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Original article

## Weight loss, quality of life and employment status after Roux-en-Y gastric bypass: 5-year analysis

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### Abstract

**Background:** Obesity can have a tremendous impact on the psychosocial, physical, and economic health of those afflicted by it. We hypothesized that if surgery results in significant weight loss and improves quality of life, those unemployed and disabled as a result of their morbid obesity might be more likely to become gainfully employed after Roux-en-Y gastric bypass (RYGBP).

**Methods:** We reviewed the medical charts of all patients who underwent RYGBP from April 1998 to December 1999. Demographics and employment status were obtained, along with preoperative weight, body mass index, Short Form 36 Health Survey and Beck Depression Inventory-II scores. For those employed, the recuperation time was also analyzed. Statistical analysis was performed using Student's *t* test and analysis of variance.

**Results:** Fifty-seven patients underwent RYGBP. Of the 57 patients, 41 were selected for analysis, 34% of whom were employed, with a mean recuperation time of 3.5 weeks. Their mean age was 32.4 years. The mean body mass index was 53.4 kg/m<sup>2</sup> preoperatively and 31.2 kg/m<sup>2</sup> at 5 years. Of the 41 patients, 27 (66%) were receiving disability and 25 (61%) attributed their disability to their morbidly obese state. At 5 years, 4 (16%) of the 25 were gainfully employed and no longer receiving public assistance.

**Conclusion:** Despite successful long-term weight loss and improvement in quality of life, many morbid obesity patients do not return to gainful employment in the workforce after RYGBP. The mean body mass index was greater in the unemployed group at both 1 and 5 years, but the difference was not statistically significant. The socioeconomic impact of morbid obesity persists long after a reduction in weight and improvement in quality of life. © 2005 American Society for Bariatric Surgery. All rights reserved.

### Keywords:

Morbid obesity; Quality of life; Roux-en-Y gastric bypass; Employment; Bariatric surgery

Obesity has reached epidemic proportions. It has been estimated that 300 million adults are obese worldwide, with more than one third of them living in developing nations [1]. Surgery is an effective long-term treatment for the morbidly obese. Among the surgical procedures, Roux-en-Y gastric bypass

(RYGBP) is a well-accepted and widespread alternative that results in significant weight loss and reduce obesity-related comorbidities, with an acceptable rate of short- and long-term side effects.

Several studies have documented a significant improvement in quality of life (QOL) after weight-loss surgery [2–8], but none of them have compared the patients' employment status before and after surgery or the correlation among weight loss, QOL, and employment.

The primary aim of the present study was to determine retrospectively the preoperative employment status of patients undergoing open RYGBP and to correlate this with

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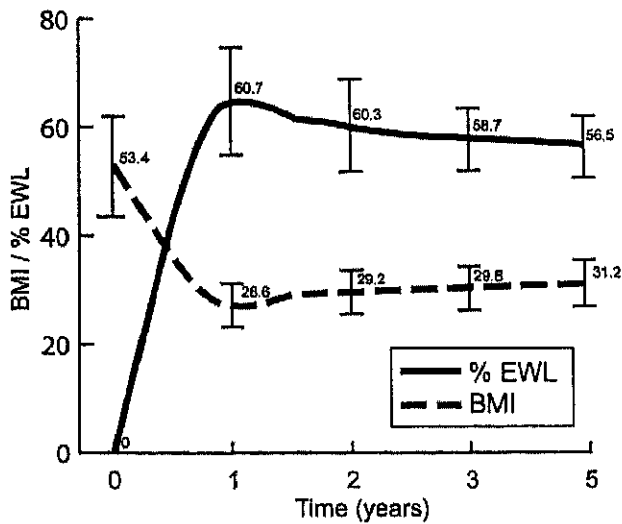


Fig. 1. BMI (kg/m<sup>2</sup>) and EWL (%). Data presented as mean  $\pm$  standard deviation.

their long-term weight loss, changes in QOL, and return to gainful employment in the workforce.

