


Female sexual dysfunction

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Key content

- Female sexual dysfunction (FSD) is defined as any sexual complaint or problem resulting from disorders of desire, arousal, orgasm or sexual pain that causes marked distress or interpersonal difficulty.
- Various gynaecological problems such as pelvic organ prolapse and endometriosis affect sexual function and this impacts on their treatment.
- Management often requires the need to address different components of the sexual dysfunction.
- Women wish to keep their options relating to sexual function open well past the menopause, and more women are presenting in later life with FSD.

Learning objectives

- To know how to assess FSD in clinical practice.

- To appreciate the reasons why all women attending a gynaecology clinic should have their sexual function assessed to establish a baseline.
- To establish realistic expectations of outcomes on sexual function following treatment of gynaecological problems.

Ethical issues

- Failure to inform women of the risk of deterioration in sexual function following gynaecological surgery can lead to litigation.
- Some essential treatments, such as vulvectomy or prophylactic oophorectomy, will result in adverse effects on sexual function, and women should make informed choices regarding their treatment.

Keywords: dyspareunia / female sexual dysfunction / genitopelvic pain disorders / hypoactive sexual desire disorders / orgasmic disorders

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Introduction

Expressions of sexuality and intimacy are some of the most complex aspects of human behaviour, and sexual function is an important component of quality of life.¹ Sexual dysfunction is more common in women than men, yet it is less frequently investigated.² Left untreated, sexual problems are associated with decreased quality of life, depression and interpersonal conflicts.³

The Diagnostic and Statistical Manual of Mental Disorders (DSM) defines female sexual dysfunction (FSD) as “any sexual complaint or problem resulting from disorders of desire, arousal, orgasm, or sexual pain that causes marked distress or interpersonal difficulty”.⁴ To qualify as a dysfunction, the problem must be present more than 75% of the time, for more than 6 months, causing significant distress.

In the DSM-5, there were several updates to the classification described in the previous version (DSM-4).⁵ Female hypoactive desire and female arousal disorder were merged and are now called sexual desire/arousal disorder. Female orgasmic disorder remained unchanged. The formerly separate dyspareunia and vaginismus are now

called genitopelvic pain/penetration disorder. Changes to the terminology are shown in Table 1.

Several other organisations, including the World Health Organization, International Statistical Classification of Diseases and Related Health Problems (ICD-10), the International Consultation of Sexual Medicine (ICSM), the International Urogynecological Association (IUGA) and the International Continence Society (ICS), have also attempted to define FSD.⁶ Although FSD is perhaps best regarded as a spectrum of disorders with considerable overlap between them,¹ there is consensus that the main subcategories of FSD are sexual desire/arousal disorders, orgasmic dysfunction and sexual pain disorder. Sexual disorders may be lifelong, acquired, generalised or situational.⁴

The National Surveys of Sexual Attitudes and Lifestyles (NATSAL) are among the largest surveys of sexual behaviour in the world. They have been carried out in the UK every 10 years since 1990. The third survey (2010–2012) showed continuation of sexual activity into later life, emphasising the need for attention to sexual health irrespective of age.⁷ The fourth survey was commenced in May 2020.

Table 1. Categories of female sexual dysfunction

DSM-4	DSM-5
Desire disorders Hypoactive sexual desire disorder Sexual aversion disorder	Desire/arousal disorders Merged desire and arousal into single category Deleted sexual aversion disorder
Arousal disorders	
Orgasm disorder	Female orgasm disorder
Sexual pain disorders Dyspareunia: pelvic pain with intercourse Vaginismus: pelvic floor muscle spasm leading to pain and obstruction with penetration	Genito-pelvic pain/penetration disorder Merged dyspareunia and vaginismus

Abbreviation: DSM = Diagnostic and Statistical Manual of Mental Disorders

This article provide an update on FSD terminology, an understanding of the various gynaecological problems and their effects on sexual function, as well as the impact of gynaecological treatments. We also assess the effectiveness of various therapeutic modalities for this condition.

Psychosexual counselling is outwith the remit of this article.

Epidemiology

Epidemiological studies have indicated a prevalence of sexual problems in women of between 30% and 60%. The commonest sexual problem is lack of interest in sex, followed by inability to experience orgasm and painful intercourse.^{1,8} Studies use different criteria for defining FSD, hence it is difficult to know the true prevalence. However, only 21% of women with sexual problems sought help.¹

Every general practitioner (GP) will see several women or couples per year presenting with sexual problems.⁹ In women attending a gynaecology clinic, the prevalence of sexual concerns has reportedly been as high as 98%.¹⁰ Despite this, FSD can be overlooked. It is often disguised as unresolved complaints and requests for repeated investigations.¹¹ Furthermore, clinicians often avoid discussing sexual problems, citing reasons such as limited time and training, embarrassment and absence of effective treatment options.^{12,13}

Normal sexual response cycle

The female sexual response cycle is poorly understood and challenging to define owing to multiple overlapping

dimensions and complex biopsychosocial influences. It is now recognised not to be a simple linear progression of processes, beginning with desire and ending in resolution – a concept first introduced by Masters and Johnson in the 1960s.²

The circular model described by Basson¹⁴ (Figure 1) acknowledges the interplay of the sexual responses of both the mind and the body. Approximately 30% and 50% of women may reach orgasm during vaginal penetration and direct clitoral stimulation, respectively.¹⁵ However, in Basson's model, orgasm is not essential for sexual fulfilment.

In partnered sexual relationships, feelings of love and emotional intimacy are important to initiate and maintain sexual satisfaction.¹⁶ Mental wellbeing is a robust predictor of sexual desire and responsiveness; women who defined themselves as being in good mental health were less likely to report distress about their sexual relationship than women who reported lower mental wellbeing scores.¹⁷ Studies have shown a high correlation between low desire and measures of low self-image, mood instability and tendency towards anxiety.¹⁸ In addition, several factors are commonly cited as distractions from sexual activity, including concerns regarding one's own/partner's arousal, fear of pregnancy, fear of sexually transmitted disease and lack of privacy.⁸

Conservative societal stereotypes with traditional gender-based expectations exert a profound effect on women's sexuality. In some cultures, women may be expected to be submissive recipients of sex, leading to negative consequences regarding arousal and orgasm. Although these views are generally fading, they remain prevalent in some societies.¹⁹

Causes of female sexual dysfunction

Healthy sexual function involves a complex interplay between anatomical, vascular, neurological, hormonal and psychological factors. Thus, aetiology of FSD is broad and often multifactorial. Table 2 categorises medical, gynaecological and psychosocial disorders that may affect sexual function; however, several other medical illnesses can also affect sexual function in some way. Various medications have also been implicated in FSD (Box 1).

