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Psychological profiles among women with vulvar vestibulitis syndrome: a chart review

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The purpose of this study was to assess the prevalence and type of psychological distress in women with vulvar vestibulitis syndrome (VVS). A retrospective chart review was conducted of all women receiving a diagnosis of VVS referred to a tertiary care facility during a two-year period. Brief psychological questionnaires, including the Personality Assessment Screener, Fear of Negative Evaluation Scale, Golombok-Rust Inventory of Sexual Satisfaction, and the Phobia Rating Scale were administered.

Fifty-consecutive cases were reviewed along with 12–15 month follow-up data for 41 cases. Phobic anxiety to vaginal touch or entry was significantly higher in women with VVS than normative data. Fear of Negative Evaluation was a strong associated feature, and for 30% approached clinically significant levels. Twenty-six percent showed a moderate, while another 26% showed a mild clinically distressed profile. Negative affect and social withdrawal were among the most frequently endorsed variables. Improvement in allodynia and intercourse were both related to these psychological variables, and a multiple regression analysis supported the use of psychological instruments in addition to standard medical assessment.

A subgroup of women with VVS display clinically significant broad based psychological distress that warrants additional assessment. The use of psychological questionnaires in addition to medical assessment of women with VVS may provide valuable information predictive of treatment needs and response.

Key words: **vulvar vestibulitis syndrome, dyspareunia, psychological profiles, assessment, allodynia**

INTRODUCTION

Vulvar vestibulitis syndrome (VVS) is thought to be the most common diagnosis underlying chronic dyspareunia[1]. The few community studies of dyspareunia in women under 40 years of age give prevalence rates from 14–22%[2,3]. Defined as severe pain on attempted vaginal entry, strictly localized hyperalgesia/allodynia of the vestibule, and findings limited to variable erythema[4], VVS may preclude entry of the penile head or cause painful intercourse, with penile movement and ejaculation fluid typically increasing the burning pain. Postcoital vulval pain and postcoital dysuria are usual, but ongoing vulvodynia unrelated to intercourse is more characteristic of dysesthetic vulvodynia[5], where the precisely defined allodynia of VVS is absent. There may be coexistent contraction of the perivaginal muscles with attempted vaginal entry, mimicking 'vaginismus', defined problematically as 'vaginal spasm'[5], but widely considered to involve increased involuntary tone of the perivaginal muscles without allodynia or other findings. The presence of both VVS and pelvic muscle hypertonicity is frequently documented[6–9]. The etiology of VVS is unclear but histological findings are compatible with neurogenic

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inflammation[10-14]. Premorbid factors with the potential to influence vulnerability to VVS may be biological, given the recent preliminary data on polymorphism of the interleukin-1 receptor antagonist gene in women with VVS[15] and a subgroup of VVS is linked to chronic or recurrent *Candida albicans* overgrowth[1], and/or is psychological[16]. To date, the literature examining an etiological role for psychological factors is equivocal[17-23]. Of note there is marked heterogeneity of responses to psychological enquiry[18], raising the possibility of shadowing psychopathology of a subsample of women with VVS by looking only at the larger group. Therefore, in order to document the prevalence of specific, subtle indications of psychological maladjustment, we conducted a retrospective chart review of all women receiving a diagnosis of VVS who were referred to a tertiary care facility during a two-year period.

METHODS

Subjects

Results are based on women consecutively referred to the BC Center for Sexual Medicine between February 2000 and February 2002, for introital pain with all attempts at penile vaginal entry. The center is a tertiary care facility for the assessment and treatment of sexual dysfunctions in men and women. Follow-up data is based on visits conducted 12–15 months after primary diagnosis. For four patients due to their distance from Vancouver, this information was supplied by the referring physician. Questionnaire completion is a routine component of assessment in this clinic; thus, no specific inclusion or exclusion criteria were employed. Approval for this chart review was obtained from the University of British Columbia and the Vancouver Hospital Ethics Review Boards.

