REVIEW ARTICLE

Update on the diagnosis and treatment of vulvodynia *

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KEYWORDS
Vulvodynia; Neuropathic pain; Chronic pelvic pain

Abstract
Context: Vulvodynia is a complex and multifactorial clinical condition. It is defined as chronic vulvar discomfort characterized by burning, stinging or irritation. Its diagnostic difficulty and treatment are known.
Objectives: To review the medical literature of the last 10 years from a critical point of view.
Evidence acquisition: A search was made in "Medline/Pubmed" and the Cochrane Library using the terms "vulvodynia" and "vestibulectomy" to which "etiology," "epidemiology," "diagnosis," "neurophysiological test" and "treatment or management," were added.
Evidence synthesis: In spite of the advances achieved in all of the aspects of vulvodynia, the methodology used at present in many cases does not have the desirable statistical soundness: there are few control or placebo-controlled groups and double-blind studies. Uniformity is lacking in the scales, indexes and questionnaires for the correct evaluation of pain before and after the treatment and debatable diagnostic criteria are used. The limited use of neurophysiological diagnostic resources that validate the clinical findings has been observed in the studies analyzed. In most of the works, the medical treatments have been shown to be ineffective. Physiotherapy and cognitive-behavioral therapy seem to be promising therapeutic tools. Surgery (vestibulectomy) stands out by its demonstrated efficacy in the publications studied.
Conclusions: A multidisciplinary approach is always necessary. Topical medical, psychological, and physical therapy treatments may have some added effects and become an alternative to surgery. New pathways of research and more regulated studies are required.
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PALABRAS CLAVE
Vulvodinia; Dolor neuropsicático; Dolor pélvico crónico

Puesta al día en el diagnóstico y tratamiento de la vulvodinia

Resumen
Contexto: La vulvodinia es una entidad clínica compleja y multifactorial. Se define como un disconfort vulvar crónico caracterizado por quemazón, escozor o irritación. Es sabida su dificultad diagnostica y su manejo.

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**Context**

In 1970, at the XII World Congress of Obstetrics and Gynaecology held in New York, the International Society for the study of vulvar disease was created (International Society for the Study of Vulvar Disease [ISSVD]). In 1985, the ISSVD recognized the vulvodynia syndrome and classified it into two different subgroups: dysesthetic vulvodynia and vulvar vestibulitis.

In 2003, we reviewed the definition of the term vulvodynia, of frequent use, and proposed a new classification that acknowledges that vulvar pain can be associated with infectious, dermatological, neurological problems, and with neoplastic processes.¹ In 2006, the ISSVD developed a new classification and nomenclature for vulvar dermatoses.² Currently, vulvodynia was defined as a discomfort, most often described as burning pain, occurring in the absence of relevant visible findings or a specific infectious (candidiasis, herpes), inflammatory (lichen planus), neoplastic (Paget’s disease, epidermoid carcinoma), or neurological (herpetic neuralgia, spinal nerve compression) or clinically identifiable disorder. On the other hand, the classification of vulvodynia is based on the site where the pain occurs, generalized or localized, and if it is caused by stimuli, spontaneous, or mixed.¹

Vulvodynia is a common reason for consultation. The patients often turn first to family physicians, then, they seek help from gynecologists, urologists, dermatologists, neurologists, psychiatrists, or psychologists. The difficulty of treatment makes these women go from doctor to doctor in search of a solution. Therefore, it seems understandable that anxiety, depression, and sexual dysfunction are institutions that are often associated with this disease, substantially complicating its management.³

In Spain, there are no data on the prevalence and incidence of this problem. In the United States in 2003, the results of a study on 4915 women were published. 16% said they had had vulvar pain on palpation at least three months prior. The authors concluded that at least 14 million women in the United States could have experienced chronic vulvar pain at any point in their lives.⁴

**Objetivos:** Revisar la literatura médica de los últimos diez años desde un punto de vista crítico.

**Adquisición de Evidencia:** Se realizó una búsqueda en "Medline/Pubmed" y librería Cochrane usando los términos "vulvodynia" y "vestibulodynia" a los que se añadieron "etiology", "epidemiology", "diagnosis", "neuropathological test" and "treatment or management".

