

Diagnosing and managing vaginismus

Tessa Crowley,¹ David Goldmeier,² Janice Hiller³

¹Bristol Sexual Health Service, Bristol BS2 0JD

²Imperial NHS Trust, St Mary's Campus, London W2 1NY

³Department of Psychology, Goodmayes Hospital, Ilford, Essex IG3 8XJ

Correspondence to: T Crowley tessa.crowley@bristol.ac.uk

Cite this as: *BMJ* 2009;338:b2284
doi: 10.1136/bmj.b2284

Recent consensus defined vaginismus as, "The persistent or recurrent difficulties of the woman to allow vaginal entry of a penis, a finger, and or any object, despite the woman's expressed wish to do so."¹ The definition also noted that affected women often avoid intercourse; experience involuntary pelvic muscle contraction; and anticipate, fear, or experience pain. However, it can be difficult to diagnose vaginismus. Women with total vaginismus are unable to tolerate penetration of their vagina by any object, but those with partial vaginismus tolerate penetration with difficulty and pain. The condition can be lifelong (primary) or it can occur after sexual function has been normal (secondary). It can also be situational, occurring only with certain partners or in particular circumstances, or it can be global, occurring independent of partner or circumstances. It is thus a clinical syndrome, not a definitive diagnosis, that consists of overlapping elements of hypertonic pelvic floor muscles, pain, anxiety, and difficulty in penetration.

The *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition (DSM-IV) categorises vaginismus as a sexual pain disorder along with dyspareunia. It describes vaginismus as occurring when "recurrent or persistent involuntary spasm of the musculature of the outer third of the vagina" interferes with intercourse.² According to this definition, the experience of pain is not necessary for the diagnosis. Sexual responsiveness and the ability to experience pleasure through stimulation are not necessarily impaired.

Because many women have satisfactory sexual relationships in the absence of penetration, this definition is limited by its focus on penetrative sexual intercourse rather than the subjective experience of the woman in

sexual and non-sexual situations. In addition, use of the term "spasm" is disputed.^{3,4}

Women with vaginismus may avoid appropriate health care, such as cervical screening. Case-control studies have reported difficulty with using certain types of contraception and tampons.³ Women may present to the general practitioner because of non-consummation of a marriage, painful or difficult penetration, or a difficult gynaecological examination.

A population based study in Sweden found a prevalence of sexual pain in women of 9.3% and one in Morocco found that 6.2% of women reported vaginismus.^{5,6} Community estimates put the prevalence at 0.5-1%, whereas rates of 4.2-42% have been reported in specialist and clinical settings.⁷

Controlled empirical studies on the aetiology and management of vaginismus are lacking. This review is therefore based mainly on observational evidence from descriptive case-control studies, case studies, clinical experience, and expert opinion.

What social and psychological factors predispose women to vaginismus?

Critical reviews of the literature conclude that studies are so methodologically flawed that no conclusions can be made about the aetiology of vaginismus.^{4,8} Religiosity has not consistently been shown to be associated with vaginismus, but affected women often come from families and cultures with strong beliefs about the dangers of penetrative sex. Negative views about sexuality in general,⁸ and sexual activity before marriage in particular, have been reported. In cultures where there is a taboo on single girls discussing sex and a bride's virginity is crucial, such as in Turkey, prevalences of more than 70% have been reported in clinic populations.⁹ Anecdotal evidence suggests that aversive sexual experiences are important in the development of vaginismus. Some women have described traumatising gynaecological examinations by unsympathetic health professionals. Some have described hearing alarming stories about painful

SUMMARY POINTS

The conditions of vaginismus, vestibulodynia, and dyspareunia overlap

Diagnosis of vaginismus is based on a full psychosexual history

The degree of distress, anxiety, and self reported interference with penetration is more central to the diagnosis than is muscle tone

Genital examination is needed at some point to exclude organic pathology

Information on sexual function and pelvic anatomy should be given to all patients

Treatment comprising insertion of "vaginal trainers" of gradually increasing size is associated with the achievement of penetrative intercourse

Sources and selection criteria

We did a Medline search using the keywords "vaginismus", "sexual pain", "dyspareunia". We selected articles that were in English. We used the term "vaginismus" to search the Cochrane Library for systemic reviews. Where necessary, we made additional searches for themes highlighted by the original search. We also consulted experts in sexual dysfunction.

