

Pelvic Floor Dysfunction in Morbidly Obese Women: Pilot Study

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Abstract

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Objective: The objective of this study was to evaluate the impact of obesity on pelvic floor function in women.

Research Methods and Procedures: This was a prospective controlled study of 20 morbidly obese female patients planning to undergo gastric bypass surgery and 20 age-matched female controls. Subjects completed symptom and impact questionnaires, including the Incontinence Impact Questionnaire (IIQ-7), Urogenital Distress Inventory (UDI), the Kobashi Prolapse Symptom Inventory and Quality-of-Life Questionnaire (PSI-QOL), and Index of Female Sexual Function. Data were analyzed with Wilcoxon or ratio χ^2 tests.

Results: Mean weight was 295.7 ± 87.9 lbs in the study group and 144.79 ± 33.07 lbs in the control group. Mean BMI was 52.65 ± 14.49 kg/m² in the study group and 25.11 ± 5.27 kg/m² in the control group. According to the IIQ-7, urinary incontinence significantly affected lifestyle in the study group. The total IIQ-7 score was also significantly affected in the study group ($p = 0.03$). The UDI indicated more urinary leakage with activity ($p = 0.04$) and more incidents of small amounts of leakage ($p = 0.02$) in the study group. According to the PSI-QOL, women in the study group experienced constipation more often because of difficulty in emptying the rectum ($p = 0.04$). The PSI-QOL score was higher in the study group (6.75 ± 6.84) than in

the control group (2.65 ± 3.03 ; $p = 0.04$). There were no significant differences between groups regarding sexual function.

Discussion: Morbid obesity is associated with a significant negative impact on urogenital health. Sexual function did not seem to be affected in women who are morbidly obese.

Key words: pelvic floor dysfunction, pelvic prolapse, sexual dysfunction, urinary incontinence

Introduction

Although obesity is believed to be a risk factor for urinary incontinence (UI)¹ and pelvic prolapse, there have been few reports that quantify the impact of obesity on urinary continence and pelvic floor function. The impact of weight loss on urinary incontinence and sexual function has not been extensively studied.

Our understanding of the impact of incontinence, prolapse, and sexual dysfunction in women has been greatly enhanced by the recent emergence of validated instruments. It is known that only one-third to one-fourth of incontinent women seek medical help (1,2). The use of patient-completed questionnaires serves the dual purpose of screening for and assessment of severity of disease. In addition, these instruments are sensitive to changes after treatment. Their use has been recommended by the International Continence Initiative (3).

The Incontinence Impact Questionnaire (IIQ) measures the impact of UI on various activities of daily life. The short version, the IIQ-7, is commonly used in clinical practice, along with its frequently used counterpart, the Urogenital Distress Inventory (UDI-6). The IIQ-7 examines the impact of UI on the four life domains of physical activity, travel, emotional health, and social activities. The IIQ-7 and UDI-6 results are usually each reported as a single score. The

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¹ Nonstandard abbreviations: UI, urinary incontinence; IIQ, Incontinence Impact Questionnaire; UDI-6, Urogenital Distress Inventory; QOL, quality of life; PSI-QOL, Prolapse Symptom Inventory and Quality-of-Life Questionnaire; IFSF, Index of Female Sexual Function.

Table 1. Demographics of population

Variable	Study group	Control group	<i>P</i>
Age	42.90 ± 10.95	46.05 ± 9.44	0.34*
Weight	295.70 ± 87.9	144.79 ± 33.07	
Height	162.70 ± 6.52	162.20 ± 5.07	0.79
Children (no.)	0.95 ± 1.10	1.35 ± 0.88	0.15
BMI	52.65 ± 14.49	25.11 ± 5.27	

* Student's *t* test. The rest are Wilcoxon tests.

internal consistency, test–retest reliability, and criterion validity have been adequately proved (4,5).

At the time this study was carried out, no validated quality-of-life (QOL) instruments were available for assessing the impact of pelvic organ prolapse on life domains. We used the Prolapse Symptom Inventory and Quality-of-Life Questionnaire (PSI-QOL) (6), which contains 11 items about prolapse symptoms and 4 items for each of the life domains of physical activity, social activity, entertainment activities, and sexual function.

