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### Vulvodynia. Definition, diagnosis and treatment

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ORIGINAL ARTICLE

## Vulvodynia. Definition, diagnosis and treatment

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### Abstract

Vulvodynia is a chronic painful disorder with an estimated prevalence of 9–12%. A rising incidence of the condition constitutes a growing problem. This has led to an increased focus on etiology and treatment, while the definition also requires attention. Previous assumptions stating that the problem is solely a psychological disorder have been abandoned, because inflammatory mechanisms and genetic factors have been found to be involved in the pathogenesis as well as psychosexual contributors.

This article describes the terminology and definition of the condition, theories on patho-physiological mechanisms underlying the disorder, methods of diagnosis and evidence and recommendations on clinical management. A critical examination of the literature regarding vulvodynia reveals numerous strategies and recommendations for treatment, many of which are not evidence-based, and a lack of effective treatment for all patients. Research is being undertaken internationally to find more specific and unequivocal causes of the disorder, as well as to develop evidence-based methods of treatment.

**Key words:** *Vulvodynia, vestibulodynia, terminology, etiology, clinical features, genital pain, treatment*

### Introduction

Pain in the vulva without objective findings has most likely always existed. In 1880 Thomas described patients with 'pronounced hypersensitivity in the nerves supplying the mucosa in parts of the vulva' (1). Interest in this condition and other vulvar disorders has increased markedly in the 1970s with the foundation of the International Society for the Study of Vulvovaginal Disease (ISSVD). In the Nordic countries the major research focus on the disorder has been in Sweden and Finland, where examination and treatment of women with vulvodynia has been established in gynecological or dermatological outpatient departments, while a number of experimental studies have also been in progress.

Epidemiological studies from the USA and Sweden have indicated that the disorder may affect between 9–12% of all women in a general population and up to 15% of women seen in a private

gynecological outpatient setting (2–4). It is, however, likely that many patients remain undiagnosed, often due to lack of knowledge about the disorder among physicians. Vulvodynia, once believed to only affect white, young nulliparous women, is now known to affect women of all ethnic groups (4). Pain in the urogenital area has a major effect on women's daily lives, relationships, sex lives, quality of life and psychological wellbeing. Two studies conducted by Reed and Mashed (5,6) have shown that use of two criteria, i.e. the presence of pain on vaginal penetration and tenderness on local pressure in the vestibule, show good reliability and validity for making a diagnosis of vulvodynia.

Despite the high prevalence rates and the consequences the disorder may have for women, knowledge of the etiology and effective methods of treatment remains modest. For several years knowledge of vulvodynia was based on retrospective,

descriptive studies, but since 1997 uncontrolled, non-randomized studies have been superseded by more evidence-based investigations with an improved methodology.

This article aims to provide a comprehensive review on developments with regard to terminology, the definition of the condition, theories on the patho-physiological mechanisms underlying the disorder, methods of diagnosis and the evidence and recommendations that exist for different treatment options.

## Materials and methodology

Medline, Biosis and Psychinfo databases were searched for empirical studies published in English on vulvodynia. The following keywords were used in Medline, Biosis and Psychinfo: vulvodynia, vulvar vestibulitis, vestibulodynia, essential vulvodynia in combination with Human Papilloma Virus (HPV), emg biofeedback, surgery, botox, lidocaine, methylprednisolone, candida, sexual dysfunction and dyspareunia, genital pain and vulvar pain. Articles up to and including February 2008 were identified. The search strategy identified 748 articles in Medline, 90 in Psychinfo and 21 in Cocharane. However, the Psychinfo and the Cochrane searches identified the same studies as the Medline search. All abstracts were initially read and the full articles were then read and included based on the strength of the evidence, primarily randomized studies, followed by controlled non-randomized trials and lastly observational studies such as cohort and case-control studies. Eventually 57 articles were included in this review. The reference lists of the identified studies and reviews were examined to include other relevant studies. The articles were classified according to the Levels of evidence first published by the Canadian Task Force on the periodic Health Examination (7).

