



Published in final edited form as:

Female Pelvic Med Reconstr Surg. 2012 ; 18(1): 55–59. doi:10.1097/SPV.0b013e31824171f9.

Prolapse Symptoms in Overweight and Obese Women Before and After Weight Loss

Deborah L. Myers, M.D.^a, Vivian W. Sung, M.D., M.P.H.^a, Holly E. Richter, Ph.D., M.D.^b, Jennifer Creasman, MSPH^c, Leslee L. Subak, M.D.^c, and Program to Reduce Incontinence by Diet and Exercise (PRIDE)

^aAlpert Medical School of Brown University, Providence Rhode Island ^bUniversity of Alabama at Birmingham, Birmingham, Alabama ^cUniversity of California at San Francisco, Women's Health Clinical Research Center, San Francisco, California

Abstract

Objective—To estimate the association between BMI and pelvic organ prolapse symptoms and bother among overweight and obese women with urinary incontinence before and after weight loss.

Methods—Women (N=338) were randomized to either an intensive 6-month weight loss or educational program (control); they were evaluated for prolapse symptoms at baseline and 6 months. Symptomatic prolapse was defined as a positive response to at least one prolapse subscale question of the Urogenital Distress Inventory. “Bother” was defined as responses of slight, moderate or great. Women with prolapse symptoms were analyzed by baseline BMI category: overweight, obese and severely obese at baseline and at 6 months. Proportional odds regression and chi square tests for trend were used for analysis.

Results—Mean \pm SD age was 53 ± 10 years, BMI was 36 ± 6 kg/m², and 78% were white. A higher proportion of obese women reported feeling vaginal bulging compared to overweight women (13 % vs. 0 %, $P < .01$). At baseline, 37% (N=124) reported bothersome “lower abdominal pressure”, 18% (N=62) bothersome “heaviness in the pelvic area”, and 14% (N=48) bothersome “pelvic discomfort when standing”. Nine percent (N=31) reported bothersome “feeling” and 2% (N=6) reported bothersome “seeing a bulge” in the vagina. At 6 months, there were no significant differences in improvement of self-reported bothersome prolapse symptoms in women in the weight loss or the control group.

Conclusion—In this study of overweight and obese women, increasing BMI was only associated with “feeling” a vaginal bulge. Weight loss did not improve bothersome prolapse symptoms.

Keywords

obesity; prolapse; symptoms

Introduction

Pelvic organ prolapse (POP) is a condition that significantly affects a woman's quality of life and is one of the most common indications for gynecologic surgery (1). There are many known and unknown variables which affect the severity of POP and its symptoms.

Epidemiological studies have identified age, race, parity, size of infant and body mass index (BMI) as independent risk factors for POP (2,3,4). Data from published cross-sectional and prospective studies suggest that being overweight or obese is associated with prevalent and incident POP as well as progression of POP.(2, 3) Few studies have evaluated the impact of weight loss on subjective or objective POP or symptom severity.

The relationship of weight or BMI to POP and its symptoms is important as the prevalence of obesity is increasing in the U.S. (5). In addition, as the population ages, the prevalence of POP is likely to increase and more women will undergo surgical procedures to treat prolapse. These two factors-increasing obesity rates and the aging population will most likely increase the rates of POP beyond what is predicted (6, 7). It is critical to get a better understanding of the relationship of obesity on prolapse to improve patient counseling. Overweight and obese women may opt for non-surgical options such as weight loss as opposed to undergoing reconstructive procedures to obtain symptom relief if weight loss is associated with improvement in POP signs and symptoms. The primary objective of our study was to estimate the association between BMI and pelvic organ prolapse symptoms and bother among overweight and obese women with urinary incontinence before and after weight loss.

Materials and Methods

This is a secondary analysis of the Program to Reduce Incontinence by Diet and Exercise (PRIDE) study, a multi-center randomized controlled clinical trial investigating the effect of weight loss on urinary incontinence in overweight and obese women. Between July 2004 and April 2006, 338 women who were either overweight (BMI 25–29.9 kg/m²) or obese (BMI ≥ 30 kg/m²) and had ≥ 10 episodes of urinary incontinence per week were enrolled. Women were randomized to an intensive 6-month behavioral weight loss program (intervention; N=226) or to a structured education program (control; N=112). Details of the study design, inclusion and exclusion criteria, and results have been previously reported. (8) The study was approved by the Institutional Review Board at each site and written consent was obtained from all participants before enrollment.

