

The Vulvodynia Guideline

Hope K. Haefner, MD,¹ Michael E. Collins, RPh, FIACP,²
Gordon D. Davis, MD,³ Libby Edwards, MD,⁴ David C. Foster, MD, MPH,⁵
Elizabeth (Dee) Heaton Hartmann, PT,⁶ Raymond H. Kaufman, MD,⁷
Peter J. Lynch, MD,⁸ Lynette J. Margesson, MD,⁹
Micheline Moyal-Barracco, MD,¹⁰ Claudia K. Piper, ACSW,¹¹
Barbara D. Reed, MD, MSPH,¹² Elizabeth G. Stewart, MD,¹³
and Edward J. Wilkinson, MD¹⁴

¹Department of Obstetrics and Gynecology, University of Michigan Hospitals, Ann Arbor, MI; ²Healthway Compounding Pharmacy, Saginaw, MI; ³Department of Obstetrics and Gynecology, St. Joseph's Medical Center and Maricopa Medical Center, Phoenix, AZ; ⁴Southeast Vulvar Clinic, Charlotte, NC; ⁵Department of Obstetrics and Gynecology, University of Rochester, Rochester, NY; ⁶Rehabilitation Institute of Chicago, Chicago, IL; ⁷Department of Obstetrics and Gynecology, Baylor College of Medicine, Houston, TX; ⁸Department of Dermatology, University of California Davis, Sacramento, CA; ⁹Department of Obstetrics and Gynecology and Section of Dermatology, Department of Medicine, Dartmouth Medical School, Hanover, NH; ¹⁰Service de Dermatologie Générale et Oncologique, Hôpital Ambroise-Paré, Assistance Publique des Hôpitaux de Paris, Université Versailles-Saint-Quentin-en-Yvelines, France; ¹¹Department of Social Work, University of Michigan Hospitals, Ann Arbor, MI; ¹²Department of Family Medicine, University of Michigan Hospitals, Ann Arbor, MI; ¹³Department of Obstetrics and Gynecology, Brigham and Women's Hospital, Boston, MA; ¹⁴Department of Pathology, University of Florida College of Medicine, Gainesville, FL

■ Abstract

Objective. To provide a review of the literature and make known expert opinion regarding the treatment of vulvodynia.

Materials and Methods. Experts reviewed the existing literature to provide new definitions for vulvar pain and to describe treatments for this condition.

Reprint requests to: Hope K. Haefner, MD, The University of Michigan Center for Vulvar Diseases, The University of Michigan Hospitals, L4000 Women's Hospital, 1500 East Medical Center Drive, Ann Arbor, MI 48109. E-mail: haefner@umich.edu

Results. Vulvodynia has been redefined by the International Society for the Study of Vulvovaginal Disease as vulvar discomfort in the absence of gross anatomic or neurologic findings. Classification is based further on whether the pain is generalized or localized and whether it is provoked, unprovoked, or both. Treatments described include general vulvar care, topical medications, oral medications, injectables, biofeedback and physical therapy, dietary changes with supplementations, acupuncture, hypnotherapy, and surgery. No one treatment is clearly the best for an individual patient.

Conclusions. Vulvodynia has many possible treatments, but very few controlled trials have been performed to verify efficacy of these treatments. Provided are guidelines based

largely on expert opinion to assist the patient and practitioner in dealing with this condition. ■

Key Words: vulvodynia, guideline, vestibulodynia, vulvar pain

THE INTERNATIONAL SOCIETY FOR THE STUDY OF VULVOVAGINAL DISEASE TERMINOLOGY AND CLASSIFICATION

The most recent terminology and classification of vulvar pain by the International Society for the Study of Vulvovaginal Disease (ISSVD) defines vulvodynia as “vulvar discomfort, most often described as burning pain, occurring in the absence of relevant visible findings or a specific, clinically identifiable, neurologic disorder.” It is not caused by infection (candidiasis, herpes, etc.), inflammation (lichen planus, immunobullous disorder, etc.), neoplasia (Paget’s disease, squamous cell carcinoma, etc.), or a neurologic disorder (herpes neuralgia, spinal nerve compression, etc). The classification of vulvodynia is based on the site of the pain, whether it is generalized or localized, and whether it is provoked, unprovoked, or mixed.

CAUSES

Several causes have been proposed for vulvodynia, including embryologic abnormalities, increased urinary oxalates, genetic or immune factors, hormonal factors, inflammation, infection, and neuropathic changes. Most likely, there is not a single cause.

DIAGNOSIS AND EVALUATION OF THE PATIENT WITH VULVODYNIA

History should identify the patient’s duration of pain, previous treatments, allergies, past medical and surgical history, and sexual history. The sexual history is best taken when the patient is clothed and has spent some time interacting with you. Ask permission to discuss the patient’s sexual life, even if permission seems implied.

Cotton swab testing (Figure 1) is used to localize painful areas and to classify the area as painless, or having mild, moderate, or severe pain. A diagram of the pain locations is helpful to assist in assessing the pain over time. The vagina is examined and a wet prep, vaginal pH, fungal, and gram stains are performed as indicated. Fungal culture may identify resistant strains, but sensitivity testing is generally not required.

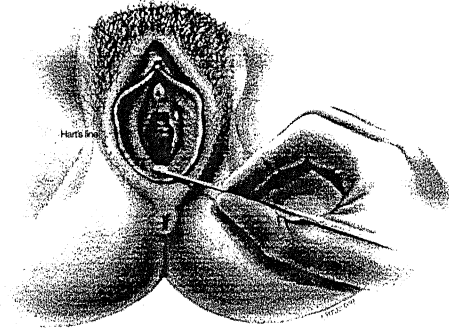


Figure 1. The cotton swab is used to test for pain locations on the vulva. Testing starts at the thighs and moves medially to the vestibule. The vestibule is tested at the 2:00, 4:00, 6:00, 8:00, and 10:00 positions. Each time the vestibule is touched if pain is present, the patient is asked to quantify the pain as mild, moderate, or severe. (From Haefner, HK. Critique of new gynecologic surgical procedures: surgery for vulvar vestibulitis. *Clin Obstet Gynecol* 2000; 43:689–700. Reprinted with permission from Lippincott Williams & Wilkins.)