Instruments and procedures

Couples were assessed together and individually over two sessions, with one physician primarily responsible for all assessments and follow-up. The women were given a simple description of pain physiology such that the role of stress and their possible predisposition to the physical sequelae of stress was clarified. An average of five one-hour visits to the physician for ongoing conservative therapy included psychosexual counseling and encouragement of non-penetrative sex. Additional intensive psychotherapy (either individual, couple, or group format) by a different mental health clinician was recommended when there were psychological issues unable to be fully addressed in the psychosexual counseling by the physician.

Women were advised with respect to vulval hygiene and shown how to apply topical anti-inflammatory medication (sodium cromoglycate) on to the precise areas of allodynia (using a 1cc syringe without a needle). In women with marked symptoms of overcontraction of perivaginal muscles, the diagnostic exam was delayed until genital self touch at home, along with a full understanding and acceptance of a detailed vulval exam, allowed their active participation. Women were recommended pelvic muscle physiotherapy and surface electromyographic biofeedback whenever allodynia did not remit with the other measures. Women were advised on stress reduction, and the few women with troublesome (premenstrual) vulvodynia were prescribed low dose venlafaxine or minimally anticholinergic tricyclic antidepressant (TCA). If, following an improvement in allodynia, involuntary overcontraction of perivaginal muscles remained, a series of conical wax vaginal inserts and modified Kegel exercise were prescribed. Writen informed consent was obtained from all female participants before the questionnaires were administered. The questionnaires took approximately 20 minutes to complete, and these were filled, either while their partner was being interviewed, or at home and mailed back to the clinic. A brief explanation of how to complete the questionnaires was given by the physician during the clinical interview. Questionnaires that tapped various aspects of personality and psychological functioning as well as sexual and relationship functioning were chosen. Four questionnaires (the Phobia Rating Scale, PRS; the Personality Assessment Screener, PAS; the Golombok Rust Inventory of Sexual Satisfaction, GRISS; and the Fear of Negative Evaluation, FNE) were used to provide broad-based assessment in a relatively brief, self-report format.

Phobia Rating Scale

The 4-item PRS was developed for use in our clinic, and was adapted from a similar rating scale used in the clinical assessment of patients with a specific phobia. Patients were asked to rate (from 0 to 4) the extent to which they feared and avoided any form of vaginal penetration (e.g. tampon, finger or sexual intercourse). Additionally, the dichotomous

true/false statement 'Although I can insert something into my own vagina, I would not allow another person to insert anything' was asked of each participant.

Personality Assessment Screener

The PAS is a valid and reliable, standardized, 22-item questionnaire that asks participants to rate (false, slightly true, mainly true, very true) the extent to which they agree with statements. It is based on the parent instrument, the Personality Assessment Inventory[24], and was developed to identify target areas in need of further assessment. The PAS provides information on the follow-ing facets: negative affect, acting out, health problems, psychotic features, social withdrawal, hostile control, suicidal thinking, alienation, alcohol problems and anger control.

Golombok Rust Inventory of Sexual Satisfaction

The GRISS[25] is a 28-item, valid and reliable standardized questionnaire designed to assess relationship and sexual satisfaction. In addition to a global dysfunction score, individual subscores for infrequency, non-communication, dissatisfaction, avoidance, non-sensuality, vaginismus and anorgasmia were obtained.

Fear of Negative Evaluation

The FNE is a 30-item true/false questionnaire that is commonly used in the assessment of social anxiety[26]. It specifically assesses the extent to which one fears the loss of approval from others, and was chosen based on our clinical impression that women with VVS often spontaneously report concerns over being evaluated negatively.

In addition to standardized questionnaires, data was collected on the following: number of visits, additional intense (up to 10 further sessions) individual, group or couple psychotherapy, physiotherapy, low dose TCA or venlafaxine and history of sexual abuse.

