were assessed to have significantly fewer vaginal spasms than women both in the vaginismus or dyspareunia/VVS groups. However, no significant differences in the frequency of vaginal spasm were noted between the vaginismus and dyspareunia/VVS groups. The overall rate of detecting vaginal spasms was much higher for the physical therapists than for the gynecologists. One or both physical therapists reported a vaginal muscle spasm in 86% of women in the vaginismus group, in 93% of women in the dyspareunia/VVS group, and in 54% of women in the normal control group. While the overall level of diagnostic agreement for the pelvic floor physical therapists was "substantial" (kappa = .64), they tended to agree much more than gynecologists on the diagnosis of vaginismus and less than gynecologists on the diagnosis of dyspareunia/VVS. However, both gynecologists and pelvic floor physical therapists were good at differentiating women in the normal control groups from those in the other two groups. Finally, women in the vaginismus group were asked by the experimenter if they experienced vaginal spasm during penetration; only 24% said yes.

Based on this one study, there is no evidence that gynecologists (or pelvic floor physical therapists) can reliably diagnose vaginal muscle spasm/tone/strength in women suffering from vaginismus. This is not totally surprising since there is some indication in the myography literature that the concept of spasm itself is not very clearly defined (Johnson, 1989; Simons & Mense, 1998). This situation may improve since protocols (Reissing, Brown, Lord, Binik, & Khalife, 2005) and a new instrument (a dynamometric speculum) (Morin et al., in press) for assessing muscle tone/strength are now being developed; unfortunately, these have not been adequately evaluated in women suffering from vaginismus and dyspareunia.

Summary

Despite almost 150 years of consensus, there is no empirical evidence to support vaginal/pelvic muscle spasm as the defining characteristic of vaginismus. While it appears possible that a subset of women currently diagnosed with vaginismus do suffer from vaginal/pelvic spasm, it is likely a minority. It is odd that researchers never bothered until recently (Reissing et al., 2004) to specifically ask women suffering from vaginismus whether they suffered from spasm. When this was finally done, less than a quarter said yes. An older study (Ward & Ogden, 1994) which asked vaginismic women about their attributions for not being able to have intercourse also suggests that few blamed spasm. Overall, there is inconsistent empirical indication about whether measures of vaginal/pelvic muscle tone or strength can differentiate women suffering from vaginismus from controls but there is a great deal of overlap on these measures between vaginismic and dyspareunic women. New instruments under development (Morin et al., in press) may provide for more sensitive and reliable measurement of the muscle tone/strength of the pelvic floor; however, these instruments have not yet been tested in women suffering from vaginismus and dyspareunia.

Is Vaginismus a "Distinct Affection"?

Partial vs. Total Vaginismus

Starting with Sims' (1861) assertion that vaginismus is a "distinct affection," vaginismus has generally been considered an "all or nothing" phenomenon and has almost always been classified categorically (for a possible exception, see Lamont, 1978). Recently, a group of Swedish investigators have raised the possibility of a dimensional approach by suggesting that it is useful to diagnose partial versus total vaginismus. Total vaginismus was defined by the following criteria (Engman, 2007):

1. severe contraction of pelvic floor muscles preventing penetration
2. the contraction is beyond the control of the women.

One of the following was also required:

1. attempts of penetration are simultaneously accompanied by burning pain and feared or avoided
2. there is a pronounced fear or avoidance of vaginal penetration including all attempts of penetration.

Partial vaginismus was defined as follows:

> … a reflex contraction of the pelvic floor muscles that partly closes the vagina during penetration or attempt to penetrate….The reflex contraction makes penetration difficult, but not impossible; is beyond the control of the woman; and is simultaneously accompanied by burning pain….The reflex contraction of the pelvic floor muscles was ascertained by palpation with one or two fingers during a pelvic examination, and every reflex contraction of the muscles simultaneously accompanied by the woman's report of burning pain was defined as partial vaginismus. (p. 2)

In two published studies and a doctoral thesis (Engman, 2007; Engman, Wijma, & Wijma, 2007, 2008), women were classified with partial vaginismus with or without additional diagnoses of VVS. In this clinical sample of 224 women, there was great overlap between the diagnoses of partial vaginismus and VVS, i.e., all women diagnosed with VVS also met criteria for partial vaginismus. It was suggested that there were two possible additional symptoms/characteristics of partial vaginismus, including itch (location not specified but presumably vaginal) and pain after intercourse.