VULVODYNIA TREATMENTS

Multiple treatments have been used for vulvodynia, including vulvar care measures; topical, oral, and injectable medications; biofeedback; physical therapy; low-oxalate diet and calcium citrate supplementation; and surgery (Figure 2). Newer treatments being used include acupuncture, hypnotherapy, nitroglycerin, and botulinum toxin.

Vulvar Care Measures

Gentle care for the vulva is advised. Common suggestions include wearing cotton underwear in the daytime and none at night, avoiding vulvar irritants (perfumes, dyed toilet articles, shampoos, detergents, and douches), and use of mild soaps, with none applied to the vulva. The vulva can be cleaned gently with water and patted dry. After cleansing, an emollient without preservatives (vegetable oil or plain petrolatum) helps to hold moisture in the skin and to improve the barrier function. If menstrual pads are irritating, cotton pads may be helpful. Adequate lubrication for intercourse is recommended. Ice packs are helpful in some, but produce irritation when overused. Cool gel packs may be used. Rinsing and patting dry the vulva after urination may be helpful. Use of hair dryers should be avoided.

Topical Therapies

Different topical medications have been tried as treatments for vulvar pain (Table 1). In women who have

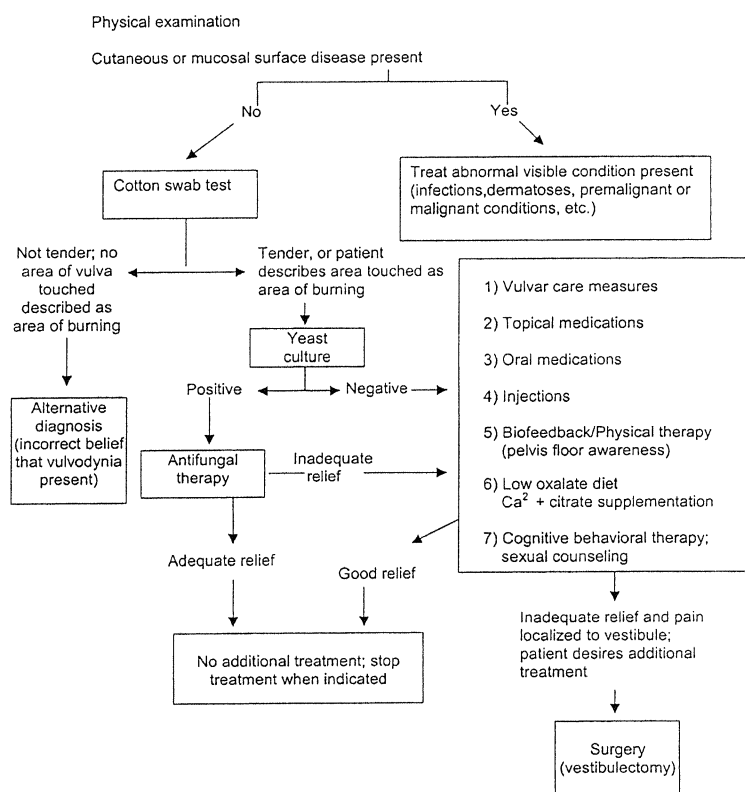


Figure 2. Vulvodynia algorithm.

been using multiple topical medications for a prolonged period, stopping all treatments may decrease symptoms.

The most commonly prescribed topical medication is lidocaine ointment 5% (Xylocaine jelly 2% or ointment 5%; AstraZeneca Pharmaceuticals LP, Wilmington, DE), applied as required for symptoms and 30 minutes before sexual activity. Emla (eutectic mixture of local anesthesia, comprised of lidocaine 2.5% and prilocaine 2.5%; AstraZeneca Pharmaceuticals LP), ELA-Max (lidocaine 4% and 5%) L-M-X 4 (formerly ELA-Max 4% cream [lidocaine 4%]; Ferndale, Ferndale, MI), and L-M-X 5 (formerly ELA-Max Anorectal 5% cream [lidocaine 5%]; Ferndale) also are used by some patients. These may cause stinging or sensitization. Male sexual partners may experience penile numbness and should avoid oral contact.

Long-term use of overnight topical lidocaine may minimize feedback amplification of pain and may allow for healing [1]. Patients apply a copious amount of 5% lidocaine ointment to the affected area at bedtime and place a cotton ball generously coated with the 5% lido-

caine ointment on the vestibule to assure overnight contact with the area (for 8 hours or more). After a mean of 7 weeks, 76% were able to have intercourse after therapy as compared with 36% at baseline. There was a significant decrease in pain with sexual activity. It is important to use caution in using excessive amounts of lidocaine, because reports on lidocaine toxicity exist [2]. Benzocaine, the anesthetic in Vagaine (Clay-Park Laboratories, Inc. Bronx, NY) and Vagisil (Combe Inc., White Plains, NY), has a propensity to produce allergic contact dermatitis and should be avoided. Diphenhydramine (Benadryl; Warner Wellcome, Morris Plains, NJ) is present in many topical anesthetic and anti-itch preparations; this also is a common sensitizer to be avoided.

Some patients benefit symptomatically from the application of plain petrolatum (Vaseline; Cheeseborough-Ponds, Greenwich, CT). Estrogen has been used topically with variable results. A recent study showed decreased estrogen receptor expression in women with vestibulitis [3]. Additionally, for women who are able

