

# Female sexual dysfunction: differential diagnosis

Timothy P. Canavan, MD, FACOG, and Kristine Marchalonis, MD

## Practice Tips

‡ During the physical examination, look for signs of vulvar or vaginal disease, pelvic infection, pelvic masses, and rectal or bladder tenderness.

‡ Be sure to note any difficulty with pelvic examination, which may indicate dyspareunia or vaginismus. Allow the patient to participate in the exam by asking her to point out the areas of tenderness or pain.

‡ If you are concerned about the patient's hormonal status, obtain a plasma follicle-stimulating hormone level; a plasma estradiol level can also be obtained but may not be helpful.

‡ Until better long-term studies are available, testosterone should not be uniformly recommended in postmenopausal women with intact ovaries.

**ABSTRACT** Characterized as a disturbance in or pain during the sexual response cycle, sexual dysfunction affects up to 63% of women in this country and comprises a variety of clinical conditions with different etiologies. A combination of medical treatments and counseling can usually help women overcome the often-devastating complications of some of these conditions. The authors recommend that every woman has a yearly sexual history and that any complaint is thoroughly assessed by her primary care physician. Recognizing the signs and symptoms of each clinical category will help narrow the differential diagnosis and suggest the approach to treatment. Future articles will detail the management of each of these distinctly different conditions.

**CASE 1** A 55-year-old woman presents for a routine examination and mentions that she is sexually active but has recently been having problems with decreased desire and vaginal lubrication. She and her husband have always enjoyed an active sex life and these changes have become very upsetting. The patient is in good health but provides a history of menopause beginning about 2 years ago. Her husband is in the waiting room and would like to come in and join the discussion about possible treatments.

**CASE 2** A 33-year-old woman presents with pelvic pain, which has been increasing over the past several years. The pain had occurred mostly with menses, but over the past year has also been associated with intercourse. The patient describes the pain as occurring deep in the pelvis during intercourse, mostly on deep thrusting. She has not discussed this with her partner.

**CASE 3** A 23-year-old woman presents as infertile but is otherwise in excellent health. An attempt at pelvic examination is unsuccessful because of intense, painful vaginal spasms. On further questioning, the patient reports that intercourse is very difficult for her because of the pain. She states that her mother had the same problem, which resolved "after she had a baby."

---

### Timothy P. Canavan, MD, FACOG

Director  
Department of Obstetrics and Gynecology  
Lancaster General Hospital  
Lancaster, Pennsylvania

### Kristine Marchalonis, MD

Department of Family and Community  
Medicine  
Lancaster General Hospital  
Lancaster, Pennsylvania

Female sexual dysfunction (FSD) is a widespread problem, affecting 25% to 63% of women in the United States.<sup>1</sup> Sexual dysfunction is more prevalent in women than in men<sup>1</sup> and varies with different demographic characteristics. Defined by *The Diagnostic and Statistical Manual of Mental Disorders, fourth edition* (DSM-IV) as "a disturbance in the processes that characterize the sexual response cycle or by pain associated with sexual intercourse,"<sup>2</sup> FSD has the potential for serious and lasting negative effects on a woman's life

if left untreated. Many women are unaware that FSD is a common problem with available effective treatment and suffer needlessly before deciding to ask for help.

### Classification of female sexual dysfunction

The five major clinical categories of FSD include disorders of arousal, aversion, desire, orgasm, and pain. Each disorder is further subdivided according to onset (lifelong versus acquired), context (general versus situational), and etiological factors (psychological or combined medical and psychological). Knowing whether a condition is lifelong or of recent onset, is related to specific situations or relationships, or is general, is often key to the etiology and may help suggest the course of treatment. For a complete understanding of FSD, it is helpful to be familiar with the female sexual response cycle, as most disorders involve dysfunction at different stages of that cycle.

### Sexual response cycle

Various models have been suggested to clarify the patterns of sexual response, and our understanding is still evolving. Many of the models, however, are based on the four basic phases first proposed by Masters and Johnson in 1966—excitement, plateau, orgasm, and resolution.<sup>3</sup> In 1979, Kaplan proposed a three-phase model of desire, arousal, and orgasm.<sup>4</sup> The DSM-IV's definitions of FSD<sup>2</sup> are based on the Kaplan model, but sexual response is again divided into the following four phases:

- *Desire*, consisting of fantasies and the desire to engage in sexual activity.
- *Excitement*, a sense of pleasure associated with physiological changes.
- *Orgasm*, a peaking of sexual pleasure with a release of sexual tensions, associated with rhythmic contractions of the perineal muscles and reproductive organs.
- *Resolution*, produces a sense of relaxation and general well-being.