A patient's perspective

For me, it started as a very mild form but got worse. My husband and I attempted intercourse for the first time on our wedding night. We were both looking forward to it. I was tired and stressed but we tried anyway. It was extremely painful. As I got used to intercourse the pain became more bearable and I was able to enjoy sex and achieved orgasm during intercourse. I eventually told my gynaecologist who advised me to "drink wine and try other positions" and that I would just "get used to it." So I was determined to just keep trying even if it hurt. This just made it worse. Finally I was diagnosed with vaginismus. My treatment included physical therapy and marital therapy because the condition has led to emotional trauma for us both. Because I can now insert the vaginal trainers with no pain my husband has begun to insert them so that I can get used to him. It amazes me how my body reacts when he does this. Even with the smallest trainer, I can feel my body mounting a "fight or flight" response. My legs tingle a bit (in a bad way), my muscles tighten, and my respiration and heart rate increase, even though I feel no pain. Clearly, I had learnt some sort of response to him. Why doesn't anyone tell people to stop if it hurts, instead of telling people to just "keep trying?"

experiences during sex or childbirth or not receiving any explanation about genital sensations and responsiveness from a parent. Although many women report a history of abuse,⁸ its role in this condition is not clear. Sexual abuse was ranked as least important in the perceived causation of vaginismus in a postal survey of 89 women who currently or previously had had vaginismus, whereas the influence of intrusive, inaccurate, or negative messages about sexual intercourse was considered more important.¹⁰ Case reports have discussed the role of separation anxiety in mother-daughter relationships and its possible association with vaginismus.^{w1}

Women with vaginismus report more negative views about sexuality⁸ and have a higher propensity for disgust than women with or without dyspareunia.¹¹ Feelings of disgust at the thought of vaginal contact or penile penetration may elicit a defensive reflex that evokes involuntary pelvic muscle activity.

What are the organic contributory factors?

Provoked vestibulodynia—a condition characterised by painful tender areas at the entrance to the vagina—postmenopausal oestrogen deficiency, trauma associated with genital surgery, abnormalities of the hymen,

Box 1 | Causes of painful intercourse**Superficial pain**

Lack of sexual arousal
Vulvovaginitis caused by trichomoniasis, herpes simplex infection, candidiasis, furunculosis
Atrophic vaginitis
Vulvar dermatoses, such as lichen sclerosus, lichen planus, or lichen simplex chronicus
Drugs or radiotherapy

Deep pain

Endometriosis
Pelvic inflammatory disease

genital tract infections, and pelvic radiotherapy may be associated with difficulties in tolerating vaginal penetration (box 1).¹² Difficulty in becoming sexually aroused is more common in women with diabetes, multiple sclerosis, or spinal cord injury, and this may result in poor lubrication, insufficient vaginal expansion, and painful sexual intercourse.¹²

Pelvic floor muscles are indirectly innervated by the limbic system and are thus potentially reactive to emotional states.¹² A recent small case-control study used electromyography of pelvic floor muscles and assessment of pudendal nerve activity in women with vaginismus found neurophysiological abnormalities; this suggests that central nervous system changes are present in this condition.¹³

What is the role of pain in vaginismus?

A qualitative study of 89 women on the experience of vaginismus found that the three most common contributing factors were fear of painful sex, the belief that sex was wrong or shameful, and traumatic early childhood experiences.¹⁰ Women with vaginismus exhibit more distress and avoidance behaviours than those with dyspareunia or women who have pain-free intercourse.¹ They seem more fearful and unwilling to bear any pain associated with penetration and may become anxious at the possibility of penetration.

The quality of pain experienced does not seem to differ between women with dyspareunia and vaginismus.¹⁴ The degree of avoidance of vaginal penetration may be the crucial differentiating factor between the two conditions. Pain related fears associated with attempted penetration rather than spasm may be involved in the development and maintenance of vaginismus.^{3 15 16}

How does vaginismus affect relationships?

Many women who present with vaginismus are not in a relationship and attribute this fact to the condition. The dynamics of the intimate partner relationship have been evaluated for heterosexual women with vaginismus only. One retrospective study of women with vaginismus found that personality characteristics and sexual problems of male partners were no different from controls or norms.¹⁷ Couples may enjoy a non-penetrative sexual relationship, although loss of interest and problems with arousal are more common in this group.⁸ A clinical review of relationship adjustment suggests that solicitous responses from the partner may help maintain and exacerbate sexual pain because of avoidance of sexual activity.¹⁸ The assertion is that the woman chooses her partner because he is passive and unassertive. The partner's role in maintaining the symptoms through concern about the woman's fears remains to be explored.