## Methods

Between April 1998 and December 1999, 57 patients underwent open RYGBP at Nassau University Medical Center. All patients met the National Institutes of Health criteria for bariatric surgery. All procedures were performed by a single surgeon and consisted of a "nondivided," long-limb RYGBP (Roux limb length range 150–270 cm). A total of 41 charts were retrospectively analyzed; 16 patients were excluded from the study because of incomplete data or follow-up. Weight loss was assessed by calculating both the body mass index and the percentage of excess weight loss at 1, 3, and 5 years postoperatively. For each patient, QOL was measured by the scores obtained from the Short Form 36 Health Survey (SF-36) and the Beck Depression Inventory-II (BDI-II) questionnaires. The SF-36 is a standardized form that contains 35 questions about eight concepts and 1 question about the patient's impression as to the change in health [9]. Higher scores indicate greater functioning and better QOL. The BDI-II is a standard questionnaire consisting of 21 multiple-choice items designed to assess the presence and severity of depressive symptoms [10]. On the BDI-II, in contrast to the SF-36, higher scores indicate more severe depression. Patients who did not have a 5-year questionnaire on file were asked to complete one in person or through a telephone interview. Employment status was analyzed before surgery and at 1 and 5 years postoperatively. For those patients who were employed before surgery, we determined the recuperation time, defined as the time from surgery to the return to work. For those patients who were unemployed before surgery, we analyzed the employment

status at 1 and 5 years postoperatively, and we reviewed the unemployment reasons as given by the patients. We also compared the amount of weight loss in those who were employed with that of those who were unemployed. Statistical analysis was performed using Student's *t* test and analysis of variance when appropriate, with  $P \leq .05$  considered statistically significant.

## Results

Follow-up was 95% at 1 year and 71% at 5 years. The mean age of the group was  $32.4 \pm 3.6$  years (range 28–43); 36 (89%) were women and 5 (11%) were men; and 9 patients (22%) were white, 24 (58%) were black, and 8 (20%) were Hispanic. Preoperatively, the mean body mass index was  $53.4 \pm 8.9$  kg/m<sup>2</sup> and had dropped significantly to  $31.2 \pm 4.1$  kg/m<sup>2</sup> at 5 years (Fig. 1). The greatest weight loss was seen at 1–2 years postoperatively. The percentage of excess weight loss was  $60.7\% \pm 9.2\%$  at 1 year and  $57.5\% \pm 4.7\%$  at 5 years, the difference was not statistically significant (Fig. 1).

In comparing the amount of weight loss in those employed and unemployed, we found that those employed sustained a greater amount of weight loss as measured by body mass index at 1, 3, and 5 years; however, the difference was not statistically significant (Fig. 2).

We noted a statistically significant difference in the SF-36 between the preoperative and U.S. norm scores in all subscales ( $P < .01$ ; Table 1), suggesting significant disability due to morbid obesity. At 5 years after surgery, however, significant improvement was noted compared with the preoperative scores ( $P < .01$ ; Table 1). No significant difference was noted between the 5-year postoperative group and the U.S. norm (Fig. 3). Significant changes in the SF-36 scores were noted as early as 6 months after surgery.

Preoperatively, the mean BDI-II score was  $16.32 \pm 4.08$  compared with  $10.54 \pm 3.21$  postoperatively ( $P < .01$ ).

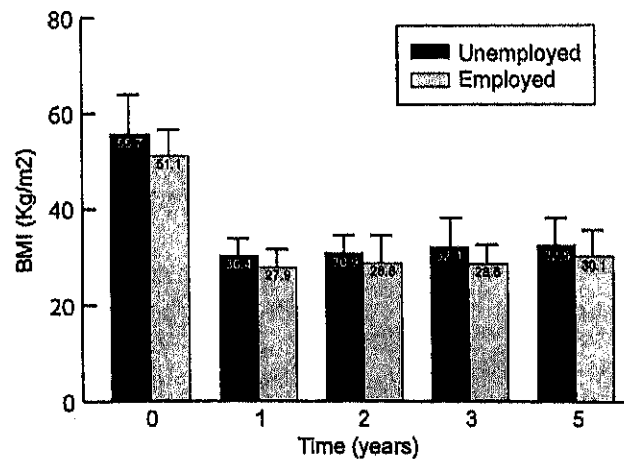


Fig. 2. BMI for unemployed versus employed patients. Data presented as mean  $\pm$  standard deviation.

Table 1  
Quality of life according to Short-Form 36 scores

Domain	Preoperative	5 yr	U.S norm	P value*
Physical functioning	41.1 ± 22.2	80.1 ± 24.7	84.15 ± 23	<0.01/<0.01/NS
Role-physical	27.16 ± 32.47	78.9 ± 29.30	80.96 ± 34	<0.01/<0.01/NS
Bodily pain	41.08 ± 26.69	73.7 ± 21.74	75.15 ± 23.96	<0.01/<0.01/NS
General health	41.55 ± 22.09	70.4 ± 20.81	71.95 ± 20.34	<0.01/<0.01/NS
Vitality	34.04 ± 17.87	58.53 ± 12.31	60.86 ± 20.96	<0.01/<0.01/NS
Social functioning	49.53 ± 33.52	82.4 ± 23.64	83.28 ± 22.69	<0.01/<0.01/NS
Role-emotional	49.01 ± 41.29	78.63 ± 26.63	81.26 ± 33.04	<0.01/<0.01/NS
Mental health	63.68 ± 20.6	71.51 ± 20.83	74.74 ± 18.05	0.02/<0.01/NS

Data presented as mean ± standard deviation.