**Síntesis de Evidencia:** A pesar de los avances conseguidos en todos los aspectos de la vulvodynia, hoy, la metodología utilizada en buen número de casos no tiene la solidez estadística deseable: pocos grupos controles o placebo y estudios a doble ciego, falta de uniformidad en las escalas, índices y cuestionarios para la correcta evaluación del dolor antes y después del tratamiento y una utilización de criterios diagnósticos discutibles. Se ha visto en los estudios analizados la poca utilización de medios diagnósticos neurofisiológicos que validen los hallazgos clínicos. Los tratamientos médicos se muestran en la mayoría de los trabajos examinados poco efectivos. La fisioterapia y la terapia cognitiva-conductual parecen ser herramientas terapéuticas prometedoras. La cirugía (vestibulectomía) destaca por la eficacia demostrada en las publicaciones estudiadas.

**Conclusiones:** El abordaje multidisciplinar es siempre necesario. El tratamiento médico tópico, el psicológico y la fisioterapia pueden tener efectos sumatorios y convertirse en una alternativa a la cirugía. Se precisan nuevas vías de investigación y estudios más reglados.

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between the objective proposed and the data analysis, some rules of inclusion and exclusion have been followed.

With regard to the publications dealing with the diagnosis, those that clarify and improve Friedrich’s diagnostic criteria have been included. We included all studies of sample size larger than 30 cases regarding medical treatment, with more than 50 cases in relation to surgical treatment, to promote the statistical power and reliability. The articles on individual cases and on specific vulvar pains were excluded.

Synthesis of evidence

Friedrich published in 1987 three diagnostic criteria for the called vulvar vestibulitis syndrome, which are still used today to diagnose vulvodynia: severe pain on vestibular palpation or in the introitus, acute pain on palpation of the vestibular area with a cotton swab, and vestibular erythema.

The symptoms can appear in childhood or in the first relation, or even arise after having relations for years without pain. There is a widespread belief that neuropathic pain does not occur in vulvodynia, but the patients often define their pain as burning vulva which can be irritative, stabbing, or simply as itch, ranging in intensity from mild to severe. Allodynia and hyperalgesia are also common, like in neuropathic pain.

Possibly, the incidence of chronic vulvar pain is underestimated, although in the last decade, we can see an increase in the number of related papers and their scientific quality. Most studies measure pain depending on the degree of discomfort during sexual relations, although many patients have spontaneous pain. It would be useful to add other measurement forms such as the visual analog scale (VAS) and DN4 (neuropathic pain questionnaire), using these tools before and after treatment.

With regard to diagnosis, Friedrich criteria are insufficient in a number of cases, so we should reach a consensus in order to improve them and make them more accurate. The ‘buffer test’ by Foster et al., given its simplicity, reliability, and validity at a statistical level to measure the results before and after treatment, can be an effective alternative to the quantification of pain during sexual relations or dyspareunia. On the other hand, it does not seem very logical that vulvodynia is considered a single entity and that it is excluded from the list of entities related to chronic pelvic pain and it is not included in the classification. Also, the definition of chronic pelvic pain is not sufficiently accurate or consensual in the literature, which decreases the possibility of carrying out comparative studies, investigating causes, and improving treatments.

Medical treatment

A total of 12 articles are gathered in the synthesis of evidence concerning medical treatment (Table 1). Eight of them used one or several active ingredients, in a cream or gel, and three articles used systemic medication.

A randomized double-blind study evaluated the efficacy of cromolyn sodium 4% applied daily for three months, with no significant differences between the diseased group and the placebo group. In another prospective study, we evaluated the effects of lidocaine ointment 5% applied nightly for 6–8 weeks and with a follow-up of at least 6 months. 57% of the patients had improvement of at least 50%.18 Danielsson et al. analyzed the results of the use of topical lidocaine gel 2 and 5% from the second month (5–7 applications/day) and compared it with the use of biofeedback. Both therapeutic tools improved vulvar pain without detecting any significant difference between them.

Two papers studied the efficacy of capsaicin cream 0.05% in the treatment of essential vulvodynia. In one of them, the improvement was only partial.20 In another one, significant improvement was detected in the contact test and sex relations.21

Boardman et al. evaluated the usefulness of topical gabapentin 2–6% as monotherapy or in combination with other therapies in a retrospective publication, describing that 80% of the patients showed at least 50% improvement and that sexual relations were more frequent.22 In another retrospective study, the effectiveness of amitriptyline and baclofen cream topically 2% was analyzed. 71% of the patients achieved improvement, 53% greater than 60%.

