

LONG-TERM STUDY ON THE EFFECT OF WEIGHT LOSS IN WOMEN WITH OBESITY AND URINARY INCONTINENCE

Hypothesis / aims of study

Epidemiological studies have shown that both overweight and obesity are important risk factors for the development of urinary incontinence (1). Obesity may act through the added weight that presses on pelvic tissues, causing chronic strain, stretching and weakening of muscles, nerves and other structures of the pelvic floor (1). There are few data referring to weight loss effect on the pelvic floor muscles (PFM) contractile ability and on the evolution of long-term urinary incontinence. The purposes of this study were to evaluate the effect of weight loss on the urinary incontinence (UI) and the contractile capacity of the PFM, and to identify predictive variables associated with eventual improvement of UI.

Study design, materials and methods

This is a descriptive, longitudinal study of overweighted, incontinent women who underwent either surgery or dieting for reducing weight. Women included in this study were seeking treatment for weight loss in a third level hospital obesity unit; all of them had a BMI of 30 kg/m² or more.

The recruitment period, after approval of the Ethics Committee, was from October 2008 to September 2009. From 327 patients enrolled, 182 had UI symptoms (prevalence 55.6%). Average follow-up period of 42 months in 121 obese patients with UI symptoms was completed. Control visits were performed 6 and 12 months later with a final telephone follow up.

At the first visit baseline demographic information and medical and obstetric history, including comorbidities, use of antidepressant medication, and previous hysterectomy surgery was collected. At the first visit and in the follow up an evaluation was performed, that included the following parameters: Presence and severity of UI was assessed using a validated questionnaire, the International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form (ICIQ-UI-SF) and the Bladder Control Self-Assessment Questionnaire (B-SAQ). Only women with a score of ICIQ-UI-SF>0 and/or a B-SAQ ≥3 were included. The amount of urine loss was quantified by 24 hour Pad Test, which was considered positive when the pads weight increase was > 8 gr. Pelvic examinations were performed in dorsal lithotomy position, using a maximum straining effort, for the pelvic organ prolapse (POP) quantification. Patients with stages II or greater in any compartment were excluded.

Vaginal digital palpation or muscular testing (MT) was used to evaluate the PFM function and the strength was measured by the modified Oxford grading scale (2). This scale quantifies pelvic floor muscle strength as: 0, no contraction; 1, flicker; 2, weak; 3, moderate; 4, good; and 5, strong. Pelvic floor muscle strength was also measured with the Peritron® perineometer (Cardio-Design, Victoria). Patients' PFM function and strength were evaluated by a single examiner; who was a skilled therapist with more than 15 years of experience performing this kind of examination

Statistical analysis. Continuous quantitative variables were described as mean values, standard deviations and ranges, and categorical ones as frequencies and percentages. Normality of data was checked by using the Kolmogorov-Smirnov test. For the bivariate analysis, ANOVA and the chi-squared test, or the corresponding non-parametric tests, were used as appropriate. Prevalence rates and odds ratios were estimated along with their 95% confidence intervals. Statistical significance was set at p-value<0.05.

Results

The average age of the 121 studied women was 49.6 (SD 12.1) years and ranged from 21 to 75 years. Parity was: 23 (19%) nulliparous, 21 (17.4%) primiparous, 50 (41.3%) secundiparous and 27 (22.3%) multiparous. The BMI ranged from 30 Kg/m² to 69.9 Kg/m², with an average of 44.2 (6.7) Kg/m². Average abdominal perimeter was 124,9 (11,4) cm with a range from 100 a 154 cm. At follow-up 90 women (78.3%) had lost> 5% of BMI. At the end of the follow up, 89 women (77.4%) had lost weight (on average, 31.7% of initial weight, range 6% - 54%).

A decrease in UI symptoms was observed, which was maintained over time. The proportion of women who remained with UI (presented ICIQ-SF> 0) was 62.8% 6 months later with a CI: 95% (53.1 to 72.6); after 12 months 60.5% (51.1 to 69.9) and 71.9% (63.2 to 80.6) at the endpoint not being these proportions statistically different. A relation between weight loss and the proportion of women with a positive Pad Test was also observed. Thus, patients that have not lost weight after the 12 months follow up had a risk four times higher to present a positive Pad Test than those that had (OR = 4.07; 95% CI: 1.01 – 17.14, p = 0.033).

The results by UI type showed that, with the as time passes, for women with persistent UI symptoms, the proportion of stress UI (SUI) was significantly decreased and a significant increase for urgency UI (UUI) was observed. (Table 1)

UI Type	Basal	6m	12m	36m - 48m
SUI	44 (36,4)	22 (33,3)	25 (36,2)	27 (32,9)*
UUI	34 (28,1)	29 (43,9)*	24 (34,8)*	26 (31,7)*
Mixed UI	43 (35,5)	15 (22,7)*	20 (29,0)	29 (35,4)

Table 1

At the initial MT assessment patients were distributed as follows: 14 (12.73%) had a MT of 0 (no contraction), 19 (17.27%) of 1 (flicker contraction) and 77 (84.7%) values ≥ 2 (weak to strong contraction). When comparing muscle function measured by perineometry, between women who continued with UI symptoms and those who were continent, after 6 and 12 months follow-up, no statistically significant difference was observed between the values of the maximum, half and second maintenance of the PFM squeeze strength. However, when the impact of weight loss on muscle function measured with the MT was examined, there was no evidence of a relation in the control after 6 months ($p = 0.399$). Nevertheless, in the 12 months control, there was a statistically significant association between weight loss and the PFM contractile capacity, so that patients with any or low muscle tone had three times more risk to continue suffering UI symptoms than those who had a better contractile capacity (OR = 3.09, 95% CI 1.49 -6.43, $p = 0.002$).

Interpretation of results

The results of this study show the positive impact of weight loss on UI prevalence in a population of obese women, evaluated with objective measures such as validated questionnaires and the Pad Test. The dimension of this positive effect was similar to the observed in other studies (3). Stress incontinence has a proportionally greater recovery than urge and mixed incontinence.

Regarding the weight loss impact produced on the PFM function evaluation parameters, it was observed that a significant association between the initial MT and the probability of UI improvement occurs, so women with low muscle tone run the risk of persistence of their UI symptoms three times higher than those with an initially normal muscle function. This positive effect could not be verified when muscle function was evaluated by perineometry.

Concluding message

Weight loss in obese and incontinent women reduces the prevalence of UI especially in the UI stress group. Women who had a normal contractile capacity of the PFM at the baseline showed a greater probability of incontinence improvement.

References

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Disclosures

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