

PLENARY SESSION ABSTRACTS

1. REDUCTION OF 5-YEAR MORTALITY IN MORBIDLY OBESE PATIENTS TREATED WITH LAPAROSCOPIC ADJUSTABLE GASTRIC BANDING.

Luca Busetto, MD; Franco Favretti, MD; Gianni Segato, MD; Maurizio De Luca, MD; Marco Mazza, MD; Giuliano Enzi, MD; Maria L Petroni, MD¹; Franco Balzola, MD¹; Dario Mirabelli, MD²; Margherita Chiusolo, MD²; Franco Merletti, MD²
Terapia Medica e Chirurgica Obesita, Padova, Italy; ¹Istituto Auxologico Italiano, Piancavallo, Italy; ²Epidemiologia Tumori, Torino, Italy

Background:

The net effect of bariatric surgery on mortality of morbidly obese patients is still controversial. Peri-operative mortality should be balanced against the reduction of long-term obesity-related mortality presumably produced by a sustained weight loss. Recently, gastric bypass has been found to be associated with reduced long-term mortality, but also with high peri-operative death rates in unspecialized institutions. The effects of less invasive and less risky procedures are still unknown. The aim of this study was to compare the mortality rate of obese patients treated with laparoscopic gastric banding (LAGB) with the mortality rate of matched obese patients.

Methods:

The series consisted of 821 patients with BMI > 40 kg/m² consecutively treated with LAGB from 1994 to 2001 at the Centre for Medical and Surgical Therapy of Obesity of Padova University. The reference group consisted of 821 sex-, age- and BMI-matched patients selected from a sample of 4,762 adult patients with BMI > 40 kg/m² observed between 1976 and 1996 at 6 Italian medical centers not using surgical therapy. Only medical patients enrolled since 1994 were included in this study. The vital status (index date December 31, 2004) was ascertained by direct contact for the surgical group and from administrative search for the reference group.

Results:

Mean follow-up was 5.6±1.9 years in the surgical group and 7.2±1.2 years in the reference group. Vital status at the index date was ascertained in 90.6% of the cases in the surgical group (8 deaths recorded, with no peri-operative deaths) and in 97.4% of the cases in the reference group (36 deaths recorded). In the surgical group, %EWL was 39.8±17.9% 1 year after LAGB, 40.9±21.7% 3 years after LAGB, and 37.2±23.8% 5 years after LAGB. The rate of late revisional surgery was 12.2%. We have not data about the body weight during follow-up in the reference group. Kaplan-Meier survival curves were calculated at 6 months and 1, 2, 3 and 5 years and differences in survival between the two groups were evaluated by log-rank test: survival rate was significantly higher in the surgical group (p<0.0007). In a multivariate (Cox) survival analysis, the 5-years relative risk of death in the surgical group, adjusted for sex, age, and baseline BMI, was 0.38 (95%CI: 0.17-0.85).

Conclusion:

In our study, LAGB was associated without peri-operative mortality and a 40% stable %EWL. LAGB patients had a 5-years 60% lower risk of death than comparable morbidly obese patients observed at medical centers and not receiving obesity surgery.

2. A 2-WEEK VERY LOW CALORIE DIET RESULTS IN A DECREASE IN LIVER VOLUME AND IMPROVED HISTOLOGIC FINDINGS OF FATTY LIVER DISEASE.

Justin D. Braverman, MD; Brian Quebbemann, MD
The N.E.W. Program, Newport Beach, CA

Background:

Steatosis of the liver is often an acutely reversible disorder found pre-operatively in 95% of patients undergoing bariatric surgery. A very low calorie diet (VLCD) over a 2-week period can markedly decrease liver volume improving visualization of the G-E junction and also demonstrates improved histology on biopsy.

Methods:

Patients undergoing bariatric surgery with a BMI > 45 kg/m² and ultrasonographic evidence of hepatomegaly with fatty infiltration of the liver were included in this prospective study. Two weeks prior to surgery, patients were started on a uniform VLCD and that same day underwent a state of the art CT scan with volumetric analysis of the liver and percutaneous CT-guided needle liver biopsy. On the day of surgery, the volumetric CT scan of the liver was repeated and intraoperative wedge and needle biopsies were obtained. CT scans were compared by a single radiologist to measure changes in liver volume. Liver biopsies were compared for any change in the degree of steatosis/fibrosis.

Results:

All subjects completing the 2 week VLCD demonstrated a decrease in liver volume. No large left lobe of the liver was encountered at surgery. Histologic findings demonstrated either no change or improved steatosis of the liver.

Conclusion:

Preoperative VLCD will reduce liver size and can demonstrate improved histology on biopsy.

3. THE RELATIONSHIP OF BMI WITH DEMOGRAPHIC, CLINICAL AND PROCEDURE CHARACTERISTICS: RESULTS FROM THE LONGITUDINAL ASSESSMENT OF BARIATRIC SURGERY (LABS) CONSORTIUM.

