FEMALE SEXUAL DYSFUNCTIONS AND UROGYNECOLOGICAL DISORDERS

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ABSTRACT

Female sexual dysfunctions are a highly prevalent and often-underestimated health problem and include disorders of sexual desire, arousal, orgasm and sexual pain, associated with self-distress. Pathophysiology of female sexual dysfunctions is complex and still poorly understood, although it has been related to several biological, medical and psychological factors. Amongst women, urogynecological disorders such as urinary incontinence, overactive bladder syndrome, bladder pain syndrome and pelvic organ prolapse, have been found to be associated with sexual dysfunctions, although the biological and psychological bases of these associations are poorly investigated. Data on sexual function impact of these conditions come from several cross-sectional or community-based, epidemiological studies based on self-administered validated psychometric tools. This review focuses on the most relevant available evidence on the impact of urogynecological disorders and related surgical treatments on female sexual function.

Keywords: bladder, pain syndrome, female sexual dysfunctions, LUTS, pelvic organ prolapse, urinary incontinence.

INTRODUCTION

Sexuality is one of the most important components of quality of life (QoL) in both sexes. Female sexual dysfunctions (FSD) have been recognised as a common problem and its prevalence increases dramatically with increasing age.[1] Data from the National Health and Social Life Survey (NHSLS) revealed sexual dysfunctions have a higher prevalence in women (43%) than men (31%).[2]

Several studies reported that female sexual function (FSF) is negatively influenced by lower urinary tract symptoms (LUTS) and pelvic floor disorders (PFD).[3-6]

The importance of these observations is related to the high and increasing incidence worldwide of urogynecological conditions.[7-8] Thus, all physicians dealing with women's health should be aware of the possible detrimental effect of these conditions on FSF.

The aim of this article is to review the published data on the impact of urogynecological conditions on FSF, focusing on urinary incontinence (UI), overactive bladder syndrome (OAB), pelvic organ prolapse (POP) and bladder pain syndrome/interstitial cystitis (BPS/IC).

DEFINITION AND MEASURES

The second International Conference of Consensus on Women's Sexual Disorders[9] classified the FSD in four categories: sexual desire disorders, sexual arousal disorders, orgasmic disorders and sexual pain disorders. Because the Diagnostic and Statistical Manual of Mental Disorders (DSM) IV-TR defines FSD as "disturbances in sexual desire and in the psycho-physiological changes that characterise the sexual response cycle and cause marked distress and interpersonal difficulty",[10] both sexual function and sexually-related personal distress should be considered when assessing FSD. Although some studies estimate that 40–50% of women report at least one sexual complaint,[11] not all sexual complaints lead to dissatisfaction or sexual distress and, until recently, most research on FSF has focused on sexual complaints but has not considered the QoL impact of these complaints in relation to sexual distress.[12]

The self-administered questionnaires are a reliable standardised method for clinical evaluation of FSF.[13-22] Questionnaires are also an ideal research tool to assess outcome from various treatment modalities and can be of use in epidemiological surveys. Most of the published

studies have investigated FSF using the Female Sexual Function Index (FSFI)[18] or the POP/UI Sexual Questionnaire (PISQ).[19] The FSFI is a 19-item questionnaire that features six areas of sexual function: desire, arousal, lubrication, orgasm, satisfaction and pain. The PISQ includes 31 items and assesses sexual function in women with POP and/or UI. Their abbreviated forms have a wider applicability in the clinic to minimise the time of administration.[20] The International Continence Society (ICS) provided a validated questionnaire, the ICIQ-Female Sexual Matters associated with Lower Urinary Tract Symptoms (ICIQ-FLUTSsex), which is useful for researchers and clinicians in both primary and secondary care institutions to obtain a brief, yet comprehensive, summary of female sexual matters and the impact of urinary symptoms on this.[21]

Up until now there have been reported no standardised values for what should be considered a 'normal' sexual function and the majority of studies show the changes in the overall score over time. However, average values of the women with and without LUTS and UI have recently been reported for the FSFI.[22]

UI AND OAB

Prevalence rates of FSD in women with UI are estimated to range between 26–47%.[23-25] All forms of UI are associated with FSD of all phases of the sexual cycle and studies have examined the impact of UI on individual domains of sexual function and satisfaction.[26-31]