The Index of Female Sexual Function (IFSF) (7) is a nine-item self-administered index patterned after the International Index of Erectile Function (8). The total scale score reliability is high ($r = 0.70$). Although it has not been validated, it remains a useful instrument for assessing sexual function in women. Such a questionnaire can be used to conduct an analysis of subjective patient perceptions of sexual function. In addition to discomfort and dryness, questions related to the level of desire, orgasm, and clitoral sensation are critical in studying overall sexual function. Hypofunctioning in a particular domain may contribute to the disorder of another domain. It has been suggested that chronic arousal disorder may lead to hypoactive sexual desire disorder and female orgasmic disorder (7). It is well known that disorders of desire, arousal, and orgasm may coexist in the same patient. Psychosocial factors such as negative body image caused by being overweight and lack of partner may also play a contributory role in sexual dysfunction in obese patients.

Our aim was to study the status of sexual and urogenital health in a group of morbidly obese women and controls. To the best of our knowledge, this is the first study of pelvic floor dysfunction in morbidly obese women using symptom inventories and QOL questionnaires.

Research Methods and Procedures

After obtaining institutional review board approval, we recruited into the study 20 consecutive female morbidly obese patients who were enrolled in a program to undergo

Table 2. UDI-6 variables

Variable	Study group	Control group	<i>P</i>
Frequent urination	1.00 ± 1.17	0.60 ± 0.68	0.42
Leak-urgency	0.75 ± 1.16	0.35 ± 0.67	0.35
Leak-activity	1.40 ± 1.27	0.55 ± 0.60	0.048*
Leak-small	1.15 ± 1.27	0.25 ± 0.44	0.02*
Difficulty emptying	0.25 ± 0.79	0.05 ± 0.22	0.54
Pain	0.40 ± 0.68	0.20 ± 0.70	0.15
Total score	4.95 ± 5.38	2.00 ± 2.29	0.11

* A *P* value of ≤ 0.05 is considered significant.

gastric bypass surgery. Twenty female volunteers from an employee medical clinic were recruited as controls.

Both groups completed a series of questionnaires including the IIQ-7 (4,5), UDI-6 (4,5), PSI-QOL (6), and IFSF (7). Questionnaires were scored as described in the original reports. The PSI-QOL was used with permission from the authors. Because this was a pilot study with unknown differences between groups and multiple variables were being studied, a power calculation was not performed.

Categorical and continuous variables were analyzed using the Student's *t* test or the nonparametric Wilcoxon test. Total and subscale scores were compared between groups for all questionnaires. A *p* value of ≤ 0.05 was considered significant.

Results

Demographic data are shown in Table 1. On the UDI-6 scale, obese women reported more incidents of small amounts of leakage ($p = 0.02$) and significantly more leakage with activity ($p = 0.04$) compared with controls. Total UDI score was higher in the morbidly obese group compared with controls ($p = 0.11$; Table 2).

On the IIQ-7 scale, the impact of UI on entertainment activities ($p = 0.03$), social activities outside the home ($p = 0.04$), emotional health ($p = 0.03$), and feelings of frustration ($p = 0.03$) was significant in the study group. The total IIQ score was significantly higher in the morbidly obese group compared with controls ($p = 0.03$; Table 3).

On the PSI-QOL scale, women in the study group experienced constipation more often, resulting from difficulty in emptying the rectum ($p = 0.04$). Cumulatively, the total score was significantly higher in the obesity group (6.75 ± 6.84) than in the control group (2.65 ± 3.03 ; $p = 0.04$; Table 4). All PSI-QOL comparisons for the total and subscales were significantly higher in the study group ($p = 0.004$; Table 4).

Table 3. IIQ-7 variables

Variable	Study group	Control group	P
Household chores	0.55 ± 1.05	0.15 ± 0.67	0.11
Recreation	0.65 ± 1.14	0.15 ± 0.49	0.11
Entertainment	0.65 ± 1.04	0.10 ± 0.45	0.03*
Travel	0.60 ± 0.99	0.15 ± 0.49	0.07
Social activities	0.65 ± 1.14	0.10 ± 0.45	0.048*
Emotional health	0.50 ± 1.00	0.00 ± 0	0.03*
Feel frustrated	0.60 ± 1.14	0.00 ± 0	0.03*
Total score	4.20 ± 7.13	0.65 ± 2.48	0.03*

* A *P* value of ≤0.05 is considered significant.

