CHAPTER 13

INTERCOURSE DIFFICULTIES IN WOMEN: PAIN, DISCOMFORT, AND FEAR

Female dyspareunia . . . may be one of the earliest recognized sexual dysfunctions . . . the most common . . . possibly the most underreported . . . and the sexual dysfunction most linked to physiological pathology. Perhaps one of the reasons why the literature . . . is filled with absolutes is because of one further distinction - it is clearly the most underinvestigated . . .

MEANA AND BINIK, 1994[1]

THE PROBLEM

A 32-year-old nurse was seen in consultation with her 35-year-old husband. They were married seven years and had two children. Their sexual experiences had always been pleasurable and free of problems until two years ago. Immediately after the birth of their second child, she experienced persistent pain whenever intercourse was attempted. The pain was located at the entrance to her vagina and became evident only with entry. Before her vaginal pain began, the frequency of intercourse was several times each week but now was reduced to once or twice each month. She and her husband remained sexually interested and sexual activity (excluding, by agreement, attempts at intercourse) occurred several times each week.

The use of tampons had never been a source of difficulty for her but she stopped using them after her last childbirth. Vaginal examinations by her doctor were uncomfortable in the past but now they were associated with great pain. At her request her husband stopped inserting his finger into her vagina during sexual experiences. On examination by a gynecologist, there was vaginal spasm at the introitus and mild reddening in the 4 to 9 o'clock area of the vestibule. The cotton swab test (see Figure 13-2 and `Physical Examination' below in this Chapter) showed exquisite tenderness in this same region, indicating a diagnosis of vulvar vestibulitis.

Anesthetic ointment relieved her pain temporarily but also diminished pleasurable feelings. Vaginal dilators helped relieve the vaginal spasm so that when intercourse occurred it was less painful. Surgery was discussed with her and while she and her husband viewed this as a possible option, they preferred to wait until other approaches were exhausted.

A 23-year-old school teacher was seen with her husband of eight months because intercourse was attempted on many occasions but had never actually occurred (either during her marriage or before). She reported experiencing vaginal discom-

fort when intercourse was attempted. Both were born of families that emigrated from Asia and had known each other since childhood. The marriage was born of a love relationship rather than having been arranged but they nevertheless refrained from including intercourse in their sexual activities before their wedding because of family, religious, and cultural proscriptions. Both families were applying not-so-subtle pressure on the couple to have children. No one else knew of their inability to have intercourse. She was terrified of pain and expected to experience pain with anything entering her vagina (or going out, hence also her fear of childbirth). Her dread of pain with intercourse was so strong that she cried out when he neared her vulva (a reaction that made him progressively less enthused about making any attempt at vaginal entry).

In an initial inspection-oriented pelvic examination, the patient was in a semi-reclining position and watched the procedure with a handheld mirror. Cotton swab test was negative. When on a subsequent occasion the end of the physician's finger was introduced into the patient's vagina, the physician could feel a ring of surrounding muscle. The diagnosis of vaginismus was made and the patient and her husband began a treatment program. About four months later, intercourse occurred successfully on many occasions, and when last seen she was pregnant.

TERMINOLOGY

Terminology problems have more to do with health professionals than with patients or the lay public. *Vulvodynia* is a general term recommended by the International Society for the Study of Vulvar Disease (ISSVD) to describe any chronic discomfort or pain in the vulvar region regardless of etiology and not necessarily related to sexual activity.[2] *Dyspareunia* is more specific in describing pain associated with sexual intercourse. Dyspareunia could be felt at the point of vaginal entry, associated with the back and forth movements of intercourse, or deep within the patient's vagina. Insofar as pain with intercourse is discussed, this chapter concerns itself principally with the first.

However, patients may complain of vaginal "discomfort," rather than pain, when intercourse occurs. Whether such discomfort always represents mild pain, does so sometimes, or is something else altogether is unclear. The multiplicity of problems that are inherent in the present use of the word "dyspareunia" were outlined by Meana and Binik and include issues such as unclear definition, disagreement over the inclusion or exclusion of certain disorders (such as vaginismus and postmenopausal vaginal dryness), confusion about the role of physical and psychological factors in the etiology, and the meaning of not finding abnormalities on pelvic examination.[1] Another source of confusion can be found in the use of the word *vaginismus,* which in the literature describes (1) a physical sign accompanying various casuses of painful intercourse and (2) a specific disorder. (In this Chapter, the words "vaginal spasm" will be used to describe the former, and "vaginismus" will refer to the latter).

Vulvar vestibulitis (VVS) is a specific diagnostic term that is defined and discussed below in this chapter.

CLASSIFICATION

While the heading "Sexual Pain Disorders" was not carried over from DSM-IV[3] to DSM-IV-PC[4], both classification systems continue a tradition of asking clinicians to think of two disorders (dyspareunia and vaginismus), and to do so in an either/or fashion. The criteria for both are summarized in the PC version respectively as follows: "recurrent or persistent genital pain . . . before, during, or after sexual intercourse, causing marked distress or interpersonal difficulty" (p. 117) and "recurrent or persistent involuntary spasm of the musculature of the outer third of the vagina that interferes with sexual intercourse, causing marked distress or interpersonal difficulty" (p. 118).[4]

CLASSIFICATION PROBLEMS: DISTINGUISHING DYSPAREUNIA AND VAGINISMUS

In relation to the problem of pain, discomfort, and/or fear of intercourse in women, DSM-IV-PC[4] definitions and accompanying clinical information often conflict with clinical experience and result in confusion when trying to distinguish dyspareunia and vaginismus. The two often occur together. For example, when intercourse is attempted in the context of vaginismus, patients usually complain of pain (although *fear* of pain may be much more prominent). Likewise, when persistent painful intercourse occurs for reasons other than vaginismus, it is clinically commonplace to see associated vaginal spasm. In such instances, vaginal spasm seemingly functions as a symptomatic and defensive (usually involuntary) reaction of the woman to protect herself against anticipated pain.

SUBCLASSIFICATION: DESCRIPTIONS

Theoretically, the subclassification of disorders that cause fear, discomfort, or pain-related difficulties with intercourse in women involve the assessment of whether the problem is lifelong or acquired, situational or generalized. In clinical practice, the first two patterns described below are most commonly seen; the third probably occurs frequently in the community but is uncommonly presented to health professionals. The assessment of pain, discomfort, or fear associated with attempts at intercourse in women is outlined in Figure 13-1.

