ELSEVIER

Surgery for Obesity and Related Diseases ▮ (2015) 00–00

SURGERY FOR OBESITY AND RELATED DISEASES

Original article

Sexual functioning and sex hormones in men who underwent bariatric surgery

David B. Sarwer, Ph.D.[a,b,*], Jacqueline C. Spitzer, M.S.Ed.[a], Thomas A. Wadden, Ph.D.[a], Raymond C. Rosen, Ph.D.[c], James E. Mitchell, M.D.[d], Kathy Lancaster, B.A.[d], Anita Courcoulas, M.D., M.P.H., F.A.C.S.[e], William Gourash, M.S.N., C.R.N.P.[e], Nicholas J. Christian, Ph.D.[f]

[a]*Department of Psychiatry, Center for Weight and Eating Disorders, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, Pennsylvania*

[b]*Department of Surgery, Division of Plastic Surgery, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, Pennsylvania*

[c]*New England Research Institutes, Watertown, Massachusetts*

[d]*Neuropsychiatric Research Institute, and the University of North Dakota School of Medicine and Health Sciences, Fargo, North Dakota*

[e]*University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania*

[f]*Graduate School of Public Health, University of Pittsburgh, Pittsburgh, Pennsylvania*

Received August 11, 2014; accepted December 17, 2014

Abstract

Background: The relationship between obesity and impairments in male sexual functioning is well documented. Relatively few studies have investigated changes in sexual functioning and sex hormones in men who achieve significant weight loss with bariatric surgery. The objective of this study was to assess changes in sexual functioning, sex hormones, and relevant psychosocial constructs in men who underwent bariatric surgery.

Methods: A prospective cohort study of 32 men from the Longitudinal Assessment of Bariatric Surgery-2 (LABS) investigation who underwent a Roux-en-Y gastric bypass (median body mass index [25th percentile, 75th percentile] 45.1 [42.0, 52.2]) and completed assessments between 2006 and 2012. Bariatric surgery was performed by a LABS-certified surgeon. Sexual functioning was assessed by the International Index of Erectile Functioning (IIEF). Hormones were assessed by blood assay. Quality of life (QoL), body image, depressive symptoms and marital adjustment were assessed by questionnaire.

Results: Men lost, on average, (95% confidence interval) 33.3% (36.1%, 30.5%) of initial weight at postoperative year 1, 33.6% (36.8%, 30.5%) at year 2, 31.0% (34.1%, 27.9%) at year 3, and 29.4% (32.7%, 26.2%) at year 4. Participants experienced significant increases in total testosterone ($P < .001$) and sex hormone binding globulin (SHBG) ($P < .001$) through postoperative year 4. Although men reported improvements in sexual functioning after surgery, these changes did not significantly differ from baseline, with the exception of overall satisfaction at postoperative year 3 ($P = .008$). Participants reported significant improvements in physical domains of health-related quality of life (HRQoL), all domains of weight-related QOL, and body image, but not in the mental health domains of HRQoL or relationship satisfaction.

Conclusions: Men who lost approximately one third of their weight after Roux-en-Y gastric bypass experienced significant increases in total testosterone and SHBG. They did not, however, report significant improvements in sexual functioning, relationship satisfaction, or mental health domains of HRQoL. This pattern of results differs from that of women who have undergone bariatric surgery,

This ancillary study to the Longitudinal Assessment of Bariatric Surgery-2 was funded by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) grant #R01 DK072452.

*Correspondence: David B. Sarwer, Ph.D., 3535 Market Street, Suite 3126, Philadelphia, PA 19104.
E-mail: dsarwer@mail.med.upenn.edu

http://dx.doi.org/10.1016/j.soard.2014.12.014

who reported almost uniform improvements in sexual functioning and psychosocial status. (Surg Obes Relat Dis 2015;▮:00–00.)

