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Original article

Effect of bariatric surgery on urinary and fecal incontinence: prospective analysis with 1-year follow-up

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Abstract

Background: Few studies have established that obesity promotes all types of urinary incontinence and disorders of the pelvic floor. The role of bariatric surgery in urinary incontinence remains poorly studied.

Objective: To determine the effect of bariatric surgery on urinary incontinence, dysuria, and fecal incontinence before and 1 year after bariatric surgery.

Setting: University hospital expert in bariatric surgery

Methods: This was an observational cohort study of 140 patients who underwent bariatric surgery between September 2013 and September 2014. Patients prospectively completed 4 questionnaires, 2 for urinary symptoms and 2 for fecal incontinence. Eighty-three women and 33 men completed 4 questionnaires the day before surgery when arriving in the department and 1 year after surgery.

Results: Of the 140 patients, 116 completely responded to the 4 questionnaires. The rate of urinary incontinence was 50.9% before surgery and 19% at 1-year follow-up ($P < .0001$). After bariatric surgery, there was improvement in the rate of stress urinary incontinence: 39.7% before surgery versus 15.5% at 1 year ($P < .0001$). In addition, there was an improvement in urinary urge incontinence: 36.8% versus 7.9% at 1 year ($P < .0001$). The dysuria rate was 19.8% before surgery versus 3.4% at 1 year ($P < .0001$). Bariatric surgery improved the quality of life related to urinary symptoms ($P < .0001$). One year after surgery, there was no significant difference in terms of prevalence and severity of fecal incontinence.

Conclusion: We confirmed with our study that weight loss after bariatric surgery improves stress urinary incontinence, urge incontinence, dysuria, and quality of life. However, we did not find any positive effect on fecal incontinence. (Surg Obes Relat Dis 2016;■:00–00.) © 2016 Published by Elsevier Inc. on behalf of American Society for Metabolic and Bariatric Surgery.

Keywords:

Bariatric surgery; Urinary incontinence; Fecal incontinence

Obesity is a major public health issue, particularly in industrialized countries [1]. It predisposes to many diseases. It reduces life expectancy [2] and increases healthcare and

prevention costs [3]. Few studies have established that obesity promotes all types of urinary incontinence and disorders of the pelvic floor [4]. The management of urinary incontinence in obese patients begins with weight reduction with a low calorie diet and correcting eating disorders. Sphincter and perineal physiotherapy has its place as a first intent treatment, but the results are poor, whatever the weight [5]. The results of suburethral slings are identical for

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obese women with a body mass index (BMI) $<35 \text{ kg/m}^2$ and women with a normal BMI. The failure rate for women with a BMI $>35 \text{ kg/m}^2$ is very high: 81% achieve continence, compared with 92% to 96% in the general population [6,7]. The role of bariatric surgery in urinary incontinence and related quality of life remains poorly studied. The aim of our study was to determine prospectively the effect of bariatric surgery on urinary incontinence and urge incontinence as well as fecal incontinence before and 1 year after bariatric surgery.

Methods

Between September 2013 and September 2014, 140 patients underwent bariatric surgery. Each patient was discussed during a multidisciplinary meeting to choose the technique best adapted (laparoscopic sleeve gastrectomy [LSG] or bypass) to the patient's characteristics. We conducted an observational cohort study. Patients prospectively completed 4 questionnaires, 2 urinary incontinence questionnaires and 2 fecal incontinence questionnaires. Eighty-three women and 33 men completed 4 questionnaires the day before surgery when arriving in the department. Patients were contacted by mail 1 year after surgery to complete postsurgical questionnaires. The questionnaires were anonymous. These questionnaires were chosen because they have been validated in French.

Data collection followed French legislation concerning prospective noninterventive studies to evaluate routine care (Article Art. L1121-1-2 of French Public Health Code [Code de santé publique français]). Institutional review board approval was obtained to prospectively collect data on patients who underwent bariatric surgery. The study did not require submission to a consultative committee for persons' protection in biomedical research.