Lifelong and Generalized

When hearing that pain or fear associated with attempts at intercourse have always existed, the history is often that of an unconsummated marriage. Not only has a man's penis never entered her vagina, but the same story is also heard concerning her own, or her partner's fingers, tampons or a physician's fingers or speculum. Alternatively, vaginal entry of a current or previous partner's penis may have taken place but pain persisted through much of the experience of intercourse. Prior to intercourse attempts (e.g., in the premarital period when a woman resolutely decides against having intercourse before marriage), she often found herself sexually interested, wet, and possibly orgasmic. While this response may have continued in the short run (e.g., after marriage), the pattern may have altered in the long run as a result of pain and fear connected to present attempts at penile entry. In such a situation, women typically feel

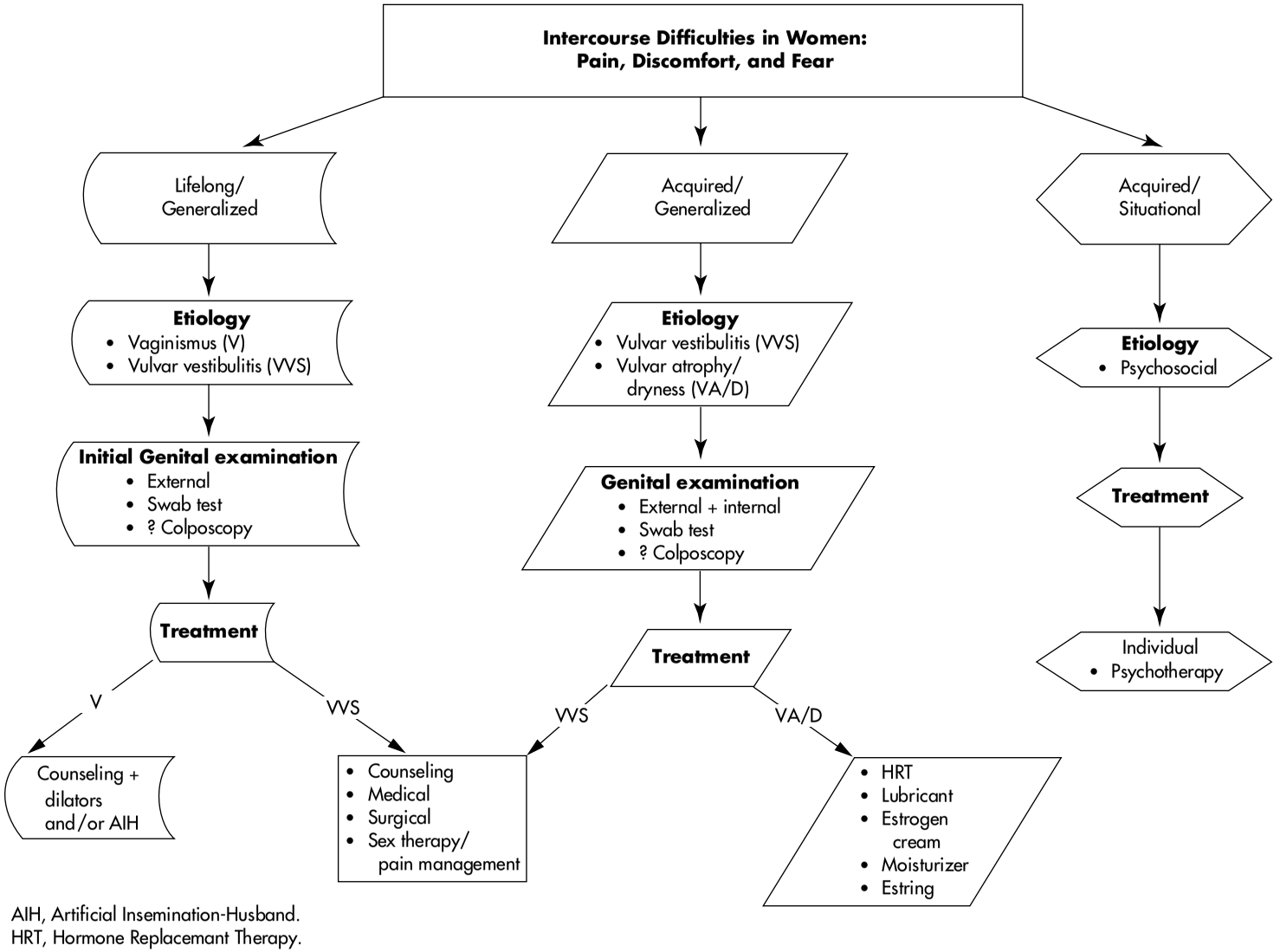

Figure 13-1 Assessment of intercourse difficulties in women: pain, discomfort, and fear.

self-deprecatory, saying that they feel "abnormal" as women and as a marital and sexual partner. In a frenzy of ambivalence, she may have explicitly suggested to her partner that he "find himself someone else" while simultaneously fearful that he will do exactly that. The agony of feeling unable to become pregnant through intercourse is often the final straw that drives her to the humiliating admission that help is necessary to accomplish what television, magazines, and billboards shout is a common event for the rest of mankind.

A 22-year-old woman saw her family doctor because she had married three weeks before but was unable to have intercourse despite numerous attempts. It was evident that she was fearful of vaginal entry but it was not evident whether she also experienced pain when intercourse was attempted. She and her husband were sexually active with one another in the three years of their courtship but decided for religious reasons that intercourse should be included only after they married. Their sexual practices did not include vaginal insertion of his fingers, and, as well, she never had intercourse with a previous sexual partner, did not like the idea of tampons, and never had a vaginal examination from a physician. Neither she nor her husband described any other difficulties with their sexual function.

A pelvic examination was scheduled for the following day when the physician could allocate a greater amount of time. The external vulvar examination revealed no structural pathology and a negative swab test. The physician then explained her diagnostic impression of vaginismus and aspects of the anatomy and physiology of the patient's vagina, reassured the patient that there were no apparent structural problems impeding intercourse, described the importance of control by the patient in relation to vaginal insertion, and encouraged the patient to insert her own and then the doctor's finger part-way into her vagina. With patience and encouragement from the doctor, finger insertion took place. The patient was enormously pleased and felt a sense of accomplishment. She was encouraged to guide her husband's penis into her vagina in the same manner as her own finger. When seen one week later, the patient related that intercourse occurred on three occasions, the last two times without any difficulty.

A 38-year-old woman was seen alone because of a lifelong inability to have intercourse. Her first marriage was annulled after five years, primarily because of "non-consummation." She had pleasurable sexual experiences since her separation ten years before but she always managed to avoid attempts at intercourse. Over the years, she was unwilling to accept suggestions made by her family physician (aware of the problem because of the impossibility of vaginal examinations) for referral to a sex therapist. Presently, she was in the midst of a serious relationship and was contemplating marriage. However, she was also fearful of the implications of her inability to engage in intercourse. Her partner was accepting of this limitation but at the same time was encouraging her to obtain medical care.

A vaginal examination, conducted by a consultant, resulted in a negative swab test, and it was possible to only partially insert a single finger because of enormous fear of pain and severe muscular tightness at the vaginal entrance. A suspected diagnosis of vaginismus was confirmed. She remained unwilling to consult a sex therapist and insisted on not involving her partner in the treatment program, explaining that she had this problem long before their relationship began. She was unable to insert the smallest dilator and felt pessimistic about the benefit of this approach. When last seen she had remarried and was sexually active without intercourse.

Acquired and Generalized

In this syndrome, the most commonly heard story concerning vaginal pain with intercourse is that the woman had no prior difficulty. Typically, her previous sexual enthusiasm, ease of arousal, and orgasm contrasts sharply with her present reticence. The current experience of pain tends to be associated with anything entering her vagina (penis, fingers, a vaginal speculum), and the discomfort is particularly located at the vaginal entrance and especially in the "horseshoe" 4 to 8 o'clock area. The intercourse pain is described as "tearing" and occurs with initial vaginal entry but is sometimes characterized as burning and connected more with the friction of continuous coital movement. Discomfort may continue for several hours after the sexual experience.

A 27-year-old woman, married four years, was seen by her family physician because of pain associated with intercourse. She related that before the past two years, she only rarely experienced pain during intercourse and it lasted only a matter of seconds and was relieved by change in position. Her sexual interest was equal to that of her husband and other male partners before she married, she had no difficulty becoming vaginally wet when interested, and would easily come to orgasm. Since the past two years, all of this had changed. Pain associated with vaginal entry had become gradually more common and increasingly severe and as a result she found herself only marginally interested in sexual activities, often used an artificial lubricant because of insufficient vaginal lubrication, and only occasionally would come to orgasm. She described the pain as in the 6 o'clock area of her introitus, burning in character, and somewhat relieved by the cessation of intercourse, although the discomfort after would necessitate her sitting in a bath to obtain some lessening of the feeling of irritation.