## Anatomy

The vulva is bordered at the front by the mons pubis and to the rear by the anus, including the clitoris, labia majora, labia minora and perineum. Within the vulva is the vestibule, which contains the urethral meatus, vaginal introitus, Skene's glands, Bartholin's glands and the small vestibular glands. The vestibule is bordered medially by the hymen and laterally by Hart's line (Figure 1). The vestibule is richly innervated by myelinated and non-myelinated nerve fibres, in contrast to the vagina.



Figure 1. The cotton swab test (Q-tip test) is used to test for location of pain in the vestibule. The testing starts laterally on the thighs and moves medially to the vestibule. The vestibule is tested at 1, 4, 6, 7 and 11 o'clock positions. When the patient reports pain upon touch at the sites, the patient is asked to rate the degree of pain on a Likert scale and the intensity of the pain (mild, moderate or severe).

Picture from Haefner HK. Critique of new gynecologic surgical procedures; surgery for vulvar vestibulitis. *Clin Obstet Gynaecol.* 2000;43:689-700.

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## Terminology

Since the third ISSVD World Congress in 1976, at which the expression 'burning vulva syndrome' was first mentioned, the term vulvodynia has been subject to many classifications and changes in the terminology. The ISSVD most recently revised the terminology and classification of vulvodynia in 2003, which at present is used by gynecologists, dermatologists and pathologists worldwide (8).

Vulvodynia is defined as a chronic discomfort in the vulva, often described as a burning pain without objective findings or specific signs of a neurological disorder. Vulvodynia is classified according to the localization of the pain in the vulva, whether it is generalized or localized and to whether it arises on provocation of the area or is unprovoked. The pain may also be found in a mixed form, i.e. both on provocation and spontaneously.

The localized, provoked form was previously termed 'vulvar vestibulitis', as clinical examination of these patients confirmed vestibular erythema and a histological presence of mononuclear inflammatory cells in skin biopsies from the vestibule. Friedrich called the condition vestibular adenitis, later renamed 'vulvar vestibulitis syndrome', based on three diagnostic criteria: (1) the presence of pain on pressure to the vestibule or when attempting to insert an object into the vagina; (2) pain on pressure to the vestibule upon examination; and (3) vestibular erythema. The criteria are known as Friedrich's triad and have since then acted as the diagnostic criteria

for localized, provoked vulvodynia (9). Based on later studies, among others those by Nylander-Lindqvist et al., the term 'vestibulitis' was abandoned in 2001 as studies had shown that the presence of mononuclear inflammatory cells is also a feature of normal skin biopsies from the vestibule and therefore not diagnostic for vulvodynia (10).

Vestibulodynia, the type of vulvodynia that is localized only in the vestibule, is classified as primary or secondary. The primary subset has been present since first tampon use or intercourse. Secondary vestibulodynia develops after a time without pain on intercourse or on insertion of a tampon. Women who present with a history of pain characterized by a generalized, diffuse distribution arising spontaneously without demonstrable cause were previously given the diagnosis 'dysesthetic vulvodynia'. This term was abandoned in the most recent review of the terminology for vulvar pain (ISSVD 2003), and these patients are now given the diagnosis 'generalised, unprovoked vulvodynia' (8).

### *Etiology*

The cause of vulvodynia has not yet been established, but is believed to be a condition with a multifactorial etiology, with organic or functional components. The organic theory derives from the presence of pro-inflammatory markers in the vestibular mucosa. This model hypothesizes that psychosexual dysfunction arises as a consequence of a chronically inflamed vestibular mucosa, resulting in reflex contraction in the pelvic floor musculature, with accompanying pain.