Baseline group characteristics and demographic data were obtained and time dependent measures were repeated at 6 months after the start of the intervention. Weight was measured with participants wearing street clothes, without shoes, using a calibrated digital scale (Tanita BWB 800, Tanita Corporation of America, Inc., Arlington Heights, IL) and recorded to the nearest 0.1 kg. Height was measured at baseline to the nearest centimeter using a calibrated, wall-mounted stadiometer and a horizontal measuring block. Women completed a 7 day voiding diary, 24-hour pad test, and subjective symptom specific distress and life impact questionnaires using the Urinary Distress Inventory (UDI) and Incontinence Impact Questionnaire (IIQ).(9) Pelvic organ prolapse symptoms were measured using self-reported

patient responses to the prolapse items in the UDI (questions L, O, P, Q and R) including: 1) abdominal pressure 2) pelvic heaviness; 3) feeling a vaginal bulge; 4) seeing a bulge or 5) pelvic discomfort when standing with a bother component of not at all, slight, moderate, or great. Symptoms of prolapse were considered to be present if there was an affirmative response to any of the prolapse items. Bother was defined as slight, moderate or great. One hundred-ten women self-selected to participate in a subset group of urodynamic testing and Pelvic Organ Prolapse Quantification (POPQ) examination before and after weight loss. (10). The POPQ examination, to objectively assess POP, was performed in all 110 women. Anatomical prolapse was defined as any prolapse beyond the hymen (> 0) for any of the POP-Q points.

Chi square and ANOVA tests were used to examine demographic and clinical characteristics across BMI groups. Women were categorized as overweight (BMI of 25 to 29.9), obese (BMI of 30.0 to 39.9; World Health Organization (WHO) Class I and II obesity) or severely obese (BMI 40; WHO Class III obesity) (11). Differences in level of bother (range of 1 to 3, 1=slight, 2=moderate and 3=great) across BMI categories were estimated from ANOVA testing. Improvement in POP symptoms was defined as an absence (or “cure”) and/or a lower report of bother at 6 months. The effect of weight loss at 6 months on prolapse symptoms and bother was analyzed by randomized weight loss group. Chi square tests were used to compare differences in proportion cured, improved or newly symptomatic between weight loss groups.

Results

At baseline, participants had a mean \pm SD age of 53 ± 10 years and 78% were white and 19% African American (Table 1). Mean weight was 92 ± 18 kg, and BMI was 36 ± 6 kg/m², with 16% overweight, 58% obese and 26% severely obese. Ninety-nine of 338 (29%) women had a previous hysterectomy and 13 of 338 (4%) women had prior surgery for pelvic organ prolapse. Compared to white women, more African-American women were obese and severely obese ($p < 0.01$). There were no differences in other demographic or clinical characteristics of participants by BMI category. Mean UDI score was 164 ± 53 (range 0–300) and was not significantly different among BMI groups.

Over half of participants (178/338) reported at least one prolapse symptom present (including non-bothersome and bothersome) and 24% reported more than one symptom (Table 1). A higher proportion of obese women reported feeling vaginal bulging compared to overweight women (13 % vs. 0 %, $P < .01$) Anatomic data of POP relative to the hymen of the 110 women subset are presented by weight group in Table 1. The mean number of prolapse symptoms did not differ across BMI categories (overweight 0.7 (0.9), obese 0.9 (1.1), severely obese 0.8 (1.1); $p = 0.47$). Anatomical prolapse beyond the hymen was not significantly different between BMI groups. Self-report of specific prolapse symptoms, bother due to the symptom and level of bother are presented in Table 2. Most women (85–97%) who reported symptoms also reported bother due to the symptom. The most common bothersome symptom was abdominal pressure (37%). The mean level of bother (0 “not at all” to 3 “great bother”) for each prolapse symptom was similar across all symptom categories (1.3 ± 0.70 ; $P = 0.94$, data not shown) and BMI categories (Table 3).

Table 4 presents the data on the effect of weight loss on bothersome prolapse symptoms by weight loss groups (intensive/intervention vs. structured education program/control) by “cure” only and “cure” plus “improvement” of symptoms, where “cure” is defined as no prolapse symptoms at 6 months and “improvement” defined as a reduction in at least 1 level of bother. Report of new bothersome symptoms at 6 months is also presented. At 6 months, women in the intervention group had a mean weight loss of 8.0% (7.8 kg), as compared to 1.6% (1.5 kg) in the control group ($P < 0.001$). Over 70% of women reporting a specific bothersome prolapse symptom at baseline reported improvement or cure at 6 months, with similar rates reported by women in the weight loss and control groups (Table 4). Seventeen percent of women reported at least one new symptom at 6 months, with no difference in incidence between the weight loss and control groups. There was also no significant difference in anatomical prolapse beyond the hymen between weight loss intervention and control groups.