The loss of urine significantly impairs the QoL of women, who are forced to organise exhausting strategies to prevent or mask stains and/or odours.[32] At emotional and behavioural levels, a generalised apathy, feelings of guilt and depressive attitude may develop to different areas of life due to the unpredictable nature of the symptoms.[33] Thus, several studies showed a correlation between UI and major depression, which has a three times higher incidence in incontinent patients than in continent patients.[34] Specifically, women with UI feel threatened in their femininity, expressing feelings of shame, inadequacy and reduced self-esteem[35-37] and subsequently a communicative and emotional inability with a strong sense of isolation.[38] The lack of libido and reduced level of self-esteem because of a fear of uncontrolled leakage are the main factors in women with UI and FSD.[39]

Nilsson et al.[40] evaluated women with UI and/or urinary urgency (the key symptom of OAB) and their partners and reported that 22% of the men and 43% of the women stated that the female urinary symptoms impaired their sexual life. 49% of the women expressed worries about having urinary leakage during sexual activity, but 94% of their male partners did not. 23% of the men and 39% of the women responded the woman leaked urine during sexual activity and the majority (84%) of women considered this a problem, yet 65% of their partners revealed they did not.

Focusing on sexual distress, Knoepp et al.[41] assessed sexual complaints among 305 women seeking outpatient gynecologic care using the Female Sexual Distress Scale (FSDS). 26% of the scores reflected distress, and distressed women were more likely to be younger, have higher depression scores and report decreased arousal, infrequent orgasm, and dyspareunia. Women with sexual distress were also more likely to report sexual difficulty related to pelvic floor symptoms, including UI with sexual activity, sexual avoidance due to vaginal prolapse, or sexual activity restriction due to fear of UI.

Salonia et al.[42] found that 47% of patients who reported a hypoactive sexual desire had stress UI (SUI), and 46% of those who reported orgasm problems also had significant symptoms of OAB with urgency UI (UUI). The study concluded that patients with UI or LUTS more frequently suffer from sexual dysfunction compared to healthy control patients. Accordingly, Yip et al.[43] found that patients with SUI or OAB have a decreased QoL measured with King's Health Questionnaire (KHQ),[44] less sexual satisfaction and worse marital relations than controls. In the study of Coksuer et al.,[45] patients with a diagnosis of mixed urinary incontinence (MUI) had significantly lower mean PISQ-12 scores than the ones with SUI and urodynamic detrusor overactivity (DO) whereas patients with SUI had lower mean PISQ-12 scores than patients with DO, so they concluded that MUI has the greatest impact on sexual function when compared with SUI and DO alone. Sacco et al.[46] reported that, among women with UI and/or OAB, those with UUI and MUI reported worse FSD as compared with those with SUI or with dry OAB. Women with urodynamically-proven detrusor overactivity incontinence appeared in this and other studies to have the worst FSF.[43,47-48] Mechanisms associated with the impact of OAB on FSF can be the fear of leakage during stimulation and intercourse, coital UI during orgasm, the need to interrupt intercourse to void, urgency and frequency after coitus, dyspareunia and pelvic floor dysfunction.

The fear of urine leakage during intercourse was found in 11-45% of patients with UI.[49-54] Moran et al.[53] found that 11% of 2,153 women had UI during intercourse, most of which reported this symptom only in a questionnaire, 70% reported urine leakage during penetration, 20% only during orgasm and 11% during both penetration

and orgasm. A SUI was present in 80% of women with UI during penetration, in 93% of women with UI during orgasm and in 92% of women with UI during both phases. The pathophysiology leading to UI during intercourse is not clear. During penetration, the displacement of the anterior wall of the vagina and bladder neck or the increase of the intra-abdominal pressure loss can cause SUI. Detrusorial simultaneous contractions and urethral relaxation were demonstrated in urodynamic studies during orgasm.[51]

Recent studies evaluated the relationship between body mass index (BMI), UI and FSD among perimenopausal and postmenopausal[55] or overweight and obese women,[56-57] showing that UUI and SUI are more common and have greater impact on sexual function in obese women. Furthermore, increased BMI early in menopause represents a risk both for UI and for FSD although the severity of the FSD may not be directly related to the severity of UI or obesity.