Studies by Weström, Bohm-Starke et al., Bornstein and Halperin et al. have, in skin biopsies obtained from women with vulvodynia at vestibullectomy or by punch biopsies, demonstrated increased intraepithelial innervation in skin biopsies and an increase in the number of C-afferent nociceptors on special histopathological staining (S-100) (11–13). This is thought to be indicative of a change in the nerve supply to the affected area, which could be a possible pathophysiological basis for increased pain sensitivity on touch or even constant pain. An increase has also been found in the number of mast cells which on degradation release heparanase, an enzyme involved in inflammatory reactions that break down surrounding connective tissue and thus potentially allows the proliferating nerve fibres (nociceptors) to penetrate the basal membrane and reach the surface epithelium (14).

Inflammation in the mucosa appears to play a role in the clinical manifestations. A number of studies have demonstrated an increase in the number of

inflammatory markers such as Interleukin-1alpha and TNF-alpha and anti-inflammatory markers such as Interleukin-1 receptor antagonist (15–17), which result in a chronic inflammatory condition in the mucosa and a local proliferation of nerves as described above. The chronic inflammation may induce changes in the peripheral nociceptors and result in a reduced sensory pain threshold, also called *allodynia*. *Central sensitization* subsequently arises as a combination of peripheral sensitization of sensory nerves in the vestibular tissue, triggered by inflammation or trauma, and a change in the sensory transmission of pain, which leads to changes in the central nervous system, such that the patient experiences altered abnormal sensory and motor pain in other parts of the body (18). This was illustrated in a study by Pukall et al., which showed that women with vulvodynia experience a reduced pain threshold in the trunk and upper extremities as well as in the vulva, pointing toward a central sensitization. The phenomenon is also known from patients with fibromyalgia, irritable bowel syndrome and interstitial cystitis, which frequently occur comorbidly with vulvodynia (19,20).

The correlation between HPV infection and vulvodynia has been examined in numerous studies. Koilocytosis occurs in the vestibular tissue of 16–71% of all cases, which could indicate a viral infection (21,22). However, in several studies it has not been possible to confirm these findings with a positive HPV-PCR and there still appears to be doubt concerning the connection between HPV infection and vulvodynia (23,24).

Theories focussing on vulvodynia as a functional disorder are based on the documented effect of treatment by cognitive therapy as well as pelvic floor awareness training and stretching exercises. Women with vulvodynia often present with hypertonicity or spasms in the pelvic floor musculature as well as poor body awareness compared with healthy women (25). This may be secondary to the chronic changes in the mucosa, a phenomenon that is also seen in women with dyspareunia and which maintains or exacerbates the pain condition when treated incorrectly. In 2005, Ter Kuile et al. looked into whether or not vulvodynia was an accompanying condition to vaginismus. Vaginismus is defined as a recurrent or persistent involuntary spasm of the musculature around the introitus. The spasms prevent the introduction of objects or penetration in spite of the woman's own wishes. The case control study showed that more than 50% of women presenting with primary vaginismus also met the criteria for vulvodynia (26).

The evidence that women with vulvodynia present psychopathological traits to a greater degree than women without vulvodynia seems to be growing. Studies have shown conflicting results in terms of the extent of accompanying symptoms in the form of depression, anxiety, a tendency to somatization and sexual problems (27,28). Nylander-Lundqvist and Bergdahl reported that women with vulvodynia have a vulnerable personality with low self-esteem, a tendency toward mild to moderate depression and a high level of anxiety (29). Most often, it appears that the depressive thoughts may be a result of the burden of the pain condition rather than actual depression requiring treatment (30). Jantos et al. found in their study a significant correlation between vulvar pain, anxiety, depression and a generally high level of stress. Whether pain predisposes to depression or vice versa has to be examined in more detail in future studies (31). Overall, it is not possible to point to a single etiology behind vulvodynia and whether there is a different etiology behind generalized (vulvar dysesthesia) and localized vulvodynia (vestibulodynia) is under discussion and remains to be clarified in more detail (32).

