

Original article

# Number of weight loss attempts and maximum weight loss before Roux-en-Y laparoscopic gastric bypass surgery are not predictive of postoperative weight loss

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## Abstract

**Background:** Many insurance companies have mandated that bariatric surgery candidates already satisfying the National Institutes of Health criteria make an additional attempt at medically supervised weight loss. The objective of this study was to determine whether a correlation exists between the number of weight loss attempts (WLAs) or maximal preoperative weight loss (MWL) and the percentage of excess weight loss (%EWL) after laparoscopic Roux-en-Y gastric bypass (LRYGB) surgery.

**Methods:** The WLAs and MWL data were collected by bariatric medical record review. The postoperative %EWL was obtained by retrospective review of a prospectively enrolled bariatric database. Patients whose records contained 1 year of follow-up data and either the WLAs or MWL were included in the study. The data were analyzed using Pearson correlations and odds ratios.

**Results:** From September 2001 to 2006, 530 patients underwent LRYGB. Of these, 384 met the study criteria (82.6% were women). The mean WLAs was  $4.3 \pm 1.8$ . The mean MWL was  $46.6 \pm 31.2$  lb ( $21.2 \pm 14.2$  kg). At surgery, the mean patient age was  $43.3 \pm 9.3$  years, and the mean body mass index was  $48.0 \pm 5.9$  kg/m<sup>2</sup>. At 1 year after LRYGB, the mean body mass index was  $30.2 \pm 5.0$  kg/m<sup>2</sup>, and the mean %EWL was  $72.3\% \pm 15.3\%$ . Statistical analysis revealed no correlations between the %EWL at 1 year after LRYGB and the WLAs ( $R^2 = .011$ ) or MWL ( $R^2 = .005$ ).

**Conclusion:** Neither the WLAs nor the MWL correlated with the %EWL at 1 year after LRYGB. Our results showed no evidence that the WLAs or MWL before surgery correlates with the %EWL in patients undergoing LRYGB. (Surg Obes Relat Dis 2009;5:208–211.) © 2009 American Society for Metabolic and Bariatric Surgery. All rights reserved.

## Keywords:

Laparoscopic gastric bypass; Preoperative weight loss; Percentage of excess weight loss; %EWL

The number of overweight and obese American adults has doubled in the past 20 years, contributing an estimated 300,000 deaths annually [1]. Obesity not only has social, economic, and psychological implications, but it also has a significant effect on an individual's health. People who are

obese (body mass index [BMI]  $\geq 30$  kg/m<sup>2</sup>) have a 50–100% increased risk of premature death from all causes compared with individuals at a healthy weight. Approximately 5.5 million Americans have a BMI  $>35$  kg/m<sup>2</sup> [2]. To date, bariatric surgery remains the only effective treatment option for long-term weight loss in the severely obese [2].

In the past several years, advances in minimally invasive surgical techniques have contributed to the increase in the popularity of bariatric surgery. In 2000, approximately

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36,700 bariatric procedures were performed; by 2007, the number had increased to 205,000 bariatric procedures [3].

In 1991, the National Institutes of Health published criteria for individuals considering bariatric surgery. According to these criteria, candidates must have a BMI  $\geq 40$  kg/m<sup>2</sup>. Individuals with a BMI of 35–40 kg/m<sup>2</sup> can be considered for surgery if they have significant co-morbid conditions, such as sleep apnea, hypertension, or diabetes mellitus. Surgical candidates are also required to have demonstrated multiple failed attempts at conventional weight loss [2]. Patients who have already met the National Institutes of Health criteria for bariatric surgery are often required to complete an additional medically supervised weight loss program before approval by their insurance company. The requirements for weight loss programs vary by insurance company, and these programs can last anywhere from 6 months to 3 years and are not always a benefit covered by insurance. Although the definition of medically supervised weight loss differs among insurance companies, they often consist of visits with a registered dietician with supervision by the surgeon.

It has been shown that patients pursuing bariatric surgery have reported an extensive history of weight loss attempts, including those mandated by insurance companies, all of which have proved unsuccessful [4–6]. Therefore, the question remains: if previous attempts at weight loss have proven unsuccessful, is it reasonable to require yet another attempt at conventional weight loss before surgery? Does the number of preoperative weight loss attempts (WLAs) or the maximal preoperative weight loss using conventional methods (MWL) have an effect on an individual's postoperative success? Our goal was to determine whether such a correlation exists between either the WLAs or MWL and the percentage of excess weight loss (%EWL) after laparoscopic Roux-en-Y gastric bypass (LRYGB).