Summary

This research does not provide crucial empirical data to confirm the reliability of the distinction between total and partial vaginismus. Moreover, the diagnosis of partial vaginismus in this research greatly overlaps with the diagnosis of VVS. All the women who met the VVS cotton swab pain criteria were also diagnosed with partial vaginismus; there were no findings presented to characterize the women with partial vaginismus who did not meet the criteria for VVS.

Can Non-Muscle Based Symptoms Differentially Diagnose Vaginismus from Dyspareunia?

There are a number of studies which try to differentiate vaginismus from dyspareunia on a variety of non-muscle spasm based measures or methods. These studies were probably motivated by the difficulty in differentiating vaginismus from dyspareunia on the basis of muscle spasm/tone/strength measures and by clinical reports that other symptoms such as pain or fear might be important in differentiating vaginismus from dyspareunia.

Pain

The majority of women diagnosed with vaginismus also experience vulvar pain upon gynecological examination (e.g., Basson, 1996; de Kruiff, ter Kuile, Weijenborg, & van Lankveld, 2000; Engman et al., 2007, 2008; Kaneko, 2001; Reissing et al., 2004). This vulvar pain is typically diagnosed as VVS. There is substantial variation in the reported percentages of vaginismic women who experience vulvar pain (from about 40% to almost 100%) but there is little doubt of significant comorbidity. It is likely that this variation may be related to sampling error, the method of determining VVS/vulvar pain or the difficulties in actually examining some women diagnosed with vaginismus. Overall, it is clear that it is not currently possible to reliably differentiate vaginismus from VVS using pain measures. ter Kuile, van Lankveld, Vlieland, Willekes, and Weijenborg (2005) concluded that "pain is an integral part of the experience in the majority of women with lifelong vaginismus" (p. 245).

Fear/distress or related behaviors have also been empirically investigated as potential differentiators between vaginismus and dyspareunia. In the Reissing et al. (2004) muscle spasm diagnostic reliability study reviewed above, gynecologists rated the behavior of all the patients they examined on a 0–4 scale (0 = no problematic reaction; 1 = tension; 2 = close legs/pelvic withdrawal; 3 = pronounced tension and pelvic withdrawal; 4 = participant terminated the exam). Physical therapists also rated women during their examinations on a similar list of behaviors that they termed protective or defensive (e.g., closing knees, moving away, etc.). Both the gynecologists and physical therapists rated the women in the vaginismus group as exhibiting more defensive, protective, and avoidant behaviors during their examinations than women in the dyspareunia/VVS and normal control groups. Reissing et al. described this behavior as similar to that of fearful/phobic individuals when confronted with their feared stimulus.

Lahaie, Binik, Amsel, and Khalifé (2008) further investigated the fear hypothesis by recruiting 50 women suffering from vaginismus, and two additional age matched control groups consisting of women suffering from VVS and normal controls. Subjects were recruited and assigned to experimental group status based on criteria similar to those of Reissing et al. (2004). All subjects underwent a standardized protocol, including a structured interview, psychometric testing (Fear Survey Schedule [Wolpe & Lang, 1964]; Fear of Vaginal Penetration Survey, Disgust Sensitivity Index, the State-Trait Anxiety Inventory [Spielberger, Gorsuch, & Lushene, 1970], Fear of Pain Questionnaire [McNeil & Rainwater, 1998], Pain Catastrophizing

Scale [Sullivan, Bishop, & Pivik, 1995]), and a standardized gynecological examination. During the gynecological examination, heart rate and skin conductance were continuously monitored. In addition, the subjects' behavior during the gynecological examination was videotaped and independently rated by trained observers blind to experimental group membership.

Although the data are not yet fully analyzed, interim analyses of the self-report, psychophysiological, and behavioral data suggest that fear/distress about vaginal penetration may characterize many women typically diagnosed with vaginismus. For example, almost two-thirds of the women in the vaginismus group reported that the main reason they avoided a gynecological examination was fear. Fear ratings by the participants and the gynecologist during the examination significantly differentiated all groups, with women in the vaginismus group demonstrating the highest levels. The psychometric evidence also suggests that women in the vaginismus group were more fearful in general and more fearful of vaginal penetration than women in the VVS and normal control groups. Behavioral "fear" or "protective" reactions, such as closing of the legs and pelvic withdrawal, also significantly differentiated all three groups, as did heart rate. Perhaps the strongest indicator of fear was that 44.9% of women in the vaginismus group discontinued the gynecological examination as opposed to 6.4% in the VVS and 2.3% in the normal controls. Nonetheless, there was significant overlap between women in the vaginismus and VVS groups on general anxiety, fear of pain, skin conductance, and pain catastrophizing even though both of these groups scored significantly higher than controls.