Measures

Percentage rates were calculated to characterize our sample's demographic status, to determine the proportion with clinically significant personality profiles, and to quantify the number of patients who improved following treatment. The two main outcome variables were allodynia improvement and intercourse improvement.

At each visit allodynia level was assessed on a self-report 4-point Likert scale from 0 (no pain) to 4 (profound pain). Intercourse ability was rated on a 3-point Likert scale from 0 (possible and free of pain), 1 (improved but still painful) to 2 (not improved). Allodynia and intercourse improvement scores were obtained by subtracting the value given at their final visit from the level assessed at the initial visit.

For analyses in which published normative data do not exist, results were compared to data obtained from women participating in other studies affiliated with our clinic. Specifically, two separate samples consisting of 25 women without female sexual dysfunction, and 30 women with female orgasmic disorder but not VVS, were used as comparison groups. These two groups of women had responded to a newspaper advertisement seeking volunteers for a university-sponsored laboratory study on sexual arousal.

Statisitcal analysis

Independent samples *t*-tests were used to investigate differences between diagnostic groups on a number of psychological variables and response to treatment. Pearson product moment correlation coefficients were used to establish the relationship between improvement in pain scores and severity of psychopathology, and outcome on intercourse ability and psychological variables. Levene's test for equality of variance was used to establish homogeneity of variance between groups. Finally, multiple regression analyses were used to determine which psychological measures contributed the most unique variance to pain change and intercourse improvement scores.

RESULTS

The mean age for the 50 women with VVS was 29.4 (range 19–54) years. Co-existent perivaginal muscle hypertonicity was strongly suggested by history and physical examination in 35 of these women. The mean duration of symptoms from VVS was 6.2 (range 0.6–27) years. Twenty-four percent of the women had one or more of the following diagnoses: tension headaches, chronic temporo-mandibular pain and irritable bowel syndrome. Thirty-two percent reported inconstant, mostly mild premenstrual vulvar pain unrelated to attempts at vaginal entry. Forty-four percent of the women with VVS

had previously experienced pain-free intercourse, 40% had lifelong histories of painful intercourse, and 16% had never been able to tolerate penile containment nor internal physical examination. Four women had experienced sexual abuse (8%). The mean number of visits was 4.4 (range 2–9), with 15 of the women receiving additional sessions for intensive psychotherapy. There were seven women who were unable to implement this recommendation. Fifteen women received physiotherapy and 13 others were unable to follow this recommendation. Five women were prescribed venlafaxine or low dose TCA.

Women with VVS scored significantly higher on the PRS than age-matched sexually health women, t (71.99) = −8.06, $p < 0.0001$ (mean 6.18 and 1.20, respectively). Comparisons between women with VVS and an age-matched sexually healthy group revealed no significant differences on the GRISS subscales of non-communication (e.g., asking your partner what he enjoys about the sexual relationship), t (70) = 0.15, $p > 0.05$, or anorgasmia, t (68) = −1.86, $p > 0.05$. Women with VVS did score significantly higher on the subscales of non-sensuality (e.g., not enjoying cuddling/caressing your partner's body), t (62.78) = −2.66, $p = 0.010$; sexual infrequency, t (68) = −7.76, $p < 0.001$; avoidance (e.g., becoming tense/anxious or avoiding intercourse), t (68) = 5.94, $p < 0.0001$; vaginismus (e.g., having a tense/tight vagina during intercourse), t (34.12) = −11.80, $p < 0.0001$; and dissatisfaction (e.g., feeling dissatisfied with the amount of time spent engaging in sexual activity), t (66) = 2.69, $p = 0.009$. Though women with VVS significantly differed from normal controls on non-sensuality and dissatisfaction, mean levels did not fall within the range for sexual dysfunction on these variables. Women with lifelong symptoms had significantly higher vaginismus scores than women with acquired symptoms, t (30.1) = 2.78, $p = 0.009$, whereas no other GRISS subscale was affected.