Although usually occurring during the first phases, FSD can occur during any point in the sexual response cycle and can involve one or more phases. An alternative model of the female sexual response cycle was recently introduced by Rosemary Basson<sup>5</sup> (see p 41, this issue).

### Clinical categories

Limitations in the DSM-IV of classifications of FSD led to an international conference in 1999, where 19 sexuality experts reevaluated and revised these definitions.<sup>6</sup>

Their consensus statement expanded the conventional classification model to include psychogenic and organic causes, a new category of noncoital sexual pain, and a “personal distress” criterion, emphasizing that each of these disorders can cause significant personal distress to the patient. This new system is more physiologically based than was the case previously. Although not yet commonly recognized as such, it is currently the preferred approach to the clinical categories of FSD.<sup>6</sup> The diagnostic categories and etiological clues are listed in Tables 1 and 2.

**Hypoactive sexual desire.** This disorder is defined as persistent or recurrent absence or deficiency of sexual fantasies, thoughts, and/or desires.<sup>6</sup> When assessing such a patient, you must first take a detailed sexual history, to determine whether the patient indeed finds the lack of desire as a problem or whether conditioning has played a role in the development of her hypoactive sexual desire. Conditioning implies a learned response of failure to previously perceived failures. This interpretation results in an anticipation of more failure with a further decrease in desire.

Several medical conditions (eg, adrenal dysfunction, diabetes, endometriosis, hypertension, menopause, stroke, urinary incontinence)<sup>7</sup> and certain medications can be the source for these types of complaints.

The etiology in our first patient is most likely menopause. The loss of estrogen and androgen has resulted in decreased sexual desire and vaginal lubrication. Hormone replacement therapy, with oral estrogen and testosterone, is a good first choice therapy for this patient. Estrogen-containing vaginal creams or the estradiol-containing vaginal ring (Estring<sup>TM</sup>) are more effective treatments and can be used in patients who prefer local treatment or in those with severe symptoms.

**Sexual aversion.** The patient with sexual aversion disorder may report anger, fear, disgust, or lack of pleasure when confronted with possible sexual contact. The aversion may involve only one type of contact (ie, vaginal penetration, oral sex), or it can be specific to only one partner or one type of situation.<sup>6</sup> You must take a careful history to clarify the exact circumstances and extent of the aversion.

Sexual aversion usually involves other emotional and relationship difficulties that require intense couple and/or family counseling. Involvement of the partner as early as possible is extremely important to work toward the source of the dysfunction and eventual improvement. The possibility of sexual trauma, either

The classification model of FSD was recently expanded to include psychogenic and organic causes of FSD.

**TABLE 1** Female sexual dysfunction: clinical categories

Type	Clinical presentation
<b>SEXUAL DESIRE DISORDERS</b>	
<b>Hypoactive sexual desire</b>	Persistent or recurrent deficiency or absence of sexual fantasies, thoughts, and/or desire for or receptivity to sexual activity
<b>Sexual aversion</b>	Persistent or recurrent phobic aversion to and avoidance of sexual contact
<b>SEXUAL AROUSAL DISORDER</b>	
	Persistent or recurrent inability to attain or maintain sufficient sexual excitement; may be expressed as a lack of subjective excitement or genital (lubrication/swelling) or other somatic responses
<b>ORGASMIC DISORDER</b>	
	Persistent or recurrent difficulty, delay in, or absence of attaining orgasm after sufficient sexual stimulation and arousal
<b>SEXUAL PAIN DISORDERS</b>	
<b>Dyspareunia</b>	Recurrent or persistent pelvic pain directly caused by sexual intercourse or stimulation
<b>Vaginismus</b>	Recurrent or persistent involuntary spasms of the outer third vagina musculature, interfering with vaginal penetration
<b>Noncoital sexual pain</b>	Recurrent or persistent genital pain induced by noncoital sexual stimulation