On examination, the swab test was positive in many locations and a diagnosis of vulvar vestibulitis (VVS) was made. With an initial focus on her diminished sexual desire, psychologically oriented treatment was begun. Counseling also focused on helping her and her husband explore other sexual practices other than intercourse. Intercourse occurred periodically and was eventually experienced with little or no discomfort on her part. Despite improvement on many levels, her lack of sexual enthusiasm did not change and more aggressive treatment of her VVS at that time was not something she thought desirable.

Acquired and Situational

In contrast to the lifelong form, the history reveals intercourse without difficulty in the past, and in contrast to the generalized form, only vaginal entry of a man's penis in the present results in discomfort (rather than tampons, fingers, and speculum). Other features of the syndrome may include the following:

- Variability in appearance of the pain, age of patient (youth), sexual inexperience
- The presence of psychosocial explanatory factors
- The lack of pathological findings with pelvic examination

None of these features are pathognomonic.

A 19-year-old single woman was concerned that since about six months ago, intercourse was associated with pain—a facet of her sexual experiences that had never occurred before in previous relationships. Although dyspareunia was frequent now, it was also quite irregular. Her relationship with her boyfriend of ten months was frequently stormy, and on two occasions they decided to stop dating. She was still unsure about continuing the relationship and had not told him of her sexual discomfort. She had no difficulty using tampons now or in the past during her menstrual periods, and likewise, experienced no problems with pelvic examinations by a physician. The pain that she experienced was not localized, would arise only with vaginal entry, and disappeared when his penis left her vagina. Pelvic examination revealed no structural pathology and the swab test was negative. When seen three months later, she had begun a relationship with another man with whom she was in love and found that her dyspareunia had disappeared.

EPIDEMIOLOGY

In the general population study conducted by Laumann and his colleagues, respondents were asked the following question: "During the last 12 months, has there ever been a period of several months or more when you experienced physical pain during intercourse?"[5] (p.371) Overall, this was answered with a "yes" by 14% of the women (in contrast to 3% of the men). The age group in which this was most commonly reported was 18 to 24 (22%) and was least commonly reported in those over 50 (7% to 9%). As with other sexual problems, pain with intercourse was positively correlated with the respondent's health status (p. 373) (9% of women who's health status was "excellent" compared to 23% of those in "fair" health). There was also a positive correlation with "happiness" (p. 374) in that pain with intercourse was reported by 12% of those who were "extremely happy" versus 28% of those who were "unhappy most times." While intercourse pain is obviously common among women in the general population, vaginismus as a specific disorder seems unusual. Subtypes of pain associated with intercourse, and the subject of unconsummated marriages, were not addressed in the Laumann[5] or Kinsey[6,7] studies.

When asked the question: "During the last 12 months has there ever been a period of several months or more when you experienced physical pain with intercourse?"[5] 14% of the women answered "yes."

Meana et al. completed a descriptive study of a nonclinical sample of 112 women recruited by newspaper advertisement and ranging in age from 19 to 65[8] with pain relating to intercourse. Subjects underwent thorough psychological and gynecological examinations. The subjects were eventually grouped under four diagnostic subheadings:

- The largest (46%) were diagnosed as having vulvar vestibulitis
- The next largest (24%) had no dyspareunia-related physical findings
- The third (17%) was "mixed" (described by the authors as a "catch-all")
- The fourth (13%) was the vulvar/vaginal atrophy group

Apart from community studies, Goetsch provided information on the prevalence of dyspareunia and vulvar vestibulitis in an unreplicated study of a general gynecology practice.[9] All patients (n = 10) seen by her in a six month period were questioned and their examination included a swab test. Twenty percent described symptoms of pain and all except three had a positive swab test. Thirty-one patients (15% of the entire group) were diagnosed as having vulvar vestibulitis. Affected patients were typically premenopausal.

Information about the epidemiology of vulvar/vaginal atrophy (typically found in postmenopausal women) and its consequences was assessed in a general population study conducted in Sweden on a random sample of 5990 women ranging in age from 46 to 62 (five birth cohorts).[10] Subjects were sent a questionnaire (response rate 76%) that included questions on various climacteric symptoms. Vaginal dryness was reported by 21% overall and showed a linear increase (4% to 34%) in each cohort. In spite of lubrication difficulty, approximately 60% had a "regular sex-life" and only 8% of the entire sample reported that vaginal dryness was the reason for the absence of sexual activity (although 32% of the 62-year-old women said so).[11] It is instructive to note that in another study which involved the transition to menopause, one third of premenopausal women reported vaginal dryness, thus indicating that factors other than hormones can have a major influence on vaginal lubrication.[12] In addition, a study of 48 postmenopausal women that included psychophysiological measurements supported the notion that vaginal dryness in postmenopausal women might well be related to nonhormonal sexual arousal problems.[13]

In a review of the incidence and prevalence of sexual dysfunctions in "sex clinics," vaginismus was found to vary from 12% to 17% "of the females presenting with problems in sexual dysfunction clinics . . . reflecting a rather stable rate."[14] In the same review, dyspareunia rates were estimated at 3% to 5% but the authors wondered if this complaint was more often made to family physicians and gynecologists than sex therapists. Support for this was given by the Laumann data[5], and, as well, a survey of physicians[15] who reported that "dyspareunia, or painful intercourse" was the sixth most common sexual problem seen out of a list of 20 items.

ETIOLOGY

Entry dyspareunia that lasts for a short period of time (days to weeks) is probably common and may result from vaginal irritation as a consequence of infection or allergy.

Although there are many explanations for more persistent entry dyspareunia,[16] three problems probably account for most cases of pain, discomfort, or fear of intercourse in women:

- Vulvar vestibulitis
- Postmenopausal vulvar/vaginal atrophy and consequent vaginal dryness
- Vaginismus

Three problems probably account for most cases of pain, discomfort, or fear of intercourse in women:

- Vulvar vestibulitis
- Postmenopausal vulvar/vaginal atrophy and consequent vaginal dryness
- Vaginismus

Vulvar Vestibulitis

Friedrich[17] coined the term *vulvar vestibulitis* (VVS) and described three criteria for the diagnosis:

1. Severe pain on vestibular touch or attempted vaginal entry
2. Tenderness to pressure localized within the vulvar vestibule
3. Physical findings confined to vestibular erythema of varying degrees

Women with VVS are typically in their 20s and 30s and of Caucasian origin. Goetsch (see Epidemiology above) provided details of her 31 subjects (plus seven who were diagnosed with VVS before the beginning of her six month study).[9] The median length of the complaint was 8.5 years and half of the respondents first noted pain with tampon use rather than with sexual intercourse. Half of the women *always* had pain dating from the first attempt at intercourse (often designated as "primary"). A significant subgroup (21%) experienced dyspareunia in the postpartum period, and delivery by cesarean section made no difference in its appearance.