## Methods

All patients pursuing bariatric surgery at our institution are required to complete individual nutritional, behavioral, and medical assessments and are encouraged to make appropriate lifestyle modifications under the guidance of the bariatric team, which consists of a registered dietician, physician assistant, psychologist, and surgeon.

An institutional review board–approved retrospective review was performed of our prospectively maintained bariatric database. This included a review of the bariatric patients' electronic and paper medical records. All patients undergoing LRYGB from September 2001 through September 2006 were considered for the study. To meet the study inclusion criteria, a patient's medical record had to contain documentation of self-reported conventional weight loss history (either WLAs or MWL) and postoperative 1-year follow-up data. In addition to these data, we collected demographic, BMI, %EWL, and net weight loss information.

Follow-up data from postoperative years 1, 2, and 4 were included in the analysis. Successful postoperative weight loss was defined as achieving  $\geq 50\%$  EWL.

Statistical analysis included the use of Pearson correlations and odds ratios. A *P* value  $< .05$  was considered significant. The odds ratios were unadjusted and adjusted by gender. For MWL, the odds ratios were summarized per 10-lb weight loss. Because of the discrete nature of the WLA data, jitter plots were used to ensure visualization of all data points.

## Results

From September 2001 through September 2006, 530 patients underwent LRYGB. Of these patients, 384 met the study inclusion criteria. Of the 384 patients, 317 (82.6%) were women. At surgery, the mean patient age was  $43.3 \pm 9.3$  years, and the mean BMI was  $48.0 \pm 5.9$  kg/m<sup>2</sup>.

Self-reported conventional weight loss data were collected and analyzed for the study group. Of the 384 patient records, 373 documented the WLAs and 375 documented the MWL. The mean WLAs was  $4.3 \pm 1.8$  (range 1–13), and the mean MWL was  $46.6 \pm 31.2$  lb (range 0–200) or  $21.2 \pm 14.2$  kg (range 0–90.9).

Postoperative year 1 data were complete for 384 patients. The mean %EWL was  $72.3\% \pm 15.3\%$ , and the mean BMI was  $30.2 \pm 5.0$  kg/m<sup>2</sup>. A total of 359 patients (93.5%) met the %EWL goal of  $\geq 50\%$  at postoperative year 1. Statistical analysis showed no correlation between the %EWL 1 year after LRYGB and the WLAs ( $R^2 = .011$ ) or MWL ( $R^2 = .005$ ; Fig. 1).

The postoperative year 2 data were complete for 184 patients. The mean BMI at 2 years after LRYGB was  $29.5 \pm 5.5$  kg/m<sup>2</sup>, and the mean %EWL was  $74.8\% \pm 18.0\%$ . Of the 184 patients, 172 (93.5%) met the  $\geq 50\%$  EWL goal. Again, the analysis yielded no correlation between the %EWL and either the WLAs ( $R^2 = .029$ ) or MWL ( $R^2 = .004$ ; Fig. 2).

At postoperative year 4, the data were complete for 42 patients. The mean BMI was  $32.2 \pm 6.4$  kg/m<sup>2</sup>. The mean %EWL was  $67.0\% \pm 17.9\%$ . Of the 42 patients, 39 (92.9%) met the  $\geq 50\%$ EWL goal. Statistical analysis again yielded no correlation between %EWL 4 years after LRYGB and either the WLAs ( $R^2 = .004$ ) or the MWL ( $R^2 = .105$ ).

At postoperative years 1, 2, and 4, neither the WLAs nor MWL was predictive of a patient's chance of meeting the  $\geq 50\%$ EWL goal in unadjusted models (Table 1). When adjusted by gender, the postoperative year 1 and 2 %EWL goal outcomes were not predictable using either the WLAs or MWL (Table 2). At postoperative year 4, all men with follow-up data had met the  $\geq 50\%$ EWL goal. Neither the WLAs nor MWL was predictive of a woman's chance of meeting the %EWL goal 4 years after LRYGB (Table 2).

**Discussion**

The results of this study have demonstrated that patients pursuing LRYGB have made multiple conventional attempts at weight loss before surgery, and some have lost significant amounts of weight conventionally. However, neither of these preoperative factors correlated with the postoperative weight loss.