#### *Clinical features*

Women who present with symptoms of vulvodynia vary in age between 16 and 80 years. The majority are aged between 20 and 50 (3). The women typically have experienced pain for several years before the time of referral and have been examined by several doctors (4). The pain is most often described as burning, but it may be irritating, sharp, stinging or occasionally pruritic. It may have arisen suddenly, with or without provocation, and may last for several days following coitus or gynecological examination. There is pain upon touching the circumference of the vestibular area and erythema may be visible in the same area. Typically, the area of allodynia covers the vestibule at four to eight o'clock, just outside the hymenal ring, but can also involve the area around Skene's ducts. This is confirmed by the Q-tip test as illustrated in Figure 1.

Vulvodynia is an exclusion diagnosis, which can be made after the exclusion of other possible causes such as infection (candidiasis, herpes), inflammation (lichen planus, immunobullous disorder), neoplasia (Paget's disease, planocellular carcinoma) or a neurological disorder (herpes neuralgia, spinal nerve compression). At the time of referral, however, many women have been treated numerous times on suspicion of a presumed *Candida* infection (33).

Finally, the diagnosis of vulvodynia is based on a thorough medical history and physical examination, as suggested in Table I.

#### *Treatment*

Numerous treatment regimes are employed throughout the world in the treatment of vulvodynia. Table II shows published studies of the effects of various treatment regimes. Randomized clinical studies exist and are increasing in numbers on the efficacy of treating vulvodynia with topical applied lidocaine gel, biofeedback, surgery and cognitive behavioral therapy. The evidence behind treatment with anti depressive medicine, local botox injection or local lidocaine injection is based on retrospective cohort studies. According to guidelines by Haefner et al., it is recommended that the patient initially be encouraged to follow general advice on hygiene and then later to try local treatment regimes or systemic treatment regimes (34). In the absence of any effect, it may be considered to use surgical intervention, sexological or psychological support and

Table I. Medical and sexual history and diagnostics on a patient suspected to suffer from vulvodynia.

- 
1. Gynecological-, pain- and sexual history
    - 1a. Previous treatment attempted, allergies, previous medical and surgical disorders.
    - 1b. Time of debut of pain problem, duration of pain, time of onset, information on events which might trigger the pain such as insertion of tampon, coitus, cycling, riding, sitting for long period, insertion of gynecological instruments during gynecological examination.
    - 1c. Sexual life of patient, previous and current sexual experiences. The information is best obtained with the patient sitting clothed and after obtaining permission to talk about the subject with the patient using the PLISSIT model.
  2. Gynecological examination
    - 2a. Systematic inspection of the genitalia externa, colposcopy of vestibulum and vulva incl. application of acetic acid to visualize suspect dysplasia.
    - 2b. Bacteriology swabs from the vulva and vagina.
    - 2c. Virus swabs from the vulva (and vagina) (HPV, PCR, herpes) when clinical relevant.
    - 2d. Q-tip test by systematic evaluation clockwise, starting at the clitoris and continuing on the inner side of the labia minora, vestibule and hymenal ring (Figure 1). If pressure triggers pain = positive Q-tip test.
    - 2e. Inspection of the vagina by applying minimal pressure to the painful area on insertion of a narrow speculum.
    - 2f. Bi-manual palpation of the internal genitalia and internal palpation of the pelvic floor musculature to identify vaginismus or tender pelvic floor muscles.
  3. Miscellaneous
    - 3a. Microscopy of vaginal discharge to reveal fungal spores/hyphae or signs of bacterial vaginosis (BV).
-

Table II. Treatment.