The etiology of VVS is unknown, giving rise to several theories.[17-19] Infectious agents have received much attention. Some observers note a high rate of repeated vaginal and/or urinary tract infections (such as candidiasis). Human papillomavirus (HPV) is also suspected. A majority of Goetsch's patients had no known association with HPV. However, "unusually large doses of fluorouracil cream . . . had caused severe chemical burns in two patients and evolved into the most severe cases of vestibulitis seen in the survey."[9] "The only infectious agent found to directly cause or worsen vestibulitis was group B streptococcus" in two patients.[9] Eighty percent of patients in the Goetsch study who always had pain and who had sisters knew of a female relative with dyspareunia or intolerance of tampons. There was no such association in those whose pain began later. Investigators into the psychological status of patients with dyspareunia generally found evidence of more symptoms than no-pain matched controls.[8] However, no differences were found when those who specifically had VVS were separated from other subtypes.

Goetsch concluded that swab testing demonstrated a continuum from those who were positive but had no clinical pain to those who were dysfunctional.[9] Likewise, she indicated that when pain was present, it was "minor for many, and accommodation was aided even by getting an explanation of the problem."[9] Last, she noted that many had sensitivity that *predated* sexual exposure.

Goetsch concluded that swab testing demonstrated a continuum from those who were positive but had no clinical pain to those who were dysfunctional.[9] Likewise, she indicated that when pain was present, it was "minor for many, and accommodation was aided even by getting an explanation of the problem."[9]

Postmenopausal Vulvar/Vaginal Atrophy

Vaginal lubrication largely depends on estrogen stimulation of the vaginal mucosa and, therefore, vaginal dryness is usually considered to be associated with the diminution of estrogen that accompanies menopause. Atrophic alterations occur to the vaginal epithelium in the absence of estrogen and are associated with increased vaginal pH, decreased vaginal fluid, and decreased vaginal blood flow.[20] Exogenous estrogens appear to reverse these changes. However, a woman's level of sexual activity (including masturbation) and her circulating androgens have also been demonstrated to influence the extent of vaginal atrophy.[21] While vaginal atrophy and dryness is often reported as uncomfortable, the extent to which actual pain is experienced during intercourse is unclear.

While vaginal atrophy and dryness is often reported as uncomfortable, the extent to which actual pain is experienced during intercourse is unclear.

Vaginismus

Vaginismus represents an involuntary spasm of the muscles surrounding the outer third of the vagina, resulting in narrowing of the vaginal entrance and inability or difficulty in allowing vaginal entry in the waking state. The sex-related result of vaginismus is the inability to engage in intercourse (either at all or without significant discomfort). The history is usually lifelong (that is, since the patient tried to put anything into her vagina) but not all such lifelong histories represent this disorder. A similar story may be given in some instances of vulvar vestibulitis (see Vulvar Vestibulitis above).[9] Patients give various explanations for vaginismus including[22]:

1. Thinking sexual activity to be sinful or offensive
2. Fear of pregnancy or childbirth
3. Lack of anatomical awareness
4. Homoerotic feelings
5. Dislike of semen
6. Aversion to a man's penis or men in general

When patients were asked for possible causes of vaginismus, they placed pain and fear of intimacy high on the list.

Some specialists view such phenomena as symptoms rather than causes.[23] As counterintuitive as it might seem, a history of genital trauma or sexual violence in the histories of women with vaginismus is unusual.[24] When patients were asked their opinions about possible causes, they placed fear of pain and fear of intimacy high on the list.[25] Patients may describe pain with intercourse attempts but *fear* of vaginal entry rather than the actual experience of pain may be the principal factor that interferes with intercourse. Other sexual difficulties (e.g., a desire disorder) may be present in the patient and may have antedated awareness of intercourse trouble.

Patients may describe pain with intercourse attempts but *fear* of vaginal entry rather than the actual experience of pain may be the principal factor that interferes with intercourse.

INVESTIGATION

History

History is only one element, albeit an essential one, in defining fear, discomfort, or pain in women associated with intercourse attempts, and in many instances, helping to delineate the cause. Issues to inquire about and suggested questions include:

1. Duration (see Chapter 4, "lifelong versus acquired")

Suggested Question: "**HOW LONG HAS THIS BEEN A PROBLEM FOR YOU?**"

Alternative Suggested Question if Intercourse Occurred in the Past: "**HAVE YOU EVEN BEEN ABLE TO HAVE INTERCOURSE WITHOUT EXPERIENCING PAIN?**"

2. Intravaginal experience in the past (see Chapter 4, "generalized versus situational")

Suggested Question: "**WHAT HAS BEEN YOUR EXPERIENCE WITH TAMPONS?**"

Suggested Question: "**WHAT HAS BEEN YOUR EXPERIENCE WITH INSERTING YOUR OWN FINGER INTO YOUR VAGINA?**"

Suggested Question: "**WHAT HAS BEEN YOUR EXPERIENCE WITH A SEXUAL PARTNER INSERTING A FINGER INTO YOUR VAGINA?**"

Suggested Question: "**WHAT HAS BEEN YOUR EXPERIENCE WITH DOCTORS PERFORMING A PELVIC EXAMINATION AND USING FINGERS OR A SPECULUM?**"

Suggested Question: **WHAT HAS BEEN YOUR EXPERIENCE WITH WEARING TIGHT CLOTHES SUCH AS JEANS?**

3. Intravaginal experience in the present (see Chapter 4, "generalized versus situational")

Suggested Question: "**WHAT IS IT LIKE FOR YOU NOW WHEN A SEXUAL PARTNER ATTEMPTS TO INSERT HIS PENIS (OR HIS FINGER) INTO YOUR VAGINA?**"

Additional Suggested Question: "**DOES IT MATTER IF YOU ARE WITH A DIFFERENT SEXUAL PARTNER?**"

4. Location of the pain (see Chapter 4, "description")

Suggested Question if Intercourse Occurs: "**WHERE DO YOU ACTUALLY FEEL THE PAIN? AT THE ENTRANCE? WITHIN YOUR VAGINA DURING INTERCOURSE? OR DEEP INSIDE?**"

Additional Suggested Question for Entry Pain: "**IF YOU WERE TO COMPARE THE OPENING TO YOUR VAGINA TO A CLOCK, AT WHICH POINT ON THE CLOCK DO YOU FEEL PAIN?**"

Additional Suggested Question to Determine if Pain is Associated with Thrusting: "**IS THE PAIN FELT ON THE INSIDE OF YOUR VAGINA AS HE IS MOVING IN AND OUT?**"

Additional Suggested Question to Determine if the Pain is Deep: "**WHEN HE INSERTS HIS PENIS DEEPLY, DOES IT FEEL AS THOUGH HE IS POKING SOMETHING?**"

5. Character of the pain (see Chapter 4, "description")

Suggested Question: "**SOMETIMES A PERSON EXPERIENCES FEAR OF INTERCOURSE MORE THAN ACTUAL PAIN. DOES THIS EVER HAPPEN TO YOU?**"

Additional Suggested Question if Intercourse Occurs: "**WHAT DOES THE PAIN FEEL LIKE? FOR EXAMPLE, DOES IT FEEL AS THOUGH IT IS TEARING OR BURNING?**"

6. Factors that result in improvement or worsening (see Chapter 4, "description")

Any complaint of persistent pain associated with vaginal entry requires a complete physical examination, which need not take place on the first visit or be completed on one occasion.

Suggested Question: "**IS THERE ANYTHING THAT MAKES THE PAIN BETTER?**"

Additional Suggested Question: "**IS THERE ANYTHING THAT MAKES THE PAIN WORSE?**"

Additional Suggested Question if Intercourse Occurs: "**WHAT DOES IT FEEL LIKE WHEN HE EJACULATES?**"

Considerabily more time (and patience) is usually required for a pelvic examination involving persisitent pain associated with vaginal entry than is required in a more "ordinary" pelvic examintion.