Data from the American Psychiatric Association,<sup>2</sup> and Basson R, et al.<sup>6</sup>

**TABLE 2** Characteristics of sexual dysfunction: clues from the history

Subtype: historical clue	Characteristics
<b>Lifelong</b>	Present since the onset of sexual activity
<b>Acquired</b>	Develops only after a period of normal functioning; medical condition or drug use may be involved
<b>Generalized</b>	Not limited to certain types of stimulation, situations, or partners
<b>Situational</b>	Limited to certain types of stimulation, situations, or partners
<b>Psychological factors</b>	Sexual trauma, (religious) upbringing, or relationship conflict affecting sexual function
<b>Combined factors</b>	Psychological factors are involved and a medical condition or substance abuse contributes, but is insufficient to account for the dysfunction

Data from the American Psychiatric Association,<sup>2</sup> and Basson R, et al.<sup>6</sup>

presently or in the past, must always be closely evaluated.

**Sexual arousal disorder.** This serious problem involves an inability to attain or maintain sufficient arousal until completion of sexual activity. It can be characterized by a lack of subjective excitement, genital excitement (lubrication or swelling), or both.<sup>6</sup> The patient does not experience standard physiologic responses to sexual activity, and her emotional reaction may range from repulsion to only mild enjoyment. Some have proposed the term “sexual anorexia nervosa” to describe this condition,<sup>8</sup> whereby a woman may suddenly display apathy, boredom, or even revolt in the midst of sexual activity.

Treatment requires involvement of the partner from the beginning. Obtain a medical history to investigate potential negative sexual effects of a medical condition or medication as the possible etiology.

You could also recommend home exercise therapies and self-help books, but a follow-up with a therapist is essential. Home exercises that could be recommended include improvement in communication skills and work to improve foreplay and sexual experimentation.

**Orgasmic disorder.** Orgasmic problems, also known collectively as anorgasmia, are a distinct form of FSD in which the patient becomes aroused but has persistent difficulty with, delay in, or absence of orgasm. Some patients describe it as “reaching a certain point then getting stuck.” Once a woman learns how to experience orgasm, it is uncommon for her to lose that ability, unless it is associated with performance anxiety, poor sexual technique, relationship conflict, religious upbringing, or a history of trauma.<sup>2</sup> Assess the patient’s level of orgasmic capacity and determine whether it is less than would be expected for her age, sexual experience (eg, a history of previous orgasm), or the amount of stimulation she receives. The physiologic changes that occur with age—such as atherosclerosis or decreasing hormone levels—may cause a slow decline in orgasmic capacity.

Research has shown that women with anorgasmia have greater difficulty discussing sexual activity with their partner, have more negative attitudes about masturbation, and more myths and guilt about sex.<sup>9</sup> Therefore, remember

to explore these possibilities as the source of difficulty.

A very effective therapy for orgasmic disorder is using behavior modification with exercises to increase self-awareness.<sup>10</sup> This method involves a stepwise program that begins with the patient's self-examination and exploration of her body, followed by masturbation alone, then with her partner. These steps may need guidance from a sex therapist or a support group, to improve the likelihood of success.

**Pain disorders.** Sexual pain disorder includes three distinct entities with different etiologies—dyspareunia, vaginismus, and the new clinical category of noncoital sexual pain.

*Dyspareunia.* Dyspareunia can include vulvar or superficial pain during penile insertion (either actual or attempted) and vaginal pain during insertion with thrusting of the penis or with deep pelvic thrusting. Dyspareunia can also be pain during stimulation, and may occur before or after intercourse. Superficial dyspareunia can be caused by irritative or anatomic conditions. Vaginal pain can be the result of irritative friction associated with poor lubrication, vaginal scarring, or vaginal atrophy. Deeper pain is commonly associated with pelvic pathology.

Treatment of dyspareunia should be directed at the underlying cause. During a physical examination you may find it helpful to reproduce the patient's symptoms<sup>11</sup>; this will provide information about the location, character, radiation, and associated factors of the pain. The physical examination may also reveal other pelvic pathology that can cause or contribute to dyspareunia. The information gathered during the examination and enhanced by the history can help pinpoint the etiology of the dyspareunia.