Discussion

In this study population of overweight and obese women with urinary incontinence, self-report of symptoms associated with prolapse were common: over half of participants reported at least one prolapse symptom and one-quarter reported more than one symptom. The only symptom associated with increasing BMI was bothersome vaginal bulging. The mean number of prolapse symptoms was not associated with BMI. In addition, anatomical prolapse beyond the hymen was not significantly different between BMI groups in the subset of women undergoing examination.

While not found in our study, others have observed that being overweight or obese was associated with prevalent and incident POP as well as progression of POP. Whitcomb et al reported in a secondary analysis of a population-based survey of 1,155 obese women using validated questionnaires to identify pelvic floor disorder symptoms, that the prevalence of symptomatic prolapse was highest in Class III (13%) and Class II (10%) compared to Class I obese women (7%; $P = 0.04$). (6) From the Women’s Health Initiative (WHI) Hormone Therapy Clinical Trial, Hendrix et al reported on a cross-sectional study of 27,324 postmenopausal women. The risk of having objectively measured uterine prolapse, rectocele, or cystocele was significantly higher (OR 30–50%) in overweight or obese women ($BMI > 25$) compared with normal weight women ($BMI 20–24.9$). (2) In a secondary analysis of 16,608 women enrolled in the WHI observed for 5 years, Kudish et al reported women who gained weight (mean 4.4 kg) had an increase in objectively defined prevalent prolapse (3). The risk of prolapse progression in overweight and obese women compared with normal weight women increased by 32% and 48% for cystocele, 37% and 58% for rectocele, and 43% and 69% for uterine prolapse, respectively. However, after adjusting for baseline prolapse and BMI, a 10% weight change was associated with minimal change in overall POP. A 10% weight loss was associated with a worsening of uterine prolapse (odds ratio [OR] 0.93; 95% confidence interval [CI] 0.88–0.97) and regression of cystocele (OR 1.03; 95% CI 1.00–1.05) and rectocele (OR 1.04; 95% CI 1.01–1.07). Weight loss did not improve prolapse among women with more severe prolapse (at or beyond the hymen). While large (10%) weight loss has resulted in a reduction in cystocele and rectocele, this has no effect on more severe grades of prolapse. Similarly, our study did not

show an improvement in prolapse symptoms with significant weight loss. This suggests that damage to the pelvic floor related to weight gain might be irreversible.

From studies in the general surgery and bariatric literature, obesity has been shown to chronically elevate intra-abdominal pressure (IAP) (12, 13). Among 63 morbidly obese patients undergoing bariatric surgery, IAP measured by an indwelling urinary catheter in the supine position under general anesthesia was elevated in morbidly obese patients. (14) Elevated IAP may be a potential mechanism contributing to an increased risk for pelvic floor disorders. Elevated IAP among obese patients has also been reported in urogynecologic literature (15, 16). A sub-analysis of 110 women from the PRIDE study found that an intra-abdominal pressure at maximum cystometric capacity increased 0.4 cm H₂O per unit of BMI and 0.4 cm H₂O per 2 cm increase in abdominal circumference, ($p < 0.01$)(17). However, the lack of improvement in prolapse symptoms despite weight loss found in the current and other studies (3) suggests that the etiology of prolapse is multifactorial; including ligament strength, collagen quality, muscle strength and nerve innervation.

In our study, the most common prolapse symptoms were lower abdominal pressure and pelvic heaviness. In this population of overweight/obese women, pressure and heaviness may not be specific to prolapse, as only 11% reported feeling a bulge and 2% reported seeing a bulge. Pressure symptoms often attributed to prolapse are non-specific even in normal weight women. Several studies report considerable variation in women's symptoms of prolapse when compared to physical examination findings. Among women electing prolapse surgery, women with stage two prolapse had greater symptoms than those with stage three or four. (18) Ellerkmann et al looked at prolapse of each compartment (anterior, apical and posterior) and similarly did not find correlation of physical examination to expected symptoms (19). In addition, even when prolapse is symptomatic, the symptoms may vary. (20). Thus it is not surprising that our complaints of pressure and heaviness are similarly non-specific.