Clinical assessment

Patients presenting with gynaecological problems commonly have underlying sexual dysfunction. This can be caused by physical problems, psychological factors or a combination of both. However, patients are often reluctant to volunteer this information. There is frequently an aspiration that treatment of gynaecological issues will alleviate sexual problems, but it is important for patients to have realistic expectations of what can be achieved prior to undergoing any form of treatment. This is only possible if a baseline assessment of

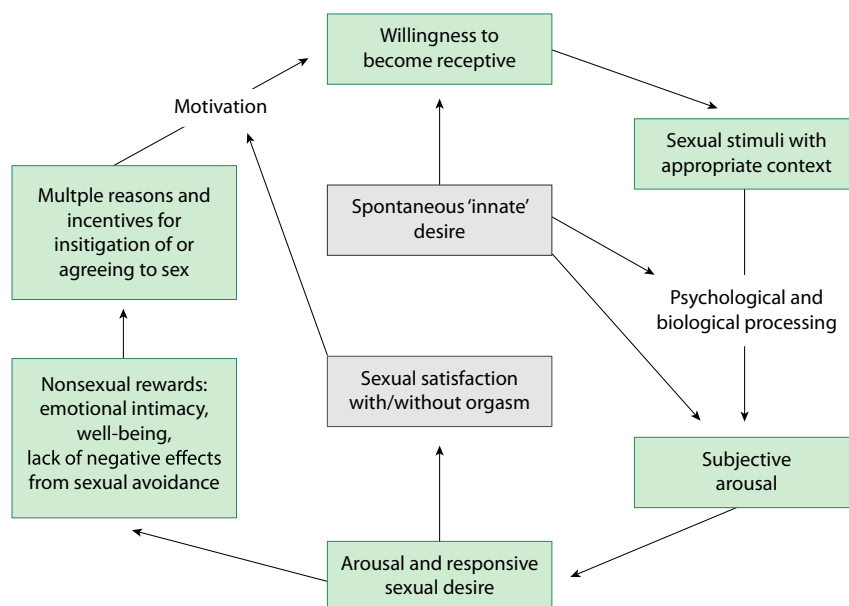


Figure 1. Sex reponse cycle¹⁴

sexual function is conducted, which should form part of any routine gynaecological consultation.

Taking a brief sexual history during a new patient visit can help to identify issues and indicate to the patients that discussion of sexual concerns is welcome. In a busy gynaecology clinic, where the presenting complaint is not FSD, a few quick screening questions such as, 'Do you have any concerns about your sex life?' will help identify any underlying problem and can be used to begin the conversation (Table 3).²⁰ The LOFTI acronym (listening, observing, feelings, thinking and interpreting)²¹ has been proposed when assessing sexual problems in women attending with underlying psychosexual problems.

Clinicians must not make any assumptions about the patient's sexual behaviour. It is best to mirror the patient's sexual vocabulary so she can relate and understand the discussion. Some women may respond best to open questions, while others may feel more comfortable giving more precise answers to specific questions.¹⁹ Others may find it easier to complete a written sexual function questionnaire, such as the Female Sexual Function Index.²² There are also condition-specific questionnaires to assess sexual function. For example, the Prolapse and Incontinence Sexual Function Questionnaire (PISQ-31)²³ and the IUGA Revised version (PISQ-IR)²⁴ are routinely used in many urogynaecology clinics. Quality of life questionnaires also provide a useful quantitative measure of baseline sexual function and can be repeated following interventions to assess response.

Aspects to consider when a more detailed history, examination and investigation is required are shown in Box 2.

Impact of obstetric conditions/ gynaecological problems

Pregnancy and childbirth

Sexual desire can often decrease during pregnancy.¹ This commonly persists into the postnatal period, with factors such as the demands of caring for a new baby, fatigue, hormonal changes, perineal wound healing, breastfeeding, postnatal depression and change in body image all being implicated. Indeed, sexual problems appear to be permanently increased after childbirth, with 83% experiencing problems in the first 3 months, declining to 64% at 6 months, but never reaching levels comparable to nulliparous women (38%). It is widely reported that mode of delivery is related to postnatal dyspareunia, with operative vaginal delivery being particularly implicated, carrying at least a two-fold increased risk compared with spontaneous vaginal delivery.²⁵ Furthermore, operative vaginal delivery is associated with a persistent rate of dyspareunia of 14% at 12 months. The protective effect of caesarean section on sexual function appears to be limited to the first 6 months of the postnatal period compared with spontaneous vaginal delivery with an intact perineum (3.4% dyspareunia).²⁶

Menopause

The prevalence of FSD in postmenopausal women varies from 68–86%. In a study of women aged 40–69 years, 71% reported they were sexually active.²⁷ In this age group, common sexual complaints include loss of desire, decreased frequency of sex, dyspareunia, vaginal dryness and dysfunction of the male partner. In a study of women aged 40–62 years, age was found to negatively influence all

Table 2. Causes of female sexual dysfunction

Group	Subgroup	Examples
Medical	Cardiovascular	Atherosclerosis
		Hypertension
		Ischaemic heart disease
		Peripheral vascular disease
		Diabetes
	Heart failure	
	Neurological	Spinal cord injury
Stroke		
Parkinsonism		
Multiple sclerosis		
Endocrine	Thyroid disease	
	Hyperprolactinaemia	
	Adrenal insufficiency	
	Hypopituitarism	
Gastrointestinal	Inflammatory bowel disease	
	Faecal incontinence	
	Irritable bowel syndrome	
	Liver failure	
Rheumatological	Inflammatory arthritis	
	Systemic lupus erythematosus	
Miscellaneous	Breast cancer	
	Chronic kidney disease	
Pelvic disorders	Gynaecological	Prolapse
		Fibroids
		Endometriosis
		Sexually transmitted infections
		Gynaecological cancer/precancer
		Infertility
		Childbirth
		Congenital mullerian anomalies
		Previous gynaecological surgery
		Urological
Stress urinary incontinence		
Urological cancer		
Functional	Vaginismus	
	Chronic pelvic pain	
	Painful bladder syndrome	
Vulval disorders		Vulvovaginal atrophy
		Lichen sclerosus/planus
		Systemic dermatoses affecting the vulva
		Sexually transmitted infections
		Female genital mutilation
Hormonal		Premenstrual syndrome
		Pregnancy
		Breastfeeding
		Premature ovarian failure

Table 2. (Continued)

Group	Subgroup	Examples
Psychosocial		Menopause
		Age
		Obesity
		Smoking, alcohol, drug misuse
		Socioeconomic class
		Relationship difficulties
		Life stressors
		Mental health disorders, e.g. depression, anxiety, obsessive compulsive disorder
		Sexual abuse
		Traumatic memories
		Negative body image
Suppressive societal stereotypes		

Box 1. Medications implicated in female sexual dysfunction

- Anti-androgens, e.g. cimetidine, spironolactone
- Anticonvulsants
- Anticholinergics
- Antidepressants, e.g. selective serotonin reuptake inhibitors (SSRIs)
- Anti-estrogens, e.g. tamoxifen, gonadotrophin-releasing hormone (GnRH) analogues
- Antihistamines
- Antihypertensives
- Aromatase inhibitors, e.g. letrozole
- Sedatives and hypnotics
- Hormonal contraception
- Sympathomimetic amines
- Metoclopramide
- Metronidazole
- Cyclophosphamide

domains of sexual function, while menopause only affected pain and lubrication.¹ It seems that ageing itself, and the associated effects on physical and psychological health status, can have a more significant impact on sexual function than the menopause itself.