Intervention	Side effects	Comments	Design/level of evidence
<b>Local medical</b>			
Lidocaine	Topical 2% gel/5% ointment Apply on vestibule 4–5 times daily Or on cotton swab at night before bedtime Start with gel 2% for 2 months, Then ointment 5% for 2 months before evaluation	Burning in applied site Only local, provoked vestibulodynia	Prospective RCT, gr. Ib (36)
40 mg Methyl- prednisolon acetate (MA) og lidocaine 1% (LC)	1 mL MA in 1 ml LC day 1st 0.5 mL MA in 5 ml LC day 8th 0.3 mL MA in 0.3 ml LC day 15th	Light burning on site of injection	Retrospective study, gr. (37)
Botox	Dosage unknown. 25 units has been tested in Pilot study	Local symptoms (pain from injection site, flu-symptoms)	Case reports, gr. IV (42;43)
<b>Systemic medical</b>			
Amitriptyline	Start dosage: 10–25 mg bedtime at bedtime for 2 weeks Continuing dosage 50–100 mg Pain relief is often achieved at 60 mg daily	Dry mouth and dry eyes  Constipation, fatigue, weight gain Contraindicated in patients with heartdisease and daily use of Mono-aminooxidase inhibitors	Retrospective study IIb (33;45;46)
Desipramine	25 mg at bedtime Continuing dosage 50–100 mg	Same as for Amitriptyline	Case reports, gr. IV (44)
Gabapentin	300 mg daily, increase every five days by 300 mg (until 3–4 times higher dosage) Max. 900 mg 3 times daily	Headache, nausea, dizziness and fatigue	Retrospective study, gr. III(47)
Paroxetine	Startdosage: 10 mg daily  Increase with 10 mg every week. Max. 60 mg daily	Fatigue, anorgasm, weight gain	Open label study, gr.IV (45)
Venlafaxine	37.5 mg daily. Continuing dosage 75–150 mg daily	GI side effects, anorgasm, anxiety	Case reports, gr. IV
<b>Others</b>			
Physiotherapy	Evaluation by physiotherapist necessary  Instruction in home exercises by physiotherapist		Prospective RCT gr. Ib (36)
Biofeedback Psychological/sexological (Cognitive behavioral therapy, CBT)	Glazer protocol 1.5 hours group therapy every week up till 12 months		Cohorte study, gr. II (48) RCT, gr. I ((26;50)
<b>Surgical</b>			
Perineoplasty		Woundinfection, local hematoma, stenosis of Bartholins glands, Bartholinitis	RCT, gr. I (50;53;54)
Vestibulectomy		Same as for perineoplasty	RCT gr. I, (50;53;54)

physiotherapy. However, there is no evidence supporting the chosen order and the best results are often obtained by a combination of treatment regimes.

#### General hygiene advice

General advice is often given initially, despite the lack of evidence, and includes the wearing of cotton underwear, no underwear at night, avoidance of allergenic irritants (e.g. perfumes, toiletries, soap) in

the vulvar region, application of oil to the vestibule before bathing, application of moisturising cream to the affected area of the vulva after bathing and avoiding the use of panty-liners.

#### Local treatment

Based on experiences from the treatment of post-herpetic neuralgia using local lidocaine ointment in plaster form, Zolnoun et al. studied in 2003 the use of topically applied lidocaine in a non-placebo

controlled study on women with local, provoked vulvodynia. The participants were instructed to apply 5% lidocaine ointment on the affected area as well as a cotton wool ball smeared with lidocaine 5% which they placed into the vestibulum at bedtime to remain in place for a minimum of eight hours. The treatment resulted in 76% of the participants in the trial being able to have coitus after seven weeks, compared with only 36% before the start of treatment (35). A randomized study has later shown that the effect of 2% lidocaine gel subsequent 5% lidocaine ointment applied to the painful area of the vulva four to seven times daily for four months compares with that of physiotherapy treatment at 12 months follow-up (36). There was a significant increase in vestibular pain threshold for both treatment groups at the 12 months follow-up as compared to before treatment.

Another non-placebo controlled study on local injections to the circumference of the vestibule on days 1, 8 and 15 respectively of 1 ml methylprednisolone, 0.5 ml and 1% lidocaine, 0.3 ml, resulted in a reduction in pain in 32% of cases, partial freedom from pain in 36% and no improvement in the remaining 32%. The participants were monitored for 24 months following treatment (37).

