

Sexual function in women with pelvic organ prolapse and surgery influence on their complaints

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ABSTRACT

Sexual health is an essential component of women's wellbeing. Women with pelvic organ prolapse (POP) often suffer from sexual dysfunction. The current review focuses on the impact of POP as well as surgical POP repair on sexual function. A variety of techniques are discussed in relation to this issue, including native tissue repair (NTR), transvaginal mesh (TVM) and sacrocolpopexy (SCP). The majority of studies utilise validated questionnaires to assess sexual function in women pre- and post-POP repair and Female Sexual Function Index (FSFI) and Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire-IUGA revised (PISQ-IR) are among the most commonly used. According to the available data, surgical management of POP usually results in improved or unchanged scores in sexual function, regardless of the type of procedure used. SCP appears to be the preferred surgical management for women with apical vaginal prolapse that minimises the risk of dyspareunia as compared to vaginal techniques.

Keywords: pelvic organ prolapse surgery; female sexual function; quality of life; dyspareunia

Ginekologia Polska

INTRODUCTION

Sexual health is an essential component of women's wellbeing. It depends on many interrelated elements, including physical, emotional, mental, social and biological factors. Even one disturbed element may affect sexual self-esteem and lead to avoidance or abandonment of sexual activity.

Pelvic organ prolapse (POP) is a common gynecological problem that influences the quality of life, including its sexual aspects. Up to 64% of sexually active women attending urogynecology clinic suffer from female sexual dysfunction (FSD) [1]. The most important factors responsible for the reduction of women's sexual experience include worries about the image of their body, loss of libido, fear of urine leakage during intercourse, concerns about their partner's satisfaction and discomfort associated with reduced genital sensation [2].

Only the minority of urogynaecologists consistently screen patients for sexual complaints. Moreover, the patient's sexual needs are not always taken into consideration when treatment options for pelvic floor disorders are being discussed, despite the fact that certain interventions could

worsen sexual function and thus should be avoided in sexually active women.

The current review focuses on the impact of POP as well as surgical POP repair on sexual function. A variety of surgical techniques are being discussed in relation to this aspect, including native tissue repair (NTR), transvaginal mesh (TVM) and laparoscopic reconstructive surgeries.

PATHOPHYSIOLOGY OF PELVIC ORGAN PROLAPSE

Pelvic organ prolapse (POP) is defined as the descent or herniation of pelvic organs from their normal position, resulting in an abnormal sensation or function. POP can be subclassified in terms of the affected compartment: a descent of the anterior compartment (cystocele), the posterior compartment (rectocele and enterocele), the uterus (cervix) or the apex of the vagina (post hysterectomy). Combined, coexisting defects are also common.

The exact prevalence of POP is unknown and depends on whether the anatomical criteria, presence of symptoms or both of these factors are considered. Of note, higher prevalence — 36 to 90% — is reported when anatomical

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criteria are considered. Only 6 to 12% of these women are symptomatic [3]. The anterior compartment is the most common site where prolapse occurs (34%), followed by the posterior compartment (19%), apical (14%), and multi-compartment POP (14%) [4].

The etiology of POP is multifactorial. All risk factors contribute to weakening of the pelvic floor connective tissue, causing pelvic organs to descend through the vaginal walls and pelvic floor. Epidemiological data indicate age, hormonal status, body mass index, gravidity, parity, number of vaginal deliveries and weight of vaginally delivered infants as independent risk factors of POP. Moreover, it has been well established that genetic predispositions play a significant role in the pathogenesis of pelvic floor disorders, with a 2.5-fold increased incidence of POP in women with a family history of prolapse compared with the general population [5].

INFLUENCE OF POP ON SEXUAL FUNCTION

According to the current literature, POP has a negative impact on sexual function. In the general population, female sexual dysfunction is reported in approximately 30–40% of women, whereas for women suffering from pelvic floor disorders (PFD) the incidence of FSD is estimated to be ca 50–83% [6]. It should be emphasized that women with POP experience symptoms that do not necessarily correlate with the anatomical level of prolapse.

Preoperatively, most of women suffering from POP have a feeling of bulging, heaviness or protrusion from the vaginal area, daily or more than once a week (92%) [7]. They report feeling vaginal looseness, reduced vaginal lubrication, dyspareunia, vaginal winds, difficulties in vaginal intercourse due to obstruction by genital prolapse or shortened vagina.