No systemic side effects or adverse effects on sexual desire, frequency, or satisfaction with sex life were reported.23 Finally, in a publication with double-blind controlled and randomized publication, three groups of topical treatment were compared: nifedipine cream 2%, nifedipine cream 4%, and placebo. It was reported that the effectiveness with the nifedipine cream is not different from the one with placebo.24

There have been three studies published with systemic medication. The first one valued oral fluniconazole (150mg weekly) associated with low-oxalate diet with calcium citrate supplement for three months versus the same diet as placebo. The results were clearly unsatisfactory.25 A second double-blind controlled study analyzed the treatment with injections of botulinum toxin (20IU) versus injections of saline (0.5 ml) and with follow-up at 3 and 6 months. There was no pain relief, or improvement of sexual function or the impact on quality of life.26 Finally, another double-blind controlled study compared 4 treatment groups: placebo tablets and cream, desipramine tablets and placebo cream, placebo tablets and lidocaine cream, and desipramine tablets and lidocaine cream. No significant improvement was observed in any of the groups.27

In summary, several topical treatments with encouraging results have been detected, among which gabapentin cream 2–6% for gynecological use, amitriptyline 2% with baclofen cream 2%, and lidocaine cream 5% of nocturnal application stand out. By contrast, the studies with systemic medication have proven ineffective.

Physiotherapy treatment

Four articles have been included in this section (Table 2). In a retrospective study, we investigated the effectiveness of physiotherapy in vulvar vestibulitis, detecting a significant improvement in 51.4% of the patients, with increased sexual desire and frequency in relations. Another paper with therapy of reduced contact of the skin of the vulvar area in vulvovestibulitis determined that 77% of the patients obtained a statistically significant improvement in different degrees.29
Another prospective article used sequential vaginal dilators as complementary treatment, finding a significant improvement in the sexual function index and the Marinoff scale. This experience highlighted the role of dilators in overcoming persistent muscle responses following the perception that the pain has decreased. Finally, Gentilcore-Saulnier et al. evaluated pelvic floor muscles with EMG in patients with vulvar pain and achieved improvement after physiotherapy treatment, which included better response to pressure by palpation, reduced muscle tone, improved vaginal flexibility, and increased capacity of relaxation of pelvic floor muscles, these measures becoming equal to controls. In short, the papers on physiotherapy alone or in combination with other therapies have shown positive and encouraging results, both short and long term.

Three studies using psychological tools for the treatment of essential vulvodynia (Table 3) stand out. Kuile et al.,
### Table 2  Physiotherapy treatment.

<table>
<thead>
<tr>
<th>Quote</th>
<th>No of patients</th>
<th>Treatment</th>
<th>Type of study</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bergeron et al. 28</td>
<td>35</td>
<td>Physiotherapy</td>
<td>Retrospective</td>
<td>Dyspareunia: 3/35 (8.5%) complete relief, 15/35 (42%) great improvement, 7/35 (20%) moderate improvement</td>
</tr>
<tr>
<td>Fowler 29</td>
<td>85</td>
<td>Hypocontact vulvar therapy</td>
<td>Prospective</td>
<td>17/85 (20%) complete response; 48/85 (56%) partial response; 20/85 (23%) no response (60% improvement of at least one level in the scale of pain)</td>
</tr>
<tr>
<td>Danielsson et al. 19</td>
<td>46</td>
<td>Biofeedback; topical lidocaine</td>
<td>Controlled and randomized</td>
<td>Biofeedback: 2/18 (11%) complete healing; 12/18 (66%) improvement, 3/18 (16%) without changes; topical lidocaine: 2/18 (11%) complete healing 10/19 (52%) improvement, 3/19 (12%) without changes</td>
</tr>
<tr>
<td>Murina et al. 30</td>
<td>15</td>
<td>Sequential vaginal dilators</td>
<td>Prospective</td>
<td>Significant improvement in the sexual function index and Marinoff scale</td>
</tr>
<tr>
<td>Brown et al. 33</td>
<td>78</td>
<td>a) Self-management (physiotherapy)</td>
<td>Prospective and randomized</td>
<td>Self-management has a modest effect and there is no effect with low doses of amitriptyline alone or with topical triamcinolone</td>
</tr>
<tr>
<td>Gentilcore-Saulnier et al. 31</td>
<td>22</td>
<td>Physiotherapy: manual therapy, biofeedback, electrical stimulation, dilators, and exercises at home</td>
<td>Prospective and controlled</td>
<td>Improvement after treatment: including less pain response, less tone, improved vaginal flexibility and improved relaxation capacity of the pelvic floor muscles, these measures equaling to controls</td>
</tr>
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</table>