On the IFSF scale, 50% of the obesity group and 70% of controls were sexually active (*p* = 0.21). There were no significant differences between groups in various aspects of sexual function (Table 5).

Discussion

In this study, obesity clearly had a negative impact on QOL because of UI and pelvic prolapse. Although overall sexual function was 20% more affected in obese women compared with controls, this difference did not achieve statistical significance, possibly because of the small sample size. Our study found a higher incidence of rectal evacuatory dysfunction, suggesting the presence of a rectocele.

A limitation of this study was that no pelvic examination was performed to assess uterovaginal prolapse. Therefore, it cannot be accurately said whether the symptoms were directly caused by prolapse.

Our cohort of obese women was recruited from a database of those awaiting bariatric surgery. It is, therefore, possible that these women were more likely to be distressed with their condition than a true obese population sample.

Despite these shortcomings, our data give a reasonably robust estimate of the urogenital and sexual aspects of health in obese women compared with a control group.

Table 4. PSI-QOL variables

Variable	Study group	Control group	P
Prolapse score	6.75 ± 6.84	2.65 ± 3.03	0.04*
QOL score	2.80 ± 4.85	0.00 ± 0	0.004*

* A *P* value of ≤0.05 is considered significant.

Table 5. IFSF variables

Sexual function variable	Study group	Control group	P
Discomfort	0.61 ± 0.61	0.95 ± 0.94	0.27
Dryness	0.72 ± 0.96	1.45 ± 1.36	0.09
Attempts	1.11 ± 1.37	1.90 ± 1.71	0.15
Desire	2.56 ± 1.42	2.47 ± 1.22	0.94
Desire level	2.44 ± 1.38	2.50 ± 0.89	0.83
Satisfaction	2.83 ± 1.54	3.18 ± 1.42	0.48
Satisfaction with partner	3.29 ± 1.57	3.50 ± 1.32	0.78
Orgasm frequency	3.00 ± 1.73	3.67 ± 1.50	0.23
Clitoral sensation	2.82 ± 1.55	3.38 ± 1.09	0.33

Numerous epidemiological surveys (5,9–11) have described the impact of obesity on the incidence of female stress UI. Age and parity are two factors that work synergistically with obesity to cause an increased incidence of female stress incontinence.

A scientific basis for stress UI in obese women has been proposed. A significant correlation has been described between BMI and intra-abdominal pressure when measured by multichannel urodynamics (12). The authors postulated that obesity might chronically stress the pelvic floor because of elevated intra-abdominal pressure. This may be the pathway through which obesity contributes to stress incontinence. Another study described an increase in the odds ratio of the prevalence of UI by 1.07 BMI units above baseline (13). Brown et al. (14) found that the incidence of daily UI increased by an odds ratio of 1.6/5 units of BMI above baseline. Beyond these series, the correlation of obesity and UI has not been widely studied. Raised intra-abdominal pressure may also explain the increased incidence of prolapse in obese women.

Whether the damage to the pelvic floor sustained over a period of time because of chronically elevated intra-abdominal pressure can be reversed by diet or surgery, weight loss is an important issue. Bariatric surgery is more commonly being used for weight loss in patients with morbid obesity. This procedure has been shown to decrease the impact of obesity on QOL and comorbid medical conditions. The effect of surgically induced weight loss on UI has been described in 12 obese women (15). Symptomatic improvement was noted in nine patients 1 year after surgery. The authors also documented a decline in vesical pressures and bladder-urethra pressure transmission ratios. Obesity has also been found to increase the incidence of operative failures in women after anti-incontinence procedures (16). In women with moderate obesity, weight reduction led to an improvement in UI (17).

In summary, we found that obese women were more likely to leak urine with activity and experience difficult

rectal evacuation. There was a significantly negative effect on quality of life caused by urinary incontinence. Sexual function did not seem to be significantly affected in women who are morbidly obese.

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