Self-Reported Behavior

Traditionally, DSM diagnoses have been made on the basis of psychiatric interview. There has never been a strong motivation to develop such an interview for vaginismus since the diagnosis of vaginismus could only be confirmed by gynecological examination. There have, however, been three preliminary attempts to use interviews or questionnaires to diagnose vaginismus or to differentiate it from dyspareunia.

In an unpublished study, van der Velde (1999) assessed the diagnostic agreement of two independent raters who reviewed a questionnaire concerning "pelvic floor complaints" completed by 46 women who "reported that they were suffering from vaginismus" and 65 controls. There was a 79% rate of diagnostic agreement between raters and substantial agreement (86%) between questionnaire ratings and the results of a gynecological examination that was also carried out. Unfortunately, the questionnaire used in this study was not specified and the definition of "pelvic floor problems" appears to have included more than vaginismus. Reissing et al. (2004) carried out a structured interview concerning pain and penetration difficulties with women suffering from vaginismus, VVS, and with normal controls. Reissing et al. asked two Ph.D. level psychologists to review these transcripts and determine a DSM-IV diagnosis of sexual or other dysfunction. The psychologists agreed on the diagnosis of vaginismus 21 out of a potential 29 times. Klassen and ter Kuile (2009) have developed a vaginal penetration cognition questionnaire; initial evaluation of this scale suggests promising psychometric characteristics and some ability to differentiate between vaginismus and dyspareunia.

Summary

Without providing any rationale, the DSM-IV-TR prohibits co-existing diagnoses of vaginismus and dyspareunia. Because the majority of women diagnosed with vaginismus experience vulvar pain, this prohibition appears unjustified. The attempts to differentiate vaginismus and dyspareunia based on self-report or interview focus on the extent of interference with intercourse and the reasons for this interference. These attempts have not been successful because the extent of, and reasons for, interference are not well specified in the DSM-IV-TR. A better specification such as the one proposed by Klassen and ter Kuile (2009) might lead to better results. Fear measures may provide the best way to differentiate vaginismus and dyspareunia but the data to date are preliminary.

Conclusions and Recommendations

The empirical literature concerning the diagnosis of vaginismus is very small and consists of only about 20 relevant publications. It is interesting that almost all of these studies are the result of the efforts of three separate research groups in Canada, Holland, and Sweden. So far, most of these studies are characterized by relatively small sample sizes, different recruitment methods, idiosyncratic methodologies, and lack of independent replication. Despite these problems, there is converging empirical consensus on two issues: (1) Muscle spasm is not an adequate defining characteristic for vaginismus; (2) As currently defined by the DSM-IV-TR, vaginismus and "penetration type" or "superficial" dyspareunia resulting from VVS cannot be reliably differentiated.

Based on this evidence, the current DSM-IV-TR criteria for the diagnosis of vaginismus cannot be empirically justified. Unfortunately, there are insufficient new data to reconstruct this category or to propose a replacement. Given this unsatisfying situation, there are at least three possible future classification strategies.

Option 1

The first strategy is to preserve the category of vaginismus but to redefine it behaviorally. For example, Basson et al. (2004) have proposed the following definition for vaginismus based on the outcome of discussions of an international sexual medicine consensus conference:

> The persistent or recurrent difficulties of the woman to allow vaginal entry of a penis, a finger, and/or any object, despite the woman's expressed wish to do so. There is often (phobic) avoidance, involuntary pelvic muscle contraction, and anticipation/fear/experience of pain. Structural or other physical abnormalities must be ruled out/addressed. (p. 45)

This definition preserves the core behavioral characteristic of vaginismus, i.e., the inability to experience vaginal penetration when desired. It also acknowledges the high levels of comorbidity among vaginismus, dyspareunia, pelvic floor dysfunction, phobic states, and medical pathology and would potentially allow for some of these diagnoses to be made by other professionals. The diagnosis of vaginismus, however, could be made by a mental health clinician alone.

