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Recent Advancements in the Management of Female Sexual Pain Disorders: A Review on Etiology, Classification, Diagnosis, and Treatment

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Abstract

Vaginismus is a condition occurring due to spasm of the vaginal muscles, which manifests as fear of penetration or vaginal intercourse. The patients typically present with pain, anxiety, depression, and fear of penetration. The etiology of the condition is not clearly understood, but a history of sexual assault, fissure, fibroid, injury during vaginal examination, etc. The condition is due to an imbalance in the tone of the pelvic floor muscles. For diagnosis, a thorough physical examination and history-taking are required. The treatment approaches available for the condition are cognitive behavioral therapy, pelvic floor physiotherapy, pharmacotherapy, vaginal dilators, and patient education. Previously published literature suggests that a comprehensive rehabilitation approach is required for better results and symptom reduction.

Keywords: Vaginismus, Review, Sexual dysfunction, Treatment

Introduction

Sexual dysfunction is an umbrella term encompassing various dysfunctions associated with sexual functioning in both males and females. About 43% of females and 31% of men have at some point in their lives experienced some sexual dysfunction that has interfered with the emotional and psychological well-being of the individuals (1). Vaginismus is a pervasive physical condition characterized by involuntary muscle spasm during or before sexual intercourse or any other kind of vaginal penetration, such as fingers, tampons, and even during vaginal examination. It is defined as "Recurrent and persistent muscle spasm of the outer third of the vagina" by DSM-IV-TR. The actual prevalence of the condition is not yet confirmed, as the individuals are silent about the condition; however, the prevalence of the condition is 5%–17% (2). Vaginismus has proved to be strongly associated with depression and anxiety and an increased rate of cesarean section (3,4). The causative factors are not yet confirmed, but some factors which could lead to vaginismus are anxiety, fear of pain, phobia, and childhood sexual abuse. Various studies suggest that childhood trauma is associated with sexual dysfunction. However, the association is not consistent (5). Vaginismus is an involuntary contraction of the muscle at the beginning of penetration, and pain during sexual intercourse is known as dyspareunia.

Dyspareunia is presented as pain while performing sexual intercourse, which alters the normal sexual response cycle of the individual. Individuals who reported to the outpatient referred to this pain felt during intercourse and did not identify it as a symptom due to lack of awareness and social stigma when discussing the problem with peers. The etiology can be malformation in the genital tract, drop in estrogen levels post menopause, nerve dysfunction, hormonal imbalance, and other emotional causes, including depression, anxiety, intimate partner violence, inadequate arousal, and sexual dysfunction in the male partner (6-8).

Various treatment strategies are available for the treatment of the pain. These treatments include cognitive behavioral therapy, sexual therapy, hypnotherapy, Botox injections, electromyography (EMG), Biofeedback, electrotherapy, and physical therapy.

In this review, we aim to identify the best available treatment approach and discuss new treatment approaches for resolving the condition, so individuals can safely start treatment by overcoming social stigma and emotional barriers. We are on a spree to find a multidisciplinary treatment approach for complete resolution of the condition.

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Methods

An extensive literature search was conducted across multiple electronic databases such as PubMed, Scopus, Web of Science, and Google Scholar. The relevant studies focusing on the management of vaginismus and dyspareunia were identified. The search was performed using the following keywords, both individually and in combination using Boolean operators (AND/OR): "Vaginismus", "Dyspareunia", "Medical Treatment", Conservative Management", and "Physical Therapy". All the relevant articles published up to May 2023 were considered for inclusion in this review. The inclusion and exclusion criteria for the articles were as follows:

Inclusion Criteria

- Studies published in English.
- Studies involving female participants diagnosed with vaginismus and dyspareunia.
- Studies assessing medical, conservative/ physical therapy, or surgical treatment approaches.
- RCTs, cohort studies, case-control studies, systematic reviews, and case reports were included
- Free full-text articles available were included.

Exclusion Criteria

- Studies not directly addressing the treatment/ management of vaginismus or dyspareunia.
- Editorials, conference abstracts, and commentaries without original data.
- Studies with insufficient methodological detail or outcome reporting.
- Duplicate publication or overlapping datasets.
- Articles published in any language other than English.

Study Selection Process

Articles fulfilling the inclusion criteria were selected for further evaluation. Two separate reviewers independently assessed the eligibility and quality of these articles. A total of 70 articles were initially identified through the database search. After removing duplicate records, 8 articles met the inclusion criteria and were included in the final review.

Aetiology

The causative agents for the pains in the female genitals are multifaceted; the following factors can be the causative agents for the condition: psychosocial factors, cultural factors, sexual behavior, and biological factors related to females. Various other factors such as surgery, child sexual abuse, and other emotional and psychological factors may lead to vaginismus.

