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Original article

Improvement of voiding characteristics in morbidly obese women after bariatric surgery: A single-center study with a 1-year follow-up

Jae Heon Kim, M.D., Ph.D.[a], Hwa Yeon Sun[a], Hyun Young Lee[a], Min Ju Soh[b], Suyeon Park[c], Yong Jin Kim, M.D., Ph.D.[b,*], Yun Seob Song, M.D., Ph.D.[a,**]

[a]*Department of Urology, Soonchunhyang University Hospital, Soonchunhyang University College of Medicine, Seoul, Korea*
[b]*Department of Surgery, Soonchunhyang University Hospital, Soonchunhyang University College of Medicine, Seoul, Korea*
[c]*Department of Biostatistics, Soonchunyang University Hospital, Seoul, Korea*

Abstract

Background: It is well known that morbid obesity in women is related to lower urinary tract symptoms, including urinary incontinence. Although several studies have reported on the improvement in urinary incontinence after bariatric surgery, few reports have focused on the detailed changes in other voiding characteristics.

Objective: To demonstrate the real benefit of bariatric surgery on lower urinary tract symptoms.

Setting: Bariatric Center of Excellence and Health Promotion at Soonchunhyang University Hospital.

Methods: From August to December 2012, a total of 57 women out of 183 women who underwent bariatric surgery agreed to be assessed for voiding dysfunction during their preoperative and 1-year postoperative evaluation using the international prostate symptom score, quality of life score, an overactive bladder symptom score, a patient perception of bladder score, and a Sandvick questionnaire for urinary incontinence. For statistical analysis, the Wilcoxon sign rank and Fisher's exact tests were used to assess a significant change in voiding status.

Results: Among a total of 183 women in the bariatric center, 57 women completed the full version of the urologic questionnaire. The baseline mean age of those patients was 38.5 ± 9.5 and their baseline mean body mass index (BMI) was 37.5 ± 5.9 (68.4% were over BMI 35). One year after bariatric surgery (Roux-en-Y gastric bypass), BMI showed a significant change, 9.5 ± 3.5 (63.1% were below BMI 28). For specific characteristic changes in voiding status, the international prostate symptom score, quality of life score, overactive bladder symptom score, and patient perception of bladder score revealed significant improvement over baseline: 3.2 ± 4.0, .6 ± .9, 1.6 ± 2.3, and .5 ± 1.0, respectively. For stress-related urinary incontinence as assessed using the Sandvick questionnaire, preoperative evaluation demonstrated the prevalence to be 40.74%, and 18.51% postoperatively.

Conclusion: At a 1-year postoperative follow-up after laparoscopic gastric bypass-type bariatric surgery, there were significant improvements in voiding status as assessed by several standard urologic voiding questionnaires/indices. (Surg Obes Relat Dis 2017;▮:00–00.) © 2017 Published by Elsevier Inc. on behalf of American Society for Metabolic and Bariatric Surgery.

Keywords: Obesity; Bariatric surgery; Lower urinary tract symptoms

Obesity is a worldwide epidemic with increasing prevalence; in the U.S., Europe, and Asian countries it is over 30% [1]. Among the different types of obesity, morbid obesity is becoming more common, and its prevalence is estimated at 5% in the U.S. [2].

*Correspondence: Dr. Yong Jin Kim, M.D., Ph.D., Department of Surgery, Soonchunhyang University Hospital, 59 Daesagwanro, Yongsangu, Seoul, 04401, The Republic of Korea.

**Correspondence: Dr. Yun Seob Song, M.D., Ph.D., Department of Urology, Soonchunhyang University Hospital, 59 Daesagwanro, Yongsangu, Seoul, 04401, The Republic of Korea.

E-mail: yjgs1997@gmail.com; yssong@schmc.ac.kr

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Recently, there has been increasing evidence of a relationship between lower urinary tract symptoms (LUTS) and obesity. Many studies of the relationship between obesity and LUTS have focused on stress urinary incontinence (SUI) in women. Many clinical studies on morbid obesity and bariatric surgery have placed a great deal of emphasis on SUI. However, not only SUI, but also other LUTS are closely related with morbid obesity, and we have demonstrated the difference in the prevalence of each LUTS symptom in a case-control study [3].