This type of definition is problematic in a variety of ways. The terms "persistent" and "recurrent" would have to be carefully and operationally defined as would a method for assessing a woman's "wish" to have penetration. More important, perhaps, is the conceptual question of whether this definition would result in a "valid" category since the degree of overlap of this diagnosis with that of dyspareunia, pelvic floor dysfunction, and phobic avoidance states would be very high. It is also not clear that structural or physical abnormalities should be ruled out first if they co-exist with other problems.

Option 2

A second strategy would be to try to limit or constrain the current category in such a way so as to increase diagnostic reliability and limit clinical variation. For example, women could be diagnosed with vaginismus only if they could not currently experience vaginal penetration in sexual situations, reported fear of (painful) vaginal penetration, and demonstrated behavioral avoidance. Women experiencing any type of pain during penetration would be diagnosed with dyspareunia and those with pelvic floor or other medical co-morbidity would be diagnosed accordingly.

This diagnostic strategy avoids the co-morbidity problem with dyspareunia and potentially creates a uniform and easily diagnosable category. It is based on "emerging" data suggesting that fear may be a crucial component of what we currently call vaginismus. Unfortunately, there are no data to show that this category can be reliably diagnosed. It is also not clear if there are a significant number of women who meet the relevant criteria but don't experience dyspareunia. The category created by this strategy would essentially constitute what might be called a vaginal penetration phobia. Whether this should be a sexual dysfunction or not is debatable.

Option 3

The third strategy is to discard the category of vaginismus and to suggest a wider multidimensional diagnosis that might be termed "genito-pelvic pain/penetration disorder." This diagnosis would include most women currently diagnosed with vaginismus and dyspareunia. Women complaining of difficulties with vaginal penetration would be assessed on five dimensions: (1) percentage success of vaginal penetration; (2) pain with vaginal penetration; (3) fear of vaginal penetration or of genito-pelvic pain during vaginal penetration; (4) pelvic floor muscle dysfunction; (5) medical co-morbidity.

Women could be diagnosed with genito-pelvic pain/penetration by reaching a threshold on any of the first four dimensions above. The first three dimensions would be assessed by a mental health professional based on a woman's self report. Pelvic floor muscle dysfunction could also be assessed on an interim basis by a woman's self report but a more formal assessment by a pelvic floor physical therapist or an appropriate physician would be recommended. Degree of medical co-morbidity would require an appropriate uro-dermato-gynecological examination (see Appendix for recommended details of the assessment of all five dimensions).

I recommend this option because it reflects our current state of (lack of) knowledge in the following ways:

1. It makes no assumptions about what causes the inability to experience vaginal penetration.
2. It reflects the dimensional nature of the factors involved (e.g., percentage success with penetration, degree or intensity of pain, fear, muscle tension, and medical co-morbidity) but can be used categorically (see Table 1 for proposed criteria).

Table 1 Proposed diagnostic criteria for Genito-Pelvic Pain/Penetration Disorder

A. Persistent or recurrent difficulties for 6 months or more with at least one of the following:
1. Inability to have vaginal intercourse/penetration on at least 50% of attempts
2. Marked genito-pelvic pain during at least 50% of vaginal intercourse/penetration attempts
3. Marked fear of vaginal intercourse/penetration or of genito-pelvic pain during intercourse/penetration on at least 50% of vaginal intercourse/penetration attempts
4. Marked tensing or tightening of the pelvic floor muscles during attempted vaginal intercourse/penetration on at least 50% of occasions
B. The disturbance causes marked distress or interpersonal difficulty
Specify
With a General Medical Condition (e.g., lichen sclerosis, endometriosis)

3. It avoids currently unreliable differential diagnoses.
4. It is potentially applicable to men who experience penile/pelvic pain during arousal/intercourse/ejaculation (see Davis, Binik, & Carrier, 2009).
5. It provides a guide for adequate assessment that will inform treatment.

This diagnostic strategy is not, however, without problems: (1) a detailed algorithm is necessary to assess each dimension and to determine what constitutes a threshold level of difficulty; (2) there is no strong evidence yet that some of the dimensions, i.e., pelvic floor muscle dysfunction, can be reliably assessed; (3) a multidisciplinary team is required to complete the full assessment.

Other Issues

Finally, there seems little reason, regardless of which strategy is finally adopted, to retain any of the standard DSM-IV-TR sexual dysfunction qualifiers, i.e., lifelong/acquired, global/situational, due to psychological/combined factors. The major reason for not retaining these qualifiers is that there is no empirical evidence that they have any implications for diagnosis/classification, etiology or treatment outcome. There are other reasons as well.