Subfertility

In couples who are trying to conceive, the goal-orientated approach to sex can result in the measurement of success or failure of sexuality in terms of the ability to produce a child, rather than the pleasure derived from it. When struggling to conceive, the woman may harbour feelings of being defective, or experience loss of self-worth and **body image**, leading to a **decreased sexual desire, sexual arousal disorders** and

Table 3. Screening questions for assessment of female sexual dysfunction

Screening question	Further assessment
Do you have any concerns regarding your sex life?	If answer no, no further questions
Are you currently sexually active?	If answer no, ask "Is that related to your current health problems?"
Are the problems with: <ul style="list-style-type: none"> • Sexual desire/libido • Sexual arousal (including vaginal lubrication problems) • Orgasm 	Assess for desire/arousal disorder Assess for female orgasm disorder
Are you experiencing any pain related to intercourse (penetration or deep pelvic)?	Assess for genitourinary syndrome of menopause (GSM), vulval dermatoses pelvic floor muscle dysfunction, pelvic pathology
If anything changes, feel free to ask in future	Gives permission to patient to broach the subject in future consultations.

anorgasmia. Scheduling sexual activity when trying to conceive can also be a problem.¹

Pelvic floor dysfunction

Up to 50% of women presenting with urogynaecological problems report FSD.¹ **Stress urinary incontinence (SUI)**, overactive bladder and other lower urinary tract symptoms can have a negative effect on **all domains of sexual function.** **Fear of odour, embarrassment, loss of self-esteem and coital incontinence** can all have a considerable impact. Up to one-third of women with pelvic organ prolapse (POP) also report FSD. Women with **POP are** more likely to report **embarrassment and avoidance of sex, dyspareunia, dryness (53%), lack of sensation (60%), vaginal obstruction (59%), orgasmic disorders and coital urinary/faecal incontinence.**²⁸ Suffering with both prolapse and incontinence has a cumulative negative effect on sexual function in all domains. FSD does not appear to correlate with a particular compartment of prolapse.

Kuhn et al.²⁹ showed that desire, lubrication and sexual satisfaction improved significantly, and orgasm remained unchanged, in women who used a pessary for POP and were sexually active.

In the surgical treatment of POP and SUI, **reconstructing local anatomy and alleviating symptoms does not necessarily ensure optimal sexual function.**

Box 2. Clinical assessment of female sexual dysfunction

History

- Medical history
- Current medication
- Obstetric history
- Systems review
- Psychiatric history
- Social circumstances
- Current life stressors
- History of sexual abuse and female genital mutilation

Examination

- General examination with particular attention to vascular and neurological systems
- Inspection for vulvar pathology
- Speculum examination to inspect condition of vagina and cervix and assess for prolapse
- Gentle bimanual examination to elicit tender points and scarring, assess for pelvic mass
- Assess pelvic floor tone
- Cotton bud evaluation of vestibule for localised tenderness if indicated by history

Investigations

- Follicle-stimulating hormone or estradiol if symptoms of deficiency and not known to be menopausal
- Free androgen index and sex hormone binding globulin
- Thyroid function tests if features of thyroid disease
- Prolactin if amenorrhoea/galactorrhoea
- Ferritin if features of iron deficiency
- Test for hyperlipidaemia and diabetes if indicated by clinical assessment
- Sexual health screen if indicated

Patients should be informed of this as part of the consent process, so they understand that **sexual function could worsen as a result of surgery.** Altered perception of genital health after surgery, with associated fear of damaging themselves, can also have a negative impact on FSD. However, despite the theoretical risks, **on the whole sexual dysfunction improves following both prolapse repair and stress incontinence surgery.**

A recent systematic review examining the effect of native tissue prolapse repair on sexual function showed that 47% improved, 39% remained unchanged, 18% deteriorated and 4% reported de novo dyspareunia – although this review was unable to separate results by compartment.³⁰ **Increased postoperative dyspareunia was found consistently when anterior and posterior repairs were combined in the same procedure; many gynaecologists may consider a two-stage procedure for sexually active women requiring repair to both compartments.** When performing pelvic floor repair, ensure that **vaginal length is maintained, excessive vaginal excision is avoided and introital calibre is preserved.**³¹ Regarding vaginal vault prolapse, **sacrospinous fixation was associated with higher rates of dyspareunia than abdominal mesh sacrocolpopexy.**³²

A systematic review noted that following surgery for SUI (mid-urethral tape/colposuspension/autologous fascial sling), coital incontinence probably improves.³³ Overall sexual function probably remains unchanged, although there is a small possibility of improvement or even deterioration following surgery. The retropubic or obturator approach does not influence sexual function.³³

Some studies show promising results regarding the effect of sacral nerve stimulation and percutaneous tibial nerve stimulation on FSD in patients undergoing treatment for pelvic floor dysfunction.^{34,35}

Dysfunctional uterine bleeding and pelvic pain

Endometriosis, fibroids and adenomyosis may be associated with dyspareunia. Erratic, heavy or painful menstrual bleeding can also affect sexual function considerably.

Sexual function after hysterectomy has been studied extensively. It has been hypothesised that damage to the autonomic nerve endings of the cervicovaginal area and vaginal shortening may interfere with lubrication, orgasm and sexual pleasure.³⁶ In addition, hysterectomy may have psychological effects, leading to loss of feminine identity and self-esteem. The largest prospective study to date is the Maryland Women's Health Study, which found that, at 24 months post-hysterectomy, there was increased frequency of sexual activity and improvement in dyspareunia, orgasm, libido and vaginal dryness.³⁷ The surgical approach (abdominal, vaginal, laparoscopic) did not affect sexual outcomes. The method of vaginal cuff closure did not impact on sexual function.³¹ Furthermore, a randomised controlled trial (RCT) comparing total versus subtotal hysterectomy found no difference in postoperative dyspareunia, quality of orgasm or sexual satisfaction. Concomitant oophorectomy can, however, be implicated in FSD, particularly in premenopausal women, because of the resultant abrupt reduction in estrogen and testosterone production. Hormone replacement therapy (HRT) is usually recommended for patients under the age of 50 years undergoing bilateral oophorectomy. Replacement testosterone can also be offered if necessary.