Classification of Vaginismus

Involuntary contraction of the vagina is considered the core element of the definition of vaginismus as given by the American College of Obstetrics and Gynecology and by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)(9).

While the International Classification of Diseases classifies vaginismus as a pain disorder characterized by muscle spasm of pelvic floor muscles causing occlusion of the vaginal opening, making it impossible to penetrate or painful (10). Due to huge social stigma, the data regarding the disease is not clearly known. Studies show that individuals with vaginismus show excessive spasmodic response as compared to normal individuals, while only 24% of those suffering from vaginismus reported pain during sexual intercourse. Only 28% of the subjects presented with vaginal spasm. As the diagnostic criteria for vaginismus are questionable due to reduced reliability and validity of the tool to assess the symptoms (11).

Another more efficient method for the assessment of the vaginal muscle spasm is the recording of the electrical activity of the muscles using surface electrode (sEMG). A recent study concluded that individuals with vaginismus have weakness of the pelvic floor muscles along with increased tone of the vaginal muscles as compared to normal individuals (12). Another study using three well-regulated sEMG datasets (ranging from 29 to 224) showed no significant difference in the contractility of the vaginal muscles between affected and sound individuals (13,14). This is due to the lack of standardization of the empirical diagnostic protocol and the term spasm itself. However, researchers and clinicians have relied on self-reported difficulties during vaginal penetration (15,16).

Assessment/ Evaluation

As the condition is explicit, assessment requires proper communication and knowledge before starting the assessment, as this part is challenging. Only through thorough assessment can a proper diagnosis be made and other comorbidities ruled out. To make a proper diagnosis, we need to go back to the basics, as a detailed "History of Present Illness" is required for making the final diagnosis. The question is as follows.

Pain History

- Location: Vagina, Superficial or Deep
- Onset of Pain: before, with, or after penetration
- Penetration is possible at all
- Insertion of tampon/finger is possible
- Intensity of pain
- Type of pain: burning, aching, itching
- Order of the pain during/ attempting or after the penetration
- Since when
- Any treatment

Medical History

- History of sexually transmitted diseases
- Use of any contraceptives
- Simultaneous bowel/ bladder infection
- Any other vaginal symptoms like discharge, burning

and itching
- Gynecological condition: endometriosis, fibroids, pelvic pain
- History of laceration/episiotomy or other trauma
- History of gastrointestinal surgery or radiation
- Rough masturbation
- Alcohol or drug abuse
- History of physical abuse

Psychosocial Factors
- Willingness of partners to discuss problems
- History of sexual abuse
- Life stressors and other contributing factors
- Patient's view of the problem and contributing factors
- History of ongoing Anxiety, depression

Sexual History
- Relationship status
- Are you sexually active
- Other sexual dysfunctions like orgasmic difficulty, lubrication, and low libido
- History of Traumatic genital examination
- Are they able to become aroused and climax at all?
- Level of anxiety while examination/penetration (17, 18)

After history taking, a vaginal examination is also required to confirm the diagnosis. On observation, inspect the vulva for fissures, ulceration, atrophy, infection, or any skin lesions such as skin tags, warts, or herpes simplex virus. Low vaginal or external vaginal slabs examination is done for pathological assessment. This is followed by superficial and deep sensory examination, which is usually done with a cotton swab for light pressure, touch, and temperature. The entire pelvic floor is palpated using fingers to look for tenderness, tightness, or discomfort. During the examination, the patient should be observed for any discomfort, distress, anxiety, gluteal tightening, lifting the buttocks off the examination table, or pelvic guarding/withdrawal signs; toe curling and clenching teeth are signs where the therapist should stop the examination.

Differential Diagnosis

The clinical features of vaginismus and dyspareunia are almost similar, as they both are sexual pain disorders. Provoked vestibulodynia (PVD) is a vulvar pain lasting for at least three months, localized to the vestibule, provoked by sexual activity. PVD is the most frequent subtype of dyspareunia in premenopausal women, with a prevalence of 7% in the population. The clinical features of PVD include sharp/burning pain or pain on attempted vaginal entry (19,20).

Treatment Approaches for Vaginismus

Once the diagnosis is confirmed, a tailored protocol is designed where the main cause, along with the symptoms, is treated. The first and primary treatment approach is:

- Patient Education: Educate the patient about the condition, its course, available treatment options, and its prognosis. A better understanding of the condition and mechanism will make the patient an active participant in the treatment for better results
- Relaxation of pelvic floor muscles: Relaxation by Laura Mitchell's relaxation technique is a physiological method of relaxation based on the principle that when a muscle group is voluntarily moved into its opposite position from a tense state, it automatically relaxes (reciprocal inhibition). Unlike techniques that require the person to consciously "let go" or feel the sensation of relaxation, this method involves actively moving the body part in a defined sequence away from the position associated with tension, which then produces relaxation as an involuntary physiological response (21). It is commonly used in physiotherapy for conditions involving stress, anxiety, chronic pain, and muscular tension, and disorders like pelvic floor dysfunction. Relaxation can be achieved to reduce muscle tension and relieve symptoms, along with deep breathing exercises guided by the therapist through verbal instructions. A hot water bag can be used to induce relaxation. The induced relaxation is then measured by EMG biofeedback and ultrasound biofeedback.
- Cognitive Behavioral therapy: This is characterized by graded/gradual exposure exercises along with cognitive restructuring to reduce sexual avoidance.
- Pharmacotherapy: The medication used for the treatment of vaginismus has limited evidence, so clinicians avoid the prescription of medication. Injection of botulinum toxin A into the puborectalis and pubococcygeus is used for the treatment, as it has low evidence; the practice is limited.
- Pelvic Floor Physiotherapy: Administration of pelvic floor physiotherapy plays an important role in restoring control of vaginal musculature, improving function, relieving pain, and improving overall condition. The therapists incorporate various techniques to achieve goals. The techniques are as follows: breathing exercises, relaxation, tissue de-sensitization, vaginal dilators, pelvic floor biofeedback, manual therapy, etc. Till now, two studies have shown a 100% success rate on the efficacy of biofeedback in the treatment of Vaginismus (22,23).

The overview of the entire review is summarized in Figure 1.

Discussion

The published evidence on vaginismus suggests that the condition is far more complex than the clinical definition of the condition, despite decades of research. The exact etiology of the condition is not fully understood. This review highlights how much uncertainty remains even in something as fundamental as how the condition is

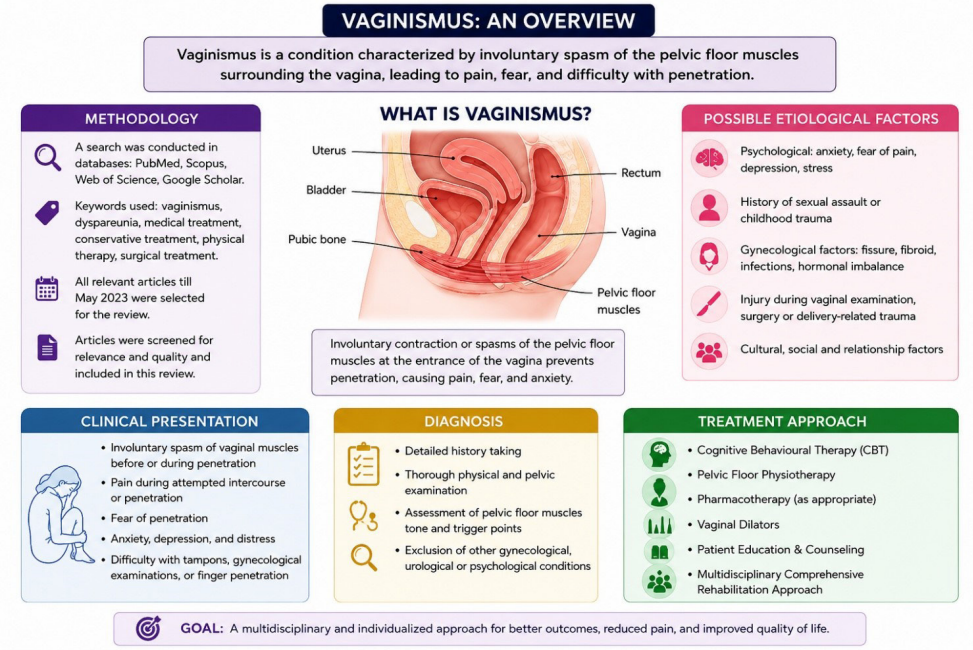

Figure 1. Pictographic Representation of the Condition.

diagnosed.

The most notable finding is the ongoing disagreement over the diagnostic criteria. The definition from DSM-IV-TR and the American College of Obstetricians and Gynecologists (9). Describe vaginismus as an involuntary muscle spasm. Yet when researchers investigated evidence of spasm using surface EMG, the findings were inconclusive. A published study suggested that an increase in pelvic muscle tone alongside underlying muscle weakness in the affected women (12). While other studies where the condition is more controlled, the EMG reports showed no measurable difference in the vaginal muscle contractility in normal and affected women (13, 14). Out of the total women suffering from vaginismus, only 24% reported pain during intercourse, and 28% showed spasm in the vaginal muscle on examination. This contradictory result shows that the presence of spasm in the vaginal muscles cannot be considered a defining feature of the condition; this indicates that the etiology of the condition involves psychological, central, and behavioral factors along with musculoskeletal dysfunction. Whereas more research is required to establish a higher level of evidence (16, 20).