With respect to the "global/situational" qualifier, there is very little clinical interest in any situation that doesn't involve some form of interpersonal sexual penetration. It is possible, in principle, for a woman to be able to have penile/vaginal penetration and not be able to have a gynecological examination or to insert a tampon but this has apparently been reported as a clinical issue only once (Bollapragada & Melrose, 2008). It may be that women who can't experience vaginal penetration in any situation are more "dysfunctional" than those who can in some but there is no evidence to support this. While with increasing age it becomes increasingly important to have annual pap smears, these can often be facilitated by an unhurried and soothing clinician using relaxation exercises and, if necessary, medication.

There are no current methods to distinguish "due to purely psychological factors" from "due to combined" (or "due to purely medical factors" for that matter). If pain and pelvic floor dysfunction are highly co-morbid with vaginismus, then by definition most cases will be "due to combined factors" unless strategy two above is adopted. Then, all cases would, by definition, be purely psychological unless biological predispositions were included.

The lifelong/acquired qualifier does make sense in that women who have experienced an extended period where vaginal penetration was possible (acquired) would be expected to be sexually different from those for whom it was never possible. Unfortunately, we have not been able to find systematic evidence to support this potential difference. Demonstrating such differences may require much larger sample sizes than are typical in the current literature and may also require a better definition of lifelong versus acquired. Anecdotal clinical reports suggest that many women with acquired vaginismus always experienced dyspareunia when they were able to have penetration. Ultimately, penetration became impossible or too difficult to bear. It is also not clear how many successful penetrations with or without pain would qualify for acquired status.

Is Vaginismus a Sexual Dysfunction?

In principle, the sexual dysfunctions listed in the DSM-III and DSM-IV were defined by their specific interference with one phase of the "sexual response cycle." This definition of sexual dysfunction was a powerful one because it was based on a theoretical model that was empirically supported and provided a single unifying framework for all sexual dysfunctions. The inclusion of the "sexual pain disorders" as sexual dysfunctions was logically problematic for this model and definition since the sexual interference resulting from vaginismus (and dyspareunia) was not limited to one phase of the cycle. The sexual response cycle model has also been challenged on other grounds and it seems unlikely that it will survive the DSM-V process. This raises the important issue of what defines a sexual dysfunction and whether vaginismus should be considered as such.

All the proposed strategies for saving or redefining "vaginismus" preserve the basic idea that vaginal penetration does not occur. There is, however, a very long list of reasons that could result in vaginal penetration not occurring that would not typically be diagnosed as vaginismus (e.g., lack of interest on the part of the male or female, lack of erection, fear of AIDS, lack of a suitable partner, religious concerns, depression, etc.). The proviso that the woman must "desire" intercourse invokes a voluntary/involuntary criterion that has not been an easy one to operationalize. What is left is the problematic situation of trying to define a problem based on the absence of a behavior (penile vaginal intercourse or the equivalent) that some would argue should not even be promoted because it is too male oriented.

Originally, vaginismus "belonged" to gynecology. The formal diagnostic capability has always remained with gynecology but even if the muscle tone/strength component were to be preserved, it is not clear that gynecologists are currently trained to make this diagnosis. Since Masters and Johnson (1970), the mental health professions and sex therapists in particular have confirmed the diagnosis and implemented treatment. It is no longer clear who can or should diagnose vaginismus or whether it should be considered a sexual dysfunction. The task of classifying vaginismus would greatly benefit from an overhauled definition of sexual dysfunction.

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Appendix: Diagnostic Guidelines for the Assessment of Genito-Pelvic Pain/Penetration Disorder

Five dimensions are proposed for the assessment and diagnosis of genito-pelvic pain/penetration disorder: (1) percentage success of vaginal penetration; (2) pain with vaginal penetration; (3) fear of vaginal penetration or of genito-pelvic pain during vaginal penetration; (4) pelvic floor muscle dysfunction; (5) medical co-morbidity.

The description of each dimension includes the following: (1) proposed assessment questions; (2) diagnostic threshold criteria; (3) diagnostic exclusion criteria; (4) interference questions; (5) medical co-morbidity. It is recommended that a woman who complains of difficulties in experiencing vaginal penetration or of pain during sexual intercourse/penetration be assessed on all five dimensions.