David R Flum, MD

University of Washington, Seattle, WA

Background:

BMI is used to characterize patient risk in bariatric surgery but its relationships with other known risks have not been well characterized.

Methods:

Data collected prospectively per LABS-1 protocol were used to evaluate the relationship between BMI and clinical/operative characteristics of patients undergoing initial bariatric surgical procedures.

Results:

Of the 1836 patients undergoing initial bariatric surgical procedures 11.4% had a BMI of at least 60 kg/m². Compared to those with a lower BMI, patients with BMI of at least 60 kg/m² were more likely to be men (27.1 vs. 21.8%) and African American (15.9 vs. 8.9%). Those in the heaviest group were also more likely to report hypertension (61.0 vs. 54.4%), ischemic heart disease (5.7 vs. 3.7%), congestive heart failure (6.2 vs. 1.8%), asthma (31.4 vs. 21.5%), history of VTE (8.1 vs. 3.0%), sleep apnea (66.7 vs. 41.5%), anemia (33.3% vs. 19.1%), diabetes (43.3 vs. 32.8%), and the inability to walk at least 200 feet unassisted (24.8 vs. 4.6%). Pre-operatively, they more often used beta-blockers (25.8 vs. 17.9%), therapeutic anticoagulation (7.1 vs. 3.8%), narcotics (27.6 vs. 14.8%) and anti-depressants (42.8 vs. 38.6%), and were more often in ASA classification IV (17.3% vs. 4.2%). Procedures in the highest BMI group were more often planned to be open (31.7 vs. 10.0%) with higher rates of conversion from lap to open (5.3 vs. 0.9%), cholecystectomy (12.5 vs. 9.2%) and gastrostomy (9.6 vs. 2.7%).

Conclusion:

Higher BMI was associated with patient/operative characteristics that have been linked with adverse outcomes and increased healthcare utilization in prior studies.

4. THE IMPACT OF BARIATRIC SURGERY ON HEALTH CARE COSTS.

Anita P Courcoulas, MD, MPH; Anne Docimo, MD; Sherry Askey; Pamela B Peele, PhD; Diane Holder
University of Pittsburgh Medical Center, Pittsburgh, PA

Background:

The treatment of severe obesity and health-related problems creates significant financial burden. This study was conducted to compare health care costs over time of patients treated with bariatric surgery to those treated medically.

Methods:

This was an observational study of two cohorts with four years of continuous enrollment in a health system owned health plan that shared their costs with clinical data. The treatment cohort included patients having undergone bariatric surgery between 2000 and 2004 and the control group included age, gender, BMI, and Charlson score matched obese patients who had not undergone surgery for weight loss during the same period. The cohorts were assessed one year prior to surgery and followed for three years. The outcome measures were total medical and pharmacy costs.

Results:

There were 37 surgery and 30 control patients in each cohort. They were well matched for age (47 vs. 48 years), gender (4% males), BMI (48 kg/m²), Charlson score (0.58), and duration of follow up (3 years post surgery). Control patients had higher total medical costs at one year following surgery (control=\$7,454; surgery=\$4,247). At four years following cohort inception (three years post surgery), total medical costs per patient were \$5,684 versus \$10,098 in the surgery and control groups, respectively. Pharmacy costs per patient, both cumulative and at the longest time point were much reduced in the surgically treated group (control, cumulative=\$7,477; surgery, cumulative=\$3,915 and control, per patient=\$2,388; surgery, per patient=\$1,061).

Conclusion:

Bariatric surgery reduces health care costs over time, especially those related to medication usage. Larger studies merging cost and clinical data are needed to confirm these trends.

5. BARIATRIC SURGERY IN ADOLESCENTS: ANALYSIS OF 309 CASES.

Esteban Varela, MD, MPH; Marcelo Hinojosa, MD¹; Ninh Nguyen, MD¹
University of Texas Southwestern, Dallas, TX US; ¹University of California Irvine, Irvine, CA US

Background:

Bariatric surgery in the adolescent continues to be a controversial topic. This study compares the perioperative outcomes of bariatric surgery between adolescent and adult patients for the treatment of morbid obesity using an administrative database of academic centers.

Methods:

Using ICD-9 diagnosis and procedural codes, we obtained data from the University Health System Consortium for 55,501 patients who underwent laparoscopic or open gastric bypass, gastric banding or gastroplasty between 2002 and 2006. Outcome measures include demographics, length of hospital stay, ICU stay, 30-day readmission, morbidity, and observed and expected (risk-adjusted) mortality.

Results:

Table

Conclusion:

Bariatric surgery in the adolescents represent 0.6% of all bariatric operations performed at academic centers with gastric bypass being the most common procedure. Outcomes of bariatric surgery in the adolescent appears to be as safe as adults, with a lower 30-day morbidity.