How is vaginismus diagnosed?

The clinical presentation of women with superficial dyspareunia and those with vaginismus can be similar, which makes diagnosing vaginismus difficult.^{4 19} A detailed medical, psychosocial, relationship, and sexual history, including any episodes of traumatic sexual

Box 2 | Questions to ask about the woman's sexual history

Is she in a relationship?
 Is she sexually active with her partner?
 Is penetration possible?
 If so, is it painful?
 Is it painful only at penetration?
 How anxious does she feel at the thought of penetration?
 Can she insert tampons or fingers?
 How long has this been a problem?
 Is she able to become aroused and climax at all?
 What does she want to achieve?
 How anxious does she feel about the thought of a genital examination?
 What is it about the examination that makes her anxious?
 Has she ever had a traumatic sexual experience?

experience, is needed (box 2). Questions about sexual knowledge and family attitudes to sexual behaviour are relevant to a psychological assessment. A clear description of the pain, fear, and avoidance responses is needed. The woman's ability to tolerate genital exploration by herself or another should be elicited.

What is the role of genital examination?

This is necessary at some time to exclude organic pathology. Several consultations may be needed before the woman is ready to be examined (box 3).

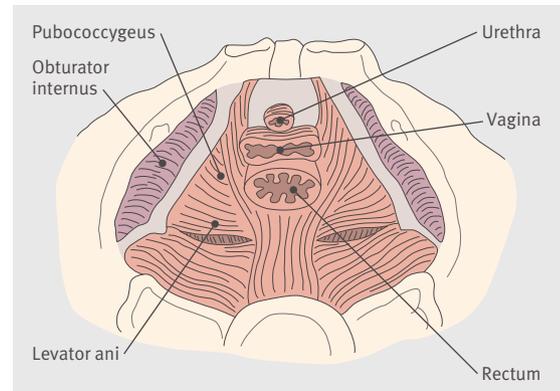
Genital examination may elucidate various degrees of anxiety. A postal survey of 401 Canadian doctors reporting experiences with difficult gynaecological examina-

Box 3 | Genital examination**Before the examination**

Give her control by reassuring her you will stop immediately if she wishes
 Explain what you will do during the examination
 Tell her she can ask questions at any point
 Show her the smallest Cusco's speculum and let her hold it
 Explain that the vagina has the potential to expand and that muscle tension caused by anxiety can make penetration difficult
 Demonstrate the degree of pressure you will use by pressing your finger on her hand

During the examination

Be gentle and encourage her to relax her legs; do not use pressure to pull them apart
 Place one finger on the external genitalia and ask her again for permission to inspect the vulva
 Use cotton wool swabs to establish any point tenderness suggestive of vestibulodynia
 Ask permission again before inserting one finger into the vagina
 Lubricants may be helpful
 Assess how well she tolerates this process
 Is finger penetration possible? If so, can you feel tightness in the levator ani, and is she aware of this?
 Can you identify painful areas?
 Ask her to squeeze and release her pelvic floor muscles. Does this make her pain worse? Can she consciously relax the levator ani?
 Information gathered at this time can be discussed afterwards in relation to her experience of sexual intercourse
 Discuss the possibility of speculum examination with her



Anatomy of pelvic floor

tions found that these ranged from verbal expressions of discomfort to refusal, pulling away, or screaming.²⁰

Insertion of the finger into the introitus may elicit pain or tenderness on palpation of pelvic floor muscles. In addition, pain is commonly reported in the absence of abnormal physical findings. Subjective evaluation alone of increased pelvic muscle tone by the doctor has not been found to differentiate between groups of women with and without vaginismus.³ The pelvic floor muscles are the levator ani and coccygeus, which attach from the pubis anteriorly and posteriorly to the coccyx (figure). No consensus exists about which muscles are responsible for the supposed spasm of vaginismus.^{4 12} Surface electromyography is not considered useful for the routine diagnosis of vaginismus. Case-control studies of women with and without vaginismus, using electromyography, have found no difference in their ability to contract and release their pelvic floor.²¹

The degree of distress shown by the patient during examination and the self reported levels of interference with, and pain and distress during, intercourse or examination seem to be more central to diagnosing vaginismus than the physiological findings of muscle tension.

How is vaginismus managed?