When vaginal bulging is visible or palpable, women are frequently bothered. Swift et al found that there was a 75% chance of correctly classifying a woman with prolapse when reporting bothersome vaginal bulge. (21). Using examination findings and patient report of symptomatic prolapse, -0.5 (or 0) cm above the hymen would be the most clinically useful cutoff for the definition of pelvic organ prolapse. This is consistent with our findings that only the report of bothersome vaginal bulging increased with BMI groups. This is also supports the non-specificity of self-report of "heaviness and pressure" to identify prolapse in this population. Other investigators have found similar lack of correlation of prolapse and BMI (6, 22).

While more than half of participants with POP symptoms reported improvement or cure of these symptoms, there was no difference between intervention groups. Perhaps this was a result of weight loss in the intervention group and a perceived improvement of quality of life in those women in the general health education group. It may also reflect the fact that they were participating in a study and had increased generalized quality of life benefit secondary

to study participation. Interestingly, approximately 1 in 5 subjects also reported new prolapse symptoms regardless of intervention group.

A limitation of this study is that we were not able to compare prolapse symptoms between overweight/obese women and normal weight women, because normal weight women were not eligible for this study. In addition, this study was a secondary analysis, thus it was not powered *a priori* to detect anatomic changes of POP or prolapse specific symptoms (bulge) with weight loss. Objective assessment with POPQ exam data was only available for a subset of women with numbers too small to make meaningful conclusions. Our study does however, provide additional information about prolapse symptoms in a group of overweight and obese women motivated to lose weight. As women become more aware of the health risks associated with obesity including cardiac conditions, diabetes, gynecologic cancers, and also pelvic floor disorders, women will need more information about weight and health (23). With the proposed increase in demand for services to treat female pelvic floor disorders, the effect of obesity on the pelvic floor as a whole is a major health concern and one which warrants continued investigation.

Acknowledgments

Funded through the U01DK067860, U01DK067861, U01DK067862

National Institutes of Diabetes and Digestive and Kidney Diseases (NIDDK)

Trial registration Clinicaltrials.gov identifier NCT00091988

References

1. Rortveit G, Brown JS, Thom DH, et al. Symptomatic Pelvic Organ Prolapse. Prevalence and Risk Factors in a Population-Based, Racially Diverse Cohort. *Obstet Gynecol.* 2007; 109:1396–1403. [PubMed: 17540813]
2. Hendrix SL, Clark A, Nygaard I, et al. Pelvic organ prolapse in the Women's Health Initiative: Gravity and gravidity. *Am J Obstet Gynecol.* 2002; 186:1160–6. [PubMed: 12066091]
3. Kudish BI, Iglesia CB, Sokol RJ, et al. Effect of Weight Change on the Natural History of Pelvic Organ Prolapse. *Obstet Gynecol.* 2009; 113:81–87. [PubMed: 19104363]
4. Schaffer JI, Wai CY, Boreham MK. Etiology of pelvic organ prolapse. *Clin Obstet Gynecol.* 2005 Sep; 48(3):639–47. [PubMed: 16012231]
5. Flegal KM, Carroll MD, Ogden CL, et al. Prevalence and trends in obesity among US adults, 1999–2008. *JAMA.* 2010 Jan 20; 303(3):235–41. [PubMed: 20071471]
6. Whitcomb EL, Lukacz ES, Lawrence JM, et al. Prevalence and degree of bother from pelvic floor disorders in obese women. *Int Urogynecol J.* 2009; 20:289–294.
7. Wu JM, Hundley AF, Fulton RG, et al. Forecasting the prevalence of pelvic floor disorders in U.S. Women: 2010 to 2050. *Obstet Gynecol.* 2009 Dec; 114(6):1278–83. [PubMed: 19935030]
8. Subak LL, Wing R, West DS, et al. Weight loss to treat urinary incontinence in overweight and obese women. *N Engl J Med.* 2009 Jan 29; 360(5):481–90. [PubMed: 19179316]
9. Shumaker SA, Wyman JF, Uebersax JS, McClish D, Fantl JA. Health-related quality of life measures for women with urinary incontinence: the Incontinence Impact Questionnaire and the Urogenital Distress Inventory. Continence Program in Women (CPW) Research Group. *Qual Life Res.* 1994; 3(5):291–306. [PubMed: 7841963]
10. Bump RC, Mattiasson A, Bo K, et al. The standardization of terminology of female pelvic organ prolapse and pelvic floor dysfunction. *Am J Obstet Gynecol.* 1996; 175:10–7. [PubMed: 8694033]

