

Outcome and Complications of Gastric Bypass in Super-Super Obesity versus Morbid Obesity

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Background: Roux-en-Y gastric bypass (RYGBP) reduces the co-morbidities of obesity. Patients with super-super obesity (BMI ≥ 60) present additional technical and medical challenges. This study compares the results in super-super-obese patients with patients with a BMI of <60 over a 5.5-year period.

Methods: Retrospective analysis was performed of the 504 patients who underwent open RYGBP from January 1999 through June 2004. Patients were divided into 2 groups: Group A (444 patients) had a BMI <60 , and Group B (60 patients) had a BMI ≥ 60 , and also had a greater percentage of males. The groups were otherwise similar in demographics and co-morbidities.

Results: Concomitant ventral herniorrhaphy was performed in 23 patients (5%) in Group A and in 3 patients (5%) in Group B. Concomitant cholecystectomy was done in 11.2% in Group A and 10% in Group B. Group A patients had an incidence of leaks of 1.3%, and there were no leaks in Group B. Wound infection rate for Group A was 5% vs 1.7 % in Group B (NS). Mortality for both groups was similar. The stricture rate for Group A was 0.9% compared with 1.7 % for Group B. After 1 year, excess weight lost was 41.7% in Group A and 38.3% in Group B. The development of anemia was not statistically different (8.3% vs 11.0 %). Incidence of postoperative gallbladder disease and incisional hernia was similar.

Conclusions: Super-super-obese patients should not be excluded from RYGBP because of a perceived increased risk based upon BMI.

Key words: Morbid obesity, super-super obesity, gastric bypass, weight loss

Introduction

Roux-en-Y gastric bypass (RYGBP) is a preferred bariatric operation in the USA. Perioperative complications of RYGBP have not been reported to be increased in the super-obese (BMI ≥ 50) or in the super-super obese (BMI ≥ 60), than in the morbidly obese (BMI 40-49.9).^{1,2} However, in patients weighing >227 kg undergoing open RYGBP, an increased length of stay, need for intensive care unit, and days on mechanical ventilation were reported, although complications were no greater compared to those weighing <227 kg in a 3-year study.³ Others have reported the safety of RYGBP in patients with BMI ≥ 70 .^{4,5}

Christou et al⁶ reported that infections are more likely to occur in super-obese patients, whereas gender, age, BMI, duration of surgery, and incidence of diabetes had no effect. Obese patients have significantly more co-morbidities than non-obese patients, including hypertension, diabetes, asthma, gastroesophageal reflux disease, heart disease, sleep apnea, and arthritis of weight-bearing joints.⁷ Complications following bariatric surgery have been reported to be related to patient age (≥ 50 years),⁸ male gender, and hospital size.⁹ The present study evaluates differences in operative times, complication rates and length of stay between morbid (BMI ≥ 40) and super-obese (BMI ≥ 50 to 60) patients versus super-super-obese patients (BMI ≥ 60) undergoing open RYGBP.

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Patients and Methods

Open RYGBP was performed over the 5.5-year period, January 1999 through June 2004, by a single surgeon (IML) and a single institution (Lenox Hill Hospital, a 625-bed Manhattan university-affiliated hospital). The total 504 patients who fulfilled the criteria according to the NIH were evaluated.¹⁰ An additional 54 RYGBP patients were excluded from the study due to follow-up of < 14 months. Complete medical records of all patients were analyzed retrospectively to document outcomes and complications. The patients were divided into two groups based on BMI. Group A (444 patients) consisted of all patients with BMI < 60 kg/m², and Group B (60 patients) was patients with BMI ≥ 60 kg/m². Wound infection was defined as the need for packing and dressing changes by medical staff on a daily basis and parenteral antibiotics for fever or cellulitis. Data were subjected to univariate and multivariate analysis. A *P*-value of < 0.05 was considered statistically significant.