	<i>Adolescents</i>	<i>Adults</i>
<i>Patients (N)</i>	309	55,192
<i>Academic centers (N)</i>	59	97
<i>Female (%)</i>	74.8	82.1
<i>Age (year range)</i>	12-18	> 18
<i>Caucasian (%)</i>	70.2	74.4
<i>Moderate/high risk (%)</i>	1.9	5.9 *
<i>Mean length of stay (days)</i>	2.8 ± 4	3.4 ± 4
<i>ICU stay (%)</i>	7.0	13.9 *
<i>30 day readmission (%)</i>	0.0	0.5
<i>Gastric bypass (%)</i>	69.9	94.3 *
<i>Overall complications (%)</i>	5.5	9.8 *
<i>In-hospital mortality (%)</i>	0.0	0.2
<i>Risk adjusted mortality ratio</i>	0.0	1.0

* p < 0.01 compared to adolescents, Z-tests.

6. DOES GASTRIC BYPASS ALTER ALCOHOL METABOLISM?

Judith C Hagedorn, MHS; James Lau, MD; Meg Samrau, RN; Teresa LaMasters, MD; John M Morton, MD,MPH
Stanford University, Stanford, CA

Background:

Morbid obesity is the leading public health crisis in the US and gastric bypass is an effective and enduring treatment for this disease. Post-operatively, there has been concern that alcohol metabolism may be altered in gastric bypass patients. We hypothesized that alcohol metabolism in the post-operative gastric bypass patient would not be altered.

Methods:

Ten control subjects (CS) and ten post-gastric bypass subjects (GBS) each consumed 5 ounces of red wine. Subjects underwent alcohol breath analysis (AlcoHawk) every 5 minutes. Outcomes included symptoms, initial alcohol breath level, and time for alcohol breath levels to normalize.

Results:

Both groups were clinically similar on the basis of age, gender, and BMI. The average time after gastric bypass was 2.5 years with an average BMI loss of 20 kg/m² (pre, 49/post, 29). Both groups had similar initial alcohol breath levels (.04 vs. 04) and time to zero alcohol breath levels (minutes, 66, CS vs. 68, GBS). The post gastric bypass group did report a much higher rate of flushing (% , 100 vs. 0) and diaphoresis (% , 40 vs. 0) than the control group.

Conclusion:

In this study, alcohol metabolism is not different between post-gastric bypass and control subjects. There is a higher rate of adverse symptoms reported by gastric bypass patients. Further investigation will prospectively determine alcohol metabolism in the gastric bypass patient both pre and post-operatively.

7. PREDICTORS OF POOR OUTCOME AFTER LAPAROSCOPIC GASTRIC BANDING (LG).

Ralph Peterli, MD; Bettina Woelnerhanssen; Beatrice Kern, MD; Thomas Peters, MD¹; Markus von Fluee, MD
Surgical Clinic, St. Claraspital, Basel, BS Switzerland

¹Interdisciplinary Centre of Nutritional and Metabolic Diseases, St. Claraspital, Basel, BS Switzerland

Background:

We investigated predictors of poor outcome after LG

Methods:

Between 12/96 and 08/05 a total of 398 consecutive patients (female 78%, mean age 41 (17-66) years, BMI 44.3 (35-75) kg/m²) were prospectively evaluated and operated by primary LG (Lap-Band®). Until 04/04 a two-stage-therapy concept was applied with primary LG in all morbidly obese patients followed by bilio-pancreatic diversion duodenal switch (BPD) in case of failure. Thereafter, lap sleeve gastrectomy (LS) and lap Roux-en-Y gastric bypass (LRYGB) were also performed in case of failure of LG. The follow-up rate after a mean of 4.8 (1-9) years was 98%. The Kaplan-Meier method was used to calculate survival time of poor outcome. Poor outcome ("event") was defined by patients with band removal, BPD, LS and LRYGB or Lap-Band® patients with a BAROS score below 3. Time to event was defined by the reoperation date or the date of last follow-up of Lap-Band® carriers. The multivariate Cox proportional hazard model was applied to calculate hazard ratios for influencing factors.

Results:

At last follow-up 269 patients still had their band (25 of them after re-banding). Their mean weight loss was 40 (-25-111) % of excessive weight, mean BAROS score was 4.25 (-2.5 – 8.85), a good to excellent result could be observed in 69%. Five years after LG 39% either lost their bands or had a BAROS score below 3. Up to date, 69 patients needed BPD, 28 LRYGB, 23 LS, and 9 patients had band removal. Patients with binge-eating disorder (HR: 1.89, 95%CI: 1.41-2.54, p<0.00002), sweets-eater (HR: 1.44 95%CI: 1.06-1.97, p<0.02), and higher age (HR: 1.3, 95%CI: 1-1.67, p<0.045) were predictors of poor outcome after LG

Conclusion:

Patients with binge-eating disorder, sweets-eater and higher age were predictors of poor outcome after LG. In these patients another initial bariatric operation should be performed to increase the success-rate.