Eva et al. have identified a subgroup of patients with local, provoked vulvodynia who have fewer estrogen receptors in the vestibular tissue (38). However, no major effect of the use of estrogen in vulvodynia has been described. For this reason the use of estrogen in vulvodynia should only be on indication, where there is a significant lack of local estrogen such as in post-menopausal conditions, thyroid disorders, lichen sclerosus or other similar atrophic or degenerative skin conditions.

A study by Bohm-Starke et al. have shown a possible connection between the contraceptive pill and provoked vulvodynia (39). A relative lifetime risk of 6.6 of developing local, provoked vulvodynia when using oral contraceptives has been found in another study. For this reason, withdrawal of the contraceptive pill for a minimum of six months have been suggested to be attempted (40). Harlow et al. have however not been able to reproduce the high association in clinic-based studies and further evidence is needed for the clinical recommendation (41).

At least two non-placebo controlled pilot studies have reported an effect of local injections of Botulinum Toxin A (botox) into the vestibule in the treatment of vulvodynia (42,43). Both pilot studies have shown a significant reduction in pain for up to 12 months following treatment in 17 and 20 women, respectively. Currently, a number of randomized,

placebo-controlled studies are taking place on the effect of botox in the treatment of vulvodynia.

#### *Systemic treatment*

Tricyclic antidepressants (TCAs) such as amitriptyline and desipramine have been used in lower doses than is the case with depression. Other antidepressants such as selective serotonin re-uptake inhibitors (SSRIs) and serotonin and noradrenalin re-uptake inhibitors (SNRIs), have also been tried (44). Reed et al. (45) demonstrated, in a prospective non-randomized, non-placebo controlled follow-up study, a 50% reduction in pain among 56–90% of the participants when using amitriptyline, paroxetine and other SSRI drugs. McKay et al. (46) reported retrospectively in a register study on the same effect of treatment with TCAs.

In the absence of any effect from antidepressants, effects have been reported from anti-epileptic drugs such as gabapentin or pregabalin. Harris et al. found in a retrospective follow-up study a reduction of 80% in subjective complaints (primarily burning pain in the vulva, dyspareunia and irritation in the vulva) following 30 months of treatment with gabapentin in 64% of women diagnosed with general, unprovoked vulvodynia (47).

#### *Biofeedback and pelvic floor exercises*

Since Glazer et al. in 1995 reported on the effect of biofeedback on vulvodynia, it has been recognized that hypertonicity of the pelvic floor musculature in women is a contributory factor in the pain condition (48). The application of biofeedback is more widespread in the USA, Australia and Canada than it is in Europe and all studies on its effect on vulvodynia are therefore predominantly on non-European women. McKay et al. found in their prospective study that 89% of the women who undergo biofeedback resumed their sex lives during six months of treatment (49). Jantos et al. obtained comparable results in their study (31). Based on these findings, instruction in relaxation of the musculature of the floor of the pelvis, if biofeedback treatment is unavailable, is often recommended.

#### *Psychological/sexological treatment*

Cognitive group therapy (CBT) is being offered to an increasing degree in several countries to women diagnosed with vulvodynia. Few studies illustrate an effect of that therapy, and only a few have been randomized. Experience from the Netherlands and Canada has shown promising results with CBT in

women with vulvodynia (26,50). The objective of CBT is to learn to control the pain. Ter Kuile et al. found in their prospective, open-trial study that a reduction in dyspareunia was related to a general improvement in sexual functional level as well as increased control of the muscles of the pelvis (26). Weijmar Schultz et al. have shown in a prospective, randomized study, that cognitive behavioral therapy (CBT) is comparable with surgery. Bergeron and colleagues found in a small randomized, controlled study among 28 women who had been allocated for CBT, electromyographic biofeedback or vestibulectomy, that surgery primarily led to a reduction in dyspareunia. Two years of follow-up results from this study showed that, even though surgery was better than CBT with regard to the intensity of pain on touching the vestibulum, that the effect of CBT and surgery were comparable after two years in terms of self-reported pain during coitus (51).

