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A PROSPECTIVE COHORT STUDY OF THE IMPACT OF SURGICALLY INDUCED WEIGHT LOSS ON PELVIC FLOOR DISORDERS IN OBESE WOMEN

Hypothesis / aims of study

To examine changes in the prevalence associated bother, and quality of life (QOL) impact of stress urinary incontinence (SUI), overactive bladder (OAB), pelvic organ prolapse (POP), and anal incontinence (AI) in obese women undergoing laparoscopic weight loss surgery. We hypothesized that the prevalence, bother and QOL impact of pelvic floor disorders (PFD) would significantly improve after surgically induced weight loss.

Study design, materials and methods

A prospective cohort study of obese women undergoing laparoscopic gastric banding or sleeve gastrectomy between September 2007 and August 2009 was performed. Women with a body mass index (BMI) ≥ 30 kg/m^2 were enrolled pre-operatively and followed to 6 and 12-months. The prevalence of SUI, OAB, POP and AI was assessed using the Epidemiology of Prolapse and Incontinence Questionnaire (EPIQ). Degree of bother for each PFD was assessed using a 100 mm visual analog scale (VAS). Quality of life impact in those women identified as having PFD was assessed using the Pelvic Floor Impact Questionnaire (PFIQ), the Pelvic Floor Distress Inventory (PFDI), and the Fecal Incontinence Severity Index (FISI), and sexual function by the Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ). Quality of life impact in all women, affected by PFD or not, was assessed using the Beck Depression Index Fast Screen (BDI-Fast Screen) and the Short-Form 36 (SF-36), and sexual function by the Female Sexual Function Index (FSFI). The prevalence of each PFD at baseline, 6 and 12-months was compared using McNemar test for paired proportions. Paired t-tests were used to compare VAS scores for each of the PFD, as well as QOL impact, at baseline, 6 and 12-months. Power calculations determined that enrollment of 91 subjects would achieve at least 80% power at a two-sided significance level of .05 to detect an average decrease in prevalence of PFD of 14% between baseline and 12-month follow-up.

Table 1: Overall prevalence of PFD at baseline, 6 and 12-month follow-up. P value represents McNemar test for paired proportions compared to baseline. SUI=stress urinary incontinence, OAB=overactive bladder, POP=pelvic organ prolapse, AI=anal incontinence, PFD=pelvic floor disorder, CI=confidence interval of change (percentage) compared to baseline.

PFD	BASELINE Percentage (n/N)	6 MONTH Percentage (n/N) [CI Change]	p VALUE	12 MONTH Percentage (n/N) [CI Change]	p VALUE
SUI	33% (32/98)	15% (10/69) [4.27, 21.65]	<0.05	21% (13/61) [0.65,19.5]	<0.05
OAB	13% (13/98)	7% (5/69) [-1.67, 14.17]	0.109	8% (5/61) [-4.09, 16.40]	0.227
POP	5% (5/98)	3% (2/69) [-1.42, 1.49]	0.99	2% (1/61) [-1.61, 1.69]	0.99
AI	28% (27/98)	32% (22/69) [-6.31,12.83]	0.549	33% (20/61) [-7.16,14.57]	0.549
ANY PFD	47% (46/98)	38% (26/69) [-4.43, 15.87]	0.267	44% (27/61) [-4.43, 15.87]	0.753

Table 2: Mean VAS scores (± SD) for those with PFD at baseline, 6 and 12-month follow-up. P value represents paired t-test compared to baseline. SUI=stress urinary incontinence, OAB=overactive bladder, POP=pelvic organ prolapse, AI=anal incontinence, PFD=pelvic floor disorder.

PFD	BASELINE	6-MONTH	p VALUE	12-MONTH	p VALUE
SUI	63.13 ± 11.4	36.5 ± 27.3	<0.001	42.3 ± 25.8	<0.05
OAB	75.1 ± 10.4	41.9 ± 26.5	<0.05	40.5 ± 24.5	<0.05
POP	88.6 ± 10.1	50.33 ± 43.5	0.34	47.5 ± 67.2	0.64
AI	47.2 ± 20.2	36.5 ± 25.9	<0.05	33.3 ± 23.7	<0.05

Results

A total of 98 women were enrolled with average age of 43 (range 21 to 69 years). Mean BMI decreased from 39.7 ± 6.15 kg/m^2 at baseline to 34.5 ± 5.8 kg/m^2 at 6 months and 34.2 ± 5.6 kg/m^2 at 12 months. With 85% of data collection complete at the time of this abstract, the overall prevalence of SUI in the entire cohort decreased at 6 and 12-months post-operatively (Table 1). While there were decreases in the prevalence of OAB, POP and any one or more PFD at 6 and 12-months, these were not statistically significant. Of those women with SUI at baseline, 62% resolved at 6-months and 48% at 12-months ($p<0.05$). Of those with OAB at baseline, 73% resolved at 6-months and 80% at 12-months ($p<0.05$). Of those with any one or more PFD at baseline, 29% resolved at 6-months and 21% resolved at 12-months ($p<0.05$). The prevalence of AI in women affected at baseline was not significantly different 6 (79%) and 12-months (77%) ($p=0.13$), and there were insufficient numbers of women affected by POP to evaluate change at 6 and 12-months. De novo development of PFD was rare and only occurred for AI at 6 (15%) and 12-months (17%) ($p<0.05$). Mean VAS scores for women with SUI, OAB and AI at baseline decreased at 6 and 12-months (Table 2). There were no significant changes in mean VAS scores for POP. Pelvic Floor Distress Inventory (PFDI) and BDI-Fast Screen scores decreased from baseline to 6-months (mean change 15.78 ± 22.91 and 0.75 ± 2.54 respectively, both $p<0.05$), and SF-36 scores increased from baseline to 6-months (mean change 195.73 ± 333.51, $p<0.001$) and 12-months (mean change 273.89 ± 331.39, $p<0.001$), indicating reduction in QOL impact. Female Sexual Function Index scores increased from baseline to 12-months (mean change 2.60 ± 7.99, $p<0.05$), indicating improved overall sexual functioning. There were no significant differences in PFIQ and FISI scores from baseline to 6 or 12-months.

Interpretation of results

While only the overall prevalence of SUI decreased at 6 and 12-months after laparoscopic bariatric surgery, there was a statistically significant decline in the proportion of women affected by SUI, OAB and any one or more PFD from baseline to 6 and 12-months. De novo pelvic floor conditions after surgical weight loss occurred only for AI, which may be explained by post-operative dietary or digestive changes, as well as by a definition of AI that included any flatal incontinence. In women with SUI, OAB and AI there was a significant decrease in the degree of bother related to these symptoms at 6 and-12 months. Quality of life impact of PFD decreased after laparoscopic weight loss surgery in the condition-specific realm of pelvic floor distress, and generic measures of depression, health status, and sexual function.

Concluding message

In addition to the well-documented health benefits of weight loss surgery, the proportion of women affected by SUI, OAB and any one or more PFD, as well as their associated bother and QOL impact, are improved post-operatively. These findings only partly corroborate those of others that found significant decreases in the prevalence of both urinary and fecal incontinence in morbidly obese women undergoing laparoscopic weight loss surgery [1].

References

1. Burgio KL, Richter HE, Clements RH, Redden DT, and Goode PS. Changes in urinary and fecal incontinence symptoms with weight loss surgery in morbidly obese women. Obstetrics & Gynecology 2007;110:1034-1040.

Specify source of funding or grant	**American Urogynecologic Society Foundation Research Award 2007**
Is this a clinical trial?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**University of California San Diego Institutional Review Board**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**