Gynaecological precancer/cancer

Patients with an abnormal cervical smear result were found to have a negatively affected sexual function in all domains and more negative feelings towards their partners.³⁸

There is a high prevalence of FSD amongst gynaecological cancer patients, with 74% reporting low sexual desire and 40% suffering from dyspareunia. There are direct effects of disease and treatment, as well as psychological and behavioural changes that disrupt sexual function. Complaints in this patient group include vaginal dryness, short vagina, inelastic vagina and dyspareunia. Radiotherapy

is more debilitating to sexual function than radical hysterectomy. The growing interest in FSD after pelvic surgery has led to the development of nerve-sparing surgical techniques.

Female genital mutilation

Female genital mutilation (FGM) types 2 and 3 can affect all aspects of sexual function and are associated with post traumatic stress disorder (PTSD), low self-esteem, disturbed self-identity, desire/arousal disorders and orgasmic disorders, as well as pain and obstruction during intercourse.³⁹ Management should be multifaceted, with a combination of approaches including psychotherapy. However, despite best efforts, some women will have permanent dysfunction. Psychosexual counselling may be required to address their problems.

Many of the surgical treatments described for the treatment of underlying gynaecological problems can induce psychosexual problems postoperatively because of factors such as loss of fertility, disfigurement, depression and anxiety about one's desirability as a sexual partner.⁴⁰ Anxiety regarding a return of normal sexual function heightens these problems. A period of psychosexual adaptation is often required before sexual function returns to normal. Partners may also be affected psychologically owing to concerns about causing harm following surgery.⁴¹

Management

A multidisciplinary approach is often required when managing FSD.¹⁹ For example, a patient suffering from genitopelvic pain disorder (vaginismus) may benefit from cognitive behavioural therapy (CBT), vaginal dilator use, lubricants, pelvic floor physiotherapy and relaxation techniques. Even after treatment of an underlying medical/gynaecological cause, the history of FSD may have longer lasting psychological effects and the patient may still benefit from psychosexual counselling/psychological interventions.

General principles

- Educating the patient (and partner, where relevant) about normal physiological response and anatomy may be necessary. Physiological changes related to ageing and implicated medical conditions should be explained.
- Lifestyle modifications, nonpharmacological therapies and psychosexual counselling may be considered first-line intervention in cases where aetiology is not physical.
- Review medications and, in conjunction with the GP/prescriber, consider alternatives or reduced doses of medications implicated in FSD.
- Treatment of underlying gynaecological/medical condition.

Lifestyle modifications

Weight loss, smoking cessation, reduction in alcohol consumption, establishing a healthy diet and a regular exercise regime are all valuable interventions for improving FSD and health.⁴²

Dedicating specific time to spend with their partner can also help to improve women's quality of sexual life.⁴³

Nonpharmacological therapies

Physiotherapy

Pelvic floor exercises that focus on the functional control of each muscle in the pelvis can be helpful for women suffering from **genitopelvic pain disorder**.⁴⁴ Practising contracting and relaxing the pelvic floor can help bring this under voluntary control. Deep pelvic relaxation is important to practice when also using vaginal dilator therapy.

Pelvic floor physiotherapy is also part of the **first-line management of SUI and first-stage POP**.⁴⁵ Following a 6-month course of pelvic floor physiotherapy, 39% of women reported an improvement in sexual function. Pelvic floor exercises were associated with increased control, strength and awareness of the pelvic floor, improved self-confidence, sensation of a 'tighter' vagina, improved libido and orgasms, resolution of pain with intercourse and heightened sexual gratification for partners.⁴⁶ No difference was found between standard physiotherapy and electrical stimulation.⁴⁷

Zahariou⁴⁸ evaluated the effect of pelvic floor muscle training on sexual function in a group of women with SUI. All domains of the FSFI were significantly improved 12 months after treatment.

In a study of healthy women, strong or moderate pelvic floor muscle contractions were associated with significantly higher scores on both orgasm and arousal domains of the FSFI compared with women with weak contractions.⁴⁹

Vaginal dilators

Dilators can be useful for women who experience involuntary pelvic muscle contraction (**vaginismus**) or **vaginal stenosis**. Beginning with a small device, the dilators gradually increase in size until, ultimately, intercourse is introduced.⁵⁰ Results are better when this is supervised, either by a specialist nurse or women's health physiotherapist, to provide the support these patients require. Better outcomes have been reported when used in conjunction with topical estrogen cream for menopausal women.⁵¹

Self-stimulation and devices

The benefits of self-stimulation have been reported in literature, as women learn more about their sexual response cycle and become more familiar with their body. Masturbation is an effective way for women who have

never achieved orgasm to learn how to do so without the pressure of interacting with their partner.

Frequent masturbation in couples was associated with relationship dissatisfaction, suggesting that it may not be healthy for a couple to replace partnered sexual activity with individual sexual activity. Indeed, there is evidence to suggest that partnered sexual activity may create a higher level of emotional wellbeing.¹⁹

Clitoral vacuum/therapy devices are handheld, battery-operated devices with a small, soft plastic cup that applies a gentle vacuum over the clitoris and a low-level vibratory sensation to cause increased blood flow.⁵² They are designed to be used three or more times a week for approximately 5 minutes at a time. Small studies have shown that use of this device may improve arousal and orgasm,⁵³ however, these have not been tested in well-conducted trials.

Vibration devices are designed for both clitoral and vaginal stimulation. A relationship between vibrator use and positive sexual functioning has been reported.¹⁹

Psychotherapies

Cognitive behavioural therapy/sex therapy

Cognitive behavioural therapy (CBT)/sex therapy focuses on identifying and modifying maladaptive thoughts, expectations and behaviours that negatively affect sexual functioning. Strategies are suggested to improve the couple's emotional connection and communication, but the evidence is controversial.⁵⁴ When couples are being consulted, they are encouraged to focus on the strengths as well as weaknesses in their relationship. Homework assignments are given for the couple to practice skills, such as turning the idea of sexual obligation into pleasure, learning to focus on sensations rather than anxieties and communicating openly with their partner. One approach is the use of sensate focus techniques, consisting initially of nonsexual physical touch with gradual progression toward sexual touch. Partners are encouraged to provide feedback about what touches are pleasurable to help reduce performance-related anxiety.⁵⁵

Psychosexual counselling

The aim of psychosexual counselling is to understand and manage emotional factors, which are not always experienced at a conscious level, but interfere with sexual performance and enjoyment. Counselling sessions are aimed at assessing the attitudes, anxieties and fantasies relevant to understanding the sexual problem in conjunction with a detailed physical examination. This may take place over several consultations. During the consultation, issues relating to the impact of upbringing and memories of family, social life and religious beliefs⁵⁶ on sexual function may be uncovered. Past relationships, self-esteem, previous sexual abuse and trauma are also explored. Details of psychosexual

counselling are out with the remit of this article, but have been previously discussed in *The Obstetrician & Gynaecologist*.²¹ However, all gynaecologists should have basic training in providing psychodynamic therapy and identifying patients who require formal input from a psychosexual counsellor.