Results

The two groups were found to be similar in age, comorbid conditions, prior surgical history, and use of medications. There were a higher percentage of male patients in the super-super-obese group (Table 1). The two groups received similar surgical treat-

Table 1. Patient demographics and co-morbidities

	Group A (BMI <60) N=444 patients	Group B BMI (BMI ≥ 60) N=60 patients
Average age (range)	37 years (19-64)	40 years (18-61)
Gender	36 Females 24 Males	374 Females 70 Males
Hypertension (%)	3 (5%)	20 (4.5%)
Diabetes (%)	15 (25%)	58 (13%)
Cardiac Disease (%)	8 (13%)	73 (16%)
Sleep Apnea (%)	5 (8.3%)	26 (5.8%)

P >0.05 in all categories

Table 2. Concomitant surgery and percent excess weight loss (%EWL)

	Group A (BMI <60) n=444	Group B (BMI ≥ 60) n=60
Concomitant ventral hernia repair (%)	22 (5%)	3 (5%)
Concomitant cholecystectomy (%)	50 (11.2%)	6 (10%)
% EWL after 1 year	41.7%	38.3%

P >0.05 in all categories

ment (Table 2). Concomitant ventral herniorrhaphy was performed in 23 patients (5%) in Group A and in 3 patients (5%) in Group B. Concomitant cholecystectomy was done in 11.2% of patients in Group A and 10% in Group B. Excess weight loss was similar (41.7% for Group A and 38.3% for Group B).

Patients were followed for a mean of 2.5 years (range 14-81 months). Early and late complications are shown in Table 3. Group A patients had an incidence of leaks of 1.3%, while there were no leaks in Group B. The stricture rate for Group A was 0.9%, compared with 1.7% in Group B. Wound infection rate for Group A was 5% vs 1.7% for Group B (*P* >0.05 , not significant). The development of anemia was not statistically different (8.3% vs 11.0%). Incidence of postoperative gallbladder disease and incisional hernia have been similar.

Operative times and length of stay between Groups A and B were similar (Table 4).

Table 3. Complications following open Roux-en-Y gastric bypass

	Group A (BMI <60)	Group B (BMI ≥ 60)
Anastomotic Leaks	6 (1.3%)	0%
Mortality	2 (0.4%)	0%
Anastomotic Stricture	4 (0.9%)	1 (1.7%)
Wound Infection	22 (5.0%)	1 (1.7%)
Development of Anemia	37 (8.3%)	7 (11.7%)

P >0.05 in all categories

Table 4. Hospital data for Roux-en-Y gastric bypass surgery

	Group A (BMI<60)	Group B (BMI≥60)
Mean operative time in minutes (range)	112 (69 - 218)	124 (84 - 204)
Average length of stay in days (range)	4.8 (3 - 37)	5.1 (4 - 31)
Admitted to ICU (%)	32 (7.2%)	5 (8.3%)

$P > 0.05$ in all categories

Discussion

RYGBP has risks and complications, but these are low and should not prevent the super-super-obese patient from undergoing bariatric surgery. In the present study, the most feared complications (anastomotic leak and death) were not specifically related to the BMI, when controlled for other variables.

Patients with BMIs ≥ 60 kg/m² clearly benefit from the weight loss with respect to co-morbidities and quality of life. These patients stand to benefit the most from the effects of weight loss on heart disease and diabetes after the RYGBP.^{2,11} Major relief or improvements in sleep apnea, hyperlipidemia and hypertension occur. Importantly, the weight loss improves the activities of daily living, and patients who were sedentary are now able to ambulate considerably better and musculoskeletal pain is dramatically improved.¹²

Among the important supplements after gastric bypass are iron (especially in menstruating females), folic acid and vitamin B₁₂, to prevent anemia.¹³

All bariatric patients should be examined and given thorough preoperative work-up and preparation to prevent complications. There is now a trend to decrease weight by preoperative dieting in the massively obese, which will decrease liver size and visceral adipose tissue and will improve exposure and decrease operative time.¹⁴ On the other hand, when presented with a huge liver or massive visceral adiposity, there is a trend to stage the surgery with a sleeve gastrectomy for initial weight loss, followed later by a definitive operation.¹⁵ Massively obese patients should be considered acceptable candidates for planned RYGBP, and should not be excluded due to a perceived increased risk based on BMI alone.

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