8. DOES DIABETES AFFECT WEIGHT LOSS AFTER GASTRIC BYPASS?

Alfredo M Carbonell, DO; Luke Wolfe, MS; Jill G Meador, RN, BSN; Harvey J Sugerman, MD; John M Kellum, MD; James W Maher, MD

Virginia Commonwealth University Medical Center, Richmond, VA

Background:

Weight loss in diabetics improves glycemic control. We investigated whether diabetes adversely affects post gastric bypass weight loss.

Methods:

Our database was queried for demographics and outcomes in diabetics (DM) and non-diabetics (NDM) undergoing gastric bypass. Patients were subdivided by severity: diet-controlled (DC), oral hypoglycemics (OHG), or insulin (INS).

Results:

20% (n=655) of 3193 patients had DM. The DM group was older (45.8 ± 10.4 vs. 39.1 ± 9.9 , $p < 0.0001$), with more comorbidities; hypertension (70.5% vs. 44.2%, $p < 0.0001$); sleep apnea (36.7% vs. 26.1%, $p < 0.0001$); and venous stasis (5.6% vs. 2.6%, $p < 0.0001$). More males had DM (25.6% vs. 19.3%, $p = 0.0006$). Age-adjusted, preoperative weight and BMI were equal. There was a direct relationship between DM severity and age, weight, and comorbidities. At one year, the DM group had lower percent excess weight loss (PEWL) ($60.8\% \pm 16.6$ vs. $67.6\% \pm 16.7$, $p < 0.0001$) and higher BMI (34.2 ± 7.1 vs. 32.3 ± 7.2 , $p < 0.0001$). PEWL was 67.6% in NDM, 63.5% in DC, 60.5% in OHG, and 57.5% in INS. Diabetes resolution was 89.8% in the DC, 82.7% in the OHG, and 53.3% in the INS groups.

Conclusion:

Diabetics typically had more comorbidities, with no difference in preoperative weight compared to non-diabetics. Despite lower weight loss, diabetics had durable resolution of comorbidities.

9. PREOPERATIVE WEIGHT GAIN DOES NOT PREDICT FAILURE OF WEIGHT LOSS OR COMORBIDITY RESOLUTION OF GASTRIC BYPASS FOR MORBID OBESITY (RYGB).

Michael C Harnisch, MD; Rebecca Petersen; Aurora Pryor, MD; John P Grant, MD; Eric J DeMaria, MD; Dana Portenier, MD
Duke University, Durham, NC

Background:

Success with pre-operative weight loss is often mandated by the bariatric team to assess patient compliance and has been suggested to correlate with postoperative weight loss outcomes.

Methods:

Retrospective analysis of 1240 consecutive patients undergoing RYGB at a single institution. Patients with preoperative weight gain or loss of ≥ 10 lbs were compared. Patients with < 12 month follow up were excluded.

Results:

There was no difference between the two groups (Gainers n=94, Losers n=86) in terms of preoperative BMI, presence of co-morbidities, or time interval between initial program-entry weight and surgery (156 vs. 147 days). Caucasians were statistically under-represented in the Gainers (72.3% vs. 81.6%, $p<0.02$). There was no difference in percent excess weight loss (% EWL) at 12 months, when calculated using the patient's immediate preoperative weight (62.5% EWL Gainers vs. 64.5% EWL Losers, $p=0.37$). However, preoperative weight gain did result in a slightly reduced %EWL when calculated using weight at time of the initial evaluation (58.7% EWL Gainers vs. 67.7% EWL Losers, $p<0.0002$). Weight loss was maintained in both groups through 24 months of follow-up (Gainers n=37, Losers n=32). Resolution rates of diabetes (75% vs. 75%, NS) and hypertension (45% vs. 59%, NS) were equivalent, as were peri-operative complication rates (18.1% and 15.1%, NS). A single mortality was recorded in the Loser group (NS).

Conclusion:

Weight loss prior to RYGB is not mandatory and may deter patients from considering weight loss surgery. RYGB can be performed safely with equivalent co-morbidity resolution and %EWL regardless of preoperative weight gain or loss.

10. PRESURGERY PSYCHIATRIC DISORDERS ARE ASSOCIATED WITH SMALLER REDUCTIONS IN BMI AT 6 MONTHS AFTER GASTRIC BYPASS.

Melissa A Kalarchian, PhD; Anita Courcoulas, MD¹; Michele D Levine, PhD; Julia N Soulakova, PhD²; Marsha D Marcus, PhD
WPIC/UPMC, Pittsburgh, PA; ¹UPMC, Pittsburgh, PA; ²University of Nebraska, Lincoln, NE

Background:

There is significant interest in identifying factors associated with outcomes following gastric bypass surgery, which may inform clinical care.