The FNE was significantly higher in women with VVS compared to a separate group of women with orgasmic disorder, t (78) = −3.81, $p < 0.001$. Thirty percent of the sample scored in the markedly significant clinical range on this variable (score > 20), and show profiles similar to patients with marked social anxiety.

There were no differences between women with and without co-existing perivaginal muscle contraction on the PRS, t (48) = 0.56, $p > 0.05$; the PAS, t (47) = 0.889, $p > 0.05$; the FNE, t (18.78) = 0.463, $p > 0.05$; or the GRISS total score, t (41) = −0.757, $p > 0.05$. The only GRISS subscale to significantly differ between these groups was, predictably, the vaginismus subscale, t (44) = −2.692, $p = 0.010$, with significantly higher scores in women with both VVS and perivaginal muscle contraction. Thus for all remaining GRISS analyses women with and without this associated feature were combined.

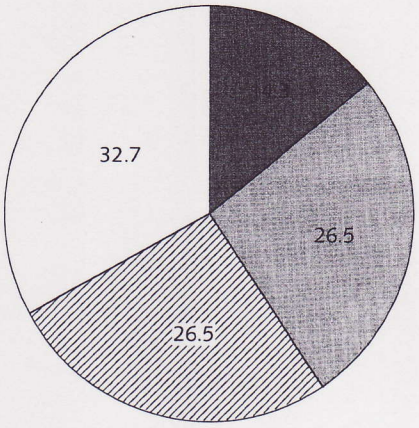

Figure 1 Percentage (%) of women with VVS (n = 50) scoring in the (□), normal; (▨), mild; (▩), moderate; and (■) marked clinically significant range on the Personality Assessment Screener (PAS)

Using the PAS, the data revealed that 14.3% of our sample scored in the marked clinically significant range, 26.5% scored in the moderately significant range, 26.5% were in the mild clinical range, and 32.7% did not differ from a normal, standardized sample (Figure 1). Among those women who were in the moderate to marked clinically significant range (n = 20), subscales for several personality traits emerged as being clinically significant. The most frequently endorsed psychological variables were negative affect (e.g., experience of personal distress, unhappiness and apprehension), and social withdrawal (e.g., detachment or discomfort in relationships), both of which were seen in 45% of the sample. Anger control (e.g., difficulties managing anger) 37%; hostile control (e.g., need for control and inflated self-image) 35%; health problems (e.g., somatic complaints and health concerns) 27%; and acting out (e.g., problems with impulsivity or sensation-seeking) 16%, were also over-represented in this group. Some 22% of the women with VVS reported thoughts of death or suicide. There were no significant differences between women with VVS who did and did not have coexisting perivaginal muscle

contraction on any of these personality subscales, $p > 0.05$.

Allodynia and intercourse data at one-year follow-up are available for 39 and 41 women, respectively. There was an overall improvement in allodynia following treatment, $F(1.40) = 572.55$, $p < 0.0001$ which was unaffected by the presence of associated perivaginal muscle contraction. Allodynia completely remitted in 38.1% of women, improved in 52.4%, and was the same or worse in 9.5%. Among women with an overall clinically significant PAS, there was a trend towards acting out and allodynia improvement being negatively related, $r = -0.472$, $p = 0.08$, such that women with higher acting out scores improved less. The majority of women with complete remission of allodynia, who did not require additional intensive counseling, did not show a clinically significant PAS (Table 1). Furthermore, among those women with a clinically significant PAS profile whose allodynia completely remitted, nearly half did receive additional intensive counseling (Table 1). Another eight women with VVS and a significant PAS profile had slightly improved allodynia. The number of women improving and experiencing no change in allodynia with treatment are presented in Table 1. Among women reporting vulvodynia unrelated to intercourse attempts, a clinically significant PAS profile correlated significantly with less vulvodynia improvement, $r = -0.812$, $p = 0.05$. Women who scored in the clinically significant range on the FNE had less improvement in allodynia than women with normal profiles (mean improvement 1.83 vs. 2.44 out of 4.00 respectively). None of the GRISS subscales correlated with allodynia improvement, $p > 0.05$. There was no difference in allodynia outcome between women with life-long and acquired symptoms.