Table 1. Topical Medications Used to Treat Vulvodynia

Topical medication	Dosage	Side effects ^a
5% lidocaine ointment	Apply to skin as needed; dispense 30-g tube. Do not use >20-g of ointment in a 24-h period.	Erythema or edema. Rare cases of purpura. If ointment is present on skin during intercourse, the partner may experience numbness. Paleness, erythema, and swelling.
EMLA cream (lidocaine 2.5% and prilocaine 2.5%; AstraZeneca Pharmaceuticals LP, Wilmington, DE)	Apply to skin prn. Do not exceed 2.5 g over 20–25 cm ² of skin surface (for example, a 5- × 5-cm area). Dispense 30-g tube.	Erythema and edema.
L-M-X 4, formerly ELA-Max 4% cream (lidocaine 4%; Ferndale, Ferndale, MI)	Apply to skin as needed. Dispense 30-g tube.	Erythema and edema.
L-M-X 5, formerly ELA-Max Anorectal 5% cream (lidocaine 5%); Ferndale, Ferndale, MI	Apply to skin as needed. Dispense 30-g tube.	Erythema and edema.
Estrogens	These can be used intravaginally or topically.	Common reactions
Estrace vaginal cream (estradiol vaginal cream 0.01%); Bristol-Meyers Squibb Company, Princeton, NJ	For treatment of vulvar and vaginal atrophy associated with the menopause, the lowest dose and regimen that will control symptoms should be chosen and medication should be discontinued as promptly as possible. Usual dosage: The usual dosage range is 2 to 4 g (marked on the applicator) daily for 1 or 2 weeks, then gradually taper. Tube contains 1.5 oz (42.5 g) with a calibrated plastic applicator for delivery of 1, 2, 3, or 4 g.	Vaginal bleeding, spotting, breast changes, nausea, vomiting, headache, fluid retention, mood changes, weight changes, rash
Premarin vaginal cream (conjugated estrogens 0.625 mg/g); Wyeth-Ayerst Company, Philadelphia, PA	0.5 to 2 g daily, intravaginally, depending on the severity of the condition. Taper gradually to every other day, twice weekly, etc. Patients with an intact uterus should be monitored closely for signs of endometrial cancer, and appropriate diagnostic measures should be taken to rule out malignancy in the event of abnormal vaginal bleeding. Each contains net wt. 1.5 oz (42.5 g) tube with one plastic applicator calibrated in 0.5-g increments to a maximum of 2 g. Taper gradually.	Serious reactions Thromboembolism, stroke, MI, breast, endometrial changes, fibroid enlargement, gallbladder disease, cholestatic jaundice, pancreatitis, asthma worsening, depression, hypertension
Amitriptyline 2%/baclofen 2% in water washable base (Elavil 2%/Lioresal 2% in water washable base)	Topical amitriptyline 2% with baclofen 2% in water washable base (WWB); squirt 0.5 mL from syringe onto finger and apply to affected area one to three times daily. Dispense 30-day supply	Common reactions (amitriptyline) Irritation, contact dermatitis, dry mouth, drowsiness, dizziness, constipation, weight gain, urinary retention, tachycardia, blurred vision, confusion
Elavil (AstraZeneca Pharmaceuticals LP, Wilmington, DE)		Serious reactions (amitriptyline) Seizures, stroke, myocardial infarction, agranulocytosis, thrombocytopenia
Lioresal (Geigy Novartis Pharmaceuticals Corp., East Hanover, NJ)		Common reactions (baclofen) Drowsiness, dizziness, weakness, nausea, confusion, hypotension, headache, insomnia, constipation, muscle weakness, rash, sweating, fatigue
		Serious reactions (baclofen) Depression, respiratory problems, ataxia, syncope, seizures, hallucinations, exacerbation of spasticity

prn, as needed; MI, myocardial infarction.
^aGenerally, the side effects of topical medications are less than when taken systemically.

to insert medication via the vagina, the intravaginal estrogen ring may be considered.

Capsaicin is available to treat neuropathic pain. Its usefulness is limited by its extreme irritant effects. Topical nitroglycerin has been reported temporarily to improve vulvar pain and dyspareunia [4]; however, headache was a limiting side effect. For some patients with localized pain and vaginismus, a combination of

topical amitriptyline 2% (Elavil; AstraZeneca Pharmaceuticals) and baclofen 2% (Lioresal Geigy Novartis Pharmaceuticals, East Hanover, NJ) in a water washable base has been useful for point tenderness and vaginismus. A compounding pharmacy is used to formulate these topical medications. Topical therapies not shown to benefit vulvodynia include topical corticosteroids, topical testosterone, and topical antifungal medications.

Choosing the proper vehicle for these medications is as important as choosing the proper medications or combinations. In general, creams contain more preservatives and stabilizers and often produce burning on application, whereas ointments are usually better tolerated. Some clinicians prefer commercially available topical medications, whereas others prefer to compound the medications. It is important to have a close relationship with a compounding pharmacist who can help to determine the proper combination of ingredients. Specific instructions should be included, emphasizing the area for the medication to be applied (vulva, vestibule, vagina, etc.).

Oral Medications

A variety of oral medications are used for pain control. Table 2 summarizes the various oral medications used in the treatment of vulvodynia. When new medications for pain control are added, it is important to check for drug interactions with the patient's current medication.

Antidepressants. Oral tricyclic antidepressants are a common treatment for vulvar pain [5]. This group of drugs (e.g., amitriptyline [Elavil; AstraZeneca Pharmaceuticals]), nortriptyline [Pamelor; Novartis Pharmaceuticals Corp.], and desipramine [Norpramin; Hoechst Marion Roussel for Aventis Pharmaceuticals, Bridgewater, NJ]) have been used for generalized vulvodynia; recent reports have found it to be helpful in localized pain. A 47% complete response to tricyclic antidepressants for the use of vulvodynia (both generalized and localized) was reported in 33 women attending a vulvar pain clinic [6]. Often, amitriptyline is used as a first line agent. It is started at an oral dose of 5 mg to 25 mg nightly and increased by 10 to 25 mg weekly, generally not to exceed 150 mg daily. The 5- to 10-mg dose should be used to start treatment in the elderly population or patients who show sensitivity. Tricyclic antidepressants should not be stopped suddenly, but rather weaned by 10 to 25 mg every few days. Alcohol should be limited to one drink daily. Contraception should be provided in the reproductive age group. Tricyclic medications are available as syrups so that very small doses can be used to start patients with sensitivities. This medication should not be used in patients with abnormal heart rates (for example, tachycardia) or in patients taking monoamine oxidase inhibitors. Nortriptyline and desipramine are dosed in a similar fashion. Often, the full pain relief response is not evident for even 4 or more weeks of antidepressant use. Other antidepressants have been used for pain con-

trol. The selective serotonin reuptake inhibitors have been used for women with vulvodynia, as has venlafaxine (Effexor XR; Wyeth-Ayerst Co., Philadelphia, PA) [7].

Anticonvulsants. Gabapentin (Neurontin; Pfizer, New York, NY) and carbamazepine (Tegretol; Novartis Corporation Pharmaceuticals) have been used to treat vulvodynia [8, 9]. Gabapentin is begun at a dose of 300 mg orally for 3 days, then gradually is increased to a maximum of 3,600 mg total daily dosage. See Table 2 for specific dosing instructions. Monitoring and dosage adjustment are required for side effects, but in most cases the drug does not need to be discontinued. In the elderly, gabapentin may cause or exacerbate gait and balance problems as well as cognitive impairment. Dosage adjustment is necessary in patients with renal insufficiency.