The proposed assessment questions are suggested as the minimum assessment that any clinician should make for a woman complaining of difficulties in having vaginal penetration or pain during intercourse/penetration. All of these questions can be directly asked of the client by a mental health clinician though a full assessment of pelvic floor muscle dysfunction and medical comorbidity will require a physical examination and expertise outside of the mental health domain.

The diagnostic threshold criteria provide the specifications by which a clinician can determine that a client is diagnosable with a genito-pelvic pain/penetration disorder. These thresholds are based on the available data and the author's judgment. These thresholds should be modified when new research is available. To be diagnosed with genito-pelvic pain/penetration disorder, a client must exceed the threshold for only one of the first four dimensions. Clients who exceed the threshold for only the fifth dimension, medical co-morbidity, will be diagnosed with the appropriate medical condition. All dimensions should be assessed for all clients even if they are already diagnosable based on one or two dimensions because this information will be useful in treatment planning and research. Based on the literature review, it is quite likely that most clients will exceed diagnostic thresholds for more than one dimension.

The exclusion criteria provide other diagnoses or information that would exclude a diagnosis of genito-pelvic pain/penetration disorder. For example, a woman would probably not be diagnosed with genito-pelvic pain/penetration disorder if she has never had a partner with an erection sufficient for penetration (or equivalent forms of penetration). Clinician judgment must often be used in determining these exclusion criteria or diagnostic thresholds since not all potential diagnostic circumstances can be specified. For example, the first dimension (percentage success of vaginal penetration) requires at least 10 attempts at intercourse in the last 6 months before the diagnostic threshold can be reached. Some women will not have had 10 attempts in the previous 6 months for a variety of reasons (e.g., they and their partner have "given up trying" or they didn't have a partner for most of this period). The clinician can determine whether there have been "sufficient" previous attempts to warrant a diagnosis.

The interference questions attempt to determine the degree of interference related to the dimension. These are not diagnostic questions but highlight the important finding that the severity or intensity of a symptom is often not directly related to real life interference. For example, some women reporting excruciating vulvar pain may continue to have intercourse/penetration at relative high frequencies.

Dimension 1: Percentage Success of Vaginal Penetration

1. How many times have you attempted to have intercourse or penetration in the last 6 months?
2. How many times has there been full penetration into the vagina during this period?

Diagnostic Threshold Criteria

Must have tried to have vaginal intercourse or penetration at least 10 times in the last 6 months and must have failed at least 50% of the time.

Diagnostic Exclusion Criteria

1. Lack of adequate erection (or equivalent types of penetration).
2. Has not tried at least 10 times.

Interference Question

What is the most important reason that you want to have sexual intercourse or penetration?

1. To get pregnant
2. To please my partner
3. To have pleasure
4. To improve our couple relationship
5. To improve my sexual self-esteem
6. Other (specify)

Clinician Judgment

The clinician should use his/her judgment in determining whether there have been sufficient attempts at intercourse/penetration during the couple's relationship. It is possible that these have not occurred in the last 6 months. Judgment must also be used in interpreting whether "full penetration" has occurred since some women may not know or may indicate "partial penetration." It is the author's experience that "not knowing" or "partial penetration" be interpreted as a failure of penetration though the final judgment should be made by the clinician. If there haven't been an adequate number of attempts based on the clinician's judgment and it is believed that that the woman is "avoiding intercourse" based on fear or other factors, then this would be diagnosed under "the fear of vaginal penetration or of pain" dimension below.

Dimension 2: Pain with Vaginal Penetration

1. How much pain do you feel pain during (attempted) intercourse/penetration?

   0 = No pain
   1 = A little pain
   2 = Some pain
   3 = Moderate pain
   4 = Quite a bit of pain

2. Could you choose the option which best describes when you feel the pain (you can choose more than one option and pain may also occur independently of intercourse/penetration)?

   1. Before (attempted) intercourse/penetration
   2. At the beginning of (attempted) intercourse/penetration
   3. During thrusting
   4. During orgasm
   5. After intercourse/penetration is over
   6. During gynecological examinations
   7. During tampon insertion
   8. While wearing tight pants
   9. While exercising
   10. The pain comes and goes and is not related to intercourse/penetration
   11. Other
   12. I don't know (e.g., because I haven't attempted intercourse/penetration in a long time)

3. Looking at the diagram of your genital/pelvic area (see diagram), can you point to where the pain is (it can be in more than one spot)?
4. How would you describe the quality of your pain?