Among women with VVS, there was a significant improvement in ability to have intercourse without pain. Specifically, 40% of the sample was able to have pain-free intercourse, and 28% had modest improvement in their dyspareunia. Thirty-two percent of the sample were not attempting to have intercourse at the time of follow-up for a variety of reasons; thus, any improvement in their dyspareunia is unknown. Women with clinically significant PAS scores improved less on intercourse outcome, though this measure only approached statistical significance, $r = -0.425$, $p = 0.06$. Women with initially higher vaginismus subscale scores improved less on intercourse ability, $r = -0.314$, $p = 0.032$. Avoidance showed a trend to being negatively related to intercourse improvement, $r = -0.256$, $p = 0.08$. Of the 17 women with VVS who progressed to pain free intercourse, eight of these had clinically significant PAS profiles – three receiving additional intensive psychotherapy, presented in Table 1. Of the seven women who were encouraged to receive additional counseling but did not, only one improved to pain free intercourse while the other six made no improvements on this measure. The number of women improving and experiencing no change in intercourse ability with treatment are presented in Table 1.

Table 1 Personality Assessment Screener (PAS) profiles and effects of receiving additional psychotherapy among women with VVS who experienced remitted, modestly improved, and no change in allodynia ($n = 39$), and intercourse ability ($n = 41$). Data represent number of women within each category

Category	*Allodynia outcome*	*Intercourse outcome*
Normal PAS + no psychotherapy		
In remission	7	8
Modest improvement	11	6
No improvement	1	6
Normal PAS + psychotherapy		
In remission	2	1
Modest improvement	2	2
No improvement	1	2
Clinical PAS + no psychotherapy		
In remission	4	5
Modest improvement	3	0
No improvement	0	2
Clinical PAS + psychotherapy		
In remission	3	3
Modest improvement	5	4
No improvement	0	2

Despite an improvement in allodynia in most women, this did not necessarily translate into pain-free intercourse, $r = 0.149$, $p > 0.05$. Women with life-long histories reported less improvement in intercourse than those with acquired symptoms.

Using a multiple regression analysis with allodynia improvement as the dependent measure, and the PRS, PAS total score, GRISS total score, FNE and initial allodynia severity as independent predictors, it was found that initial allodynia, standardized Beta = 0.719, $p < 0.001$, and the PRS score, standardized Beta = −0.242, $p = 0.038$, significantly accounted for improvement across women with VVS. Subsequently the multiple regression was run only among women with a clinically significant PAS score using the same predictor

variables to predict allodynia outcome. This time the FNE, standardized Beta = −0.318, $p = 0.037$, emerged as providing the most unique variance.

DISCUSSION

Unlike erectile dysfunction which may affect up to 7% of men under the age of 40[2], chronic dyspareunia in women of this age group has received little research attention. Given the limited efficacy of the various medical, surgical, physical and behavioral therapeutic interventions[16], increased understanding of subgroups of women with VVS may allow more effective therapy. The areas of allodynia are remarkably consistent[10,27], and pathophysiological mechanisms may include those of neurogenic inflammation and central and peripheral sensitization of dorsal horn cells in the spinal cord[28]. In addition to altered descending input from the brain, there may be increased afferent input from the typically hypertonic pelvic muscles[29]. Peripheral sensitization from products of inflammation[11,14,30] and upregulated nerve growth factor[31] provokes peptide release from sensory nerve endings under conditions of sustained stimulation – compounding and maintaining the inflammatory process[14,32]. This neurological sensitization allows touch to be perceived as pain. It is the clarification of any role for psychological factors modulating central and peripheral neurological sensitization[32] in VVS that is the focus of this chart review.