### Table 3  Psychological treatment.

<table>
<thead>
<tr>
<th>Quote</th>
<th>No of patients</th>
<th>Treatment</th>
<th>Type of study</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bergeron et al. 36</td>
<td>87</td>
<td>Cognitive behavioral therapy; vestibulectomy</td>
<td>Clinical randomized</td>
<td>Vestibulectomy 15/22 (68%) complete relief; cognitive behavioral therapy 11/28 (39%) complete or great relief; biofeedback 10/28 (36%) complete or great relief</td>
</tr>
<tr>
<td>Ter Kuile et al. 32</td>
<td>76</td>
<td>Cognitive behavioral therapy</td>
<td>Prospective</td>
<td>Significantly lower coital pain; decreased vaginal muscle tension; significantly lower pain with cotton test</td>
</tr>
<tr>
<td>Masheb et al. 34</td>
<td>50</td>
<td>Cognitive therapy Psychotherapy</td>
<td>Clinical randomized</td>
<td>Significant reduction of pain, pain in the exploration, and sexual function compared before and after treatment in both cognitive therapy and psychotherapy</td>
</tr>
<tr>
<td>Bergeron et al. 32</td>
<td>51</td>
<td>Cognitive behavioral therapy, biofeedback</td>
<td>Clinical randomized</td>
<td>The benefits of the treatments are maintained after 30 months</td>
</tr>
</tbody>
</table>

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in a prospective study with a group of cognitive behavioral therapy (12 sessions of two hours, every two weeks), found significant differences in coital pain, decreased vaginal muscle tension, and pain reduction with the cotton test.

In a prospective randomized study by Brown et al.\textsuperscript{33} comparing three treatment groups: self-management (educational, sexual, behavioral therapy, and physiotherapy), 10–20mg/day amitriptyline, and amitriptyline with topical triamcinolone acetate 0.1%, the results were not very encouraging, concluding that self-management has a modest effect and that with the use of low doses of amitriptyline alone or with topical triamcinolone, the effect is null. Masheb et al.\textsuperscript{34} in a clinical study comparing cognitive therapy versus psychotherapy found significant reduction in pain, pain in the exploration, and sexual function compared before and after treatment in both cognitive therapy and psychotherapy. But, cognitive therapy achieved better results.

In summary, psychological and cognitive therapy\textsuperscript{32,34} appears to be quite responsive with regard to reducing coital pain and vaginal muscle tension.

### Surgical treatment

Vestibulectomy and modified vestibulectomy are the two techniques currently performed. 10 articles that meet the inclusion criteria (Table 4) have been found in the literature. In a retrospective study\textsuperscript{35} based on 69 vestibulectomies, moderate or excellent improvement was obtained in 83.3\% of the cases. Bergeron et al.\textsuperscript{36} compared three treatment groups: vestibulectomy, cognitive behavioral therapy, and biofeedback. The first one achieved large or complete relief in 15 out of 22 patients, the second one in 11 out of 28, and biofeedback in 10 out of 28. Other authors also confirmed the favorable results of vestibulectomy.\textsuperscript{37–41}