Treatment should be individualized based on the history and physical examination, and may be as simple as antibiotics for a vaginal infection or as extensive as complex hormonal or surgical therapy for endometriosis. Other therapies, such as vaginal lubricants, local anesthetics, or pelvic relaxation exercises may also be helpful. Other pelvic pathologies that may be the source of dyspareunia include fibroids, pelvic infection, and ovarian masses. Definitive treatment of these disorders usually resolves the dyspareunia.

Our second patient's history indicates endometriosis. A focused pelvic exam, looking for evidence of nodularity in the cul-de-sac and uterosacral ligaments, is important. A pelvic ultrasound scan to look for ovarian masses has a high false-negative rate. Depending on the

patient's concern and future child-bearing plans, laparoscopic investigation may be the next step.

*Vaginismus.* An involuntary spasm of the musculature of the outer third of the vagina, vaginismus can occur with any attempt to penetrate the vagina (ie, with a finger, tampon, speculum, or penis) and tends to be lifelong, but can be acquired or situational. It can vary from intense spasm and pain to mild tightening with discomfort.

Psychological issues are often at the root of vaginismus, but other medical conditions can be responsible. Treatment encompasses a combination of vaginal dilation and

muscle awareness exercises combined with couple counseling. Vaginal dilation helps the patient learn that something can be inserted into the vagina without pain. Muscle awareness exercises teach the patient to control the

perineal muscles and prevent them from going into spasm. Through counseling, the partner learns to participate in these exercises until penile penetration and intercourse can take place comfortably.

Our third patient gives a history indicative of vaginismus, although it is not her chief complaint. Clearly the patient needs further evaluation and treatment of her vaginismus before infertility evaluation can begin. This patient was started on home muscle awareness exercises with vaginal dilator therapy and referral to a sex therapist.

*No coital sexual pain* Noncoital sexual pain encompasses pain resulting from activities that do not involve penile-vaginal intercourse and may apply to women engaging in alternative sexual behaviors.<sup>6</sup> The consensus panel noted that a significant number of women experience pain from noncoital sexual stimulation and would not be included in the definitions for vaginismus or dyspareunia.

Evaluation and treatment are similar to those for dyspareunia. The goal is to look for and correct medical problems while reserving referral for patients who do not respond to therapy. Even if a medical problem is detected, other problems may coexist and require further therapy.

## Assessing female sexual difficulties

**Sexual history.** Every woman should have a brief yearly sexual history, which can be covered with four simple questions: Are you sexually active? Is your sex life satisfying for you? Is your sexual activity satisfying for your partner? Do you have any concerns about your sex life or functioning?<sup>10</sup>

Ask the patient to elaborate on any answers that express concern or dissatisfaction, and have a plan for a

Difficulty with performing the pelvic examination may indicate dyspareunia or vaginismus.

**TABLE 3** Drugs that may cause decreased sexual desire or anorgasmia in women

Medication	Decreased desire	Delayed orgasm or anorgasmia
Amphetamines & anorexic drugs		+
Cimetidine	+	
Citalopram	+	+
Clomipramine	+	+
Desipramine		Painful orgasm
Diazepam		+
Fluoxetine	+	+
Impramine		+
Isocarboxazid		+
Methadone		+
Methazolamide		+
Methyl dopa	+	
Paroxetine	+	+
Phenelzine		+
Propranolol	+	
Reserpine	+	
Sertraline	+	
Spironolactone	+	
Timolol	+	

Adapted from The Medical Letter.<sup>12</sup>

follow-up visit. If you are uncomfortable with further evaluation of the patient's complaints, consider referral to a specialist. It is important that the patient has a nurturing environment in which to discuss her concerns; if you are distracted or appear disinterested or uncomfortable, an opportunity to help the patient may be lost.

More specific questioning, based on the complaint itself, will help narrow down the specific symptoms and help differentiate the diagnosis. Frequently patients offer only general complaints, such as a loss of desire, and usually without any specific physical complaints. Be sure to clarify she is not experiencing a lack of arousal or anorgasmia.