Methods:

We collected demographic information and administered the Structured Clinical Interview for the DSM-IV to assess current and lifetime psychiatric disorders (mood, anxiety, substance, and eating disorders) among 224 patients prior to gastric bypass. We utilized generalized linear regression models to examine the relationship of presurgery psychiatric disorders to changes in BMI over the first six months after operation, with 6 patients (2.6%) lost to follow-up.

Results:

The sample was 83.3% female and 89.2% Caucasian, with 50.2% having at least some college education. Mean BMI was 52.2 kg/m² and age 46.1 yrs. Upon interview prior to surgery, 38.5% had a current psychiatric disorder (including mood, anxiety, substance and eating disorders), and 71% had a lifetime psychiatric history. After controlling for initial BMI, having at least one disorder at the time of preoperative evaluation was strongly related to a smaller decrease in BMI 6 months after operation ($F = 7.1$, $df = 1$, $p < 0.01$). Estimated decreases in BMI derived from the model were 13.6 kg/m² (SE = 0.3) for those with a psychiatric disorder, as compared to 15.8 kg/m² (SE = 0.5) for those without. We then conducted separate, exploratory, linear regression models to examine the impact of a lifetime history of each type of disorder, with each model again controlling for preoperative BMI. Lifetime mood disorders were associated with a significantly smaller decrease in BMI ($F = 7.58$, $df = 1$, $p = 0.006$, $p < 0.05$); lifetime anxiety disorders were also associated with a smaller decrease in BMI ($F = 8.10$, $df = 1$, $p = 0.005$, $p < 0.05$); lifetime substance disorders tended to be associated with a smaller decrease in BMI ($p = 0.07$); and lifetime eating disorders were not associated with BMI change at 6 months after operation.

Conclusion:

After controlling for initial BMI, preliminary analyses suggest pre-surgery psychiatric disorders are related to poorer weight outcome at 6 months after gastric bypass. Results suggest that intervention to improve psychosocial functioning, especially anxiety and depression, may improve surgery outcomes.

11. PARTICIPATION IN 150 MINUTES/WEEK OF MODERATE OR HIGHER INTENSITY PHYSICAL ACTIVITY (PA) YIELDS GREATER WEIGHT LOSS FOLLOWING GASTRIC BYPASS SURGERY (GBS).

Ronald K. Evans, PhD; Dale Bond, PhD; Luke G. Wolfe, MS; Jill G. Meador, RN, BSN; Jeffrey E. Herrick, MS; John M. Kellum, MD; James W. Maher, MD
Virginia Commonwealth University, Richmond, VA

Background:

The American College of Sports Medicine's position stand on weight loss and prevention of weight regain suggests that while 150 minutes/week of moderate intensity PA promotes general health, an increase to 200-300 minutes/week may facilitate long-term weight loss maintenance. Therefore, this study compared 3-month, 6-month, and 1-year post-operative weight loss between GBS patients who met or exceeded the recommended 150 min/week of moderate or higher PA and those who did not meet the recommendation.

Methods:

The International Physical Activity Questionnaire was administered to assess time spent in moderate or higher intensity PA at 3-months (N=178), 6-months (N=128), and 1-year (N=209) post-GBS. Height and body weight were also obtained to determine lbs lost (LBSlost), percent excess weight loss (PEWL), BMI change (dBMI), and total weight loss percentage (PWL). Weight loss differences were analyzed via ANCOVA at each time point with age and pre-operative BMI as covariates.

Results:

Patients who reported 150 minutes/week of moderate or higher PA had significantly ($p < 0.05$) greater LBSlost, PEWL, dBMI, and PWL at 6-months and 1-year. PEWL was $56.0 \pm 11.5\%$ vs. $50.5 \pm 11.6\%$ and $67.4 \pm 14.3\%$ vs. $61.7 \pm 17.0\%$ for the groups at 6-months and 1-year post-GBS, respectively. No significant difference existed at 3 months post-GBS.

Conclusion:

Participation in a minimum of 150 minutes/week of moderate or higher intensity PA was associated with greater post-operative weight loss at 6-months and 1-year. Patients should be encouraged to meet or exceed this recommendation until prospective, randomized studies definitively establish a link between PA and greater post-operative weight loss and maintenance.

12. LAPAROSCOPIC ADJUSTABLE GASTRIC BANDING IN PATIENTS > 65 YEARS OF AGE.

Mouza T Goova, MD; Mark Watson, MD; David A Provost, MD
UT Southwestern Medical Center, Dallas, TX

Background:

Laparoscopic adjustable gastric banding (LAGB) has been shown to be a safe and effective treatment for morbid obesity. Despite the recent CMS National Care Determination providing coverage for LAGB in the Medicare population, little data is available to support LAGB in patients 65 years of age and older. The aim of this study was to evaluate weight loss and complications after LAGB in this older age group.