Carlin et al. [5] studied preoperative program-mandated weight loss to determine whether it was a predictor of postoperative weight loss after LRYGB. Patients were given a weight loss goal to be achieved preoperatively. Patients were counseled by an exercise physiologist and a registered dietitian on an individualized nutrition and exercise program. No correlation was found between preoperative conventional weight loss and postoperative weight loss at 1 year after surgery. These results, in addition to our data, add to the body of evidence showing that the weight loss history before surgery is not useful in predicting for postoperative weight loss.

Many insurance payors claim that preoperative dietary counseling improves the postoperative outcomes and com-

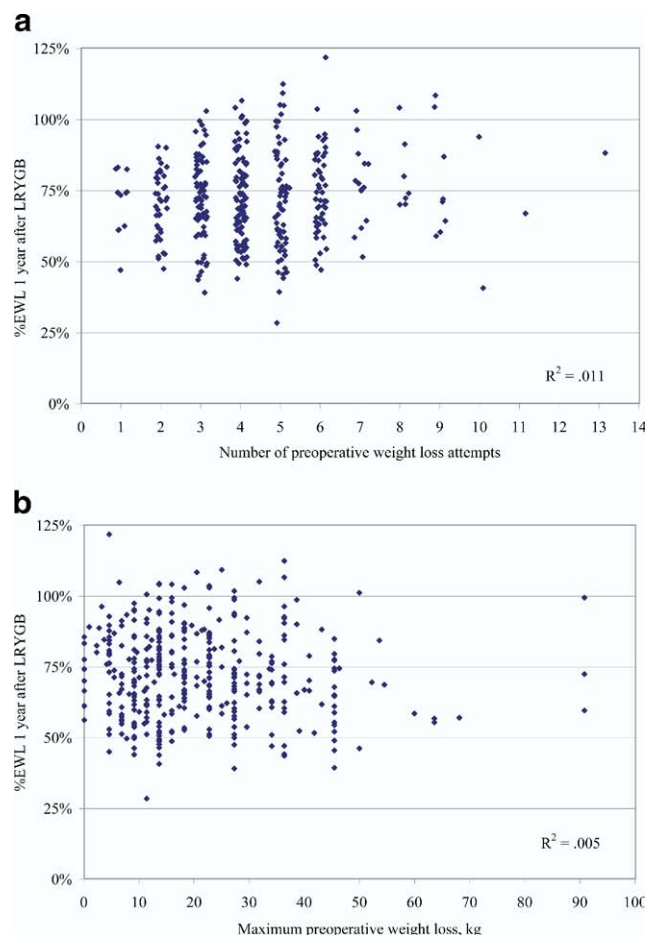


Fig. 1. (a) %EWL 1 year after LRYGB and WLAs. (b) %EWL at 1 year after LRYGB and MWL.

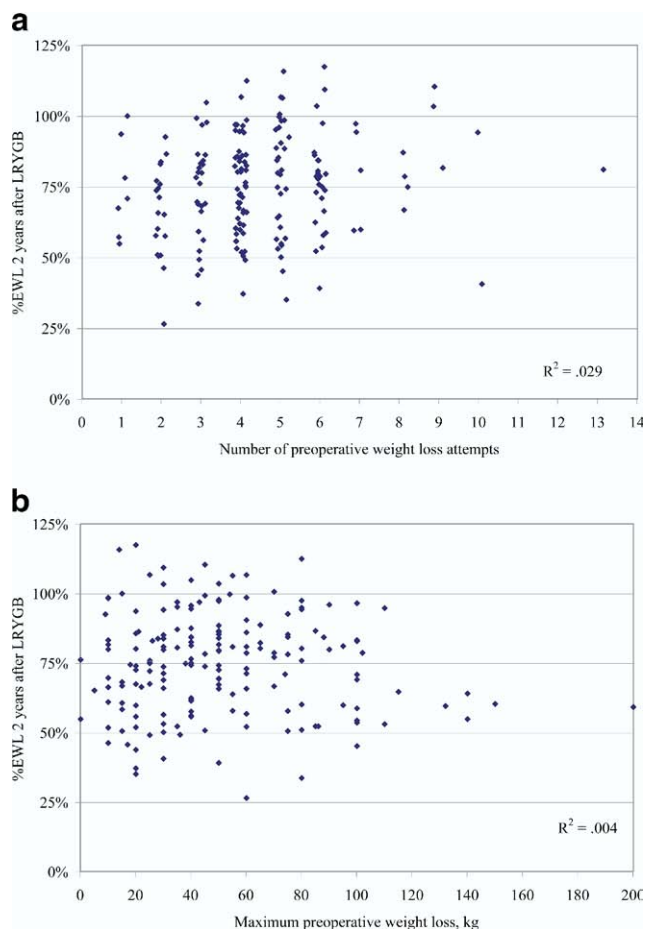


Fig. 2. (a) %EWL 2 years after LRYGB and WLAs. (b) %EWL at 2 years after LRYGB and MWL.