NS not statistically significant.

\* Analysis of variance between preoperative and 5-yr, preoperative and U.S norm, 5-yr and U.S norm.

When employment status was evaluated, 14 patients (34%) were gainfully employed preoperatively and 27 (66%) were unemployed (Table 2). The reasons for unemployment were attributed to morbid obesity in 25 patients (Table 3). Two patients blamed their unemployment on disability from previous motor vehicle collisions. For the patients who were employed preoperatively, the recovery time was  $3.5 \pm 1.2$  weeks (range 2–4.5). For those who were unemployed primarily because of obesity, at 1 year, only 2 patients had become gainfully employed. At 5 years, only 4 patients had become gainfully employed, for a 16% reemployment rate. All 14 patients employed preoperatively were employed at the 1- and 5-year follow-up visits. The postoperative reasons for unemployment, although nonspecific, were categorized into three general groups, as depicted in Table 3.

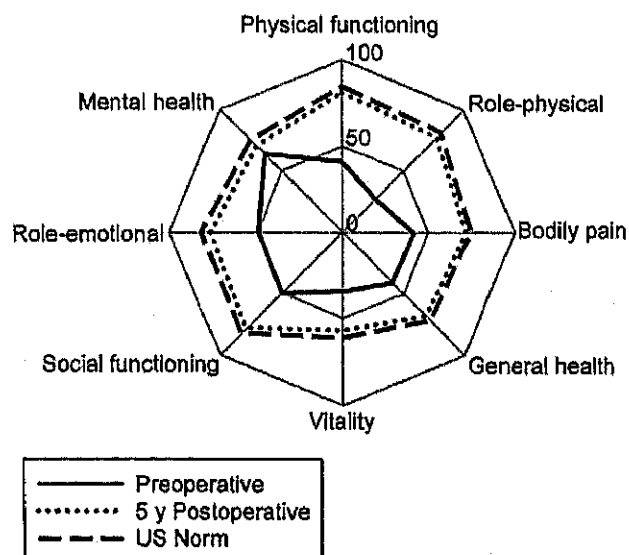


Fig. 3. QOL according to SF-36.

## Discussion

Morbid obesity is a disease that leads to severe physical and emotional disability. Morbidly obese patients are often the targets of stigmatization and discrimination, not only in social situations and medical settings, but also because of employability in the workplace [11, 12]. RYGBP often results in a significant reduction in weight and improvement in QOL; however, it is not a panacea.

Surprisingly, even though RYGBP results in significant reduction in weight and improvement in QOL, only 16% of our previously unemployed patients had become gainfully employed at 5 years after surgery. Patients who remained unemployed continued to have physical complaints attributable to the effects of morbid obesity despite improvements in QOL. Perhaps, other social factors were at play, but that was beyond the scope of our study. Although enhanced QOL may be expected to motivate patients to maintain a surgically established weight loss and adhere to health behaviors that reduce the chance of comorbidities [13], it did not seem to predict the employment status of our patients after gastric bypass. No significant difference was noted in the weight loss amount between the employed and unemployed patients. Perhaps a greater study group size would have revealed a significant difference in weight loss in those unemployed.

In the unemployed patients, it was clear that the socioeconomic impact of morbid obesity persisted long after the reduction in weight and improvement in QOL, suggesting

Table 2  
Employment status (n = 41)

	Employed (n)	Unemployed (n)
Preoperative	14*	27 (25)
1 yr	16	25 (23)
5 yr	18†	23 (21)

Data in parentheses are number of patients unemployed because of obesity.

\* Recovery time  $3.5 \pm 1.2$  wk (range 2.0–4.5).

† Rate of gainful employment at 5 yr: 16%.

Table 3  
Reasons for unemployment

Reason	Patients (n)
<b>Preoperative</b>	
Morbid obesity	25
Generalized pain	
Back pain	
Difficulty ambulating	
Leg swelling	
Depression	
Chronic fatigue	
Osteoarthritis	
Motor vehicle collisions	2
<b>Postoperative</b>	
<b>Social</b>	
Dropped out of school/ training programs	15
Still think overweight	
Still looking for a position	
<b>Economic</b>	
Fear/difficult to enter work place	11
<b>Medical, despite improved QOL</b>	
Chronic fatigue	5
Osteoarthritis	

QOL = quality of life.

that surgical intervention should probably be considered earlier, rather than later, to minimize the chronicity of the disease.