### *Surgery*

Until 1995, the literature often contained recommendations for surgical treatment of vulvodynia, including local, provoked vulvodynia (52). However, the recommendations were and still are based on non-controlled, non-randomized studies. The various surgical procedures that have been tried include vestibuloplasty, vestibulectomy and perineoplasty (53), the last-named operation being the most extensive. A complete response (no postoperative dyspareunia) was found in 61–83% of the women who had perineoplasty and in 60–95% of the women who had vestibulectomy (51,54). Vestibuloplasty has not been shown to be effective.

A positive PCR for HPV DNA viral material in the vulvar tissue, greater age and a long history of vulvodynia are factors that are unfavorably associated with a high success rate. Vaginismus should be excluded as the cause of vulvodynia before surgery (53).

### *Other methods of treatment*

Less well publicized methods of treatment such as acupuncture, local treatment using capsaicin, hypnosis and laser therapy are used to a lesser extent without any major documentation (55–57). For the clinician, it is important to be aware that a cure is not achieved in a short time despite using the apparently correct treatment measures. Improvement and reduction in pain may take weeks. A realistic review of the results of treatment, the time frame and the need for multidisciplinary treatment should be discussed with the patient.

### **Conclusion**

Vulvodynia is a complex disorder in women characterized by pain in the vulva with psychological and sexual consequences and many non-evidence based treatments. The ISSVD definition emphasizes three cardinal points: the localization of the pain, the involvement of the sensory nerves and the multi-dimensional clinical picture. However, the emotional and psychological factors are not mentioned in the definition. Because of that it has often been omitted to study the connection between the physiological and the psychological factors that undoubtedly affect the condition. However, the absence of a clear pathology should not lead one to search exclusively for a psychological explanation model, but a thorough clinical examination and recognition of the emotional superstructure should lead to the appropriate multimodal treatment.

Several mechanisms may contribute to the vulvar pain syndrome such as local nociceptor upregulation and proliferation, infectious, inflammatory and genetic disorders as well as psychological and sexual disorders. The findings of a non-classical inflammatory response and the identification of a specific allele of a gene involved in the regulation of inflammation may in the future through further research aid in the understanding of the pathogenesis of the vulvar pain syndrome.

Vulvodynia is a diagnosis of exclusion. The diagnosis depends on a careful medical history and physical examination. The cotton swab is the most useful instrument. The relevance of taking a vulvar biopsy and performing vulvo – colposcopy has never been thoroughly tested for the validity and reliability in regard to the diagnosis. A biopsy may however be useful in regard to diagnosing any suspected dermatological condition causing pain in the vulva.

Despite many published studies on treatment for the past two decades, it remains difficult to recommend one specific treatment for any given patient. Based on recent research that has provided an increasing number of prospective and randomized studies, attempts to recommend more evidence-based treatments are in place. Vestibulectomy, evaluated in a randomized study, seems to be the most efficacious treatment option. Longterm follow-up studies are however still needed in regard to risks and sideeffects as well as the implications on the psychosexual wellbeing of the patient. Furthermore, daily application of topical lidocaine and local corticosteroid-lidocaine injections seem important to mention as they provide considerable relief to women with vestibulodynia, shown in small non-randomized clinical trials. Future placebo controlled randomized

studies are needed for further evaluation. Lastly biofeedback and cognitive behavioral therapy or sexual counseling seem to be promising non-invasive treatments, the last mentioned evaluated in a randomized setting. A conclusive consensus among clinicians specialising in treating women with vulvar pain tends to favor a multidisciplinary approach in the treatment of this condition. Future research should aim at evaluating a multimodal approach along with the need for more research on etiology.

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