Morbid obesity can be treated in many ways, including by conservative treatment and by surgery. Weight loss has a positive effect on LUTS in that weight loss accomplished through conservative treatment brings about improvements in LUTS [4–7]. Subak et al. reported in a randomized controlled trial that there was a significant improvement in urinary incontinence (UI) after 6 months of conservative treatment including diet and exercise [7].

Conservative treatment includes dietary changes and exercise. However, to bring about and maintain an improvement in obesity, bariatric surgery is becoming an excellent alternative [8,9]. Several studies have showed the positive effects on LUTS after bariatric surgery [10–15]. Moreover, a systematic review of bariatric surgery indicated that contemporary bariatric surgery appears to result in consistent weight loss with an acceptable cost/benefit ratio [8].

However, those studies have focused on SUI, and various other LUTS have seldom been studied. Nowadays, as discussed in our report, storage symptoms are increasingly being focused on more often than are other LUTS [3]. The aim of this study was to demonstrate the benefit of bariatric surgery at 1 year on diverse LUTS using validated questionnaires and standard surgical techniques.

Methods

Patients

A total of 183 women were evaluated at the Bariatric Surgery Center of Soonchunhyang University Hospital during the same period. Of those, 57 women agreed to and completed the requisite evaluations pre- and postoperatively. The study was approved by the Institutional Review Board of Soonchunhyang University Hospital (2014-08-012). All patients underwent Roux-en-Y *gastric bypass* (performed by one experienced surgeon, Yong Jin Kim) and also underwent detailed clinical evaluations using the international prostate symptom score (IPSS), overactive bladder symptom score (OABSS), patient perception of bladder condition (PPBC), Sandvik questionnaire, and Beck depression inventory (BDI) both preoperatively and postoperatively. Anthropometric measurements including height, weight, and waist circumference were determined. The exclusion criteria were the use of medications affecting LUTS (such as alpha-adrenergic blockers, anticholinergics, or 5-a-reductase inhibitors), the presence of neurogenic bladder dysfunction, confirmed prostate cancer, prostatitis, and previous surgical intervention related to benign prostatic hyperplasia.

IPSS questionnaire

The severity of LUTS was measured by the IPSS, which is based on the American Urologic Association symptom index, with the inclusion of one additional question regarding quality of life (QoL). The IPSS questionnaire has been translated into many different languages and adapted based on the circumstances in each country. The IPSS questionnaire is now widely used for objective assessment of LUTS in both men and women [16,17]. The IPSS questionnaire consists of 8 items, which include seven 6-point scale questions regarding symptoms (a feeling of incomplete emptying [IPSS Q1], urinary frequency [IPSS Q2], interrupted stream [IPSS Q3], urinary urgency [IPSS Q4], weak urinary stream [IPSS Q5], urinary hesitancy [IPSS Q6], and nocturia [IPSS Q7]) [18].

OABSS Questionnaire

The original Japanese version of the OABSS consists of a total of 4 questions regarding daytime frequency, nocturia, urgency, and urgency incontinence [19]. The overall score is the sum of the 4 scores, and the diagnostic criteria for OAB is a total OABSS of 3 or more, with a Question 3 urgency score of 2 or more [20]. In the event that the OABSS is used as the standard for the assessment of the severity of OAB, it is recommended that a total score of 5 or less be defined as mild, a score of 6 to 11 be defined as moderate, and a score of 12 or more be defined as severe.

PBBC and Sandvick

The PPBC is a commonly used patient-reported measurement of bladder condition which has demonstrated validity and responsiveness to change [21]. Additionally, the Sandvik questionnaire consists of 2 questions regarding the frequency and the amount of UI. However, SUI was defined as the existence of any incontinence regardless of its amount and frequency. It has shown stable validity versus 24-hour pad tests. Good construct validity was indicated by a clear link between Sandvik questionnaire responses and inconvenience in performing daily activities [22].

Age questionnaire

Age has an impact on the generation-specific prevalence of the disorder, as well as on the prevalence of IPSS and OABSS. Therefore, this study registered each participant's date of birth.