11. WHO expert consultation. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. *The Lancet*. 2004;157–163.
12. Lambert DM, Marceau S, Forse RA. Intra-abdominal pressure in the morbidly obese. *Obes Surg*. 2005 Oct; 15(9):1225–32. [PubMed: 16259876]
13. Sanchez NC, Tenofsky PL, Dort JM, et al. What is normal intra-abdominal pressure? *Am Surg*. 2001 Mar; 67(3):243–8. [PubMed: 11270882]
14. Varela JE, Hinojosa M, Nguyen N. Correlations between intra-abdominal pressure and obesity-related co-morbidities. *Surg Obes Relat Dis*. 2009 Sep-Oct;5(5):524–8. [PubMed: 19560978]
15. Noblett K, Jensen JK, Ostergard DR. The relationship of body mass index to intra-abdominal pressure as measured by multi-channel cystometry. *Int Urogynecol J Pelvic Dysfunct*. 1997; 8(6): 323–6.
16. McIntosh S, Drinnan M, Griffiths C, et al. Relationship of abdominal pressure and body mass index in men with LUTS. *Neurourol Urodyn*. 2003; 22(6):602–5. [PubMed: 12951672]
17. Richter HE, Creasman JM, Myers DL, et al. Urodynamic characterization of obese women with urinary incontinence undergoing a weight loss program: the Program to Reduce Incontinence by Diet and Exercise (PRIDE) trial. *Int Urogynecol J Pelvic Floor Dysfunct*. 2008 Dec; 19(12):1653–8. [PubMed: 18679560]
18. Fitzgerald MP, Janz NK, Wren PA, et al. Prolapse severity, symptoms and impact on quality of life among women planning sacrocolpopexy. *Int J Gynaecol Obstet*. 2007 Jul; 98(1):24–8. [PubMed: 17477927]
19. Ellerkmann RM, Cundiff GW, Melick CF, et al. Correlation of symptoms with location and severity of pelvic organ prolapse. *Am J Obstet Gynecol*. 2001 Dec; 185(6):1332–7. discussion 1337–8. [PubMed: 11744905]
20. Sung VW, Clark MA, Sokol ER, et al. Variability of current symptoms in women with pelvic organ prolapse. *Int Urogynecol J Pelvic Floor Dysfunct*. 2007 Jul; 18(7):787–98. [PubMed: 17115232]
21. Swift S, Woodman P, O'Boyle A, et al. Pelvic Organ Support Study (POSST): The distribution, clinical definition, and epidemiologic condition of pelvic organ support defects. *Am J Obstet Gynecol*. 2005; 192:795–806. [PubMed: 15746674]
22. Washington BB, Erekson EA, Kassis NC, et al. The association between obesity and stage II or greater prolapse. *Am J Obstet Gynecol*. 2010 May; 202(5):503.e1–4. [PubMed: 20171604]
23. Truesdale KP, Stevens J, Cai J. Differences in Cardiovascular Disease Risk Factors by Weight History: The Aerobics Center Longitudinal Study. *Obesity* (Silver Spring). 2011 Mar 10. Epub ahead of print.

Table 1

Baseline demographics and clinical characteristics by BMI category (N=338)

Characteristic	TOTAL N=338	Over-weight (n=54)	Obese class I or II (n=196)	Obese class III (n=88)	P-value*
Age (yrs), Mean±SD	53±10	56±11	54±10	49±9	<0.01
Parity, Mean±SD	2±1	2±1	2±1	2±1	0.14
White race (%)	262 (78)	48 (89)	158 (81)	56 (64)	<0.01
Highest level of education high school (%)	293 (87)	49 (91)	171 (87)	73 (83)	0.14
Current tobacco use (%)	18(5)	3 (6)	11 (6)	4 (5)	0.74
Post menopausal (%)	177 (52)	29 (54)	108 (55)	40 (45)	0.27
Hysterectomy (%)	99(29)	15 (28)	58 (30)	26 (30)	0.88
Prior prolapse surgery (%)	13 (4)	4 (8)	7 (4)	2 (2)	0.14
prior anti-incontinence surgery (%)	1 (<1)	0 (0)	1 (1)	0 (0)	0.94
Constipation					0.40
Never (%)	141 (42)	22 (41)	78 (40)	41 (47)	
Less than monthly (%)	119 (35)	20 (37)	69 (35)	30 (34)	
Monthly (%)	48 (14)	6 (11)	29 (15)	13 (15)	
Weekly (%)	25 (7)	6 (11)	16 (8)	3 (3)	
Daily (%)	5 (1.5)	0 (0)	4 (2)	1 (1)	
Urogenital Distress Inventory score, ** Mean±SD	164±53	164±46	164±53	170±56	0.42
Prolapse Symptoms					
Women with reported symptoms (%)	178 (53)	29 (54)	110 (56)	39 (44)	0.76
Lower abdominal pressure (%)	132 (39)	22 (41)	83 (42)	27 (31)	0.17
Heaviness in pelvic area (%)	64 (19)	10 (19)	38 (19)	16 (18)	0.97
Feeling of bulging in vaginal area (%)	36 (11)	0 (0)	27 (14)	9 (10)	0.01
See bulging in vaginal area (%)	7 (2)	1 (2)	5 (3)	1 (1)	0.74
Pelvic discomfort when standing (%)	49 (14)	7 (13)	26 (13)	16 (18)	0.52
Prolapse beyond the hymen [†] (%)	19 (17)	5 (24)	11 (17)	3 (13)	0.32