Observational case-control studies suggest that the syndrome of vaginismus, vestibulodynia, and dyspareunia overlap.^{4 19} Expert opinion recommends that the condition should be managed as a sexual pain syndrome.¹²

Treatment consists of education, counselling, and behavioural exercises. Treatment is tailored to the needs of the woman and her partner, if she is in a relationship. The woman's objective may be penetrative painless intercourse, tampon use, or painless vaginal examination. When the primary goal is conception, information about assisted conception should be given. The doctor should explain what treatment choices are available.

The aim of treatment is to enable the woman to become more comfortable with her genitals, by teaching relaxation techniques to be used in conjunction with self exploration of the genitals and insertion of "vaginal trainers." These are smooth plastic rods that are graduated in size and length; they have a handle and lubrication gel to use when inserting them. If she

FUTURE RESEARCH

- A clear and widely accepted definition of vaginismus needs to be formulated
- More accurate population estimates of the prevalence of vaginismus are needed
- Randomised controlled trials should assess treatments, treatment combinations, and outcomes

is in a relationship, a sensate focus programme may be offered to the couple.

The course of untreated vaginismus is unclear. In one randomised treatment study the waiting list control group showed no change after three months,²² whereas spontaneous resolution of vaginismus was reported in 10% of women waiting to enter a treatment intervention study.^{w2} Clinical experience tells us the condition is not improved by childbirth or the menopause.

When should women be referred?

If the woman has a history of sexual trauma she should be referred immediately for assessment of treatment. Referral to a psychologist is advised if she has anxiety, phobic resistance to examination, or other mental health or relationship problems. Some women may need referral to specialists such as gynaecologists, sexual therapists, psychiatrists, or psychotherapists. Those who are less anxious may use vaginal trainers with support from their doctor. Homework diaries recording progress are helpful.

What treatment strategies are available?

Genital examination can provide information about anatomy and sexual functioning, and it can also be used to teach pelvic floor contraction and relaxation exercises. Organic pathology if present should be treated.¹²

Progressive relaxation (box 4) is used to manage anxiety, and women should use it before finger or trainer insertion. A recent literature review of muscle relaxation treatment suggests that it is beneficial, although we have no clear understanding of how it works. Its benefits may be the result of an increased sense of control and altered thinking.^{w3}

Desensitisation is a process whereby the woman gradually overcomes her anxiety by inserting graded vaginal trainers into her vagina. Starting with the smallest one she inserts larger vaginal trainers over time until one the size of a penis can be inserted comfortably. Short term treatment (2-15 sessions) using insertion training seems to be effective, where the outcome measure is penetrative intercourse. A Cochrane systematic review reported 72-100% success in uncontrolled trials and case series. It concluded that there is limited evidence to recommend the use of systematic desensitisation.²³

One small trial that investigated the efficacy of this treatment for vaginismus compared two versions of desensitisation and reported that 43 of 44 patients achieved intercourse. No differences were found between the two treatment groups.²³

A recent well designed randomised controlled

treatment outcome study of women with lifelong vaginismus compared a waiting list control group with those given either cognitive behavioural group therapy or informative literature and limited support from a therapist on the telephone. Non-coital penetration improved in both treatment groups—at the end of three months of treatment, 79% could insert one finger into the vagina compared with 36% of the control group. This proportion fell at follow-up but remained significantly higher than the 30% baseline. At one year, 21% of the group therapy participants and 15% of the limited support group reported successful intercourse.²²

Other clinical approaches are based mainly on small observational studies, case reports, and anecdotal evidence. These include biofeedback,^{w4} physiotherapy, hypnotherapy, topical lidocaine applied within the vagina, and antidepressants.^{4 23} Intravenous diazepam has been reported to facilitate intercourse in these women, but expert opinion does not recommend it.^{w5}

Box 4 | Treatment strategies**Progressive relaxation**

This consists of alternately tensing and relaxing groups of muscles in a prescribed sequence—for example, starting from the feet and moving upwards. This is taught to women to use before self fingering or insertion of vaginal trainers.

Desensitisation

This is used in behavioural therapy to treat phobias and other behavioural problems that involve anxiety. Patients are exposed to anxiety provoking situations that gradually become more threatening (in this case vaginal trainers that are gradually increased in size) until they are able to tolerate the situation comfortably.

Sensate focus

This is a series of structured touching activities designed to help couples overcome anxiety and increase comfort with physical intimacy. The focus is on touch rather than performance. Intercourse is initially banned and couples use homework exercises to gradually move through stages of intimacy to penetration.

Electromyography

This technique uses an electromyograph, which detects the electrical potential generated by muscle cells when active and at rest, to evaluate and record the activation signals of muscles.