**Medical history.** Follow the sexual history with a comprehensive medical history. Concentrate on medical problems that can cause or coexist with the complaints reported during the sexual history. If a patient complains of dyspareunia, evaluate her for vaginal infections and look for evidence of problems resulting

**Many women experience pain from noncoital sexual stimulation.**

from vaginal surgery. The medical history should also detail the patient's present medications with the dose and period of use. Many drugs, especially antidepressants, have been linked to FSD (Table 3).<sup>12,13</sup> Be sure to include a psychiatric history with details about treatments prescribed and the success of those therapies.

**Physical examination.** Focus the physical exam on any medical and/or gynecologic complaints expressed during the history. Look for signs of vulvar or vaginal disease, pelvic infection, pelvic masses, and rectal or bladder tenderness. Evaluation of vaginal discharge by wet prep and/or cervical cultures may reveal an underlying vaginitis or cervicitis. Note any difficulty with pelvic examination, which may indicate dyspareunia or vaginismus. Allow the patient to participate in the exam by asking her to point out the areas of tenderness or pain. Use this time to provide the patient with knowledge of pelvic anatomy and function, which may help her to provide you with better information. This is also a good time to perform some health maintenance by performing a Pap smear, if indicated.

**Lab testing.** Laboratory analysis may also provide information about the patient. If needed, perform a cervical culture to identify pelvic infection and a Pap smear to check for the presence of human papilloma virus infection or cervical dysplasia. If you are concerned about the patient's hormonal status (ie, menopause), obtain a plasma follicle-stimulating hormone level; a plasma estradiol level can also be obtained but may not be helpful. Perform other tests, as needed, based on the history and physical, to identify any other potentially contributory medical conditions such as diabetes or cardiovascular disease.

**Psychological evaluation.** Psychosocial evaluation is an important part of the work-up in all conditions. If you feel uncomfortable or ill-prepared for this, refer the patient to a sex therapist, psychologist, or psychiatrist. Early consultation is important for patients who have a preexisting psychiatric illness or in whom you suspect coexisting psychiatric disease.

### Female life cycle and sexuality

**Menopause.** Many women experience some change in sexual function just before, during, and/or after menopause. The physiologic changes induced by the cessation of ovarian hormone secretion place women at risk for FSD. Decreased levels of circulating estrogen and androgen cause alterations in nerve transmission and

peripheral blood flow from genital sensory stimulation. Subsequent decrease in vascular engorgement, vaginal lubrication, and sensory stimuli reaching the limbic system can all contribute to decreased arousal, vaginal dryness, or pain and burning during intercourse.<sup>14</sup>

Menopause is one of the few causes of FSD that can be effectively treated. Estrogen supplementation relieves vaginal dryness and seems to improve the vasocongestive response to sexual activity.<sup>14</sup> The addition of testosterone has been suggested to improve libido and enhance the effects of estrogen; testosterone decreases sex hormone-binding globulin, thereby increasing free estrogen and testosterone.<sup>15</sup> Research is continuing on the benefits and safety of testosterone supplementation.

A recent study found that testosterone supplementation improves sexual functioning and psychological well-being in oophorectomized women.<sup>16</sup> This study cannot, however, be applied to women with intact ovaries, as these continue to produce some testosterone after menopause. Physicians have voiced concerns over the effects of testosterone on the cardiovascular system, hepatic function, lipids, and breast cancer.<sup>17</sup> Until better long-term studies are available, do not uniformly recommend testosterone in postmenopausal women with intact ovaries.

**Pregnancy.** Many studies have documented a decrease in coital frequency during pregnancy as a result of dyspareunia and a decrease in orgasmic quality.<sup>10,18</sup> Coital frequency was found to decrease further as pregnancy progressed, but this was not associated with a decrease in desire; many pregnant women even reported an increase in their sexual desire.<sup>10</sup>

Postpartum women report sexual dysfunction with symptoms similar to those reported during pregnancy. A healing episiotomy, as well as hormonal changes (ie, hypoestrogenism secondary to lactation) may contribute to these findings. Most women improve with time, but evaluation is recommended if the patient is still experiencing difficulty after 6 months, or sooner if the symptoms are having a severe effect on sexual functioning. Refer patients who have healed poorly or have prolapse to a specialist for further evaluation.

**Pelvic Surgery.** Any surgery involving the genital tract has the potential for altering female sexual functioning. Obviously, radical pelvic surgery has the greatest risk, especially when it involves the vulva and clitoris as in radical vulvectomy. Of most concern is hysterectomy, since it involves a large number of women, many in their reproductive years.