Methods:

The prospectively collected institutional bariatric surgery database was retrospectively reviewed to identify patients > 65 undergoing LAGB between December 2001 and December 2005. Demographics, complications, and percent excess weight loss (EWL) was determined.

Results:

LAGB was performed in 63 patients, 48 (76.2%) females and 15 (23.8%) males. Mean age was 67.9 years (65-76), mean weight was 129.5 kg (90.5-222.3 kg) and mean BMI was 46.8 kg/m² (35.0-67.6 kg/m²). Early complications occurred in 4.8% (1 port infection, 1 band infection, 1 early prolapse), while late complications occurred in 6.3% (1 prolapse, 1 port infection, 1 band leak, 1 port leak) for an overall reoperation rate of 11%. There were no deaths. 3 patients required band removal (4.8%). Excess weight loss at 12, 24, 36, and > 48 months was 37.9%, 41.49%, 48.6%, and 60.5% respectively. Follow-up at all time points was > 85%. Comorbidities were improved.

Conclusion:

LAGB provides a safe and effective weight loss option in patients 65 years and older.

13. MAINTENANCE OF WEIGHT LOSS IN PATIENTS WITH BMI GREATER THAN 60: THE IMPORTANCE OF THE LENGTH OF SMALL BOWEL BYPASSED.

Nahid Hamoui, MD; Howard Kaufman, MD; Gary Anthone, MD¹; Peter F Crookes, MD
University of Southern California, Los Angeles, CA; ¹Omaha, NE

Background:

It is commonly believed that weight loss after biliopancreatic diversion/duodenal switch (BPD/DS) is inversely related to the length of the alimentary limb and the common channel. However, the effect of biliopancreatic limb length (BPL) on weight loss has received little attention.

Methods:

1,100 patients after BPD/DS (234 male/ 866 female, mean age 42 ± 10 years, mean BMI 53 ± 9 kg/m²) were divided into two groups based on the ratio of BPL to total small bowel length (SBL): Group A had a BPL $\leq 45\%$ of SBL, and Group B $> 45\%$ of SBL. Nutritional parameters and percent excess weight loss (%EWL) were compared between the two groups.

Results:

In patients with BMI ≤ 60 kg/m² EWL at one year postoperatively was 66.8% in Group A and 69.3% in Group B (p=ns). At two years it was 73.7% vs. 79.5% (p=ns), and at three years it was 73.4% vs. 75.2% (p=ns). In patients with BMI > 60 kg/m² EWL was 56.8% vs. 61.4% (p=.07) at one year, 62.2% vs. 77.5% (p=.04) at two years, and 59.8% vs. 77.5% at three years (p=.05). Levels of nutritional parameters at one year are presented below (table).

Conclusion:

The amount of weight lost after BPD/DS is directly related to the proportion of small bowel bypassed in patients with a BMI > 60 kg/m², and the effect increases with duration of follow up. In less heavy patients the ratio of BPL to SBL has minimal effect on long term weight loss and a more pronounced effect on nutritional parameters.

BMI ≤ 60 kg/m ²	BPL $\leq 45\%$	BPL $> 45\%$	p value
Hemoglobin (gm/dL)	13.2	12.6	<.001
Potassium mEq/L	4.1	4.0	.05
Albumin (gm/dL)	4.0	4.0	ns
Calcium (mg/dL)	9.1	8.9	.03
BMI > 60 kg/m ²	BPL $\leq 45\%$	BPL $> 45\%$	p value
Hemoglobin (gm/dL)	12.6	12.8	ns
Potassium mEq/L	4.2	4.1	ns
Albumin (gm/dL)	4.0	3.9	ns
Calcium (mg/dL)	9.1	9.0	ns

14. LAPAROSCOPIC ADJUSTABLE GASTRIC BANDING FOR MORBID OBESITY: THE US EXPERIENCE.

David A Provost, MD; Christine Ren, MD¹; George A Fielding, MD²; Emma J Patterson, MD³; Jaime Ponce, MD⁴; Adam B Smith, DO⁵; Daniel B Jones, MD⁶
UT Southwestern, Dallas, TX; ¹NYU School of Medicine, New York, NY; ²NYU School of Medicine, New York, NY;
³Oregon Weight Loss Surgery, Portland, OR; ⁴Dalton Surgical Group, Dalton, GA; ⁵Fort Worth Laparoscopy, Bariatrics
and Surgery, Fort Worth, TX; ⁶Beth Israel Deaconess Medical Center, Boston, MA

Background:

Laparoscopic adjustable gastric banding (LAGB) for the treatment of morbid obesity has steadily increased since the LAP-BAND approval by the FDA in 2001. The aim of this study was to determine if adoption of the *pars flaccida* insertion technique and a program of frequent band adjustments have achieved durable weight loss, low perioperative mortality and resolution of comorbid illnesses.