SURGERY FOR UI

Although SUI surgery is thought to improve sexual function,[39,58-59] data reporting sexual function following surgical repair are limited and conflicting.[60]

Moran et al.[61] evaluated 55 women with SUI and coital incontinence treated with Burch colposuspension. Before the procedure, 36 women (65%) had coital leakage only with penetration, 9 women (16%) had only with orgasm and 10 (18%) with both. After the procedure, 81% described no further coital incontinence. In Baessler;[62] a cohort of sexually active women were affected by SUI with concomitant coital incontinence, this problem was cured in 70% of patient and improved in almost 7% after Burch colposuspension. Brubaker et al.[39] studied sexual function in 655 women randomised to Burch colposuspension or sling surgery and reported patients with successful surgery had a greater improvement in PISQ-12 scores in both Burch and sling groups.

Berthier et al.[63] found no significant postoperative changes regarding frequency of sexual intercourse, satisfaction with sexual intercourse or personal importance of having an active sexual life in 66 women undergoing tension-free vaginal tape (TVT) procedure for SUI. These results are in agreement with those of previous studies.[64-66] Ghezzi et al.[67] reported that 62.2% of women undergoing TVT procedure had no change in sexual function after surgery, no significant difference in the incidence of dyspareunia and two patients (3.8%) referred intercourse to be worse,

one because of erosion and one for 'de novo' anorgasmia.

Studies on trans-obturatory sling (TOT) reported no impact or a beneficial effect of this procedure on FSF.[68-70] Filocamo et al.[68] included in their study women complaining of urodynamic SUI who were both sexually and non-sexually active at baseline. 105 women out of 133 had a TOT procedure, while 28 out of 133 had a retropubic procedure. Twelve months after surgery, 22 out of 54 non-sexually active women (40%) re-established sexual activity, whereas only 6 out of 79 (7.5%) patients, sexually active at baseline, were not sexually active one year after surgery. The authors concluded that after a sling procedure, FSF improves and a very relevant percentage of non-sexually active women can recover sexual activity after sling. Accordingly, Xu et al.[70] evaluated sexual function before and six months after a TOT procedure in 55 sexually active women. More than half (54.5%) the women reported an improvement in sexual function after surgery and 45.5% reported no change, and no statistically significant difference was found between preoperative and postoperative total or domain scores on the FSFI, so they concluded that TOT procedure did not significantly affect sexual function. In a recent study, Zyczynski et al.[71] described an increase of mean PISQ-12 scores after mid-urethral sling surgery (TOT and TVT) and a reduction of dyspareunia, incontinence during sex and fear of UI during sex.

However, surgeons should know that vaginal sling procedures may have a potential negative effect on FSF due to damage to vascular and/or neural genital structures or to 'de novo' dyspareunia. Baessler et al.[72] reported that dyspareunia was a severe indication for removing the posterior intravaginal synthetic sling. Bekker et al.[73] described the autonomic and somatic pathways in relationship to sling surgery in 14 adult female dissected hemipelves, after TVT or TOT procedures have been performed. They concluded that the dorsal nerve of the clitoris was not disturbed during the placement of the TOT but the autonomic innervation of the vaginal wall was disrupted by the TVT procedure, which could lead to altered lubrication-swelling response.

PELVIC ORGAN PROLAPSE

Several studies investigated the specific role of POP on FSD, with conflicting results. Intuitively, POP would seem likely to have an adverse impact on sexual function; however, older age and postmenopausal status, common in women with prolapse, are also associated with sexual dysfunctions and may confound the association between

POP and FSD.[74-75]

In a recent cross-sectional observational study, Athanasiou et al.[76] evaluated the effect of POP on FSF in 101 women compared with 70 women without POP, and found that FSF was worse in POP group than in control group, but did not seem to worsen with an increasing grade of POP. Based on a linear regression model, they concluded that the presence of prolapse only partly explained impaired sexual functioning in women with POP. Investigating 495 women scheduled for hysterectomy with evidence of PFD, Handa et al.[77] found that UI was significantly associated with low libido, vaginal dryness, and dyspareunia and independent of age, educational attainment and race, but POP was not associated with any sexual complaint. Barber et al.[47] reported 81% of sexually active patients described sexual intercourse as 'somewhat' or 'very' satisfactory, and that neither UI nor POP significantly influenced the answer to this question. Weber et al.[50] reported women with POP and/or UI have a similar sexual function than women without these PFD. In this study, increasing age was the only significant factor predictive of FSD, and increasing grade of POP predicted interference with sexual activity, without affecting frequency of intercourse or description of satisfaction with the sexual relationship.