As with tricyclic antidepressants, allow 3 to 8 weeks for titration of gabapentin to allow development of tolerance to adverse effects. As soon as the maximum tolerated dosage is reached, allow 1 to 2 weeks of medication before giving a final assessment of pain improvement. Carbamazepine, another anticonvulsant, may be used for resistant cases. Table 2 describes these, as well as other medications, used for pain control.

Biofeedback and Physical Therapy

Biofeedback and physical therapy are used in the treatment of vulvar pain; both for localized and generalized pain [10–15]. These techniques are particularly helpful if there is concomitant vaginismus. Biofeedback aids in developing self-regulation strategies for confronting and reducing pain. The time required for biofeedback and the frequencies of visits will vary with each person.

Physical therapists with experience in vulvar pain may be helpful. Abnormally high muscle tone, or spasm, poor contraction and relaxation cycles, and instability within the muscular structure of the pelvic floor [16, 17] can be identified and relieved with specific exercises. Vulvar pain also can be related to other parts of the body, such as the back or hips, so a thorough musculoskeletal evaluation should be performed. Of patients with chronic vulvar pain treated by a physical therapist, 71% showed a more than 50% improvement in overall symptom reduction, whereas 62% reported improvement in sexual functioning and 50% reported an increase in quality of life [15]. Physical therapy also may improve intercourse frequency and may decrease pain with intercourse and gynecological examinations

Table 2. Oral Medications Used to Treat Vulvodynia^a

Medication category medication	Dosage	Side effects
<p>Antidepressants</p> <p>Amitriptyline (Elavil; AstraZeneca Pharmaceuticals LP, Wilmington, DE)</p>	<p>Initial amitriptyline prescription: Amitriptyline 10 mg or 25 mg. Directions: 1 by mouth each night for 1 week; if symptoms persist, 2 by mouth each night for 1 wk; if symptoms persist, 3 by mouth each night for 1 wk; if symptoms persist, 4 by mouth nightly. Maintain nightly dose that relieves symptoms. Generally, do not exceed 100 to 150 mg nightly. Start at 10 mg in patients age 60 or older, or in patients that have not been able to tolerate higher dosages. Increase by 10 mg weekly. Often other medications should be tried in the elderly population than amitriptyline. Do not stop suddenly. Wean by 25 mg every 3 to 4 days. Discuss interaction with alcohol (no more than one drink per day). If patient is in the reproductive age group, discuss contraception.</p>	<p>Common reactions (amitriptyline) Dry mouth, drowsiness, dizziness, constipation, weight gain, urinary retention, tachycardia, blurred vision, confusion</p> <p>Serious reactions (amitriptyline) Seizures, stroke, myocardial infarction, agranulocytosis, thrombocytopenia</p>
<p>Nortriptyline (Pamelor; Novartis Pharmaceuticals Corp., East Hanover, NJ)</p>	<p>Same dosing as amitriptyline.</p>	<p>Common reactions Dry mouth, drowsiness, dizziness, constipation, urinary retention, tachycardia, blurred vision, weight gain, confusion</p> <p>Serious reactions Seizures, MI, stroke agranulocytosis, thrombocytopenia</p>
<p>Desipramine (Norpramin, Hoechst Marion Roussel for Aventis Pharmaceuticals, Bridgewater, NJ)</p>	<p>Same dosing as amitriptyline, except desipramine is often taken in the morning instead of the evening.</p>	<p>Common reactions Drowsiness, dizziness, blurred vision, dry mouth, constipation, tachycardia, urinary retention, diaphoresis, weakness, nervousness, rash, seizures, tinnitus, anxiety, confusion</p> <p>Serious reactions Seizures, sudden death, arrhythmias, stroke, myocardial infarction, atrioventricular block, thrombocytopenia</p>
<p>Venlafaxine (Effexor XR; Wyeth Pharmaceuticals, Madison, NY) Consider this in patients that do not respond to the common tricyclic antidepressants. Often used in conjunction with an anticonvulsant.</p>	<p>It is started at 37.5 mg daily (in the morning) with an increase to 75 mg daily (in the morning) after 1 to 2 weeks. Can increase gradually (dose changes every 1 to 2 weeks) to a maximum dose of 150 mg daily. When stopping the medication, wean by 75 mg/week. Well tolerated in the elderly population.</p>	<p>Common reactions Headache, nausea, somnolence, weight loss, anorexia, constipation, anxiety, vision changes, diarrhea, dizziness, dry mouth, insomnia, weakness, sweating, hypertension</p> <p>Serious reactions Seizures, suicide ideation, depression</p>
<p>Other antidepressants are used to treat pain. These include: fluoxetine (Prozac; Eli Lilly & Co., Indianapolis, IN); sertraline (Zoloft; Pfizer Inc., New York, NY) paroxetine (Paxil; GlaxoSmithKline, Research Triangle Park, NC); citalopram (Celexa; Forest Laboratories Inc., New York, NY)</p>		
<p>Anticonvulsants Gabapentin (Neurontin; Pfizer Inc., New York, NY)</p>	<p>Gabapentin comes in 100-, 300-, 400-, 600-, and 800-mg tablets. Generally, it is started at 300 mg by mouth daily for 3 days, then 300 mg by mouth twice daily for 3 days, then 300 mg by mouth three times daily. It can be increased gradually to 3600 mg total daily. Ideally, gabapentin is given in a three times daily dosage, but if the patient is unable to comply with that, it can be given in a twice-daily dosage. However, if using higher doses, a three times daily regimen should be followed. Do not exceed 1200 mg in a dose. For the elderly population, do not exceed 2700 mg/day.</p>	<p>Common reactions Somnolence, dizziness, ataxia, fatigue, nystagmus, tremor, diplopia, rhinitis, blurred vision, nausea, vomiting, nervousness, dysarthria, weight gain</p> <p>Serious reactions Leukopenia</p>

(continued)

