

**OUTCOMES FOLLOWING LAPAROSCOPIC ROUX-EN-Y GASTRIC BYPASS (LRYGB) VARY BY SEX:
ANALYSIS OF 83,059 MORBIDLY OBESE WOMEN AND MEN**

Malinda Lyon, DO and Gus J Slotman, MD, Department of Surgery, Inspira Health Network, Vineland, NJ 08360

Introduction: Previously we have reported significant variation in the pre-operative clinical characteristics between women and men seeking LRYGB, including age, weight, BMI and the distribution of weight-related medical conditions. However, in these complex and medically fragile patients, whether or not the post-operative response to LRYGB for weight, BMI and the resolution or persistence of obesity co-morbidities also varies by sex has not been investigated thoroughly.

Objective: To identify statistically and clinically significant variations in long-term outcomes between women and men who underwent LRYGB.

Methods: Pre-operative and follow-up data at 2, 6, 12, 18 and 24 months after surgery on 83,059 patients from the Surgical Review Corporation's BOLD database who underwent LRYGB was analyzed retrospectively in two groups: Women (n=65,325) and Men (n=17,734). Data included age, weight, BMI, and 29 weight-related medical conditions. Continuous variables were analyzed using ANOVA with baseline and treatment in the model. Pair-wise comparisons were performed on the least squares means of the treatments calculated from the ANOVA model to find differences in the treatment groups. Distribution of obesity co-morbidities was examined by a general linear model with baseline and treatment in the model and modified for binomial distribution to account for dichotomous variables.

Results: Pre-operative age (47.5±11.5 vs 44.5±11.5), weight (156 ±30 vs 127 ± 23 kg) and BMI (49.0±8.6 vs 47.3±7.7) were higher for men than women (p<0.0001). Outcomes at 12 months after LRYGB included higher male weight (104±21 vs 82±17 kg), weight loss (53±19 vs 45±13 kg), and BMI (32±6 vs 31±6), p<0.0001. At 12 months women, compared with men, had increased (female%/male%) incidence of cholelithiasis (25.87%/10.34%), GERD (25.12%/20.97%), abdominal panniculitis (8.79%/6.98%), asthma (14.92%/10.02%), mental health diagnoses (10.5%/6.63%), depression

(34.06%/21.03%), pseudotumor cerebri (1.88%/0.59%), psychological impairment (15.94%/11.01%), and stress urinary incontinence (17.5%/2.56%), (n=9, all p<0.0001). At 12 months, men compared with women, had increased (male%/female%), abdominal hernia (7.35%/4.53%), congestive heart failure (3.23%/1.37%), diabetes mellitus (19.9%/13.21%), hypertension (41.5%/31.2%), obesity hypoventilation syndrome (1.89%/1.17%), obstructive sleep apnea (34.97%/22.69%), alcohol consumption (25.3%/20.56%), angina (3.03%/1.4%), gout (6.89%/1.55%), dyslipidemia (32.52%/25.17%)(p<0.0001), liver disease (7.57%/6.16%)(p<0.001), impaired functional status (2.92%/2.21%), lower extremity edema (16.3%/14.79%), substance abuse (0.59%/0.31%), tobacco abuse (5.2%/4.35%)(p<0.01) and pulmonary hypertension (1.67%/1.32%)(p<0.05)

Conclusions: Clinical outcomes following LRYGB vary significantly between men and women. In spite of greater weight loss, at 12 months BMI was higher for men. Women persisted in higher cholelithiasis, abdominal panniculitis, GERD, and stress incontinence, and in serious mental health conditions. Men failed to resolve clinically important cardiopulmonary/vascular issues, metabolic derangements (diabetes, gout, dyslipidemia), developed abdominal hernia, and were functionally impaired more than women. Increased alcohol consumption may contribute to increased male liver disease. Overall, women may benefit more from LRYG than do men. The advance knowledge from these results may facilitate optimized post-LRYGB management.