On the other hand, Novi et al.[78] compared sexual function of women with POP to that of women without POP using the PISQ, and reported that mean PISQ score in sexually active women with POP were significantly lower compared to controls, with significant difference in satisfaction with sexual relationship, actual frequency of intercourse and ability to achieve orgasm with masturbation, but no difference in the desired frequency of intercourse, initiation of sexual activity, rate of anorgasmia or subjective assessment of partner satisfaction. The study of Digesu et al.[79] reported a comparison of prolapse symptoms and QoL with physical examination findings and urinary, bowel and sexual dysfunctions in symptomatic and asymptomatic women. They identified women as symptomatic from prolapse if they complained of any of the prolapse symptoms and/or on direct questioning the patients reported a "sensation of dragging" or "a lump or fullness in the vagina". These symptoms were correlated with anterior, posterior and apical compartment prolapse severity. For the symptomatic women only, sexual symptoms severity was correlated with apical and posterior wall prolapse, so they concluded that FSD was related to uterine displacement, likely leading cervix to obstruct penile penetration. Displacement of the uterus coming down, pulling the ligaments, pedicles and peritoneum may also lead to a sensation of heaviness or "dragging" vaginal feeling, which may interfere with sexual function.

POP SURGERY

Functional results are as important an outcome measure as anatomical results in the assessment of pelvic floor surgery.[80] Sexual function in particular has been overlooked and superficially assessed in the past and several studies of the impact of surgical intervention have also been limited by absence of baseline data.[81] Based on data from the Colpopexy and Urinary Reduction Efforts (CARE) study,[82-83] Handa et al.[74] administered the PISQ-12 to 224 sexually active stress-continent women planning abdominal sacrocolpopexy for stage II-IV prolapse, before and one year after the intervention. In the CARE trial, concomitant Burch colposuspension was randomly assigned at the time of sacrocolpopexy, and posterior colporrhaphy was performed at the discretion of the surgeon, so the potential impact of those procedures on postoperative sexual function was assessed. One year after colposacropexy, the number of sexual active women rose significantly from 148 (66.1%) to 171 (76.3%), the number of women who avoided sex because of vaginal bulging decreased from 103 (47.3%) to 10 (4.6%) and the mean PISQ-12 score among women who were sexually active before and after surgery improved significantly. 58% of women with dyspareunia at baseline did not report pain during intercourse after surgery and 14.5% of women without dyspareunia reported pain one year after sacrocolpopexy, regardless of concomitant Burch colposuspension. The proportion of women with infrequent sexual desire, sexually excited during sexual activity and who reported orgasm with intercourse did not change substantially. Only 11 of 148 women who were sexually active before surgery became inactive after surgery. They did not differ in age or preoperative prolapse severity from women who continued sexual activity after surgery and reported no postoperative sexual interference from fear of incontinence, vaginal bulging or pain. However, more of these women reported infrequent sexual desire after surgery. Comparing Burch colposuspension group versus non-Burch group, they did not find difference in proportion of sexually active women, dyspareunia and PISQ-12 scores one year after surgery, while more women who underwent posterior repair reported postoperative dyspareunia, although the difference did not reach statistical significance. These data are consistent with previous studies reporting a high percentage of dyspareunia after posterior repair, both with levator ani muscle plication narrowing of mid-vagina[84-86] and with posterior colporrhaphy.[87-88] The authors

concluded that most sexually active women can expect to continue sexual activity following sacrocolpopexy and experience less impact from pelvic floor symptoms.[74]

The presence of prosthetic material in the vagina may adversely affect sexual function, although several studies reported contradictory results. Wang et al.[80] evaluated the short-term impact (six months) of surgical repair with total transvaginal mesh (TVM) on FSF among 27 sexually active women with symptomatic POP. In these patients the TVM surgery corrected the pelvic anatomy and urinary symptoms successfully; while there were no significant changes in sexual desire, sexual arousal, orgasm, satisfaction, the mean postoperative score of the lubrication and dyspareunia domains worsened significantly, with two-thirds of all participants showing a lower total FSFI score postoperatively. The authors explained that changes in vaginal blood flow and ischemia, disruption of the dense nerve innervation of the anterior and lateral vaginal wall during dissection and the insertion of permanent mesh in the vagina might have contributed to the painful sensation and loss of lubrication postoperatively. Similar results were obtained by other studies.[89-90] On the other hand, Hoda et al.[91] reported an initial deterioration of sexual function during the first three months after transobturator mesh implants, followed by a steady improvement that reached a significant difference at twenty-four months postoperatively and Dwyer and O'Reilly[92] reported a significantly decreased dyspareunia in 97 women with recurrent or large POP undergoing polypropylene mesh repair to reinforce anterior and posterior compartment after six, twelve and twenty-four months.