Psychosexual counselling is practised by clinicians, including gynaecologists with adequate training (for example, from the Institute of Psychosexual Medicine, IPM). It is available in many, but not all, areas on the NHS. It adopts a psychodynamic approach, which attempts to connect the mind to the body.²¹ For gynaecologists who lack training, it remains essential to recognise which women require input from a trained psychosexual counsellor.

Yoga, relaxation techniques, hypnotherapy

Since stress and fatigue contribute to FSD, stress management activities such as yoga or meditation may be beneficial. Furthermore, hypnosis and relaxation therapies have been cited as promising interventions for vaginismus, but there is no conclusive evidence to support their use at present.⁵⁷

Medical therapies

Lubricants and vaginal moisturisers

Women who are menopausal, **breastfeeding and/or suffering with a genital arousal disorder may lack vaginal lubrication and experience dyspareunia**.⁵⁸ Topical lubricants and vaginal moisturisers can be used to relieve these symptoms. These treatments can be used as required at the time of intercourse, in addition to regular treatment with topical estrogen if appropriate. Women should be advised to use a lubricant that is physiologically similar to natural vaginal secretions.⁵⁹

Hormones

Estrogen

A fall in estradiol levels can result in vaginal smooth muscle atrophy and increased vaginal acidity, leading to discomfort.⁶⁰ Systemic HRT in isolation may not always address these problems and vaginal estrogen may still be required to treat FSD related to vulvovaginal atrophy. Topical estrogen is currently available in the form of a vaginal ring, vaginal creams and vaginal pessaries.

Breastfeeding women experiencing hormonal imbalance caused by estrogen deficiency can also benefit from topical estrogen as a treatment for dyspareunia and vaginal dryness.⁶¹ Reassurance may be given that symptoms will improve following cessation of breastfeeding.

The use of systemic estrogen in the form of HRT must be considered carefully for the treatment of FSD alone. However, for women suffering from a combination of

vasomotor symptoms and vulvovaginal atrophy, systemic HRT would be appropriate⁶² following adequate discussion with the patient.

Following breast cancer treatment, women who are on aromatase inhibitors for adjuvant therapy (as opposed to tamoxifen) are more likely to suffer with sexual dysfunction. This can affect compliance and there may be a place for the use of local estrogens in this cohort following adequate discussion with the patient and her oncologist.⁶³

Intravaginal prasterone

Prasterone is a steroid precursor, which is converted to estrogen and androgens. Several studies have shown a moderate benefit for vulvovaginal atrophy, although prasterone has not been compared directly with other treatments such as topical estrogen.

Ospemifene

Ospemifene is a selective estrogen receptor modulator, which is licensed for the treatment of vulvovaginal atrophy in women for whom topical estrogen is not suitable. This is supported by a systematic review and meta-analysis, which found that ospemifene is an effective treatment for dyspareunia secondary to vulvovaginal atrophy.⁶⁴ However, the contraindications for ospemifene are similar to those for estrogen, including breast cancer, endometrial hyperplasia and history of venous thromboembolism, thereby limiting its use.

Tibolone

Tibolone is a synthetic steroid with estrogenic, progestogenic and androgenic properties, commonly used for the treatment of menopausal symptoms. A study by Nijland et al.⁶⁵ demonstrated that tibolone improved overall sexual function, increased frequency of sex and reduced sexually related personal distress in postmenopausal women with FSD.⁴⁵ However, tibolone is associated with a higher increased risk of stroke than other HRT options.⁶⁶

Testosterone

Testosterone production naturally declines after the menopause. Low levels of testosterone are associated with decreased libido, arousal and orgasm. Testosterone therapy in the form of a transdermal patch or gel has resulted in significant improvement in various domains of sexual function in postmenopausal women,⁶⁷ although there is a lack of long-term safety data and several undesirable side effects, including alopecia, hirsutism, acne, breast pain, headache, adverse liver function, lipid profile change, increased risk of cardiovascular disease, insulin resistance and metabolic syndrome. It is perhaps best suited to patients suffering from surgical menopause or a medical condition resulting in androgen deficiency. In surgical menopause there

is an abrupt 50% reduction in production of testosterone in contrast to the gradual decline in ovarian and adrenal androgen production that ordinarily occurs naturally with age.

Guidelines published by the National Institute for Health and Care Excellence (NICE)⁶² and Cochrane reviews⁶⁸ on menopause now recommend considering testosterone supplementation as HRT for women with low sexual desire if estrogen replacement alone is not effective. The American College of Obstetrics and Gynecology⁴² suggests that, if prescribed, a 3–6-month trial is recommended, with assessment of testosterone levels at baseline and after 3–6 weeks of initial use to ensure levels remain within the normal range. It also suggests that if continuing therapy is used, follow-up clinical evaluation and testosterone measurement should take place every 6 months to assess for androgen excess.

Oxytocin and progesterone have no role in the treatment of FSD.

Drug therapy

Several drugs have been used for the management of FSD, with variable results. These are discussed in Table 4.

Surgical

No operation is designed to improve sexual dysfunction and evidence for a positive effect is lacking.

Lasers

Women suffering from breast cancer are a particularly vulnerable group, with a high prevalence of lubrication difficulties, dyspareunia and a low level of sexual desire.⁶⁹ Topical estrogen is sometimes used off licence in this group of women, but there is unwillingness to prescribe this long

Table 4. Drug therapy for female sexual dysfunction

Drug group	Examples	Mechanism	Evidence
Vasodilators	Sildenafil (Viagra [®])	Increases availability of cyclic guanosine monophosphate (cGMP), which mediates vascular smooth muscle relaxation via nitric oxide signalling resulting in genital engorgement	Evidence for sildenafil is mixed Has been shown to be beneficial in FSD secondary to spinal cord injury and SSRI use Large RCT of women with sexual arousal disorder reported no benefit Not licensed for FSD ⁷⁹
	L-arginine, prostaglandin, phentolamine, vasoactive intestinal peptide (VIP)		All currently under investigation, no definitive evidence to support use at present
Dopamine agonists	Bupropion, apomorphine, cabergoline	Act centrally to influence behavioural states Given the central action of these drugs there is a high occurrence of side effects, such as nausea, vomiting and headaches	Dopamine agonists are effective in improving desire in women with hypoactive desire disorder Cabergoline can improve FSD secondary to antipsychotic-induced hyperprolactinaemia Bupropion can help FSD related to SSRI use Sublingual/intranasal apomorphine is currently under investigation in the hope with will be quicker acting and associated with few side effects
Serotonin 1a agonist/ 2a antagonist	Flibanserin	Acts central to influence mood and behavioural states	FDA-approved from 2015 for treatment of hypoactive desire disorder, although a systematic review showed minimal or no improvement in symptoms and a high rate of adverse effects including dizziness, fatigue and nausea Must abstain from alcohol to avoid hypotension/syncope Not licensed in UK
Muscle relaxant	Tizanidine	Centrally active alpha-2 agonist used as a muscle relaxant	Superior to placebo in treating high-tone pelvic floor dysfunction

Abbreviations: FDA = US Food and Drug Administration; FSD = female sexual dysfunction; RCT = randomised controlled trial; SSRI = selective serotonin reuptake inhibitor

term. Lubricants and vaginal moisturisers have limited efficacy when used alone in women for the treatment of severe vulvovaginal atrophy.

