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Laparoscopic sleeve gastrectomy effects on overactive bladder symptoms

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ARTICLE INFO

Article history:
Received 7 January 2015
Received in revised form
7 February 2015
Accepted 13 March 2015
Available online 18 March 2015

Keywords:
Obesity
Overactive bladder
Sleeve gastrectomy
Body mass index

ABSTRACT

Background: Morbidly obese patients may experience lower urinary tract symptoms. However, most studies focus only on urinary incontinence, with little regard to other symptoms as those suggestive for overactive bladder (OAB) syndrome. Laparoscopic sleeve gastrectomy (LSG) is commonly used to treat obesity; this procedure is effective, safe, and capable of reducing the impact of comorbidities associated with severe increase in body weight. Therefore, we investigated if LSG improves OAB symptoms in morbidly obese patients.

Methods: We prospectively recruited 120 morbidly obese patients (60 men and 60 women), evaluated by history taking, comorbidity assessment, physical examination, urinalysis and urine culture, renal and pelvic ultrasound, a 3-d voiding diary, and the OAB questionnaire short form. Outcomes of these investigations were assessed 7 d before and 180 d after LSG was performed. Controls were obese individuals (60 men and 60 women) from an LSG waiting list.

Results: Symptoms of OAB were common in the morbidly obese cohort, affecting more women than men. Compared with untreated patients, patients treated with LSG had significantly reduced body mass index 180 d postoperatively; this outcome was associated with improvement in OAB symptoms, whereas no change occurred in untreated controls.

Conclusions: OAB symptoms improve in morbidly obese patients successfully treated by LSG.

1. Background

Obesity is a pathology characterized by excessive fat accumulation that presents a risk to health and is consistent with a body mass index (BMI) $\geq$30 kg/m^2 [1]. Obesity is associated with increased incidence of a number of conditions, including diabetes mellitus, cardiovascular and respiratory diseases, and nonalcoholic fatty liver disease, with an increased risk of disability and a moderate increase in all-cause mortality [2]. Some evidence suggests that lower urinary tract symptoms (LUTS) may develop in morbidly obese patients [3] and that various urogenital complications are directly associated with

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0022-4804/$ – see front matter © 2015 Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.jss.2015.03.035

obesity [4]. However, most studies focus on urinary incontinence (UI) and pelvic floor disorders, whereas little information is available on the overactive bladder (OAB) syndrome, which is urgency with/without urinary urgency incontinence (UUI), usually with frequency and nocturia [5]. Laparoscopic sleeve gastrectomy (LSG) is now a common surgical procedure for obesity, and within the last decade, several authors have proposed that it is the definitive treatment for morbid obesity basing on its efficacy and safety in large randomized trials [6]. Various disorders associated with obesity significantly improve after BMI reduction achieved by LSG. Therefore, the aim of the present study was to assess prevalence of OAB symptoms in a morbidly obese population and to evaluate if these symptoms improved after LSG.

2. Methods

We prospectively enrolled 120 patients (group A: 60 women and 60 men) attending the Centre of Excellence for Bariatric and Metabolic Surgery of the Department of Sciences and Medico-Surgical Biotechnologies of Sapienza University of Rome in this study between September 2011 and December 2012. These patients were from a cohort of 192 individuals with preliminary evaluation based on history, physical examination (including a rectal and vaginal exploration, respectively, in men and women), BMI assessment, blood analysis, urinalysis and urine culture, renal and pelvic ultrasound, uroflowmetry with evaluation of postvoid residue, and a neurologic and psychological evaluation. Inclusion criteria were morbid obesity (BMI >40 kg/m^2), age ≥18 and ≤60 y, and eligibility for laparoscopic surgery. Exclusion criteria were urine infection, previous gynecologic or urologic surgery, previous or concomitant neoplastic conditions, any pathologic finding on renal or pelvic ultrasonography, significant urinary bladder residue (≥100 mL), pathologic findings on uroflowmetry (peak flow <15 mL/s), stress urinary incontinence (SUI), genital prolapse and previous obstetric accidents in women, any previous surgical treatment for obesity, neurogenic disorders, concomitant consumption of drugs with anticholinergic activity or psychoactive agents and any other treatment for LUTS, and serum creatinine >1.5 mg/dL. Patients meeting the inclusion criteria and recruited for the study filled in a 3-d voiding diary, which included fluid intake count (OAB is characterized by at least eight episodes of micturition per day, presence of urgency, and a strong and sudden desire to void) and the OAB short-form questionnaire (OABq SF), a specific investigational tool developed to assess OAB severity (Figure) [7]. This protocol was performed at 1 wk (baseline) and 180 d after LSG (control). Based on the same inclusion and exclusion criteria, another 120 obese patients (60 women and 60 men) waiting for bariatric surgery and scheduled to undergo surgery in 2014 were selected as a control population (group B). Preliminary statistical data were used to compare sex, age, and weight distributions in the two study populations; then, the following parameters were compared before and after surgery: number of micturitions per day, urgency episodes per day, number of UUI episodes per day, mean-voided volume for micturition, liquid intake count per day, and OABq SF score. Statistical assessment was based on the $\chi 2$ test and odds ratios for categorical variables, and the Student *t*-test for evaluating differences in continuous measurements. Considering the strong association between obesity and diabetes, a multiple linear regression model was used to evaluate the correlation between OABq SF scores and glycosylated hemoglobin (HbA1c) values in diabetics. All the study participants signed a consent form, and the study was approved by the local ethical committee and performed according to the Declaration of Helsinki.

OAB-q short form symptom bother

This questionnaire asks about how much you have been bothered by selected bladder symptoms during the past 4 weeks. Please place a ✓ or × in the box that best describes the extent to which you were bothered by each symptom during the past 4 weeks. There are no right or wrong answers. Please be sure to answer every question.

During the past 4 weeks, how bothered were you by. . .	Not at all	A little bit	Some-what	Quite a bit	A great deal	A very great deal
1. An uncomfortable urge to urinate?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
2. A sudden urge to urinate with little or no warning?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
3. Accidental loss of small amounts of urine?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
4. Nighttime urination?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
5. Waking up at night because you had to urinate?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
6. Urine loss associated with a strong desire to urinate?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6

Figure – The OABq SF. This questionnaire has been specifically developed to diagnose OAB, is easy to fill, and is self-administered.