The improvement in QOL was striking in our retrospective analysis. The SF-36 scores reliably improved after gastric bypass. The reduction in the BDI-II to a score of 10.5 suggests that morbid obesity can have a significant impact on the mental state of those afflicted by this disease condition and that depression often improves after bariatric surgical intervention. After weight loss, many patients related that they were perceived better by their coworkers and believed they were more likely to be promoted in the workplace. This impression was based on how they were treated by their colleagues after the weight loss. The attitudes and behaviors in the work environment were also altered. Coworkers no longer brought food to snack on at work, and, in some cases, rules were established in an effort to support and promote good eating habits—an indirect benefit of the operation. Interestingly, modest weight loss may substantially improve the QOL in patients after bariatric surgery, even when the final weight loss is not to the level of the surgeon's expectations. Being able to tie one's shoe, cross one's leg, and function as a normal member of society can be far more significant than the actual weight loss measured by the bariatric surgeon.

Our data have shown that, for the morbidly obese, continued underemployment is a reality even after significant surgically induced weight loss and improved QOL. In some patients, the residual effects from the morbid obesity are

“long lasting” and may preclude employment. Employment status is multifactorial and cannot be solely attributed to weight loss. Those employed before obesity surgery tend to remain employed after surgery. Only 16% of those initially unemployed became gainfully employed in the workplace at 5 years of follow-up.

Our study had limitations. The analysis was retrospective and the study population small. Future research should include a prospective study in a larger cohort to investigate patients' preoperative intentions regarding future workplace employment versus actual employment at follow-up. The results of such a study would add further to our understanding of this important aspect of the lives of our bariatric surgical population. Despite its limitations, we believe our study has provided insight into the issue of weight loss, QOL, and employment after gastric bypass as we strive to understand, not only the disease of morbid obesity, but also the impact of our interventions in the lives of those afflicted by this disease condition.

## References

- [1] World Health Organization. Available at: <http://www.who.int/nut/obs.htm>. Accessed January 8, 2005.
- [2] Larsen JK, Geenen R, van Ramshorst B, et al. Psychosocial functioning before and after laparoscopic adjustable gastric banding: a cross-sectional study. *Obes Surg* 2003;13:629–36.
- [3] Isacson A, Frederiksen SG, Nilsson P, et al. Quality of life after gastropasty is normal: a controlled study. *Eur J Surg* 1997;163:181–6.
- [4] Stunkard AJ, Stinnett JL, Smoller JW. Psychological and social aspects of the surgical treatment of obesity. *Am J Psychiatry* 1986;143:417–29.
- [5] Choban PS, Onyejekwe J, Burge JC, et al. A health status assessment of the impact of weight loss following Roux-en-Y gastric bypass for clinically severe obesity. *J Am Coll Surg* 1999;188:491–7.
- [6] Horchner R, Tuinebreijer W. Improvement of physical functioning of morbidly obese patients who have undergone a Lap-Band operation: one-year study. *Obes Surg* 1999;9:399–402.
- [7] Weiner R, Datz M, Wagner D, et al. Quality of life outcome after laparoscopic adjustable gastric banding for morbid obesity. *Obes Surg* 1999;9:539–45.
- [8] Schauer PR, Ikramuddin S, Gourash WF, et al. Outcomes after laparoscopic Roux-en-Y bypass for morbid obesity. *Ann Surg* 2000;232:515–29.
- [9] Ware J, Snow KK, Kosinski M, et al. SF-36 Health Survey: Manual and Interpretation Guide. Lincoln, RI: Quality Metric; 1993.
- [10] Beck AT, Steer R, Brown GK. Manual for the Beck Depression Inventory. San Antonio, TX: Psychological Corporation; 1987.
- [11] Buchwald H. Mainstreaming bariatric surgery. *Obes Surg* 1999;9:462–70.
- [12] Vallis TM, Butler GS, Perey B, et al. The role of psychological functioning in morbid obesity and its treatment with gastropasty. *Obes Surg* 2001;11:716–25.
- [13] Schok M, Geenen R, van Antwerpen T, et al. Quality of life after laparoscopic adjustable gastric banding for severe obesity: postoperative and retrospective preoperative evaluations. *Obes Surg* 2000;10:502–8.