Preliminary data for both erbium and carbon dioxide vaginal lasers in the treatment of vulvovaginal atrophy are promising. These **may be an alternative for breast cancer patients, but should not be introduced into clinical practice without more robust evidence.** In a recent systematic review, vaginal laser therapy was effective **in treating vulvovaginal atrophy in breast cancer survivors,** with improvement in dyspareunia, vaginal dryness and sexual function.⁷⁰ There is therefore an urgent need for RCTs to assess the long-term safety and efficacy of lasers.

Genital cosmetic surgery

Several surgical procedures have been developed that are advertised as improving sexual function by altering the appearance and/or the function of the female genital tract. Such procedures include labioplasty, vaginoplasty, perineoplasty and laser rejuvenation. They probably **have an effect on body image, rather than a clinical effect. Evidence supporting the efficacy and safety of these procedures on sexual function is lacking.**⁶

Vestibulectomy

In vestibulectomy, the painful tissues of the vestibule are identified and removed. An RCT by Bergeron et al.⁷¹ reported significantly less dyspareunia in patients with localised vulvodinia who underwent vestibulectomy than those treated with CBT and electromyographic biofeedback. However, in a study by Das et al.,⁷² outcomes on long-term sexual function were more variable, with only 57% patients being satisfied postoperatively. It is **now rarely performed in the UK.**

Fenton's procedure

Fenton's procedure can be offered when a patient experiences **dyspareunia secondary to narrowing, or skin-splitting at the posterior fourchette, usually secondary to obstetric scarring.** It is used rarely for vulval dermatoses, such as lichen sclerosus. However, benefit from this procedure is probably modest and there is a **paucity of evidence.** Worsening of dyspareunia is a potential risk. A small study of 24 women by Chandru⁷³ showed that at 12 months postoperatively, 14 women (60.8%) reported complete relief and moderate relief was reported in nine (39%). Frappell et al.⁷⁴ describe an alternative to the Fenton's procedure, in the form of an opposing Z-plasty with V-Y advancement of perineum (the 'Plymouth procedure'). Functional outcome assessed by enjoyment of sexual intercourse improved in 78% of women.

Trigger point injections

A prospective study investigated the role of trigger point injections in women with levator ani muscle spasm. The

injection given was a 5-ml mixture of 0.25% bupivacaine, 2% lidocaine, and 40 mg of triamcinolone per trigger point. Three months after injections, 72% of women reported improvement.⁷⁵ Other combinations of medications have also been used. The authors' own preference is to use bupivacaine, hyaluronidase and depot-medrone.

Botox® injections to the pelvic floor muscles

Refractory vaginismus may respond to Botox® injections into the puborectalis and pubococcygeus.^{76,77} This should be used in adequately selected cases with appropriate patient counselling because the evidence for its use is limited to very specific conditions.

Genital reconstructive surgery

In women undergoing **distorting genital surgery,** various surgical techniques are employed to preserve/give provision for sexual function in these patients. These may include local and regional flaps and grafts, although further description of surgical reconstructive options is beyond the remit of this article.

Conclusion

FSD is a common condition with considerable detrimental effects on quality of life, but is unfortunately often overlooked by clinicians. As gynaecologists we must strive to identify and explore sexual problems with our patients as we are uniquely placed to do so. This also allows for evidence-based counselling regarding any future gynaecological treatment, including likely outcomes the patient can expect for their sexual function.

Disclosure of interests

SJ is an Associate Editor for *The Obstetrician & Gynaecologist*; she was excluded from editorial discussions and had no involvement in the decision to publish.

Contribution to authorship

VK researched, wrote and edited the manuscript. SJ instigated, researched, wrote and edited the manuscript. Both authors approved the final version.

References

- 1 Srivastava R, Thakar R, Sultan A. Female sexual dysfunction in obstetrics and gynecology. *Obstet Gynecol Surv* 2008;**63**:527–37.
- 2 Masters WH, Johnson VE. The sexual response cycle of the human female. III. The clitoris: anatomic and clinical consideration. *West J Surg Obstet Gynecol* 1962;**70**:248–57.
- 3 Kingsberg SA, Rezaee RL. Hypoactive sexual desire in women. *Menopause* 2013;**20**:1284–300.
- 4 American Psychiatric Association. *Sexual dysfunction*. 5th ed. Washington DC: American Psychiatric Press; 2013.
- 5 IsHak WW, Tobia G. DSM-5 changes in diagnostic criteria of sexual dysfunctions. *Reprod Sys Sexual Disorders* 2013;**2**:122.