Previous research examined mean values across a group of women with VVS based on the use of general psychological questionnaires for sample sizes ranging from nine[18] to 54[17] and tended to amalgamate all women into one group for the purposes of statistical analysis. Reports have ranged from minimal psychopathology[17,18], increased shyness[19], somatization[19], anxiety[20], avoidance of harm[21], depression[22], or symptomatology on structured interview that is unsupported by questionnaire evaluation[23]. Clinical experience suggests that a proportion of women with VVS possess significant psychological features that warrant attention, whereas others appear psychologically healthy, and investigations that have relied less on grouping all women with VVS as a whole corroborate this clinical observation[22,23,33].

The current study, using questionnaires that address more subtle manifestations of psychological maladjustment and quite specific delineation of areas of psychological difficulty that require further assessment, identifies a subgroup with a significant experience of personal distress and unhappiness, social withdrawal, difficulties with anger management, intense need to exert control, and somatic complaints. The finding that only 32.7% showed normal psychological profiles whereas 14.3% scored in the markedly clinically significant range, and almost a quarter of the sample admitted to thoughts of death and suicide emphasizes the distress of some women with this syndrome.

The concept that personality inventories may reflect significant aspects of personality without necessitating the presence of full-scale personality disorder[34] provides the rationale for their use in women with VVS. The instruments employed mostly assess aspects of personality that are trait, rather than state characteristics. This, combined with the finding that clinically significantly profiles were seen in a similar percentage of women with life-long and acquired VVS, supports the concept that stable psychological factors, rather than situation specific anxiety, may contribute to vulnerability to VVS.

Fear of negative evaluation by others was strongly endorsed by the women and their partners during the clinical sessions, and this was supported by our questionnaires showing 30% with scores in the moderately or markedly significant range. That this associated stress might contribute to neurological mechanisms thought to underlie VVS was readily acceptable to the women once they had received a simple outline of pain physiology. Although overall stress reduction was an integral part of therapy, these results suggest specifically modifying the intense need to excel in other's eyes might be of therapeutic value. During the clinical sessions it was apparent that the self-imposed high standard at work, study, care of the home and family responsibilities often precluded the woman from fully complying with the various therapeutic recommendations.

These 50 women with typical hyperalgesia/allodynia of VVS all acknowledged significant fear and avoidance regarding genital touch and specifically, vaginal entry of even small items such as their own finger or a tampon. Moreover historical or physical judgement of increased muscle tone is approximate at best. These women all showed similar phobic anxiety to women with heightened pelvic

muscle tone (spasm) that interferes with intercourse but is not accompanied by allodynia or other findings on physical examination, i.e., women with 'vaginismus'. The lack of significant difference in psychological inventories between women with VVS and those with 'vaginismus' is in keeping with the frequently reported difficulty in distinguishing these two groups[6–9]. Confirming the research of others[18,19], yet in contrast to some[17,22], the majority enjoyed non-penetrative sexual stimulation, were orgasmic, enjoyed non-sexual physical affection, and felt they could communicate well with their partners. Therefore, in reference to the dilemma of 'do these women experience painful sex or sexual pain?[5], it would appear to be both. The pain is associated with a degree of phobic fear of vaginal entry.

Although at one year 90.5% had less allodynia, only 40% reported painless intercourse. Perhaps it is not surprising that women with lifelong versus acquired symptoms showed less improvement in coital pain – there being no positive past memories. This was despite similar improvement in allodynia in the two groups. While for some women, interpersonal difficulties or lack of a partner were relevant, for others it was the residual allodynia, or continuing pelvic muscle hypertonicity, or continued fear of pain that resulted in ongoing dyspareunia or their reluctance to attempt penile entry. Unfortunately, women with VVS can rarely capitalize on the clinical report of increased pain threshold with sexual arousal since the latter typically lessens as soon as penile introital contact is attempted. Moreover, when VVS persists, many women become avoidant of sexual cues and triggers through the day resulting in fewer sexual thoughts and lowered sexual self-image. At the time of sexual interaction, despite the various therapeutic interventions, the risk is that the woman's arousability will remain low. Some physical discomfort for a woman who is nevertheless subjectively and physiologically sexually aroused is vastly different to the experience of the woman who is unaroused, feeling sexually substandard and who otherwise strives to excel in all aspects of her life.