Physical Examination

Any complaint of persistent pain associated with vaginal entry requires a complete physical examination, which need not take place on the first visit or be completed on one occasion. For example, in the context of vaginismus, a vaginal examination might well be terrifying to the patient and, as well, impair the physician-patient relationship. A speculum examination under such circumstances may have even more severe consequences. Rafla described a case in which a vaginal examination in the context of vaginismus resulted in physical injury and a blood loss of 1000 ml.[26] Considerably more time (and patience) is usually required than in a more "ordinary" pelvic examination (see "Physical Examination" in Chapter 6).

When the patient's history is one where intercourse has never occurred because attempts resulted in pain, discomfort, or fear, it is reasonable to engage in a preparatory process before an actual intravaginal examination.[27] The patient touches herself as close to the introitus as possible, daily, in private, and for five to ten minutes. While this is taking place, she is asked to imagine herself being examined, view her genitalia with a mirror, and is shown how to insert her own fingertip around the anterior vaginal

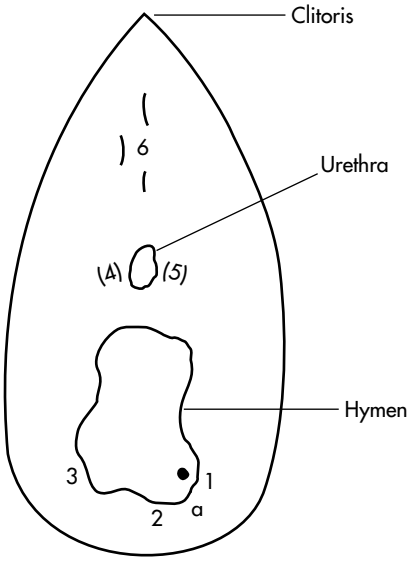

Figure 13-2 Swab test sites: a comparative site for reference (a) and six sequential test sites (from Goetsch MF: Vulvar vestibulitis: prevalence and historic features in a general gynecologic practice population, *Am J Obstet Gynecol* 164:1609-1616, 1991.)

wall using diagrams or models. This preparation is meant to convey to the patient that she will be in control of the examination when it does occur.

The actual pelvic examination in such a patient begins with an inspection of the external genitalia. In the syndrome of vulvar vestibulitis, inspection may reveal varying degrees of erythema of the vestibular mucosa.[17] On this first occasion, there is no necessary reason to extend the examination beyond inspection and explanation. However, if the patient permits, the examiner can also gently probe the vestibular openings to major and minor gland ducts (the "swab test") with a sterile water-moistened cotton-tipped applicator, to exclude the possibility of vulvar vestibulitis (Figure 13-2). (The vestibule is bordered medially by the hymenal ring, laterally by Hart's line, anteriorly by the frenulum of the clitoris, and posteriorly by the fourchette. The area contains opening of major [Bartholin's, Skene's, and periurethral] and minor vestibular glands.)[28]

Speculum and bimanual examination of the patient with a history of lifelong vaginismus should be delayed (barring some urgent reason) until a later time when vaginal entry is no longer associated with pain, discomfort, or fear.

When the swab test is positive, colposcopy might be "helpful in identifying discrete lesions, which [are] often difficult to see without aceto-white staining and magnification".[18]

When the swab test is negative, examination of the interior of the vagina might then take place. One method of allowing the patient control over this part of the examination is to have her hold the physician's wrist while she slowly introduces one of the examiner's fingers into her vagina. This process may extend over several visits. Speculum and

bimanual examination of the patient with a history of lifelong vaginismus should be delayed (barring some urgent reason) until a later time when vaginal entry is no longer associated with pain, discomfort, or fear.

Valins provided a vivid and poignant first-person account of the pelvic/vaginal examination of a woman with vaginismus with a description of how her gynecologist approached the examination[29] (pp. 203-210).

Laboratory Examination

When vaginal infection is considered, several tests can be done to eliminate the possible presence of various pathogens. In addition, biopsy of the vulvar epithelium on a patient with suspected vulvar vestibulitis often shows evidence of chronic inflammation. However, the *normal* histology of this area has not been well described. In a comparison of tissues obtained by punch biopsy done on women with VVS and normal controls, both showed evidence of inflammation, thereby casting doubt on the value of finding evidence of inflammation on histological examination of vulvar epithelial tissue.[30]

TREATMENT

Lifelong and Generalized

Most women who have the lifelong and generalized form of vaginal pain or fear to the extent that intercourse has never occurred will likely be diagnosed as having vaginismus (although some will have primary vulvar vestibulitis [see below]). Drenth suggest that when considering the treatment of vaginismus, couples should separate the issues of wanting to overcome the intercourse difficulty from wanting to become pregnant, decide which is of higher priority, and focus on that goal.[31] In any instance, primary care treatment may be sufficient.

When overcoming the fear or pain associated with attempts at intercourse is the principal objective, couples are initially advised to stop any form of vaginal insertion even if the circumstances seem favorable. (Emphasis on thoughts are crucial, since it is the anticipation that leads to worry.)

Both partners should be involved in treatment, although the apparent passivity of many husbands of women with vaginismus (noted by many authors) may contribute to his relatively small contribution.[32] (p. 34). On an impressionistic basis, many women with vaginismus seem to have difficulty talking about their thoughts and feelings, which in turn makes insight-oriented psychotherapy with them difficult. With couples where the man is passive and the woman unexpressive, visits are often brief and the focus is on progress using dilators and other functional aspects of their care.

The word "dilator" is a misnomer when used in the treatment of vaginismus since dilatation does not occur and in any case is not the purpose of the procedure. The problem is not with the structure of the muscle surrounding the vaginal opening but rather with its function.

When the diagnosis is vaginismus and pregnancy is the principal objective, Drenth suggests artificial insemination using (1) the husband's semen (AIH) and (2) the insemination procedure performed by the couple themselves.[33] When overcoming the fear/pain associated with attempts at intercourse is the principal objective, couples are initially advised to stop attempting to insert the man's penis into the woman's vagina (or anything else such as his finger), and even to not consider any form of vaginal entry even if the circumstances seem favorable. (Emphasis on thoughts are crucial, since it is the

anticipation that leads to worry.) At the same time, they are encouraged to continue enjoying the sexual activities other than intercourse that previously occurred.

After the diagnosis of vaginismus is confirmed and VVS excluded, as well as insufficient knowledge of sex-related anatomy and physiology, vaginal dilator use could be considered. (Flesh-colored, silicone dilator sets of four are available at 1-800-621-1278 through Milex Products, 5915 Northwest Highway, Chicago, ILL 60631). Although recommended decades ago for this same purpose, vaginal dilators have become a therapeutic mainstay since they were suggested by Masters and Johnson in 1970.[34] The word "dilator" is a misnomer when used in the treatment of vaginismus since dilatation does not occur and in any case is not the purpose of the procedure. The problem is not with the structure of the muscle surrounding the vaginal opening but rather with its function. A "dilator" works rather as an "accommodator" in providing an opportunity for the woman to become used to having something in her vagina without fear or pain, and entirely in her control.

Supervision of dilator use through the progressively larger sizes in a set can be readily undertaken in a primary care setting. Insertion of dilators should occur daily for the longest period of time that the patient can manage, and when she is alone so that the process remains entirely under her control (rather than at the urging of her partner). The largest dilator in the set that does not also cause discomfort should initially be used. Liberal amounts of over-the-counter water-soluble jelly (e.g., K-Y Jelly) should be applied to the dilator. Progression to the next size should only take place when there is complete absence of discomfort with the size currently used. Eventually, when she is comfortable with a size that approximates her partner's erect penis, she should be instructed to insert his penis almost as if it were another dilator. Since intromission by the woman is accomplished relatively easily when she is in the superior position, the couple should practice using that position before penile insertion is actually attempted.