Table 2. continued

Medication category medication	Dosage	Side effects
Carbamazepine XR (Tegretol-XR; Novartis Pharmaceuticals Corp., East Hanover, NJ)	Start at 100 mg by mouth nightly. Add 100 mg every 3 days, titrating with blood levels. Requires serial blood tests (drug level, liver function tests, and complete blood count). For pain, the general dose is 200 to 400 mg by mouth twice daily. Maximum dose is 1200 mg/day. Comes in 100-, 200-, 400-mg tablets.	Common reactions Dizziness, drowsiness, unsteadiness, incoordination, nausea/vomiting, blurred vision, nystagmus, allergic rash, confusion, elevated liver transaminases, hyponatremia, ataxia Serious reactions Hypersensitivity reaction, seizures, arrhythmias, syncope, aplastic anemia, agranulocytosis, thrombocytopenia, leukopenia, pancytopenia, hepatitis, cholestatic jaundice, hyponatremia, water intoxication, porphyria, Steven's-Johnson syndrome, toxic epidermal necrolysis, erythema multiforme, pancreatitis
Topiramate (Topamax; Ortho Pharmaceutical Corp., Raritan, NJ)	Start at 25 mg daily to twice daily. If symptoms persist, 50 mg by mouth twice daily for 1 week; if symptoms persist, 75 mg by mouth twice daily for 1 week. If symptoms persist, 100 mg by mouth twice daily. Maintain at the doses above where symptoms are controlled. In the elderly and chronically ill, or those with renal or hepatic dysfunction, start at a lower dose and titrate more slowly.	Common reactions Asthenia, fatigue, paresthesia, tremor, ataxia, confusion, difficulty with concentration or attention, dizziness, breast pain, dysmenorrhea, diplopia, myopia, acute and secondary angle closure glaucoma, nystagmus, memory problems, nervousness, psychomotor retardation, somnolence, nausea, speech or language problems Serious reactions Hyperthermia, oligohidrosis, anemia (rare), leukopenia (infrequent), dyspnea (rare), hepatic failure, hepatitis, pancreatitis, renal calculi, renal tubular acidosis, hyperchloremic, nonanion gap metabolic acidosis
Other medications that have been used for vulvodynia Tramadol (Ultram; Ortho Pharmaceutical Corp., Raritan, NJ)	This is a synthetic 4-phenylpiperidine analog of codeine. Studies have shown that it is effective for long-term pain management in the elderly population. 50–100 mg by mouth every 4–6 hours. Start at 25 mg by mouth in the morning then increase by 25 mg per day every 3 days to 25 mg four times daily then increase by 50 mg/day every 3 days to 50 mg four times daily, then maintenance. Do not stop suddenly. Maximum dose is 200 mg/day in the elderly population; up to 400 mg/day may be used in the general population.	Common reactions Dizziness, nausea, constipation, headache, somnolence, vomiting, pruritus, nervousness, confusion, euphoria, tremor, spasticity, emotional lability, vasodilation, visual disturbances, urinary retention, incoordination, anorexia, rash Serious reactions Seizures, respiratory depression, anaphylaxis, angioedema, bronchospasm, Stevens-Johnson syndrome, toxic epidermal necrolysis, hypotension, orthostatic serotonin syndrome, hallucinations, suicidal ideation, dependency

MI, myocardial infarction.

*With all of the antidepressants discussed, adequate time for a treatment trial must be given before abandoning them, as long as the side effects are tolerable.

[14]. Physical therapy treatment techniques include internal (vaginal and rectal) and external soft tissue mobilization and myofascial release; trigger-point pressure; visceral, urogenital, and joint manipulation; electrical stimulation; therapeutic exercises; active pelvic floor retraining; biofeedback; bladder and bowel retraining; instruction in dietary revisions; therapeutic ultrasound; and home vaginal dilation.

Intravaginal electrical stimulation of the pelvic floor muscles recently has been shown to help alleviate the pain caused by pelvic muscle spasm. Glazer et al. [11] used surface electromyography (sEMG) to assist pelvic

floor rehabilitation by calming pelvic floor spasms and renewing pelvic floor neuromuscular functioning in women diagnosed with vestibulodynia. With an average 16-week treatment time, 22 of 28 women (79%) studied returned from abstinence to sexual activity. Seventeen of 33 patients (52%) reported pain-free intercourse at the 6-month follow-up. Other studies examining the use of sEMG have further validated pelvic floor rehabilitation using biofeedback as a successful treatment approach to vestibulodynia [13, 18]. The randomized outcomes study comparing cognitive-behavioral sex therapy and pain management, sEMG biofeedback, and vestibulectomy

found that all three groups reported statistically significant reductions on pain measures at posttreatment and 6 month follow-up [10]. A successful outcome was achieved in 34.6% of biofeedback participants [10]. However, they were significantly less satisfied and had a greater dropout rate as compared with the other experimental groups, possibly because of long-term home treatment protocols and of the repetitive nature of the treatment itself. Interestingly, vestibulectomy was significantly more successful than sEMG biofeedback [10]. However, these results need to be interpreted with caution because there were significantly more participants in the vestibulectomy condition who declined to undergo the treatment that they had been randomized to, as compared with participants in the two other treatment conditions.

Intralesional Injections

Although topical steroids generally do not help patients with vulvodynia, trigger point steroid and bupivacaine injections have been successful for some patients with localized vulvodynia [19]. A common regimen uses triamcinolone acetonide 0.1% and bupivacaine. No more than 40 mg of triamcinolone acetonide 0.1% should be injected monthly. Combine the steroid with bupivacaine (large area, use 0.25% bupivacaine; small area, use 0.5% bupivacaine). It is important to draw up the triamcinolone acetonide before the bupivacaine to prevent contamination of the triamcinolone. Inject the combined drugs into a specific area or as a pudendal block [20]. Generally, patients do not tolerate more than three or four injection trials. Another regimen has been reported that uses submucosal methylprednisolone and lidocaine [21]. Interferon α (IFN- α) has been reported as a treatment for vestibulodynia [22–28]. Long-term improvement after IFN- α therapy is variable. Side effects include flu-like symptoms such as fever, malaise, and myalgias.

Vestibulectomy

Surgical excision is used as the last treatment option for patients with vestibulodynia. Before vestibulectomy, patients should be evaluated for vaginismus. If present, the vaginismus should be treated before surgery, because surgery is less successful in this subgroup [29]. Vaginal dilators as well as various forms of physical therapy are beneficial for vaginismus. Sexual counseling may enhance postoperative improvement by reducing vaginismus

and poor sexual arousal, which can develop after long-standing dyspareunia [29].