- 6 Rogers RG, Pauls RN, Thakar R, Morin M, Kuhn A, Petri E, et al. An international Urogynecological association (IUGA)/international continence society (ICS) joint report on the terminology for the assessment of sexual health of women with pelvic floor dysfunction. *Int Urogynecol J* 2018;**29**:647–66.
- 7 Mercer CH, Tanton C, Prah P, Erens B, Sonnenberg P, Clifton S, et al. Changes in sexual attitudes and lifestyles in Britain through the life course and over time: findings from the National Surveys of Sexual Attitudes and Lifestyles (Natsal). *Lancet* 2013;**382**:1781–94.
- 8 Jha S, Thakar R. Female sexual dysfunction. *Eur J Obstet Gynecol Reprod Biol* 2010;**153**:117–23.
- 9 Nazareth I, Boynton P, King M. Problems with sexual function in people attending London general practitioners: cross sectional study. *BMJ* 2003;**327**:423.
- 10 Nusbaum MR, Gamble G, Skinner B, Heiman J. The high prevalence of sexual concerns among women seeking routine gynecological care. *J Fam Pract* 2000;**49**:229–32.
- 11 Botell J. Hidden agendas: psychosexual aspects in consultations. *J Fam Plann Reprod Health Care* 2005;**31**:322–4.
- 12 Pauls RN, Kleeman SD, Segal JL, Silva WA, Goldenhar LM, Karram MM. Practice patterns of physician members of the American Urogynecologic Society regarding female sexual dysfunction: results of a national survey. *Int Urogynecol J Pelvic Floor Dysfunct* 2005;**16**:460–7.
- 13 Rosen RC, Taylor JF, Leiblum SR, Bachmann GA. Prevalence of sexual dysfunction in women: results of a survey study of 329 women in an outpatient gynecological clinic. *J Sex Marital Ther* 1993;**19**:171–88.
- 14 Basson R. Human sex-response cycles. *J Sex Marital Ther* 2001;**27**:33–43.
- 15 Aslan E, Fynes M. Female sexual dysfunction. *Int Urogynecol J Pelvic Floor Dysfunct* 2008;**19**:293–305.
- 16 Butzer B, Campbell L. Adult attachment, sexual satisfaction, and relationship satisfaction: a study of married couples. *Pers Relat* 2008;**15**:141–5.
- 17 Avis NE, Zhao X, Johannes CB, Ory M, Brockwell S, Greendale GA. Correlates of sexual function among multi-ethnic middle-aged women: results from the Study of Women's Health Across the Nation (SWAN). *Menopause* 2018;**25**:1244–55.
- 18 Shifren JL. Androgen deficiency in the oophorectomized woman. *Fertil Steril* 2002;**77** Suppl 4:S60–2.
- 19 Khajehei M, Doherty M, Tilley PJ. An update on sexual function and dysfunction in women. *Arch Womens Ment Health* 2015;**18**:423–33.
- 20 Latif EZ, Diamond MP. Arriving at the diagnosis of female sexual dysfunction. *Fertil Steril* 2013;**100**:898–904.
- 21 Cowan F, Frodsham L. Management of common disorders in psychosexual medicine. *Obstet Gynaecol* 2015;**17**:47–53.
- 22 Rosen R, Brown C, Heiman J, Leiblum S, Meston C, Shabsigh R, et al. The Female Sexual Function Index (FSFI): a multidimensional self-report instrument for the assessment of female sexual function. *J Sex Marital Ther* 2000;**26**:191–208.
- 23 Rogers RG, Kammerer-Doak D, Villarreal A, Coates K, Qualls C. A new instrument to measure sexual function in women with urinary incontinence or pelvic organ prolapse. *Am J Obstet Gynecol* 2001;**184**:552–8.
- 24 Rogers RG, Rockwood TH, Constantine ML, Thakar R, Kammerer-Doak DN, Pauls RN, et al. A new measure of sexual function in women with pelvic floor disorders (PFD): the Pelvic Organ Prolapse/Incontinence Sexual Questionnaire, IUGA-Revised (PISQ-IR). *Int Urogynecol J* 2013;**24**:1091–103.
- 25 Barrett G, Pendry E, Peacock J, Victor C, Thakar R, Manyonda I. Women's sexual health after childbirth. *BJOG* 2000;**107**:186–95.
- 26 Buhling KJ, Schmidt S, Robinson JN, Klapp C, Siebert G, Dudenhausen JW. Rate of dyspareunia after delivery in primiparae according to mode of delivery. *Eur J Obstet Gynecol Reprod Biol* 2006;**124**:42–6.
- 27 Addis IB, Van Den Eeden SK, Wassel-Fyr CL, Vittinghoff E, Brown JS, Thom DH. Sexual activity and function in middle-aged and older women. *Obstet Gynecol* 2006;**107**:755–64.
- 28 Jha S, Gopinath D. Prolapse or incontinence: what affects sexual function the most? *Int Urogynecol J* 2016;**27**:607–11.
- 29 Kuhn A, Bapst D, Stadlmayr W, Vits K, Mueller MD. Sexual and organ function in patients with symptomatic prolapse: are pessaries helpful? *Fertil Steril* 2009;**91**:1914–8.
- 30 Jha S, Gray T. A systematic review and meta-analysis of the impact of native tissue repair for pelvic organ prolapse on sexual function. *Int Urogynecol J* 2015;**26**:321–7.
- 31 Jha S. Maintaining sexual function after pelvic floor surgery. *Climacteric* 2019;**22**:236–41.
- 32 Maher CM, Feiner B, Baessler K, Glazener CM. Surgical management of pelvic organ prolapse in women: the updated summary version Cochrane review. *Int Urogynecol J* 2011;**22**:1445–57.
- 33 Jha S, Ammenbal M, Metwally M. Impact of incontinence surgery on sexual function: a systematic review and meta-analysis. *J Sex Med* 2012;**9**:34–43.
- 34 Kershaw V, Khunda A, McCormick C, Ballard P. The effect of percutaneous tibial nerve stimulation (PTNS) on sexual function: a systematic review and meta-analysis. *Int Urogynecol J* 2019;**30**:1619–27.
- 35 Khunda A, McCormick C, Ballard P. Sacral neuromodulation and sexual function: a systematic review and meta-analysis of the literature. *Int Urogynecol J* 2019;**30**:339–52.
- 36 Jewett JG. Vaginal length and incidence of dyspareunia following total abdominal hysterectomy. *Am J Obstet Gynecol* 1952;**63**:400–7.
- 37 Rhodes JC, Kjerulff KH, Langenberg PW, Guzinski GM. Hysterectomy and sexual functioning. *JAMA* 1999;**282**:1934–41.
- 38 Sparic R, Papoutsis D, Kadja S, Stefanovic R, Antonakou A, Nejkovic L, et al. Psychosexual outcomes in women of reproductive age at more than two-years from excisional cervical treatment - a cross-sectional study. *J Psychosom Obstet Gynaecol* 2019;**40**:128–37.
- 39 Alsibiani SA, Rouzi AA. Sexual function in women with female genital mutilation. *Fertil Steril* 2010;**93**:722–4.
- 40 Corney RH, Crowther ME, Everett H, Howells A, Shepherd JH. Psychosexual dysfunction in women with gynaecological cancer following radical pelvic surgery. *Br J Obstet Gynaecol* 1993;**100**:73–8.
- 41 Bayram GO, Beji NK. Psychosexual adaptation and quality of life after hysterectomy. *Sex Disabil* 2010;**28**:3–13.
- 42 American College of Obstetricians and Gynaecologists. Female sexual dysfunction. *Prac Bull* 2011;**117**:996–1007.
- 43 McCabe M, Althof SE, Assalian P, Chevret-Measson M, Leiblum SR, Simonelli C, et al. Psychological and interpersonal dimensions of sexual function and dysfunction. *J Sex Med* 2010;**7**:327–36.
- 44 Dhikav V, Karmarkar G, Gupta R, Verma M, Gupta R, Gupta S, et al. Yoga in female sexual functions. *J Sex Med* 2010;**7**:964–70.
- 45 National Institute for Health and Care Excellence (NICE). *Urinary incontinence and pelvic organ prolapse in women: management. NICE guideline NG123*. London: NICE; 2019.
- 46 Braekken IH, Majida M, Ellstrom EM, Bo K. Can pelvic floor muscle training improve sexual function in women with pelvic organ prolapse? A randomized controlled trial. *J Sex Med* 2015;**12**:470–80.
- 47 Jha S, Walters SJ, Bortolami O, Dixon S, Alshreef A. Impact of pelvic floor muscle training on sexual function of women with urinary incontinence and a comparison of electrical stimulation versus standard treatment (IPSU trial): a randomised controlled trial. *Physiotherapy* 2018;**104**:91–7.
- 48 Zahariou AG, Karamouti MV, Papaioannou PD. Pelvic floor muscle training improves sexual function of women with stress urinary incontinence. *Int Urogynecol J Pelvic Floor Dysfunct* 2008;**19**:401–6.
- 49 Lowenstein L, Gruenwald I, Gartman I, Vardi Y. Can stronger pelvic muscle floor improve sexual function? *Int Urogynecol J* 2010;**21**:553–6.
- 50 Canavan TP, Heckman CD. Dyspareunia in women. Breaking the silence is the first step toward treatment. *Postgrad Med* 2000;**108**:149–60.
- 51 Hope ME, Farmer L, McAllister KF, Cumming GP. Vaginismus in peri- and postmenopausal women: a pragmatic approach for general practitioners and gynaecologists. *Menopause Int* 2010;**16**:68–73.
- 52 Billups KL. The role of mechanical devices in treating female sexual dysfunction and enhancing the female sexual response. *World J Urol* 2002;**20**:137–41.
- 53 Wilson SK, Delk JR, Billups KL. Treating symptoms of female sexual arousal disorder with the Eros-Clitoral Therapy Device. *J Genit Specif Med* 2001;**4**:54–8.
- 54 Pyke RE, Clayton AH. Psychological treatment trials for hypoactive sexual desire disorder: a sexual medicine critique and perspective. *J Sex Med* 2015;**12**:2451–8.