However, this negative impact on sexual function may not be directly caused by the prolapse, but is rather associated with psychological factors. It is postulated that these effects are related to the patient's perception of POP symptoms and her own body image more than the objective anatomical changes. In a multicenter cross-sectional study, Lowenstein et al. [8] assessed sexual function in the group of 384 women with POP stage II or greater, showing that the mean Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire short form (PISQ-12) score did not differ significantly between women with POP-Q stage II and stage III/IV. Similarly, total PISQ-12 score was not correlated with the specific anatomical compartment of POP. The results of these observations demonstrated that worse sexual function was predominantly associated with more bothersome syndrome of POP and worse self-perceived body image [8]. Women suffering from prolapse are also more prone to depression [9]. It has been demonstrated that these patients frequently experience negative emotions associated with loss of attractiveness and low self-confidence. The prevalence of depressive symp-

toms in women with PFD varies widely — from 20% to 71% — among authors [10, 11]. In a study by Tok et al. [12] that investigated 1267 sexually active women (925 without POP and 342 with POP-Q stage ≥ 2), all of whom completed the PISQ-12 questionnaire, it was demonstrated that women with genital prolapse had lower scores of sexual desire and sexual excitement. They also avoided intercourse more frequently due to prolapse and urinary incontinence (UI) and had negative emotional reactions during sexual activity. However, the mean scores of orgasm, sexual satisfaction and pain during sexual intercourse did not significantly differ between the groups. The mean total PISQ-12 score in women with POP was found to be lower than in healthy women [12]. Another study population, which included 223 sexually active women seeking outpatient urogynecologic care, showed that women with a high Pelvic Floor Disorders Inventory-20 (PFDI) score were significantly more likely to report decreased arousal and infrequent orgasm. They also reported increased dyspareunia [13].

EVALUATION OF SEXUAL FUNCTION IN WOMEN WITH POP

In order to evaluate sexual function in women, one must be aware that sexual well-being is not only the lack of illness or symptoms. In fact, it comprises a sum of factors affecting the quality of women's life. These factors result from physical, emotional, mental, and social comfort. Several questionnaires come to aid when the assessment of sexual quality of life is desired, *i.e.*: Female Sexual Function Index (FSFI), International Consultation on Incontinence Questionnaire-Vaginal Symptoms (ICIQ-VS), Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire-IUGA revised (PISQ-IR), Sexual Quality of Life-Female (SQoL-F) and Sexual Function Questionnaire (SFQ). Validated questionnaires are the only tools that enable us to quantify changes of sexual function post treatment and to assess if the impact of particular procedures is positive, neutral or negative as far as the patient's sexual life is concerned. These questionnaires can be categorized into general and condition-specific assessments of sexual function. FSFI and PISQ-IR are among the most commonly used.

Female Sexual Function Index is a 19-item, multidimensional self-report measure that evaluates sexual function in general as well as its' basic components, including sexual desire, arousal, lubrication, orgasm, satisfaction and pain. Scores range from 2 to 36. Higher scores achieved in particular domains and total FSFI score indicate better sexual function [14, 15]. The FSFI-19 was developed in 2000 and has since been utilized in a large number of studies, including multiple observational and interventional studies in diverse populations. It has a "grade A" recommendation of the International Continence Society (ICS). The main limitation of this

questionnaire is that in the group of patients that are not sexually active it conveys no further meaningful information about the specific domains.

Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire was published in 2001 by Rogers et al. [16] and is a validated condition-specific assessment designed to measure sexual function in women with POP and/or UI. This questionnaire is widely used to evaluate results of treatment of POP and UI in terms of sexual complaints. The long version has 31 items and comprises 3 dimensions: emotional, physical and partner's related [15, 16]. In 2013, the International Urogynecological Association (IUGA) published a revised version of PISQ. The goal of this project was to establish a valid and reliable tool that allows cross-cultural assessment that can be applied in multiple cultures and languages and it was named PISQ-IR. The distinguishing feature of this tool is the possibility to assess both sexually active (SA, a section containing 21 items) and non-active patients (NSA, a section with 12 items) [15, 17]. The PISQ-12 is a short form of the original PISQ-31 measure, which is also valid and reliable. It measures three domains of sexual life: behavioral-emotive (items 1–4), physical (items 5–9) and partner-related (change concerning the partner — items 10–12) [18].