Surgical Excision

Excision of the vulvar vestibule has met with a variety of success rates. Lower success rates most likely are to be found in studies that operate on patients with long-standing problems that have failed numerous treatments. However, despite the high success rates of vestibulectomy in various studies, most experts believe that surgery should be reserved for women with long-standing and severe localized vestibular pain after other managements have yielded inadequate pain relief [30].

Surgical Techniques

Surgical approaches to introital dyspareunia caused by vestibulodynia can be grouped into the broad categories of 1) local excision, 2) total vestibulectomy, and 3) perineoplasty. Vestibuloplasty, a surgical procedure aimed at denervation of the vestibule without excision of the painful tissue, has been shown to be ineffective [31].

Local Excision. This technique requires precise localization of small painful areas outlined with a marking pen at surgery. The tissue is excised shallowly and is closed in an elliptical fashion. It may be necessary to undermine the margins for wound closure.

Total Vestibulectomy. The traditional vestibulectomy is an outpatient procedure most often performed under spinal or general anesthesia. A review of this technique with illustrations is described in a recent article [32]. The patient should undergo testing with a cotton swab before anesthesia while in the operating room to outline the areas of pain. Often, pain may be present throughout the vestibule. The incision may need to approach the periurethral area and to extend from the openings of Skene's ducts to the perineum. The incision is carried down laterally along Hart's line to the superior portion of the perineum. The incision should extend above the hymeneal ring. The skin, mucous membrane, hymen, and adjacent tissue are removed, excising the minor vestibular glands and transecting Bartholin's ducts. It is rare to see a cyst develop after vestibulectomy. Figure 3 illustrates sharp dissection of vestibule. The vagina is undermined, mobilized, and brought down to cover the defect, which is closed in two layers using absorbable 3–0 and 4–0 sutures.

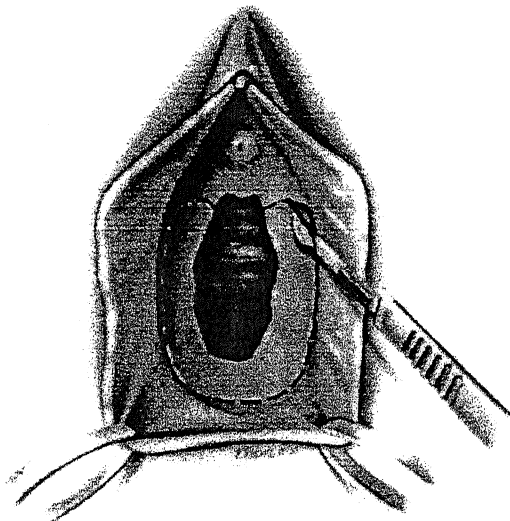


Figure 3. Sharp dissection (15-blade knife) is used to remove the area of pain on the vestibule. This patient did not have periurethral pain; thus, that area is not included in the excision. Often, however, patients will require excision of the tissues adjacent to the urethra. Care should be taken to avoid injury to the urethra as well as alteration of the urethral angle. Additionally, at times the incision extends down to the perineum (inverted triangle) to perform a perineoplasty at the same time as the vestibulectomy. (From Haefner, HK. Critique of new gynecologic surgical procedures: surgery for vulvar vestibulitis. *Clin Obstet Gynecol* 2000; 43:689-700. Reprinted with permission from Lippincott Williams & Wilkins.)

Perineoplasty. In the perineoplasty, the vestibulectomy is performed and includes removal of tissue on the perineum, usually terminating just above the anal orifice. Again, the vaginal mucosa is undermined and advanced to cover the defect.

Several studies have evaluated vulvar vestibulectomy procedures and their success rates [32]. Complications include blood loss, wound infection or separation, granulation tissue, chronic fissuring, Bartholin's duct cyst formation, decrease in lubrication, and continued pain.

Surgery for Pudendal Nerve Entrapment. Perineal pain caused by pudendal nerve entrapment is a rare entity. The pain is exacerbated particularly by assuming a sitting position and is relieved by standing. Bowel function may be abnormal, as well as painful. When the pudendal nerve is entrapped and the patient has failed guided nerve blocks with corticosteroids, tricyclic antidepressants, anticonvulsants, and physical therapy, surgical

treatment is an option. It is important to find a surgeon experienced in this area to perform the procedure when indicated [33].

Postoperative Care. Adequate analgesia is required during the 72 hours immediately after vestibular operations. Peri-incisional and labial injection of bupivacaine (with epinephrine in the nonclitoral areas) can reduce pain and intraoperative bleeding. Narcotics may be required for larger excisions. Local ice packs and topical lidocaine also are used. A hypnotic may be useful because the patient often is unable to sleep during the early postoperative period. The pain is maximal for 72 hours and then regresses. By 1 to 2 weeks after surgery, the patient is able to resume most activities. Intercourse should not occur until the health care provider has seen the patient for the postoperative visit and has verified adequate healing.

The vulva may be rinsed with Betadine (The Purdue Frederick Company, Norwalk, CT) or other gentle disinfectants after bowel movements. Patients should avoid constipating pain medicines if possible, should take stool softeners, and should eat bulk-forming foods. Warm sitz baths should begin after 24 to 48 hours. Vaginal dilator use may be required after surgery to minimize vestibular contraction and pain.

Complementary and Alternative Therapies for Chronic Vulvar Pain

Many women use other types of treatments before, during, and after seeking conventional medical diagnosis and treatment for their vulvar pain symptoms. In a study by Trutnovsky et al. [34], of the 26 women diagnosed with vulvodynia, 88% had used at least one complementary health method and 77% reported using complementary health products. Methods used included dietary alterations (60%), reduction in smoking (8%) and drinking alcohol (8%), relaxation (12%) and massage (12%) techniques, localized use of ice (16%), salt-water baths (28%), clothing alterations (84%), and exercise (20%). The various products used included skin care (27%) and antiseptic (12%) products, anesthetic creams (12%), nutritional (31%) and herbal (27%) supplements, Chinese (8%) and various other remedies (27%, including homeopathic treatment, yogurt, oat meal water, homemade salve, and hemorrhoidal, antimycotic, and steroid creams). In a population of 24 women with chronic vulvar pain, Hartmann and Nelson [15] reported that 62.5% of those questioned had used biofeedback, 41% had used a low-oxalate diet, and

35% had used ice for the treatment of their symptoms. The use of acupuncture (21%), heat (21%), and psychiatric care (17%) also was reported. The overall success of self-diagnosis and treatment remains unclear.