Hysterectomy, whether abdominal or vaginal, has the potential for loss of sensation and possible vaginal shortening that can lead to difficulty achieving orgasm and an increased risk for dyspareunia. A recent prospective trial found that sexual functioning actually improved after hysterectomy.<sup>19</sup> Some physicians have considered subtotal hysterectomy to prevent FSD, but data do not support this.<sup>20</sup> Further research is needed before recommending subtotal over total hysterectomy.<sup>20,21</sup>

Some (25%) mastectomy patients experience disruptive mood and psychosexual dysfunction for up to 1 year after surgery.<sup>22</sup> Less extensive surgery produces less psychosexual dysfunction, indicating that body image plays a major role in sexual adjustment after breast cancer surgery. Discussing sexual dysfunction before therapy and giving the patient permission to discuss her questions and concerns is the most important part of the treatment process.<sup>22</sup> ♀

**To locate a recommended sex therapist in your area, call the American Association of Sex Educators, Counselors, and Therapists, at 1-800-257-5095.**

## References

1. Laumann E, Paik A, Rosen R. Sexual dysfunction in the United States: prevalence and predictors. *JAMA* 281:537-44, 1999.
2. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, 4th ed.* Washington, DC:1994. 493-538.
3. Masters EH, Johnson VE. *Human Sexual Response.* Boston: Little, Brown, 1996.
4. Kaplan HS. *The New Sex Therapy.* London: Balliere Tindall, 1974.
5. Viera AJ. Managing hypoactive sexual desire in women. *Med Asp Human Sex* 1(2):7-13, 2001.
6. Basson R, Berman J, Burnett A, et al. Report of the international consensus development conference on female sexual dysfunction: definitions and classifications. *J Urol* 165:888-93, 2000.
7. Crenshaw TL, Goldberg JP. *Sexual Pharmacology: Drugs that Affect Sexual Function.* New York: WW Norton, 1996, p 17.
8. Renshaw DC. Sexual anorexia nervosa? *Chicago Med* 85 (11):590-92, 1982.
9. Kelly MP, Strassberg DS, Kircher JR. Attitudinal and experimental correlates of anorgasmia. *Arch Sex Behav* 19:165-77, 1990.
10. American College of Obstetricians and Gynecologists. *Sexual dysfunction.* ACOG technical bulletin no. 211. Washington, DC: ACOG, 1995.
11. Canavan TP, Heckman CD. Dyspareunia in women. Breaking the silence is the first step toward treatment. *Post Grad Med* 108:149-66, 2000.
12. The Medical Letter. Drugs that can cause sexual dysfunction: an update. *Med Lett Drugs Ther* 34:73-78, 1992.
13. *Physician's Desk Reference, 54th ed.* New Jersey: Medical Economics, 2000.
14. Sarrel PM. Sexuality and menopause. *Obstet Gynecol* 75:265-305, 1990.
15. Sarrel P, Dobay B, Wiita B. Estrogen and estrogen-androgen replacement in postmenopausal women dissatisfied with estrogen-only therapy: sexual behavior and neuroendocrine responses. *J Reprod Med* 43:847-56, 1998.
16. Shifren JL, Braunstein GD, Simon JA, et al. Transdermal testosterone treatment in women with impaired sexual function after oophorectomy. *N Engl J Med* 343:682-88, 2000.
17. Philips NA. Female sexual dysfunction evaluation and treatment. *Am Fam Phys* 62:127-36, 2000.
18. Oruc S, Esen A, Lacin S, et al. Sexual behavior during pregnancy. *Aust NZ J Obstet Gynaecol* 39 (1):48-50, 1999.
19. Rhodes JC, Kjerulff KH, Langenburg PW, Guzinski GM. Hysterectomy and sexual functioning. *JAMA* 282:1934-41, 1999.
20. Ewies AA, Olah KS. Subtotal hysterectomy: a surgical advance or a backward step? *BJOG* 107:1376-79, 2000.
21. Scott JR, Sharp HT, Dodson MK, et al. Subtotal hysterectomy in modern gynecology: a decision analysis. *Am J Obstet Gynecol* 176:1186-92, 1997.