SURGICAL MANAGEMENT FOR POP AND ITS IMPACT ON SEXUAL FUNCTION

According to the available data, nearly 12% of women will undergo surgery for POP or UI by the age of 80 years [19]. The outcome of reconstructive surgery is assessed not only by the degree of restoration of normal pelvic anatomy, but also by the impact on the quality of life, including sexual function. POP surgery involves several techniques: abdominal (mainly laparoscopic) and vaginal procedures, native tissue or synthetic mesh augmented repairs. The choice of the procedure depends on many factors, e.g.: type of anatomic defect, age, comorbidities, history of previous surgeries, sexual activity and patient's expectations. The gold standard surgery using abdominal/laparoscopic approach is sacrocolpopexy, where the uterus or vaginal apex is anchored to the sacral promontory. Vaginal procedures are performed with native tissue or using synthetic mesh.

Data reporting sexual function after prolapse surgery are still not equivocal. Many randomized controlled trials confirmed improvement in sexual function in women who underwent POP surgery. Some authors, however, reported deterioration.

Since the poorest sexual function scores are mainly connected with the worst body image perception, presumably improvement in this area should positively influence sexual life.

For the majority of women, NTR results in improved or unchanged sexual function. In a prospective study with short

term (6 months) follow-up after prolapse surgery, Glavind et al. [7] reported significant improvement in PISQ-12 scores (from 35.2 ± 4.6 to 38.9 ± 3.9) in all types of operative procedures based on NTR (anterior/posterior colporrhaphy, vaginal hysterectomy with suspension and mixed procedures). Among the 51 women that constituted the studied group, 72% improved their PISQ-12 score postoperatively, 18% had an equal score, and 10% reported a lower score. No significant differences in the PISQ-12 scores were shown depending on the type of surgery [7]. A systematic review and meta-analysis of the impact of NTR performed for POP on sexual function also demonstrated significant improvement in this regard. The included studies involved a total of 520 patients that completed the PISQ-31 and its short form (PISQ-12), FSFI, P-QOL and electronic Pelvic Floor Assessment Questionnaire (ePAQ). In eight studies, which assessed dyspareunia before and after prolapse surgery, improvement was demonstrated in 47% of women, no change in 39%, deterioration in 18% (4% reported *de novo* dyspareunia) postoperatively. A patient's likelihood of experiencing improvement or no change in dyspareunia after surgery was 4.8 — fold greater than the risk of deterioration [20].

The use of transvaginal mesh (TVM) as an option for POP repair has been controversial in the last decade due to the commonly reported complications such as pain and exposition with the resultant deterioration of the quality of life. After the first FDA notification in 2011 on the safety and effectiveness of transvaginal mesh there have been several changes in the mesh production process, leading to the new generation of lightweight and ultralightweight macroporous mesh materials. Furthermore, surgical strategies evolved and indications for mesh repair of POP have been refined. Recent data concerning influence of TVM on sexual function showed that sexual outcomes are comparable with those observed after NTR. In a study conducted by Morselli et al. [21], after a median 42 months' follow-up post TVM repair for POP-Q stage III or higher, no statistically significant differences in terms of total FSFI score pre- and postoperatively were observed. In a sub-score analysis, desire, excitement, lubrication, orgasm, satisfaction and pain also remained unaffected by surgery [21]. At a 6-month follow-up after TVM implantation. Hsiao et al. [22] observed significant improvement in all domains of the FSFI questionnaire including total score, with the exception of the lubrication domain. Similar results after TVM surgery were reported by Kinjo et al. [23], who demonstrated a significant improvement in overall FSFI scores for sexual function. *De novo* dyspareunia occurred in one patient without mesh extrusion, while the remission of dyspareunia was also detected in one patient after TVM surgery [23].

Another retrospective study showed an overall improvement in the median PISQ-12 scores after the implantation

of a TVM for POP at a 1-year follow-up. These results were consistently demonstrated in all mesh types and persisted when scores were stratified by various factors [24]. In the PROSPECT study, (PROlapse Surgery: Pragmatic Evaluation and randomised controlled trials), two years after surgery the authors did not find any difference in postoperative dyspareunia and/or pain between the group of women post standard NTR and patients in the synthetic mesh repair arm. Severe dyspareunia was reported by 5% (9/166) of women post NTR and 3% (4/145) post TVM implantation. [25]. The recently published PROSPECT 4- and 6-year follow-up results showed no clinically important differences in POP symptom score for any of the three types of surgery (native tissue, biological xenograft and polypropylene mesh). The authors were not able to prove that polypropylene mesh inlays caused greater pain or dyspareunia than NTR [26].