If this appears to be a mechanical approach, it probably is a correct perception, but only from the health professional's viewpoint. Much more than mechanical manipulations are taking place from the couple's perspective. While hope extends backward to the time the physician's finger was first inserted into the patient's vagina, only her actual experience of painless penile insertion represents concrete evidence of change. Paradoxically though, patients tend to be more subdued when describing the first occasion of intromission than is the treating health professional. The explanation might be an absence of confidence that the remainder of the therapeutic tasks can be successfully completed. However, it is well to remember at this point that penile insertion may not be immediately translated into feelings of pleasure for either person. This depends on the extent of sexual freedom that the couple enjoyed before. Some couples absorb the newly found sexual skills quickly and zealously. In other instances, pleasure for the women may take place in an evolutionary way, extending over a period of time and in the context of the confidence that is linked with not having to think about the placement of body parts. Confidence in that circumstance tends to occur with repeated successful experiences.

Most observers use intercourse (consummation) as the sole criterion for success in the treatment of vaginismus. Masters and Johnson describe excellent treatment results

(100%) in their five-year follow-up.[34] Van de Wiel et al. conducted a meta-analysis on treatment results involving 20 surveys and 17 case studies published between 1960 and 1990.[35] They conclude that several treatment approaches appear to be equally effective (except surgery, which was not a subject of a published report) and that the average rate of success was about 80%. Some describe a more modest outcome. Drenth et al. reports on a questionnaire survey of 57 patients (response rate 86%) diagnosed with "primary vaginismus."[33] Consummation occurred in 54% overall. In couples who wanted to become pregnant, consummation occurred in 74% compared to 33% who sought treatment only for the intercourse difficulty. Problems encountered in the treatment of vaginismus[31] include the following:

1. Lack of clarity around therapeutic aims
2. Intimacy difficulties on the part of the woman and consequent unwillingness to involve her partner
3. The emergence of other fears

Desire for a child may be a stronger motivating factor for the treatment of vaginismus than desire for intercourse. The survey by Drenth et al. also provided information on obstetrical issues.[33] Almost one half (25) of the patients became pregnant (10 as a result of artificial insemination and 15 through intercourse). Patients who chose self-insemination did so for reasons that include the pressure of time (resulting from a delay in seeking treatment) or slow therapeutic progress. The authors felt that insemination by a physician represented "unnecessary medicalization" and, furthermore, might unduly influence any ambivalence toward pregnancy experienced by the couple.

When self-insemination (also known as home insemination or AIH [artificial insemination by husband] is undertaken, it, may be helpful for a physician to provide technical advice to the couple and to review methods of ovulation detection. Briefly, the insemination process is as follows*: The man ejaculates [volume of ejaculate is usually in the range of 2 to 6 cc] into a clean, dry, plastic or glass container such as a urine collection bottle from a medical laboratory. Regular condoms are undesirable for collecting semen because they may contain a spermicidal agent. The semen is kept at body temperature for about 10 minutes (the sample is then more liquid) and then is drawn, with minimal accompanying air, into a narrow syringe (as small as 1 cc in instances of severe vaginismus but perhaps as large as 10 to 12 cc). The syringe is inserted as deep into the woman's vagina as possible and the semen is deposited by pushing on the plunger. During this process, the woman's hips should be slightly elevated with a pillow and she should remain in this position for about 20 to 30 minutes. The same process can be repeated in about 24 hours.

Drenth et al. also reported on 26 deliveries and found that assisted deliveries were 10% higher in patients with vaginismus than in their clinic population.[33] Reasons included the presence of vaginismus and the (older) age of the mother. However, they concluded that having vaginismus does not, in itself, require special precautions during labor and delivery. They also observed that: however counterintuitive the notion might be, childbirth does not automatically result in pain- and fear-free intercourse. "Obvi-

*Personal communication, Stacu Elliott, M.D., Co-director, Vancouver Sperm Retrieval Clinic, VHHSC, 1998.

ously, a pushing out movement is experienced quite differently from a pushing-in movement."[33]

Acquired and Generalized

As outlined above (see Etiology in this chapter), vulvar vestibulitis and vulvar/vaginal atrophy probably account for the majority of patients seen with the acquired and generalized form of dyspareunia. When such disorders are resistant to definitive treatment within the health care system, active involvement of the patient in her own care may be necessary and beneficial. Membership in the National Vulvodynia Association (NVA) may prove useful, especially since the organization produces an informative and patient-oriented newsletter. (The NVA can be reached through its Web site [see Appendix IV], by telephone at [301] 299-0775, or by mail at P.O. Box 4491, Silver Spring, MD 20914-4491)

Vulvar Vestibulitis (VVS)

Bergeron and her colleagues[19] reviewed the treatment of VVS and grouped the existing studies into three categories:

- Surgical intervention
- Medical management
- Cognitive-behavioral/pain management therapy

Surgical interventions consist of vestibulectomy and laser therapy. Vestibulectomy has been the most investigated VVS treatment and the one reported as having the best outcome. Laser treatment is described as controversial and sometimes associated with negative consequences. Surgery is usually undertaken after the failure of medial management. The surgical procedure is typically described as a modified perineoplasty, which is performed as day surgery under general anesthesia. Surgical success usually has been measured through a one-time self-report rating of pain with intercourse, and rates vary from 43% to 100%, with the majority more than 60%.[19]

Schover et al. reports an improved outcome when surgery is combined with sexual counseling.[18] They describe an eight-month follow-up study on the evaluation and treatment of a group of 45 women with VVS. All were treated by conservative local excision of the vulvar lesions. One of the factors that indicated a better outcome included willingness to engage in initial psychological evaluation and brief post-operative sexual counseling. Of 32 such patients, 50% reported that they were much improved. Other positive predictors were higher socioeconomic status and localized (versus diffuse) areas of pain. The authors hypothesize that women who could accept that their dyspareunia and vulvar pain was multifactorial in origin took an active role in rehabilitative efforts after surgery, and, as a result experienced a better outcome. They hypothesize that patients who could not do so might be poor surgical candidates.

Medical management of VVS typically involves the use of topical ointments (including anesthetics, antifungals, and antibiotics), systemic medications, and other treatments such as interferon.[19] Topical anesthetics are of limited value, since their effect is short-term and allergic reactions may occur. Nonscented lubricants are also of short-term value but do not have adverse effects. Other topical ointments (antibiotics, antifungals, antiviral, and corticosteroid creams) are considered to be ineffective but have not been

carefully studied. Acyclovir (oral), capsaicin (topical), and calcium citrate tablets have been reported to be beneficial to some patients. Alpha interferon is not recommended if colposcopy or biopsy lesions do not show evidence of HPV changes.

Patients from three groups (vestibulectomy, biofeedback, and sex therapy/pain management) reported significantly more subjective improvement from post treatment to 6 month follow-up. However, the vestibulectomy group was significantly better than the sex therapy/pain control group.