* P-values from Chi Square test for trend.

** Urogenital Distress Inventory is scored on a scale of 0–300, with a higher score representing greater impact

⁷ Prolapse evaluated with the POP-Q examination in a subset of 110 women.

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Table 2

Self-reported prolapse symptoms and level of bother at baseline (N=338)

Individual UDI prolapse item	Prolapse item reported	Bothered ⁺	Level of Bother			
			Not at all	Slight	Moderate	Great
Lower abdominal pressure	132 (39)	124 (37)	8 (6)	78 (59)	38 (29)	8 (6)
Heaviness in pelvic area	64 (19)	62 (18)	2 (3)	45 (70)	14 (22)	3 (5)
Feeling of bulging in vaginal area	36 (11)	31 (9)	5 (14)	19 (53)	5 (14)	7 (19)
See bulging in vaginal area	7 (2)	6 (2)	1 (14)	3 (43)	2 (29)	1 (14)
Pelvic discomfort when standing	49 (15)	48 (14)	1 (2)	33 (67)	12 (24)	3 (6)

* Data presented as number of women (percent)

UDI = urogenital distress inventory

⁺ Bother defined as slight, moderate or great.

Table 3

Mean bother of prolapse symptoms among women reporting bother by BMI category (N=178)

Prolapse symptom	Number of bother-some symptoms	Mean (SD) prolapse symptom bother*				P-value [†]
		Overweight	Obese class I or II	Obese class III		
Lower abdominal pressure	124	1.3 (0.6)	1.3 (0.7)	1.4 (0.7)		0.97
Heaviness in pelvic area	62	1.2 (0.4)	1.2 (0.6)	1.6 (0.7)		0.10
Feeling of bulging in vaginal area	31	0.0 (0.0)	1.4 (1.0)	1.4 (0.9)		0.85
See bulging in vaginal area	5	2.0 (0.0)	1.2 (1.1)	2.0 (0.0)		0.71
Pelvic discomfort when standing	48	1.4 (0.8)	1.2 (0.5)	1.5 (0.7)		0.39

* Prolapse symptom bother was scored as slight=1, moderate=2 and great=3

[†] Pair-wise comparisons using Chi Square

Table 4

Change in baseline prolapse symptoms by weight loss group at 6 months.

	Cured*		Improved bother or cured*		New report of the symptom	
	Intervention	Control	Intervention	Control	Intervention	Control
Lower abdominal pressure	42 (51%)	16 (41%)	54 (66%)	26 (67%)	13 (9%)	9 (14%)
Heaviness in pelvic area	23 (57%)	12 (55%)	32 (80%)	14 (63%)	10 (6%)	7 (9%)
Feeling of bulging in vaginal area	13 (57%)	8 (73%)	14 (61%)	10 (91%)	9 (5%)	5 (6%)
See bulging in vaginal area	3 (42%)	na	4 (57%)	na	2 (<1%)	1 (1%)
Pelvic discomfort when standing	22 (73%)	12 (71%)	25 (83%)	13 (76%)	10 (5%)	4 (5%)
Any POP symptom	73 (68%)	35 (71%)	82 (77%)	38 (78%)	35 (16%)	20 (21%)
Prolapse beyond the hymen [†]	2 (15%)	2 (33%)	--	--	8 (14%)	2 (8%)

Data presented as number (percent)

* Analysis includes only women reporting the symptom at baseline

Chi Square test or Fisher's Exact used for analysis

No significant differences found

[†] Prolapse measured in a subset of 110 women