Sacrocolpopexy (SCP) is regarded as the preferred treatment for apical prolapse. It provides excellent anatomical effect and can therefore be expected to positively influence sexual function. The results of the Cochrane database systematic review indicate that sacral colpopexy has outcomes superior to a variety of vaginal procedures in the surgical management of apical defect and is associated with lower risk of recurrent prolapse, repeat surgery, postoperative stress UI and dyspareunia [27].

In a study investigating sexual outcomes in 120 women (60 per group) with symptomatic anterior POP-Q stage ≥ 3 and apical ≥ 2 , who underwent laparoscopic sacrocolpopexy/cervicopexy (LSC-Cx) or anterior vaginal mesh (AVM, elevate anterior and apical) it was demonstrated that sexual activity was recovered in 42.9% of non-sexually active women (NSA) 1–2 years post-surgery. Recovery of sexual activity was greater after LSC-Cx, though not significantly. The authors reported significant improvement in the mean score of PISQ-IR among sexually active women in both groups (79.2% in the LSC-Cx group and 72.2% in the AVM group). 4.1% of women got the same score before and after the surgery (LSC-Cx), whereas 16.7% in the LSC-Cx group and 27.8% in AVM group scored lower after the surgery. Preoperative dyspareunia was significantly reduced after LSC-Cx, but not after AVM [28]. Similar results were observed in a prospective study of 204 patients undergoing abdominal sacrocolpopexy (ASC; 97% with mesh) or transvaginal pelvic organ prolapse repair (TVR; 66% with mesh). Baseline demographics were similar except that the ASC patients were significantly younger and had a higher rate of apical repair (77 vs 55%). There was no difference in sexual activity between the groups at the 6- or 12-months' follow-up. PISQ-IR score improved significantly and in a similar manner in both the ASC and TVR group compared with the baseline. Before surgery, dyspareunia was reported in 14.3% of women in

the ASC group and in 14.5% in the TVR group. The rate of dyspareunia decreased in the ASC group (9.7% at 6 months and 7.7% at 1 year), but remained stable in the TVR group (12.2% at 6 months and 14.3% at 1 year), though this trend was not statistically significant at 6 and 12 months [29].

A systematic review published last year compared different surgical approaches (NTR, TVM, biologic grafts, and SCP) used in pelvic floor repair. The authors found no differences in sexual activity pre- (40.7% vs 45.5%) or post-operation (45.2% vs 45.9%) between the SCP and NTR group. The rates of dyspareunia were similar at baseline (31% vs 29%). The rates of postoperative dyspareunia also did not differ between the SCP and NTR groups (6.7% vs 11.6%; OR, 0.56; 95% CI, 0.12–2.51). *De novo* dyspareunia occurred in 4.8% vs 8.1% of patients (OR, 0.56; 95% CI, 0.12–2.51). The prevalence of persistent dyspareunia also did not differ significantly in the two groups (44.4% vs 57.1%; OR, 0.60; 95% CI, 0.08–4.40). The improvement of sexual function measured by PISQ-12 also did not differ in the two groups. When TVM and SCP were compared, there were no differences in sexual activity or sexual function score change. The rates of *de novo* dyspareunia were similar in the two groups (8.1% post TVM vs 7% post CSP). Based on two studies, however, it was demonstrated that postoperative total dyspareunia was more common in TVM than SCP (27.5% vs 12.2). When TVM and NTR were compared, no statistically significant differences were found in baseline or postoperative sexual activity, baseline (18.6% vs 19.3%) or postoperative total dyspareunia (12.9% vs 11.1%), persistent dyspareunia (52.6% vs 34%), or *de novo* dyspareunia (7.6% vs 8.6%). PISQ-IR short form score changes did not differ between the two groups. The review demonstrated that all types of surgery reduce the prevalence of dyspareunia [30].

SUMMARY

Patients' health-related quality of life is the essential outcome of POP treatment. Sexual function depends on several factors, among which psychological, emotional and physical are the most important. Women with POP suffer from varying degrees of sexual dysfunction, which is largely due to low self-esteem. Surgical management of POP usually results in improved or unchanged scores in sexual function, regardless of the type of procedure used. Sacrocolpopexy has been proven to be the preferred surgical management for women with apical vaginal prolapse that minimizes the risk of dyspareunia as compared to vaginal techniques.

Article information and declarations

Conflict of interest

All authors declare no potential conflicts of interest.

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