The examiner can prompt the interviewee based on the adjectives in the short form of the McGill Pain Questionnaire: throbbing, shooting, stabbing, sharp, cramping, gnawing, hot-burning, aching, heavy, tender, splitting, tiring-exhausting, sickening, fearful, punishing-cruel.

Diagnostic Threshold Criteria

Any reported pain that is directly related to intercourse/penetration and is rated as 3 or 4 should be diagnosed as genito-pelvic pain/penetration disorder.

Diagnostic Exclusion Criteria

If the client reports several different recurrent or chronic pains in non-genital areas, then other diagnoses, such as fibromyalgia or somatization disorder, might be considered. These diagnoses can be co-morbid with genito-pelvic pain/penetration disorder.

Interference Questions

How much does pain interfere with your ability to experience intercourse/penetration?
How much does pain interfere with your wish to have intercourse/penetration?

0 = Not at all
1 = A little
2 = Somewhat
3 = Moderately
4 = Quite a bit or always

Clinician's Judgment

The clinician must use some judgment in interpreting the likely location of the pain since some clients may not be able to answer this question. Judgment may also be necessary in determining how many different pains there are. A superficial vulvar pain as well as a deeper pelvic pain may co-occur in which case both should be noted and rated separately.

Dimension 3: Fear of Vaginal Penetration or of Genito-Pelvic Pain During Vaginal Penetration

1. How afraid of, or anxious about, pain do you become when your husband/partner attempts to have intercourse/penetration with you?

   0 = Not at all
   1 = A little
   2 = Somewhat
   3 = Moderately
   4 = Quite a bit or always

2. How generally afraid or anxious do you become about things other than pain, when your partner attempts to have intercourse/penetration with you?

0 = Not at all
1 = A little
2 = Somewhat
3 = Moderately
4 = Quite a bit or always

3. How much do you tense up, in general, when your husband/partner tries to have intercourse/penetration with you?

0 = No tension at all
1 = A little tension
2 = Some tension
3 = Moderate tension
4 = Quite a bit of tension.

Diagnostic Threshold Criteria

A rating of 3 or 4 to any of the assessment questions will result in a diagnosis of genito-pelvic pain/penetration disorder.

Diagnostic Exclusion Criteria

This dimension is designed to reflect a fear of vaginal intercourse/penetration or fear of genito-pelvic pain during intercourse/penetration. If the client reports generalized anxiety about all aspects of sexuality or all aspects of social interaction or meets criteria for a generalized anxiety disorder, then alternative diagnoses might be more appropriate. These alternative diagnoses can be comorbid with a diagnosis of genito-pelvic pain/penetration disorder.

Interference Question

How much does fear/anxiety interfere with your ability to have intercourse/penetration?

0 = Not at all
1 = A little
2 = Somewhat
3 = Moderately
4 = Quite a bit or a lot

Clinician Judgment

The clinician should determine how specific the fear or worry is to vaginal penetration. Some women will deny any fear/worry but will behaviorally avoid any attempts at vaginal penetration by closing their legs or turning away during attempted intercourse or gynecological examinations. Such avoidance might be reasonably interpreted as "fear/anxiety" by the clinician. Such a diagnosis can be made based by asking about tampon use, frequency of gynecological examinations, and frequency of attempted intercourse/penetration. Reissing et al.'s (2004) research criteria of an average of less than 1 attempt at vaginal intercourse every two months over the past year despite adequate opportunity or being involved in a relationship, and also meeting one of the following two criteria (never having seen a health professional for, or never having successfully completed a pelvic exam; never having used tampons) might be useful in determining if a woman is avoiding vaginal penetration.

Dimension 4: Pelvic Floor Muscle Dysfunction

How much do the muscles around your vagina tense or tighten up when your husband/partner tries to have intercourse/penetration with you?

0 = No tension at all
1 = A little tension
2 = Some tension
3 = Moderate tension
4 = Quite a bit or a lot of tension

Interference Question

How much does this muscle tension (spasm) interfere with your ability to experience intercourse/penetration?

0 = Not at all
1 = A little
2 = Somewhat
3 = Moderately
4 = Quite a bit or always

Diagnostic Threshold Criteria

Any rating of 3 or 4 on the interference question would result in a diagnosis of genito-pelvic pain/penetration disorder.

Exclusion Criteria

None specified.