Methods:

Using Medline search, all published papers of U.S. outcomes data on LAGB using the *pars flaccida* technique and at least one year follow-up were reviewed. Anecdotal case reports and series predominantly utilizing the perigastric insertion technique were excluded from analysis. Duplicate series were avoided, with the exclusion of older publications in favor of more mature series from an author or institution.

Results:

Thirteen papers met inclusion criteria, representing 4,815 LAGB patients. Ten papers presented data at 2 years, 9 at 3 years and 2 at 4 years. Mean excess weight loss was 43.4% at 1 year, 52.8% at 2 years, 56.4% at 3 years, and 62.7% at 4 years. Follow-up in these studies averaged 90% (range, 73-100%). Diabetes improved/resolved in 76.5% of patients and hypertension improved/resolved in 67.5% of patients. Of 4,815 patients there were 4 perioperative deaths (0.1%).

Conclusion:

Weight loss after LAGB for morbid obesity in the U.S. approximates international results and compares favorably with gastric bypass at 3 and 4 years. Diabetes and hypertension will often resolve within the first year after weight loss surgery. Perioperative mortality is low with LAGB.

15. THE LAP-BAND SYSTEM: THE ITALIAN EXPERIENCE WITH 6,091 OPERATED PATIENTS.

Francesco Furbetta, MD; Franco Favretti, MD; Luigi Angrisani, MD; Giancarlo Micheletto, MD; Marco Zappa, MD; Michele Paganelli, MD; Marcello Lucchese, MD; Nicola Basso, MD; Francesco D Capizzi, MD; Antonio Cascardo, MD; Leonardo Di Cosmo, MD; Nicola Di Lorenzo, MD; Angelo Gardinazzi, MD; Cristiano Giardiello, MD; Michele Lorenzo, MD

Italian Group for LapBand, Naples, Italy

Background:

The LapBand System is one of the most common bariatric surgical procedures performed in the recent years. Despite its large and increasing diffusion, information on long-term results on a very large population of treated patients is lacking. The aim of this study is to report the experience of the Italian Collaborative Study Group for the LapBand System on 6,091 operated patients.

Methods:

Data were collected on a specifically designed electronic database (MS Access 2000). Items regarding mortality, laparoscopic conversion, intra and postoperative complications, BMI, and %EWL were evaluated. Data were expressed as mean \pm standard deviation except as otherwise indicated.

Results:

From January, 1996 to October, 2006, 6,091 patients (F/M: 4794/1297; age: 37.2 ± 12.3 years; BMI: 44.7 ± 9.2 kg/m²; EW: 56.5 ± 22.7 Kg; %EW: 88.1 ± 33.8) underwent LapBand System. Intraoperative mortality was absent. Postoperative mortality rate was 0.2%, mainly due to cardiovascular complications. Laparoscopic conversion rate was 109/6,091 (1.9%) due to technical difficulties (85/109) or complications such as bleeding (13/109) or gastric perforation (11/109). Major postoperative complications were pouch dilation (409; 7.1%), tube-port related complications (331; 5.8%), and intra-gastric band migration (89; 1.6%). Patient drop-out at each time of follow-up ranged between 25-32%. Weight loss has been evaluated at the following intervals: 12, 36, 60, 84 and 108 months, with BMI of 37.1 ± 4.7 , 35.8 ± 6.9 , 33.3 ± 7.4 , 29.9 ± 7.5 , and 32.1 ± 8.2 respectively. At the same intervals %EWL was: 46.7 ± 12.8 , 52.8 ± 16.5 , 53.2 ± 16.4 , 59.9 ± 19.9 , and 54.3 ± 19.2 respectively.

Conclusion:

The LapBand System is a surgical procedure with a very low mortality rate, low morbidity, and satisfactory weight loss also in long-term follow up.

16. OUTPATIENT OPEN GASTRIC BYPASS SURGERY, A FOLLOW UP.

David Syn, MD; David Mangold; Theodore Manny, MD; Chase McClain, MD; Allison Cobb, NP
Covenant Medical Center, Lubbock, TX

Background:

In June of 2005 we reported a small series of patients who had undergone outpatient open gastric bypass surgery. This is a follow up to that report. Similar if not better results, to laparoscopic surgery can be achieved with open gastric bypass surgery when attention is given to reduction of incision size and adequate analgesia.