Pain management of VVS has consisted of biofeedback, behavior and sex therapy, cold application, and acupuncture.[19] Some patients have found benefit from each of these four approaches. Since vaginal spasm (often referred to as vaginismus in the literature) is often found during the pelvic examination of a patient with VVS, some have found the inclusion of vaginal dilators to be a treatment adjunct.[36]

Bergeron et al. compared treatment results for 78 patients with VVS who were randomly assigned to surgery (vestibulectomy), biofeedback, or sex therapy/pain management.[37] Measurements were made pre- and post-treatment and at six-month follow-up. Self-reported coital pain was significantly improved in all groups from before and after treatment and from before to 6 month follow-up. However, the vestibulectomy group was significantly better than the sex therapy/pain management group post-treatment. All groups improved significantly when the frequency of intercourse was compared post-treatment to 6 months later. In summary, patients from all three groups reported significantly more subjective improvement from post-treatment to 6 month follow-up. However, the vestibulectomy group was significantly better than the sex therapy/pain control group.

Vulvar/Vaginal Atrophy

Estrogen replacement therapy generally reverses the vaginal changes associated with menopause. However, restoration of vaginal tissue function may require up to 18 to 24 months. The long duration may explain the reason for continued vaginal dryness and dyspareunia (if the woman is sexually active) in spite of hormonal and cytologic return to premenopausal values.[38] However, only a distinct minority of postmenopausal women use hormone replacement therapy (HRT). Reasons include the following:

- Personal preference
- Adverse side effects
- It is contraindicated

In addition, some women find that even with HRT, there is little urogenital benefit. Thus local (vaginal) forms of treatment have been developed to counter vaginal dryness in women who are not on HRT or who need supplemental therapy for urogenital symptoms.

Vaginal creams containing estrogen represent one example of a local form of treatment. Since estrogen is absorbed from the vaginal mucosa, a fact that may limit its acceptability in some patients, attempts have also been made to find nonhormonal agents, or, alternatively, to minimize the absorption of estrogen.

"The ring provides a safe and effective method of pharmacological therapy for women who require treatment for symptoms of urogenital aging."[40]

The estradiol vaginal ring represents a second local treatment option for vaginal dryness and other urogenital consequences of estrogen loss. The development of the ring is based on the notion that compared to the amount of estrogen necessary to reverse vasomotor symptoms (50 mg/day), the amount of estrogen necessary to alleviate urogenital atrophy is much smaller (7 to 10 μg/day).[39] The ring delivers a low dose of

17 β-estradiol directly to the urogenital tissues and has a low level of systemic absorption. Bachmann reviewed the results of 11 clinical trials with the estradiol vaginal ring.[40] She found that it reversed urogenital atrophy, induced minimal stimulation of the endometrial lining, had few adverse side effects, and that a single ring was efficacious for three months of continuous use. Of the 946 postmenopausal women with treatments up to 96 weeks, "there were cytological, physiological, physician rating and patient reporting of either elimination or amelioration of urogenital atrophy signs and symptoms."[40] She concluded that" the risk/benefit ratio has a clear preference to benefit with risks being very low. Therefore, the ring provides a safe and effective method of pharmacological therapy for women who require treatment for symptoms of urogenital aging."[40]

A vaginal moisturizer is a third local treatment option. "Replens" is a nonhormonal nonsystemic vaginal moisturizing gel that has a low pH, appears to bind to vaginal tissue, and is applied three times per week. Replens is based on a polymer (called polycarbophil), which becomes saturated with water, diffuses into vaginal epithelial cells, and then is sloughed off with epithelial cell turnover.[41] This substance has been studied in nonhuman primates[41] and humans.[42-44] In two open-label studies of women, Replens was compared to a locally applied estrogen cream and found to be safe and effective.[42,43] In one of the studies, both therapies exhibited statistically significant increases in vaginal moisture, vaginal fluid volume, and vaginal elasticity with a return of the premenopausal pH state. Replens has also been compared to a water-soluble lubricating placebo in a double-blind study of women with a history of breast cancer and similarly found to be effective.[44]

A fourth local treatment form that has been used for many years is an over-the-counter lubricating gel (e.g., K-Y Jelly).

Acquired and Situational

Little is known about this syndrome except from patients who describe the problem of vaginal discomfort with intercourse in the past, and who have watched it disappear with the advent of a new relationship. On the assumption that the difficulty relates to *inter*personal or *intra*personal psychosocial conflicts, the most reasonable therapeutic course of action is (1) reassurance to the woman about the integrity of her genitalia and (2) psychotherapy, either individual or couple-related depending on the circumstances.

INDICATIONS FOR REFERRAL FOR CONSULTATION OR CONTINUING CARE BY A SPECIALIST

1. The evaluation of persistent pain associated with intercourse should always include a physical/pelvic examination. Thus, medical consultation should always be included when a patient with dyspareunia has been evaluated only by a nonmedical health professional.
2. Lifelong vaginismus can often be successfully treated by primary care health professionals regardless if the goal is sexual or reproductive. Consultation with a physician should take place if the treating health professional is not a MD

to eliminate the possible coexistence of VVS. When artificial insemination (AIH) is desired, the couple should be referred to a physician for advice and possible assistance. When treatment that is aimed at overcoming vaginismus becomes problematic, the couple should be referred to a sex therapist for continuing care.

3. Primary (lifelong) VVS may be amenable to explanation and brief sexual counseling within primary care. Consultation with a gynecologist for the purpose of confirming the diagnosis may be helpful. The time and skills of a sex therapist may be particularly useful when intercourse has never occurred in the past because of discomfort, and for patients who are otherwise experiencing significant sexual difficulty.
4. Secondary (acquired) VVS varies in the degree of pain experienced. The greater the extent of pain and sexual complications, the more a primary care professional would want to engage the assistance of other health professionals such as gynecologists and sex therapists.
5. When dyspareunia in a postmenopausal woman persists despite adequate vaginal lubrication, consultation with a sexual medicine specialist would be desirable to consider the possibility of other contributing factors.

SUMMARY

Penile-vaginal intercourse is sometimes accompanied in women by persistent pain, discomfort, or fear. Pain can exist at the point of entry, or deep in the vagina. This chapter is concerned with the former. *Vulvodynia* is a term that encompasses vulvar pain regardless of etiology, whereas *dyspareunia* is specific to pain that occurs with intercourse. DSM-IV suggests that "dyspareunia" and "vaginismus" should be separated. However, if a clinician considers that "vaginismus" as described in the literature includes both the disorder as well as vaginal spasm occurring in the context of several vaginal disorders, then in fact, vaginismus and dyspareunia often occur together and separation becomes clinically difficult.

In community studies, about 15% of women say they have experienced pain with intercourse for a few months during the last year. When dyspareunia is lifelong and generalized, the causes are usually vaginismus (the disorder) or vulvar vestibulitis (VVS). When acquired and generalized, the etiology is usually VVS (the most common cause in premenopausal women) or vulvar/vaginal atrophy with associated vaginal dryness (the most common cause in postmenopausal women). When acquired and situational, the genesis of dyspareunia is most often related to interpersonal or intrapersonal difficulties.

The assessment of persistent vaginal pain involves a history and a physical/pelvic examination. The latter should include a swab test whenever vulvar vestibulitis is considered. In cases where vaginal entry has never occurred or where there is severe introital pain, the pelvic examination may require more than one visit and a lengthy period of time to complete.

Early or mild instances of vaginismus may respond to education and supportive counseling. Treatment of patients who are not helped by such an approach depends heavily on the use of dilators and the support of the patient's partner and health care

clinician. Sometimes the couple is primarily interested in reproduction rather than solving the intercourse problem. In such an instance, assisting in the process of artificial insemination using the husband's sperm (AIH) may be most productive.