<table>
<thead>
<tr>
<th>Quote</th>
<th>No of patients</th>
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<th>Type of study</th>
<th>Results</th>
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</thead>
<tbody>
<tr>
<td>Schneider et al.\textsuperscript{35}</td>
<td>69</td>
<td>Vestibulectomy</td>
<td>Retrospective</td>
<td>45/54 (83%) moderate to excellent improvement; 9/54 (16%) little or no improvement</td>
</tr>
<tr>
<td>Bergeron et al.\textsuperscript{36}</td>
<td>87</td>
<td>Vestibulectomy; cognitive behavioral therapy</td>
<td>Clinical randomized</td>
<td>Vestibulectomy 15/22 (68%) complete relief; cognitive behavioral therapy 11/28 (39%) complete or great relief; biofeedback 10/28 (36%) complete or great relief</td>
</tr>
<tr>
<td>Granot et al.\textsuperscript{37}</td>
<td>94</td>
<td>Vestibulectomy</td>
<td>Prospective</td>
<td>Vestibulectomy 26/33 (78%) significant improvement; no surgery 3/15 (20%) significant improvement; no treatment 3/26 (11%) significant improvement</td>
</tr>
<tr>
<td>Lavy et al.\textsuperscript{38}</td>
<td>59</td>
<td>Modified vestibulectomy</td>
<td>Prospective</td>
<td>39/53 (73%) complete response; 7/53 (13%) partial response; 7/53 (13%) no response</td>
</tr>
<tr>
<td>Traas et al.\textsuperscript{39}</td>
<td>126</td>
<td>Vestibulectomy</td>
<td>Retrospective</td>
<td>Dyspareunia: 40% yes, 60% no; Possible sexual relation: 90%</td>
</tr>
<tr>
<td>Goldstein et al.\textsuperscript{40}</td>
<td>104</td>
<td>Vestibulectomy</td>
<td>Retrospective</td>
<td>Dyspareunia: 52% no pain, 25% discomfort, 23% discomfort in relations</td>
</tr>
<tr>
<td>Eva et al.\textsuperscript{41}</td>
<td>110</td>
<td>Modified vestibulectomy</td>
<td>Retrospective with follow-up questionnaire</td>
<td>Preoperative AVS 9.17; 2 months after surgery 5.24; after one year of surgery 2.48</td>
</tr>
<tr>
<td>Bergeron et al.\textsuperscript{42}</td>
<td>51</td>
<td>Vestibulectomy; cognitive behavioral therapy</td>
<td>Clinical randomized. Revaluation of previous study</td>
<td>The benefits of the treatments are maintained after 30 months</td>
</tr>
<tr>
<td>Goetsch et al.\textsuperscript{43}</td>
<td>133</td>
<td>Vestibulectomy</td>
<td>Retrospective</td>
<td>68% referred complete relief of dyspareunia; 22% had a different pain after surgery, identified as muscle pain</td>
</tr>
<tr>
<td>Bohm-Starke and Rylander\textsuperscript{44}</td>
<td>67</td>
<td>Vestibulectomy</td>
<td>Retrospective</td>
<td>Complete improvement 56% of the secondary vulvodynia and 17% of the primary vulvodynia. Psychological improvement 79%</td>
</tr>
</tbody>
</table>
study, Lavy et al. achieved complete response in 39 out of 53
patients,38 and Traas et al. the disappearance of dyspareunia
in 70 out of 126 women and the possibility of sex relations
in 113 of them.39

Bergeron et al. conducted a randomized clinical study42
that meant a reassessment of another previous study.36
They compared three groups (vestibulectomy, cognitive
behavioral therapy, and biofeedback) and reported that
the benefits of the treatments were maintained after 30
months in the 51 patients in whom it was possible to
perform the follow-up.42 Goetsch et al.43 conducted a ret-
rospective study with evaluation through a postal survey
that questioned about AVS, dyspareunia, etc. 68% showed
complete relief of dyspareunia and 22% felt a different
pain after surgery, which was identified as muscle pain.
In the same vein, Bohm-Starke and Rylander described com-
plete improvement after vestibulectomy in 56% of secondary
vulvodynias and in 17% of primary vulvodynias. For these
authors, the psychological improvement was 79%.44

In summary, surgical treatment offers a high success
rate.35-44 However, it should be noted that it is not exempt
from risks and side effects, since it can produce pain
worsening,36 decreased vaginal lubrication,39 and various
minor postoperative complications.38 In this sense, in the
event of a disorder characterized by chronic pain, it is best
to go up to therapeutic steps, leaving surgical treatment
for refractory cases. This therapeutic option should never
be the first, except in cases of pudendal nerve entrapment.

Conclusion

The multidisciplinary therapeutic approach of vulvodynia
can provide acceptable results, given the complexity
that this entity sometimes presents. In this type of patients,
it is required to conduct new and better studies that take
into account various not well-known factors, such as the
level of associated disability, quality of life, sexual satisfac-
tion, anxiety, the presence of depression, and the possible
involvement of nerves and muscles of the pelvic floor.

Conflict of interest

The authors declare that they have no conflict of interest.

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