Biofeedback

In this technique, the woman uses electromyography, which measures muscle activation with surface electrodes on a small vaginal probe, to help her identify when she is activating the pelvic floor muscles. Physiotherapists can offer this to women together with pelvic floor exercises. Small series of case reports on the use of biofeedback have found that couples can achieve penetrative intercourse using this method.^{w4 w10}

Hypnotherapy

Hypnosis is an induced state of heightened relaxation and altered awareness during which the person is open to suggestions that may alter certain behaviours. A recent observational study of eight women found it to be beneficial for treatment of sexual pain.^{w9} Successful outcomes were reported in six women treated in a hypnotherapy group.²³

ADDITIONAL EDUCATIONAL RESOURCES

Information for healthcare professionals

British Association of Sexual and Relationship Therapy (www.basrt.org.uk)—A specialist charity that provides information on sexual problems, access to psychosexual therapists, and useful resource links

Institute of Psychosexual Medicine (www.ipm.org.uk/)—Provides training in psychosexual medicine for doctors in the UK

British Association for Behavioural and Cognitive Psychotherapies (www.babcp.com/)—

Information on training, accreditation, supervision, and access to cognitive behavioural therapists in the UK, with links to similar organisations in other countries

Society of Obstetricians and Gynaecologists of Canada (www.sogc.org/index_e.asp)—A leading authority on reproductive health care that produces national clinical guidelines for both public and medical education on women's health (in English and in French)

American College of Obstetricians and Gynecologists (www.acog.org)—Information on women's health and how to access a gynaecologist

British Society for Sexual Medicine (www.bssm.org.uk/)—Promotes research and education on sexual dysfunction. Membership allows access to peer reviewed publications

INFORMATION FOR PATIENTS

Vaginismus Awareness Network (www.vaginismus-awareness-network.org)—A non-profit making site that has information on vaginismus and its treatment for women, their partners, and doctors. It offers translations in German, Spanish, Italian, and Portuguese.

Vulval Pain Society (www.vulvalpainsociety.org/)—A UK charity aimed at women seeking help mainly in the NHS. It has links to international websites

BBC. Sex and Sexual Health (www.bbc.co.uk/health/sex)—Information on sexual problems and treatments

Relate (www.relate.org.uk)—Offers advice, relationship counselling, sex therapy, workshops, mediation, consultations, and support either face to face, by telephone, or through the website

A recent literature review of botulinum neurotoxin for the management of pelvic floor dysfunction suggests it might be useful in treating vaginismus, although it is not licensed for this condition.²⁴ Outline toxin blocks release of acetylcholine, which prevents neuromuscular transmission and leads to muscle weakness; its effects usually take place three to seven days after injection and last three to four months. In an open label study of botulinum toxin (150-400 U) injected bilaterally into the puborectalis muscles in three separate sites in 24 women with vaginismus who had not responded to other treatments, 18 women achieved intercourse, and this was maintained over one year.^{24 w6} Further evaluation by double blind randomised controlled trials is necessary.

One small study in Israel that compared regular couple sexual therapy with therapy with a surrogate partner found that surrogate therapy was associated with successful vaginal penetration in all 16 women. The authors suggest that surrogate therapy should be considered for patients whose partner is not cooperative.^{w7} Treatment of the male partner with a phosphodiesterase inhibitor^{w8} or intracavernosal injections with papaverine, with and without phenolamine, has been associated with achieving consummation in unconsummated marriages.²⁵

Vaginismus is a well recognised clinical condition associated with non-consummation and

considerable distress in women. It has received little scientific attention, and further well designed studies are needed.

Contributors: TC did the literature search, TC and DG wrote the article, and both authors are guarantors. JH provided the psychological input. Yitzchak M Binik (University of Pennsylvania) read the article and commented on it.

Competing interests: None declared.

Provenance and peer review: Commissioned; externally peer reviewed.

Patient consent obtained.