Vulvar vestibulitis is sometimes amenable to explanation, but in other instances it may be difficult to treat. Several medical, surgical, and sex therapy/cognitive-behavior therapy methods have been suggested. Surgery (vestibulectomy) has received the most attention in the VVS treatment literature and studies indicate this form of treatment to provide the best results.

At least five approaches can be used in the treatment of women with dyspareunia resulting from vulvar/vaginal atrophy and associated vaginal dryness: oral hormone replacement therapy (HRT), estrogen cream, the estradiol vaginal ring (Estring), a nonhormonal vaginal moisturizer ("Replens") and nonhormonal and nonscented lubricants.

REFERENCES

1. Meana M, Binik YM: Painful coitus: a review of female dyspareunia, *J Nerv Ment Dis* 182:264-272,1994.
2. Paavonen J: Diagnosis and treatment of vulvodynia, *Ann Med* 27:175-81, 1995.
3. *Diagnostic and statistical manual of mental disorders,* ed 4, Washington, 1994, American Psychiatric Association.
4. *Diagnostic and statistical manual of mental disorders, ed 4, Primary Care Version,* Washington, 1995, American Psychiatric Association.
5. Laumann EO et al: *The social organization of sexuality: sexual practices in the United States,* Chicago, 1994, The University of Chicago Press.
6. Kinsey AC, Pomeroy WB, Martin CE: *Sexual behavior in the human male,* Philadelphia and London, 1949, W.B.Saunders.
7. Kinsey AC et al: *Sexual behavior in the human female,* Philadelphia and London, 1953, W.B.Saunders.
8. Meana M et al: Dyspareunia: sexual dysfunction or pain syndrome?, *J Nerv Ment Dis* 185:561-569, 1997.
9. Goetsch MF: Vulvar vestibulitis: prevalence and historic features in a general gynecologic practice, *Am J Obstet Gynecol* 164:1609-1616, 1991.
10. Stadberg E, Mattsson L-A, Milson I: The prevalence and severity of climacteric symptoms and the use of different treatment regimens in a Swedish population, *Acta Obstet Gynecol Scand* 76:442-448, 1997.
11. Stadberg E, Mattsson L-A, Milson I: Womens attitudes and knowledge and the climacteric period and its treatment. A Swedish population-based study, *Maturitas* 27:109-116, 1997.
12. Larson B, Collins A, Landgren A-M: Urogenital and vasomotor symptoms in relation to menopausal status and the use of hormone replacement therapy (HRT) in healthy women during the transition to menopause, *Maturitas* 28: 99-105, 1997.
13. Laan E, van Lunsen RHW: Hormones and sexuality in postmenopausal women: a psychophysiological study, *J Psychosom Obstet Gynecol* 18:126-33, 1997.
14. Spector IP, Carey MP: Incidence and prevalence of the sexual dysfunctions, *Arch Sex Behav* 19:389-408, 1990.
15. Burnap DW, Golden JS: Sexual problems in medical practice, *J Med Educ* 47:673-680, 1967.
16. Abarbanel AR: Diagnosis and treatment of coital discomfort. In LoPiccolo J, LoPiccolo L (editors): *Handbook of sex therapy,* New York, 1978, Plenum Press.
17. Friedrich EG: Vulvar vestibulitis syndrome, *J Reprod Med* 32:110-4,1987.

18. Schover LR, Youngs DD, Cannata R: Psychosexual aspects of the evaluation and management of vulvar vestibulitis, *Am J Obstet Gynecol* 167:630-636, 1992.
19. Bergeron S et al: Vulvar vestibulitis syndrome: a critical review, *Clin J Pain* 13:27-42, 1997.
20. Semmens J, Wagner G: Estrogen deprivation and vaginal function in postmenopausal women, *JAMA* 248:445-448, 1982.
21. Leiblum SR et al: Vaginal atrophy in the postmenopausal woman: the importance of sexual activity and hormones, *JAMA* 249:2195-2198, 1983.
22. Blazer JA: Married virgins: a study of unconsummated marriages, *J Mar Fam* 26: 213-214, 1964.
23. Dawkins S, Taylor R: Non-consummation of marriage: a survey of seventy cases, *Lancet* ii:1029-1033,1961.
24. Barnes J: Primary vaginismus (part 2): aetiological factors, *Irish Med J* 79:62-65, 1986.
25. Ward E, Ogden J: Experiencing vaginismus: sufferers' beliefs about causes and effects, *Sexual Marital Ther* 9:33-45, 1994
26. Rafla N: Vaginismus and vaginal tears, *Am J Obstet Gynecol* 158:1043, 1988.
27. Basson R: Lifelong vaginismus: a clinical study of 60 consecutive cases, *Soc Obstet Gynecol Can* 18:551-561, 1996.
28. Marinoff SC, Turner MLC: Vulvar vestibulitis syndrome: an overview, *Am J Obstet Gynecol* 165:1228-33, 1991.
29. Valins L: *When a woman's body says no to sex: understanding and overcoming vaginismus,* New York, 1992, Viking Penguin.
30. Lundqvist EN et al: Is vulvar vestibulitis an inflammatory condition? A comparison of histological findings in affected and healthy women, *Acta Derm Venereol (Stockh)* 77:319-322, 1997.
31. Drenth JJ: Vaginismus and the desire for a child, *J Psychosom Obstet Gynecol* 9:125-137, 1988.
32. Friedman LJ: *Virgin wives: a study of unconsummated marriages,* London, 1962, Tavistock Publications.
33. Drenth JJ et al: Connections between primary vaginismus and procreation: some observations from clinical practice, *J Obstet Gynecol* 17:195-201, 1996.
34. Masters WH, Johnson VE: *Human sexual inadequacy,* Boston, 1970, Little, Brown and Company.
35. Van de Wiel HBM et al:Treatment of vaginismus: a review of concepts and treatment modalities, *J Psychosom Obstet Gynecol* 11:1-18, 1990.
36. Abramov L, Wolman I, David MP: Vaginismus: an important factor in the evaluation and management of vulvar vestibulitis syndrome, *Gynecol Obstet Invest* 38:194-197, 1994.
37. Bergeron S et al: *A randomized controlled comparison of vestibulectomy, electromyographic biofeedback, and group sex therapy/pain management in the treatment of dyspareunia resulting from vulvar vestibulitis*. Paper presented at the meeting of the Society for Sex Therapy and Research, Fort Lauderdale, March, 1998.
38. Semmens JP et al: Effect of estrogen therapy on vaginal physiology during menopause, *Obstet Gynecol* 66:15-18, 1985.
39. Heimer G, Samsioe G: Effects of vaginally delivered estrogens, *Acta Obstet Gynecol Scand* 163(Suppl):1-2, 1996.
40. Bachmann G: The estradiol vaginal ring: a study of existing clinical data, *Maturitas* 22(Suppl):S21-S29, 1995.
41. Hubbard GB et al: Evaluation of a vaginal moisturizer in baboons with decreasing ovarian function, *Lab Anim Sci* 47:36-39, 1997.
42. Nachtigall LE: Comparative study: Replens versus local estrogen in menopausal women, *Fertil Steril* 61:178-180, 1994.
43. Bygdeman M, Swahn ML: Replens versus dienoestrol cream in the symptomatic treatment of vaginal atrophy in postmenopausal women, *Maturitas* 23:259-263, 1996.
44. Loprinzi CL et al: Phase III randomized double-blind study to evaluate the efficacy of a polycarbophil-based vaginal moisturizer in women with breast cancer, *J Clin Oncol* 15:969-973, 1997.