Low-Oxalate Diet with Calcium Citrate Supplementation

The use of oral calcium citrate along with a low-oxalate diet is controversial but may help some women. Oxalate is an irritant, and it has been suggested that vulvar burning may be associated with elevated levels of oxalates in the urine [35–38]. Evidence to support this treatment has been disputed [39].

MULTIDIMENSIONAL ASPECTS

Sexual pain, no matter what the cause, will involve physical, psychological, and relationship aspects. Patients with localized and generalized vulvar pain need varying degrees of sexual counseling and emotional support. A comprehensive treatment approach is beneficial [40].

Psychological profiles of women with vulvodynia have been performed [41–43]. Vulvodynia is not considered primarily a psychopathological condition [44]. However, most patients benefit from early counseling for sexual pain. Initial counseling and education can be accomplished in conjunction with the medical appointment. This includes conducting a basic sexual functioning assessment; normalizing difficulties; offering simple suggestions regarding sexual positions, lubrication, temporary cessation of intercourse, alternatives to intercourse; and offering resource information such as reading, web sites, and support groups. An assessment should include inquiry about relationship concerns and previous history of mental health problems, physical and sexual abuse, and substance abuse. If any of these issues are present, or if the patient is noncompliant with medical treatment, consideration for sexual counseling is recommended.

Sex therapy, couples counseling, psychotherapy, or a combination thereof, often is very helpful and in most cases will be short term. Patients need to know that referral for therapy does not mean that the clinician considers that the pain is all in the mind. Sharing a model that integrates psyche and soma can help allay fears that the patient already may have about their pain being psychological. When managing patients with vulvodynia, psychosexual and psychological issues must be considered in addition to the patients' other needs [45, 46].

Certified sex therapists can be found through the American Association of Sex Educators Counselors and Therapists.

RESOURCES

Current information on vulvar pain is available at the National Vulvodynia Association (www.nva.org) and the Vulvar Pain Foundation (www.vulvarpainfoundation.org). Books on general sexuality and other self-help books more specifically addressing sexual pain are available. Information about sex therapy, physical therapy, dilators, as well as resources for enhancement of sexual pleasure are available. A list of resources for counseling and general sexuality information can be obtained at <http://www.med.umich.edu/socialwork/shcs/books.htm>. Books are available for health care providers who care for patients with vulvar pain, as well as for the patients with vulvar pain [47, 48].

SUMMARY

Vulvar pain is a complex disorder that frequently is frustrating to both practitioner and patient. It can be a difficult process to treat. Many treatments for vulvodynia, both generalized and localized, have been discussed. It is important to recognize that rapid resolution of symptomatic vulvar pain is unusual even with appropriate therapy. Improvement in pain may take weeks to months. Also, the level of improvement needs to be addressed realistically with patients. Additionally, no single treatment is successful in all women. Concurrent emotional and psychological support can be invaluable.

REFERENCES

1. Zolnoun DA, Hartmann KE, Steege JF. Overnight 5% lidocaine ointment for treatment of vulvar vestibulitis. *Obstet Gynecol* 2003;102:84–7.
2. Yamashita S, Sato S, Kakiuchi Y, Miyabe M, Yamaguchi H. Lidocaine toxicity during frequent viscous lidocaine use for painful tongue ulcer. *J Pain Symptom Manage* 2002;24:543–5.
3. Eva LJ, MacLean AB, Reid WM, Rolfe KJ, Perrett CW. Estrogen receptor expression in vulvar vestibulitis syndrome. *Am J Obstet Gynecol*. 2003;189:458–61.
4. Walsh KE, Berman JR, Berman LA, Vierregger K. Safety and efficacy of topical nitroglycerin for treatment of vulvar pain in women with vulvodynia: a pilot study. *J Genit Specif Med* 2002;5:21–7.
5. McKay M. Dysesthetic (“essential”) vulvodynia. Treatment with amitriptyline. *J Reprod Med* 1993;38:9–13.