The similarity in clinical presentation between vaginismus and dyspareunia and provoked vestibulodynia makes it even more challenging to diagnose an individual (19). Due to this overlapping clinical presentation, the diagnosis of the condition is shifting to a more unified/ comprehensive model, as seen in DSM-5, which classifies the condition under one umbrella term, i.e., genito-pelvic pain/penetration disorder. Rather than forcing patients into rigid categories, clinicians are moving to a symptom-based treatment approach for symptom relief.

However, identifying the causative agent/ factor for the condition is difficult, as the condition is triggered by psychological distress, prior sexual trauma or abuse, gynecological pathology, and socio-cultural implications, but none of the associations is consistent enough across the literature to point to a single root cause. Due to this weak association, a multi-domain evaluation as discussed in the review is required to cover all possible permutations and combinations among causative agents and conditions (18).

While discussing treatment, a multidisciplinary approach is required to generate the best result and effectively resolve the patient's suffering. This includes patient education, pelvic floor physiotherapy, relaxation techniques, cognitive behavioral therapy, and, where appropriate, biofeedback. This tends to produce the best outcome. A few studies suggest that complete symptom resolution is achieved by incorporating biofeedback. This showed that physiotherapy-led approaches, in particular, have promising results. The evidence for treatments like botulinum toxin injection remains thin and inconsistent, so pharmacotherapy is considered the best supporting option rather than the first line of treatment.

This review suggests that, even though we have come a long way, real gaps in the literature need to be filled by building efficient diagnostic criteria/tools and well-designed trials for physiotherapy and biofeedback interventions. Table 1 presents a summary of the articles included in this review, detailing key characteristics such as author, aims, outcome, conclusions and remarks.

Table 1. A summary of the articles included in this review

Author/Year	Aim	Outcome	Conclusion	Remark
Rosen, 2000 (1)	To assess the prevalence and risk factors of sexual dysfunction in men and women	Found high prevalence rates of sexual dysfunction across both sexes, linked to psychological and interpersonal factors	Sexual dysfunction is common and multifactorial, warranting greater clinical attention.	Useful as a broad epidemiological anchor for the review, but not specific to vaginismus — sets context rather than direct evidence.
Spector & Carey, 1990 (2)	To critically review empirical literature on incidence/ prevalence of sexual dysfunctions	Identified wide variability in reported prevalence rates due to inconsistent diagnostic criteria across studies	Highlighted the need for standardized diagnostic definitions in sexual dysfunction research	An older but still relevant reference — the diagnostic inconsistency it flags is echoed even in more recent vaginismus literature
Goldsmith et al, 2009 (3)	To evaluate vaginismus as an independent risk factor for cesarean delivery	Women with vaginismus showed significantly higher rates of cesarean delivery compared to controls.	Vaginismus may independently increase obstetric intervention rates	Strong clinical relevance — links vaginismus to a measurable, real-world outcome beyond sexual function alone
Watts & Nettle 2010 (4)	To examine the role of anxiety in vaginismus using a case-control design	Anxiety levels were significantly higher in women with vaginismus compared to controls	Anxiety plays a central role in the presentation and possibly the maintenance of vaginismus	Supports the psychological component of the biopsychosocial model discussed in this review
Farnam et al, 2014, (5)	To identify correlates of vaginismus in an Iranian clinical sample	Found associations between vaginismus and psychosocial/ cultural factors specific to the study population	Cultural and contextual factors significantly influence the presentation of vaginismus	Adds valuable cross-cultural perspective, though generalizability to other populations may be limited
Van der Velde & Everaerd, 2001, (13)	To study the relationship between involuntary pelvic floor activity, awareness, and perceived threat	No significant difference in vaginal muscle contractility was found between the symptomatic and control groups.	Psychological threat perception may be more relevant than actual muscle spasm.	Directly contradicts the classic spasm model — a pivotal, somewhat underappreciated finding.
Crowley et al, 2009 (17)	To provide clinical guidance on diagnosing and managing vaginismus	Outlined a structured, history-based diagnostic approach for clinicians	Detailed history-taking remains central to accurate diagnosis given limited objective testing	Practical and clinically oriented — forms the backbone of the assessment framework used in this review
Barnes et al 1984 (22)	To evaluate biofeedback as an adjunct to psychotherapy in treating vaginismus	Reported high success rates with biofeedback-assisted psychotherapy	Biofeedback may meaningfully enhance treatment outcomes for vaginismus	An older study, but its positive findings are echoed by more recent biofeedback research — worth flagging its age as a limitation

Authors' Contribution

Conceptualization: Om Wadhokar and Tushar Palekar.
Data curation: OM Wadhokar and Pallavi Bhakne.
Formal analysis: Om Wadhokar
Methodology: Om Wadhokar and Ganukumar Wadhokar.
Writing–original draft: Om Wadhokar.
Writing–review & editing: Om Wadhokar.

Conflict of Interests

Authors declare that they have no conflict of interests.

Ethical Issues

Not applicable.

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