pliance. Jamal et al. [6] studied insurance-mandated preoperative dietary counseling (PDC) to determine its relationship to postoperative outcomes. A group of 72 patients with insurance-mandated PDC were compared with a group of 252 patients with no such requirements. At 1 year after

Table 1

Odds ratio models for predicting patients' chance of meeting weight loss goal at 1, 2, and 4 years after LRYGB, unadjusted

Variable	OR* (95% CI)	P value
<b>WLAs</b>		
Year 1	1.04 (.82–1.32)	.743
Year 2	1.07 (.77–1.49)	.693
Year 4	0.98 (.54–1.79)	.957
<b>MWL</b>		
Year 1	0.96 (.85–1.08)	.514
Year 2	1.70 (.88–3.51)	.148
Year 4	0.83 (.66–1.06)	.131

LRYGB = laparoscopic Roux-en-Y gastric bypass; OR = odds ratio; CI = confidence interval; WLAs = number of preoperative weight loss attempts; MWL = maximal preoperative weight loss.

\* For MWL, OR summarized per 10-lb weight loss.

Table 2

Odds ratio models for predicting patients' chance of meeting weight loss goal at 1, 2, and 4 years after LRYGB, adjusted for gender

Variable	OR* (95% CI)	P value
WLAs		
Year 1	0.97 (.76–1.24)	.818
Year 2	1.05 (.75–1.48)	.759
Year 4†	1.03 (.57–1.89)	.915
MWL		
Year 1	0.98 (.87–1.10)	.678
Year 2	1.72 (.83–3.55)	.143
Year 4†	0.45 (.19–1.08)	.075

Abbreviations as in Table 1.

\* For MWL, OR summarized per 10-lb weight loss.

† All men for whom year 4 data were available met the percentage of excess weight loss goal of  $\geq 50\%$ ; thus, the analyses for year 4 were performed exclusively for women (unadjusted for gender).

surgery, the no-PDC patients had lost a greater percentage of their excess weight (67% versus 60%,  $P < .0001$ ); had a lower BMI (32 versus 35 kg/m<sup>2</sup>,  $P < .015$ ); and weighed less (197 versus 218 lb,  $P < .01$ ) than patients in the PDC group. Jamal et al. [6] concluded that insurance-mandated PDC serves only as a barrier to surgical treatment.

Some studies have shown that reaching a preoperative weight loss goal before surgery has an effect on postoperative weight loss success. Still et al. [7] studied a group of 884 patients, giving them a weight loss goal of 10% of their excess body weight to be achieved between their initial visit and surgery, and concluded that patients who lost 10% of their excess body weight before surgery were 2 times more likely to achieve 70% excess body weight loss postoperatively. In contrast, we assessed the patient's self-reported weight loss history preceding their initial visit in the bariatric clinic. We did not base our analysis on a preoperative weight loss goal. Our institution has previously studied the effects of preoperative weight loss during the interval from the initial visit to surgery and found that patients selectively asked, because of surgeon preference, to lose  $>4.54$  kg preoperatively had no difference in postoperative weight loss compared with a group not required to lose weight preoperatively [8].

Our study had several limitations. The preoperative conventional weight loss data (i.e., WLAs, MWL) were self-reported by the patients. Although prospectively collected, the information was retrospectively reviewed, which could have affected the accuracy of the data collected. Furthermore, fewer patients kept their follow-up appointments at postoperative years 2 and 4; therefore, less information was available for analysis beyond the first year after LRYGB. We have studied the reasons for patient noncompliance with

follow-up in the past [9]. It remains to be determined whether preoperative weight loss has an effect on compliance with postoperative follow-up. More research is needed on the preoperative weight loss history and its effect on postoperative long-term weight maintenance for patients beyond postoperative year 4.

## Conclusion

No correlation exists between the number of preoperative WLAs or MWL using conventional methods and %EWL at postoperative years 1, 2, and 4. We found no empirical evidence supporting additional insurance-mandated medically supervised programs for patients who have met the National Institutes of Health criteria for weight loss surgery.

## Disclosures

*The authors claim no commercial associations that might be a conflict of interest in relation to this article.*

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