- Basson R, Althof S, Davis S, Fugl-Meyer K, Goldstein I, Leiblum S, et al. Summary of the recommendations on sexual dysfunctions in women. *J Sex Med* 2004;1:24-34.
- American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. Washington DC: APA, 2000.
- Reissing E, Binik Y, Khalife S, Cohen D, Amsel R. Vaginal spasm, pain and behaviour: an empirical investigation of the diagnosis of vaginismus. *Arch Sex Behav* 2004;33:5-17.
- Reissing ED, Binik YM, Khalife S. Does vaginismus exist? A critical review of the literature. *J Nerv Ment Dis* 1999;187:261-71.
- Danielsson I, Sjöberg I, Stenlund H, Wikman M. Prevalence and incidence of prolonged and severe dyspareunia in women: results from a population study. *Scand J Public Health* 2003;31:113-8.
- Kadri N, Mchichi Alami KH, Mchakra Tahiri S. Sexual dysfunction in women: population based epidemiological study. *Arch Women's Ment Health* 2002;5:59-63.
- Simons JS, Carey MP. Prevalence of sexual dysfunctions: results from a decade of research. *Arch Sex Behav* 2001;30:177-217.
- Reissing E, Binik Y, Khalife S, Cohen D, Amsel R. Etiological correlates of vaginismus: sexual and physical abuse, sexual knowledge, sexual self-schema, and relationship adjustment. *J Sex Marital Ther* 2003;29:47-59.
- Tugrul C, Kabakci E. Vaginismus and its correlates. *J Sex Marital Ther* 1997;12:23-4.
- Ward E, Ogden J. Experiencing vaginismus: sufferers' beliefs about causes and effects. *Sex Marital Ther* 1994;9:33-45.
- De Jong PJ, Van Overveld M, Schultz W, Peters ML, Buwalda FM. Disgust and contamination sensitivity in vaginismus and dyspareunia. *Arch Sex Behav* 2007;38:244-52.
- Schultz W, Basson R, Binik Y, Eschenbach D, Wesselmann U, Van Lankveld J. Women's sexual pain and its management. *J Sex Med* 2005;2:301-16.
- Frasson E, Graziottin A, Priori A, Dall'ora E, Didonè G, Garbin EL, et al. Central nervous system abnormalities in vaginismus. *Clin Neurophysiol* 2009;120:117-22.
- Binik YM, Reissing E, Pukall C, Flory N, Payne KA, Khalifé S. The female sexual pain disorders: genital pain or sexual dysfunction? *Arch Sex Behav* 2002;31:425-9.
- Payne K, Binik Y, Amsel R, Khalifé S. When sex hurts, anxiety and fear orient attention towards pain. *Eur J Pain* 2004;9:427-36.
- Van der Velde J, Laan E, Everaerd W. Vaginismus, a component of a general defense mechanism: an investigation of pelvic floor muscle activity during exposure to emotion-inducing film excerpts in women with or without vaginismus. *Urogynecology J Pelvic Floor Dysfunct* 2001;12:328-31.
- Van Lankveld JJ, Brewaeys AM, Ter Kuile MM, Weijnenborg PThM. Difficulties in the differential diagnosis of vaginismus, dyspareunia and mixed sexual pain disorder. *J Psychosom Obstet Gynaecol* 1995;16:201-9.
- Davis HJ, Reissing ED. Relationship adjustment and dyadic interaction in couples with sexual pain disorders: a critical review of the literature. *Sex Rel Ther* 2007;22:245-54.
- Ter Kuile MM, Van Lankveld JJ, Vlieland CV, Willekes C, Weijnenborg PT. Vulvar vestibulitis: an important factor in the evaluation of lifelong vaginismus? *J Psychosom Obstet Gynaecol* 2005;26:245-9.
- Huber JD, Pukall CF, Boyer SC, Reissing ED, Chamberlain SM. "Just relax": physicians' experiences with women who are difficult or impossible to examine gynaecologically. *J Sex Med* 2009;6:791-9.
- Engman M, Lindehammar H, Wijma BJ. Surface electromyography diagnostics in women with partial vaginismus with or without vulvar vestibulitis and in asymptomatic women. *Psychosom Obstet Gynaecol* 2004;25:281-94.
- Van Lankveld JJ, ter Kuile MM, de Groot HE, Melles R, Nefs J, Zandbergen M. Cognitive-behavioral therapy for women with lifelong vaginismus: a randomized waiting-list controlled trial of efficacy. *J Consult Clin Psychol* 2006;74:168-78.
- McGuire H, Hawton KKE. Interventions for vaginismus. *Cochrane Database Syst Rev* 2001;(2):CD001760.
- Eccleston KJ, Woolley PD. Botulinum toxin for urogenital conditions. *Int J STD AIDS* 2008;19:797-9.
- Zargooshi J. Male sexual dysfunction in unconsummated marriage: long-term outcome in 417 patients. *J Sex Med* 2008;5:2895-903.