Clinician Judgment

In this dimension, the interference question is the crucial diagnostic one. It has not been typical in the past for women to be asked about their genital tension/spasm and it is not clear that there is a diagnosable problem if the woman reports tension/spasm but no interference. A full assessment of pelvic floor muscle functioning is usually best made a pelvic floor physical therapist.

Dimension 5: Medical Co-morbidity

1. Do you suffer from any medical/physical conditions or take any medications or have you had any surgery that might

have caused your difficulties with penetration or your pain during intercourse? Yes (specify_____), No, Don't Know
2. Have you (ever) had (completed) a (recent) gynecological examination? Yes (if yes, when) No
3. Did you tell your gynecologist about your difficulties with penetration/pain? Yes, No

Diagnostic Threshold Criteria

A mental health professional is not usually in a position to make a medical/gynecological diagnosis of this kind.

Diagnostic Exclusion Criteria

The existence of a medical condition does not exclude or preclude the diagnosis of genital pain/penetration disorder.

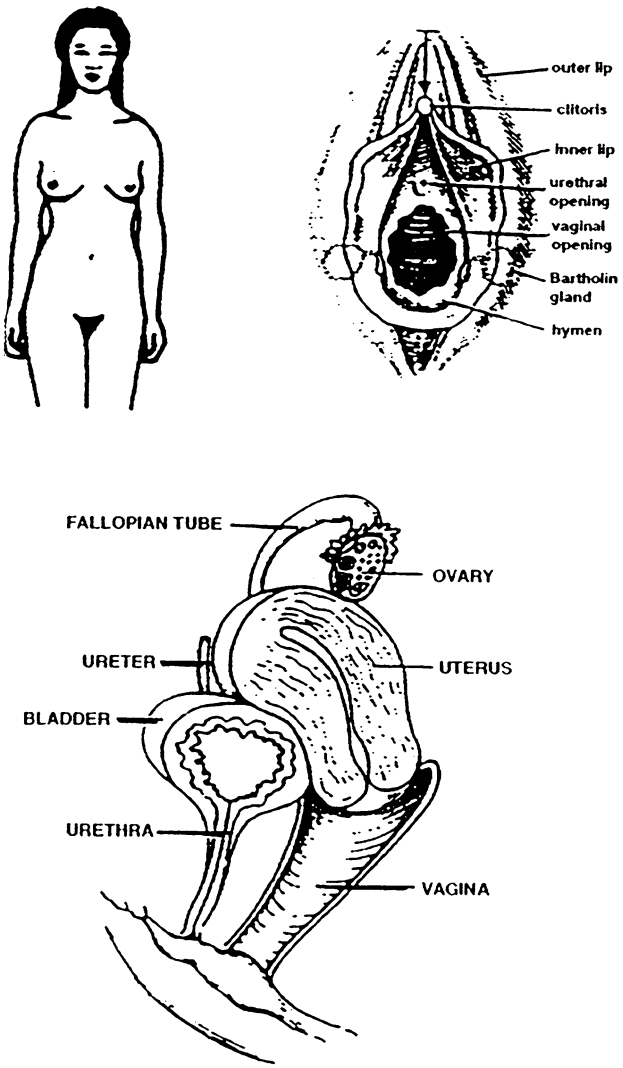
Interference Question

Do you think that there is a physical reason for your pain? Yes No Don't Know

Clinician Judgment

Traditional practice has suggested that physical causes be excluded before psychological diagnoses are made. This model may no longer be appropriate for genital pain/penetration disorder. In fact, it is often impossible to determine with any degree of certainty whether there is or how much basis there is for physical causation. Current pain assessment strategies emphasize multidisciplinary and biopsychosocial models. Prudent current practice for women complaining of genito-pelvic pain/penetration problems suggests that a comprehensive gynecological examination should always be carried out by a health professional familiar with vulvar/pelvic pain syndromes. Mental health professionals should inform gynecologists if the patient they are referring has never completed a gynecological examination. There are, in fact, a very large number of potential physical problems which may be related to genital pain or difficulties in penetration. The mental health professional should attempt to carefully balance the need for multiple invasive gynecological examinations with the chances of finding a treatable physical cause. Unfortunately, there is no available empirically based algorithm on which to base one's judgment.

Note. In order to assess genito-pelvic pain/penetration disorder in women who are bisexual or lesbian or for women who engage in vaginal penetrative behavior that does not involve penile–vaginal intercourse, the wording of the assessment questions has been written in a manner to allow the assessment of behavioral equivalents of penile–vaginal intercourse/penetration.



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