6. Munday PE. Response to treatment in dysaesthetic vulvodynia. *J Obstet Gynaecol* 2001;6:610-3.
7. Wasserman J. Pharmacological treatment of vulvodynia. *National Vulvodynia Association News Letters* Spring 2002.
8. Ben-David B, Friedman M. Gabapentin therapy for vulvodynia. *Anesth Anal* 1999;89:1459-62.
9. Scheinfeld N. The role of gabapentin in treating diseases with cutaneous manifestations and pain. *Int J Dermatol* 2003;42:491-5.
10. Bergeron S, Binik YM, Khalife S, Pagidas K, Glazer HI, Meana M, et al. A randomized comparison of group cognitive-behavioral therapy, surface electromyographic biofeedback, and vestibulectomy in the treatment of dyspareunia resulting from vulvar vestibulitis. *Pain* 2001;1:297-306.
11. Glazer HI, Rodke G, Swencionis C, Hertz R, Young AW. Treatment of vulvar vestibulitis syndrome with electromyographic biofeedback of pelvic floor musculature. *J Reprod Med* 1995;40:283-90.
12. Glazer HI, Marinoff SC, Sleight IJ. Web-enabled Glazer surface electromyographic protocol for the remote, real-time assessment and rehabilitation of pelvic floor dysfunction in vulvar vestibulitis syndrome. A case report. *J Reprod Med* 2002;47:728-30.
13. McKay E, Kaufman RH, Doctor U, Berkova Z, Glazer H, Redko V. Treating vulvar vestibulitis with electromyographic biofeedback of pelvic floor musculature. *J Reprod Med* 2001;46:337-42.
14. Bergeron S, Brown C, Lord MJ, Oala M, Binik YM, Khalife S. Physical therapy for vulvar vestibulitis syndrome: a retrospective study. *J Sex Marital Ther* 2002;28:183-92.
15. Hartmann EH, Nelson C. The perceived effectiveness of physical therapy treatment on women complaining of chronic vulvar pain and diagnosed with either vulvar vestibulitis syndrome or dysaesthetic vulvodynia. *J Sect Womens Health* 2001;25:13-8.
16. White G, Jantos M, Glazer H. Establishing the diagnosis of vulvar vestibulitis. *J Reprod Med*. 1997;42:157-60.
17. Glazer HI, Jantos M, Hartmann EH, Swencionis C. Electromyographic comparisons of the pelvic floor in women with dysaesthetic vulvodynia and asymptomatic women. *J Reprod Med* 1998;43:959-62.
18. Glazer HI, Romanzi L, Polzeczky M. Pelvic floor muscle surface electromyography. Reliability and clinical predictive validity. *J Reprod Med* 1999;44:779-82.
19. Segal D, Tifheret H, Lazer S. Submucous infiltration of betamethasone and lidocaine in the treatment of vulvar vestibulitis. *Eur J Obstet Gynecol Reprod Biol* 2003;107:105-6.
20. Calvillo O, Skaribas IM, Rockett C. Computed tomography-guided pudendal nerve block. A new diagnostic approach to long-term anoperineal pain: a report of two cases. *Reg Anesth Pain Med* 2000;25:420-3.
21. Murina F, Tassan P, Roberti P, Bianco V. Treatment of vulvar vestibulitis with submucous infiltrations of methylprednisolone and lidocaine. An alternative approach. *J Reprod Med* 2001;46:713-6.
22. Marinoff SC, Turner ML, Hirsch RP, Richard G. Intralesional alpha interferon. Cost-effective therapy for vulvar vestibulitis syndrome. *J Reprod Med* 1993;38:19-24.
23. Horowitz BJ. Interferon therapy for condylomatous vulvitis. *Obstet Gynecol* 1989;73:446-8.
24. Sonnendecker EW, Sonnendecker HE, Wright CA, Simon GB. Recalcitrant vulvodynia. A clinicopathological study. *S Afr Med J* 1993;83:730-3.
25. Kent HL, Wisniewski PM. Interferon for vulvar vestibulitis. *J Reprod Med* 1990;35:1138-40.
26. Larsen J, Peters K, Petersen CS, Damkjaer K, Albrechtsen J, Weismann K. Interferon alpha-2b treatment of symptomatic chronic vulvodynia associated with koilocytosis. *Acta Derm Venereol* 1993;73:385-7.
27. Gerber S, Bongiovanni AM, Ledger WJ, Witkin SS. A deficiency in interferon-alpha production in women with vulvar vestibulitis. *Am J Obstet Gynecol* 2002;186:361-4.
28. Bornstein J, Abramovici H. Combination of subtotal perineoplasty and interferon for the treatment of vulvar vestibulitis. *Gynecol Obstet Invest* 1997;44:53-6.
29. Abramov L, Wolman I, David MP. Vaginismus: an important factor in the evaluation and management of vulvar vestibulitis syndrome. *Gynecol Obstet Invest* 1994;38:194-7.
30. McCormack WM, Spence MR. Evaluation of the surgical treatment of vulvar vestibulitis. *Eur J Obstet Gynecol Reprod Biol* 1999;86:135-8.
31. Bornstein J, Zarfati D, Goldik Z, Abramovici H. Perineoplasty compared with vestibuloplasty for severe vulvar vestibulitis. *Br J Obstet Gynaecol* 1995;102:652-5.
32. Haefner HK. Critique of new gynecologic surgical procedures: surgery for vulvar vestibulitis. *Clin Obstet Gynecol* 2000;43:689-700.
33. Ramsden CE, McDaniel MC, Harmon RL, Renney KM, Faure A. Pudendal nerve entrapment as source of intractable perineal pain. *Am J P M R* 2003;82:479-84.
34. Trutnovsky G, Law C, Simpson JM, Mindel A. Use of complementary therapies in a sexual health clinic setting. *Int J Sexually Trans Dis AIDS* 2001;12:307-9.
35. Solomons CC, Melmed MH, Heitler SM. Calcium citrate for vulvar vestibulitis. A case report. *J Reprod Med* 1991;36:879-82.
36. Melmed MH. Vulvar vestibulitis: relief with a low-oxalate diet and calcium citrate. *Cervix Lower Female Genital Tract* 1995;13:155-6.
37. Willems J. Medical management of vulvar vestibulitis. *OBG Management* 1999; June 27-8:33-5,38,40,45,49,96.
38. Yount JJ, Solomons CC, Willems JJ, St. Amand RP. Effective nonsurgical treatments for vulvar pain. *Women's Health Digest* 1997;3:88-93.

39. Baggish MS, Sze EH, Johnson R. Urinary oxalate excretion and its role in vulvar pain syndrome. *Am J Obstet Gynecol* 1997;177:507-11.
40. Schover LR, Youngs DD, Cannata R. Psychosexual aspects of the evaluation and management of vulvar vestibulitis. *Am J Obstet Gynecol* 1992;167:630-6.
41. Schmidt S, Bauer A, Greif C, Merker A, Elsner P, Strauss B. Vulvar pain. Psychological profiles and treatment responses. *J Reprod Med* 2001;46:377-84.
42. Lynch PJ. Vulvodynia: a syndrome of unexplained vulvar pain, psychologic disability and sexual dysfunction. *J Reprod Med* 1986;31:773-80.
43. Van Lankveld JJ, Weijenborg PT, ter Kuile MM. Psychologic profiles of and sexual function in women with vulvar vestibulitis and their partners. *Obstet Gynecol* 1996;88: 65-70.
44. Bornstein J, Zarfati D, Goldik Z, Abramovici H. Vulvar vestibulitis: physical or psychosexual problem? *Obstet Gynecol* 1999;93:876-80.
45. Sackett S, Gates E, Heckman-Stone C, Kobus AM, Galask R. Psychosexual aspects of vulvar vestibulitis. *J Reprod Med* 2001;46:593-8.
46. Nunns D, Mandal D. Psychological and psychosexual aspects of vulvar vestibulitis. *Genitourin Medicine* 1997;73: 541-4.
47. Stewart EG, Spencer P. *The V Book: A Doctor's Guide to Complete Vulvovaginal Health*. New York: Bantam Publishers, 2002.
48. Glazer HI, Rodke G. *The Vulvodynia Survival Guide: How to Overcome Painful Vaginal Symptoms & Enjoy an Active Lifestyle*. Oakland, CA: New Harbinger Publications Inc., 2002.