The Urinary Symptom Profile (USP) is a questionnaire developed in 2005 by the French Association of Urology. It studies all urinary symptoms in terms of 3 aspects: stress urinary incontinence (SUI), overactive bladder (OAB), and obstructive symptoms. It contains 13 questions. There is a score for each aspect; the higher the score, the more severe the symptoms. The USP has been validated in English [8]. The International Consultation on Incontinence Questionnaire (ICIQ) is validated in men and women and in 27 languages. It assesses SUI, urge incontinence, and mixed incontinence and their impact on quality of life (QoL). It contains 4 items: 3 symptom items (frequency, volume, and leakage circumstances) and a fourth item for quality of life, with a visual analog scale of 0 to 10 [9]. These 2 questionnaires, both validated in French, are complementary because USP does not evaluate QoL and ICIQ does not evaluate OAB symptoms.

Fecal incontinence was investigated using 2 questionnaires, the Wexner scale and the Fecal Incontinence Quality of Life (FIQL) scale. The Wexner scale is a quantitative

questionnaire that includes 5 items: 3 symptom items (gas leakage, liquid stool, solid stool), number of protections used, and quality of life score. Symptoms are rated 0 to 4. The total score varies from 0 to 20, with 20 corresponding to total incontinence [10]. The FIQL is a questionnaire with 29 items grouped according to 4 aspects: lifestyle, behavior, depression and self-image and embarrassment. Each item is rated on a scale of 1 to 4 (1 being the worst), allowing calculation of scores by aspect [11,12].

Preoperative questionnaires completed by the 140 study patients were compared with questionnaires completed by 40 obese patients followed in the nutrition department with no surgery scheduled.

Statistical analysis

Quantitative variables are described in our tables as follows: number of patients (N), mean \pm standard deviation, minimum, first interquartile, median, third interquartile, and maximum. The groups were compared by student parametric test or by Mann-Whitney or Wilcoxon non-parametric tests. Questionnaires before and after bariatric surgery were compared by paired t tests. A Spearman test was used for correlation. Multivariate analyses were performed with ANCOVA or multiple linear regressions.

Results

Of the 140 patients, 116 (83 women and 33 men) completely responded to the 4 questionnaires. Response rate was 83%. The average age was 47.6 ± 11.9 years old, 45.9 ± 11.9 years old for women and 51.7 ± 11.1 years old for men ($P = .0175$) (Table 1). Weight loss was significant after surgery; overall mean BMI was $43.6 \pm 6.9 \text{ kg/m}^2$ preoperatively and $30.7 \pm 6.5 \text{ kg/m}^2$ 1 year after surgery ($P < .0001$). In men, mean BMI was $43.3 \pm 5.7 \text{ kg/m}^2$ preoperatively and $31.6 \pm 5.2 \text{ kg/m}^2$ at 1 year ($P < .0001$). Mean BMI was $43.7 \pm 7.3 \text{ kg/m}^2$ in women preoperatively and $30.2 \pm 7 \text{ kg/m}^2$ at 1 year ($P < .0001$). There was no difference in degree of weight loss with the 2 techniques used (bypass and LSG) ($P = .4$). Type of surgery (bypass or LSG) did not influence symptom or QoL score improvement (data not shown).

Stress urinary incontinence

The rate of urinary incontinence was 50.9% before surgery and 19% at 1-year follow-up ($P < .0001$). Bariatric surgery improved the rate of SUI: 39.7% before surgery versus 15.5% at 1 year ($P < .0001$) (Table 2). In women, the rate before surgery was 49.4% versus 21.7% at 1 year ($P < .0002$) and in men 5.2% versus 0% ($P = .02$). The severity of urinary incontinence improved after surgery. The initial score was 1.4 ± 2.3 versus $.3 \pm 0.9$ ($P < .0001$) at 1 year. In women, the score was 1.8 ± 2.6 preoperatively and $.4 \pm 1.1$ at 1 year ($P < .0001$). In men, the score was

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