Keywords: Sexual functioning; Sex hormones; Quality of life; Obesity; Bariatric surgery

Obesity, and extreme obesity in particular, is associated with significant medical and psychosocial co-morbidity [1,2]. A large number of studies have found a relationship between extreme obesity and impairments in quality of life, as well as greater depressive symptoms and increased body image dissatisfaction [3–7]. Individuals with obesity often report untoward changes in sexual functioning and decreased sexual satisfaction [6,8–13]. In a recent study of individuals with extreme obesity who presented for bariatric surgery, 51% of women and 36% of men reported a sexual dysfunction [13]. The presence of dysfunctional sexual behavior was associated with lower levels of quality of life and impairment in other areas of psychosocial functioning for women. In contrast, the impact of sexual dysfunction on the psychosocial functioning of men was less pronounced or uniform [13]. Obesity has been associated with untoward changes in several sex hormones in women and men, which also may adversely impact sexual functioning [13–17].

Weight loss after lifestyle modification or bariatric surgery has been associated with significant improvements in sexual functioning [18–21] and sex hormones [16,21–23]. For example, recently it was found that women who underwent bariatric surgery and experienced a mean weight loss of 33.5% (95% CI, 31.5–35.6%) at postoperative year 2 reported significant improvements in overall sexual functioning and specific domains of functioning, including desire, arousal, lubrication, and satisfaction [24]. These women also reported significant improvements in body image, depressive symptoms, and most domains of quality of life, and they experienced improvements in total testosterone, estradiol, follicular stimulating hormone, sex hormone binding globulin, and DHEA-S.

Because women represent the vast majority of individuals who present for bariatric surgery, there has been less opportunity to study changes in sexual functioning and sex hormones in men who undergo bariatric surgery. For example, in a study of 10 men who underwent Roux-en-Y gastric bypass, Reis et al. found marginally significant improvements in self-reported sexual functioning 2 years after surgery, improvements in total testosterone, follicle stimulating hormone, and prolactin were more robust [21]. This study, however, was limited by its small sample size. Furthermore, it did not include an assessment of psychosocial factors that could influence sexual behavior, such as quality of life, body image, and romantic relationship satisfaction. The present study was undertaken to address this gap in the literature. It was hypothesized that men would experience improvements in sexual functioning, sex hormones, and psychosocial variables of interest, with a pattern of results similar to that seen with women [25].

Methods

Study design

This study used data collected from the Longitudinal Assessment of Bariatric Surgery (LABS) consortium. The LABS study design is detailed elsewhere [26–28]. LABS-2 is investigating the long-term effects of bariatric surgery on patients' weight, as well as physical and mental health status. The present study is considered an ancillary study of LABS-2, because it extends lines of investigation to other, more specific questions, including the authors' previous reports on baseline sexual functioning [13] and changes in female sexual functioning 2 years after surgery [25].

Thirty-two men undergoing Roux-en-Y gastric bypass and participating in the LABS-2 study from 2 of the 10 LABS sites (the Neuropsychiatric Research Institute [NRI] and the University of Pittsburgh Medical Center [UPMC]) were studied. Data were collected between 2006 and 2012. Participants were assessed before surgery and annually thereafter. Year 2 was the primary point of interest, because most bariatric surgery patients reach maximum weight loss by this time [29]. Year 3 and year 4 outcomes also are reported. The trial was approved by the institutional review boards at NRI, UPMC, and the University of Pennsylvania. Informed consent was received from all participants.

Participants

Men who met the inclusion criteria of the LABS-2 study (at least 18 years old and seeking a first bariatric surgical procedure) and also met all medical and mental health criteria for bariatric surgery were included in the study. Men who were nonambulatory, those with significant or uncontrolled medical conditions (including recent history of stroke, untreated or uncontrolled hypertension, and history of renal or hepatic disease), and those with untreated or uncontrolled psychiatric conditions were excluded. Men had to report involvement in a relationship that provided them with opportunity for sexual activity with a partner. Participants received a $40.00 gift card (to a local department or bookstore) after completion of each assessment and to enhance retention.