The majority of women with improved allodynia from the standard five visits for medical therapy and psychosexual counseling by the physician did not show a clinically significant psychological profile. Of interest are the women with significant psychological features on the PAS whose allodynia improved, with complete healing in seven (although three of these did receive extra intense psychotherapy). In contrast, less than a quarter of the women with a normal PAS and remitted allodynia required additional psychotherapy. The assessment of FNE appeared especially helpful in predicting outcome given that those with more intense fear of others' negative evaluation had less improvement in allodynia. This and the result from the multiple regression analysis support the inclusion of this instrument, as well as the vaginal PRS, as both contribute significant unique variance in predicting treatment response.

Regarding the ability to have painless intercourse, three variables emerged as significant predictors of poor improvement – high sexual avoidance and vaginismus subscores on the GRISS, and an overall clinically significant PAS score. It is of interest that the majority of women with VVS who progressed to painless intercourse without the need of further intense psychotherapy did not show overall high levels of psychopathology. Failure to follow through with recommended additional psychotherapy is also of predictive value given that only one of the seven women was able to progress to painless intercourse.

Relating the psychological profiles to outcome at one year is problematic since this is a clinical population, with each couple receiving slightly different treatment. The number of physician visits and additional psychotherapy received varied, depending on need and ability of the couple. Pelvic muscle physiotherapy was recommended whenever the allodynia did not completely remit with topical sodium cromoglycate, stress reduction and avoidance of penetrative sex – but some women could not afford the cost. However, given that all women were offered the same modalities of treatment whenever they were deemed necessary, and motivation to follow through may itself be linked to the psychological features of these women, the findings are of some interest. Another methodological consideration is that the current sample represents women seeking treatment for VVS, and their personality style may differ from those choosing to live with the condition. Yet it is of interest that FNE scores were significantly higher than those of women choosing to present for help with orgasmic problems. The extent to which fear of negative

evaluation is related to this sample of treatment seekers should be the focus of a future investigation.

Overall the findings from this chart review support the use of psychological inventories in the assessment and management of women with VVS. The benefit of including such questionnaires as the GRISS, PAS, PRS and FNE is that they are relatively brief, yet also valid and reliable with published normative data available. Additionally, the finding that these measures possess predictive validity for response to treatment suggests that optimal treatment can be tailored based on a woman's psychological presentation. Considerable discussion on the potential etiological role of psychological factors in VVS exists. The findings from this review that among a subgroup of women with VVS clinically significant psychological features do exist, does not solve this etiological question. However, the results imply that in some women, psychological features concurrent with their sexual pain may play a predisposing, precipitating, or perpetuating role. The current findings may have treatment implications that should be the focus of a future controlled investigation. If these findings are replicated and a correlation between psychological profiles and treatment outcome is corroborated, then the current position of reserving surgery only for treatment of non-responders might better consider assessing and addressing negative psychological factors before proceeding to surgery. Long-term prospective studies where the identified psychological issues are addressed in tandem with sexual and medical aspects of management are very much needed.

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Current knowledge on this subject

- Current data on psychological profiles in women with VVS is equivocal, and this may be attributable to inadequate questionnaires having been administered, and the tendency to amalgamate all women into one group, thus missing subtle indications of psychological difficulty among a subgroup of the sample
- The implications for such psychological profiles in women with VVS has not been examined empirically, though clinical anecdotal experience would suggest that such features may affect treatment outcome

What this study adds

- This study suggests that among a subgroup of women with VVS there are significant psychological features that distinguish them from the entire sample
- Future investigations might benefit from tailoring treatment approaches to the individual woman, taking into account her psychological profile