- 55 Jones LM, McCabe MP. The effectiveness of an Internet-based psychological treatment program for female sexual dysfunction. *J Sex Med* 2011;**8**:2781–92.
- 56 Kingsberg SA, Janata JW. Female sexual disorders: assessment, diagnosis, and treatment. *Urol Clin North Am* 2007;**34**:497–506.
- 57 McGuire H, Hawton K. Interventions for vaginismus. *Cochrane Database Syst Rev* 2003;(1):CD001760.
- 58 Convery KM, Spatz DL. Sexuality and breastfeeding: what do you know? *MCN Am J Matern Child Nurs* 2009;**34**:218–23.
- 59 Edwards D, Panay N. Treating vulvovaginal atrophy/genitourinary syndrome of menopause: how important is vaginal lubricant and moisturizer composition? *Climacteric* 2016;**19**:151–61.
- 60 Allahdadi KJ, Tostes RC, Webb RC. Female sexual dysfunction: therapeutic options and experimental challenges. *Cardiovasc Hematol Agents Med Chem* 2009;**7**:260–9.
- 61 Bachmann G, Bancroft J, Braunstein G, et al. Female androgen insufficiency: the Princeton consensus statement on definition, classification, and assessment. *Fertil Steril* 2002;**77**:660–5.
- 62 National Institute for Health and Care Excellence (NICE). *Menopause: diagnosis and management. NICE guideline NG23*. London: NICE; 2019.
- 63 Derzko C, Elliott S, Lam W. Management of sexual dysfunction in postmenopausal breast cancer patients taking adjuvant aromatase inhibitor therapy. *Curr Oncol* 2007;**14** Suppl 1:S20–40.
- 64 Cui Y, Zong H, Yan H, Li N, Zhang Y. The efficacy and safety of ospemifene in treating dyspareunia associated with postmenopausal vulvar and vaginal atrophy: a systematic review and meta-analysis. *J Sex Med* 2014;**11**:487–97.
- 65 Nijland EA, Weijmar Schultz WC, Nathorst-Boos J, Helmond FA, Van Lunsen RHW, Palacios S, et al. Tibolone and transdermal E2/NETA for the treatment of female sexual dysfunction in naturally menopausal women: results of a randomized active-controlled trial. *J Sex Med* 2008;**5**:646–56.
- 66 Formoso G, Perrone E, Maltoni S, Balduzzi S, D'Amico R, Bassi C, et al. Short and long term effects of tibolone in postmenopausal women. *Cochrane Database Syst Rev* 2012;(2):CD008536.
- 67 Elraiyah T, Sonbol MB, Wang Z, Khairalseed T, Asi N, Undavalli C, et al. Clinical review: The benefits and harms of systemic dehydroepiandrosterone (DHEA) in postmenopausal women with normal adrenal function: a systematic review and meta-analysis. *J Clin Endocrinol Metab* 2014;**99**:3536–42.
- 68 Somboonporn W, Davis S, Seif MW, Bell R. Testosterone for peri- and postmenopausal women. *Cochrane Database Syst Rev* 2005;(4):CD004509.
- 69 Sbitti Y, Kadiri H, Essaidi I, Fadoukhair Z, Kharmoun S, Slimani K, et al. Breast cancer treatment and sexual dysfunction: Moroccan women's perception. *BMC Womens Health* 2011;**11**:29.
- 70 Jha S, Wyld L, Krishnaswamy PH. The impact of vaginal laser treatment for genitourinary syndrome of menopause in breast cancer survivors: a systematic review and meta-analysis. *Clin Breast Cancer* 2019;**19**:e556–62.
- 71 Bergeron S, Binik YM, Khalife S, Pagidas K, Glazer HI, Meana M, et al. A randomized comparison of group cognitive-behavioral therapy, surface electromyographic biofeedback, and vestibulectomy in the treatment of dyspareunia resulting from vulvar vestibulitis. *Pain* 2001;**91**:297–306.
- 72 Das D, Davidson ERW, Walters M, Farrell RM, Ferrando CA. Patient-centered outcomes after modified vestibulectomy. *Obstet Gynecol* 2020;**135**:113–21.
- 73 Chandru S, Nafee T, Ismail K. Evaluation of modified fenton procedure for persistent superficial dyspareunia following childbirth. *Gynecol Surg* 2010;**7**:245–8.
- 74 Frappell J, Rider L, Riadin L, Ebeid E, Asmussen T, Morris R. Double opposing Zplasty with VY advancement of the perineum: long-term results of a new technique as an alternative to Fenton's operation for narrowing and splitting of the skin at the posterior vaginal fourchette. *Eur J Obstet Gynecol Reprod Biol* 2018;**223**:46–9.
- 75 Langford CF, Udvari NS, Ghoniem GM. Levator ani trigger point injections: An underutilized treatment for chronic pelvic pain. *NeuroUrol Urodyn* 2007;**26**:59–62.
- 76 Ghazizadeh S, Nikzad M. Botulinum toxin in the treatment of refractory vaginismus. *Obstet Gynecol* 2004;**104**:922–5.
- 77 Morrissey D, El-Khawand D, Ginzburg N, Wehbe S, O'Hare P, III, Whitmore K. Botulinum toxin A injections into pelvic floor muscles under electromyographic guidance for women with refractory high-tone pelvic floor dysfunction: a 6-month prospective pilot study. *Female Pelvic Med Reconstr Surg* 2015;**21**:277–82.