Lowestein et al.[93] evaluated sexual function, prolapse symptoms and self-perceived body image after treatment for POP to explore differences in body image perception and sexual function following conservative and surgical treatment for POP. At six-month follow-up visits, the patients reported significant improvement in FSF from baseline in both groups and the improvement in FSF, as measured by PISQ-12, was not significant among sexually active patients treated with a pessary compared with those treated surgically. In this study, body mass index and changes in body image perception were the only independent factors associated with changes in PISQ-12 score following POP treatment.

BPS/IC

Sexual dysfunction issues have been reported among women with BPS/IC and can contribute to reduced QoL in these patients. Pelvic pain due to inflammation of the bladder wall and neuropathic dysfunction, dyspareunia,

and fear of pain during intercourse are particularly frequent among these patients and may cause resistance to penetration and consequent pelvic floor overactivity, vulvodynia, and vaginismus.[94]

Sacco et al.[46] showed that, among women with lower urinary tract disorders, those with BPS reported the greatest adverse impact on FSF, mostly because of sexual pain, followed by those with urodynamic DO, clinical diagnosis of UUI, MUI and SUI, dry OAB and voiding-phase LUTS.

Accordingly, Peters et al.[95] sent a mailed survey to 5000 randomly selected women from the United States (controls) and 407 women with IC (cases) from a large referral centre, including the Female Sexual Distress Scale (FSDS) and questions about sexual function, desire, orgasm, and pain. A significantly greater proportion of cases reported fear of pain and pain with intercourse. In adulthood, a large proportion of cases reported pelvic pain, fear of pain during intercourse, and dyspareunia. Furthermore, after the diagnosis of IC, the number of cases reporting moderate to high desire and orgasm frequently and very frequently declined significantly.

Verit et al.[96] evaluated 112 women complaining of chronic pelvic pain (CPP) with a comprehensive history, including FSFI, compared with a group of 108 healthy women without CPP. Among 112 CPP patients, 78 (69.6%) of them had FSD and 34 (30.4%) patients did not have FSD in this study. Among patients with FSD, 42 patients (53.8%) had hypoactive sexual desire disorder, 26 patients (33.3%) had sexual arousal disorder, 17 patients (21.7%) had orgasmic disorder and finally 58 patients (74.3%) had sexual pain disorder. In compliance with these findings, using FSFI to compare FSD in 75 patients affected by IC with 22 controls, Ottem et al.[97] reported that total adjusted FSFI scores differed between patient and controls and that 51 patients (68%) had an abnormal FSFI score versus 3 controls (14%), concluding that patients with IC have sexual dysfunction, including pain, dyspareunia, sexually related distress and significant declines in desire and orgasm frequency, more commonly than do controls.

In a survey of 1469 women who met criteria for BPS/IC diagnosis, 88% of those with a sexual partner reported ≥1 general sexual dysfunction symptom and 90% reported ≥1 BPS/IC-specific sexual dysfunction symptom in the past four weeks.[98] In the multivariate models, BPS/IC-specific sexual dysfunction was significantly associated with more severe BPS/IC symptoms, younger age, worse depression symptoms, and worse perceived general health. Of note, only a small proportion (about 10-20%) of those

women with sexual dysfunction sought medical help for the condition.

CONCLUSIONS

Sexual dysfunctions are common health issues in women suffering from urogynecological disorders and have a great impact on quality of life. However, findings of published studies are often conflicting, particularly on the role of POP. Data on the relative impairment of sexual function in women with different types of urogynecological disorders are deficient. The consistency of published studies is often limited by several biases such as use of non-condition-specific instruments, lack of a control group and of urodynamic evaluation.

The diagnosis of FSD requires a complete anamnesis with regard to the sexual history, and self-administered questionnaires represent useful tools not only for research but also for patient-clinician discussions on sexuality.

Although urogynecological surgery is thought to improve sexual well-being, data reporting sexual function following surgical repair are still limited and often diverging. More research is needed using standardised assessment tools to define clear endpoints in this field.

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