Methods:

From June 2005 to November 2006, 296 consecutive primary open gastric bypass procedures were performed by a single surgeon. Average incision length was 10cm. Average operative time was 65 minutes. Rectus sheath block with 0.5% Ropivacaine was used in all patients. External pain pump with dual catheters tunneled into bilateral rectus sheaths delivering 2cc/h of 0.2% Ropivacaine for 72hrs post-operatively was placed in all patients. Intravenous Ketorolac was given peri-operatively. Patients were discharged on oral hydrocodone. Average age was 43 years. 86% were females. Average BMI was 54.7 kg/m². Average number of life-threatening co-morbidities per patient was 2.1.

Results:

267 of 296 patients were discharged at 24 hours post surgery. 7 of 296 patients were discharged within 12 hours of surgery. Average length of stay was 1.2 days. There were 2 anastomotic leaks. Mortality at 30 days was 1. Re-admissions within 30 days were 2. The most common post-operative complication was seroma, 15 of 296. The second most common post-operative complication was wound infection, 6 of 296.

Conclusion:

Open gastric bypass surgery, when done with attention to reducing incision length and controlling post-operative pain, can yield results similar to, if not better, than laparoscopic surgery and, in select patients, can be done as true day surgery.

17. GASTRIC BYPASS IS A TREATMENT OF CHOICE FOR DIABETICS WITH LOW BMI (30-35) – AN INDIAN PERSPECTIVE.

Muffazal Lakdawala, MS

Department of Bariatrics & Minimal Invasive Surgery, Saifee Hospital, Mumbai, Maharashtra, India

Background:

There has been a major surge in the prevalence of obesity not only in the world but also in developing countries like India. Analysis show that more than half of the population of India has abdominal obesity according to WHO criteria. A waist > 90cm in men and >80cm in women have an increased propensity to develop co-morbidities at much lower BMI. Based on the hypothesis of differences in body build and distribution of body fat in different population groups we question the applicability of internationally laid cut offs such as BMI for bariatric surgery especially for those from India.

Methods:

We conducted a retrospective analysis of 15 patients in the past year who have under gone RYGBP with a BMI from 30-35 kg/m² with co-morbidities, especially diabetes. We studied their fasting insulin, fasting glucose, HbA1c and C-Peptide levels.

Results:

We followed the patients at 1, 3, 6, 12 months post surgery. Insulin levels dropped to near normal within 48 hours, HbA1c levels were < 6 at 1 month and C Peptide were within the normal range at the end of 6 months with an average of 65% excess weight loss at one year after surgery.

Conclusion:

We noticed complete resolution of Type II diabetes in 13 out of 15 patients in our pilot study. We conclude that RYGB can be a modality of choice of surgery in the Asian subset for lower BMI range (30- 35 kg/m²) with co -morbidities but this needs further evaluation and long term studies.

18. CALCIUM HOMEOSTASIS AFTER BARIATRIC SURGERY: A COMPARISON OF THE SLEEVE GASTRECTOMY, DUODENAL SWITCH, AND ROUX-EN-Y GASTRIC BYPASS.

Cindy Lee, BS; Nahid Hamoui, MD; Gary Anthone, MD¹; Howard S Kaufman, MD; Peter F Crookes, MD
University of Southern California, Los Angeles, CA
¹Omaha, NE

Background:

Several studies have reported on calcium metabolism after bariatric surgery but few have compared the effects of different procedures. The goal of this study was to compare calcium, 25-hydroxyvitamin D (25-OH D), and parathyroid hormone (PTH) values in patients who underwent a sleeve gastrectomy (SG), duodenal switch (DS), or Roux-en-Y gastric bypass (RYGB).

Methods:

Patients who underwent a DS (n=331, mean BMI 53.5 kg/m²), SG (n=70, mean BMI 60.2 kg/m²), or RGB (n=72, mean BMI 48.6 kg/m²) had calcium, PTH, and 25-OH D levels measured preoperatively and at 12 and 24 months postoperatively. The percentage of patients developing new-onset hyperparathyroidism (NHPT) postoperatively was determined during the first 6 months (early) and between 9 and 12 months (late).

Results:

The median preoperative PTH value was significantly higher in the SG group compared to the RGB group (p=.03). The DS group had a significantly lower 25-OH D level compared to the RGB group at 12 months (p=.02) and compared to the SG group at 24 months (p=.01). There was no significant difference in median calcium values between groups (table). The percentage of patients developing NHPT in the early period was 11.1%, 25.3%, and 23.2% in the SG, DS, and RGB patient groups, respectively (p=ns). The percentage of patients developing NHPT in the late period was 27.3%, 41.6%, and 10.0% in the SG, DS, and RGB patient groups (p=.05 for DS vs. RGB).

Conclusion:

Patients who underwent a DS are more at risk of developing vitamin D deficiency and secondary hyperparathyroidism in comparison to patients having an RGB or SG.

Parathyroid hormone (pg/mL)		Preoperative level	12 months	24 months
	SG	59.4*± 38.7	52.0± 35.9	64.5± 25.7
	RYGB	39.0± 19.1	49.0± 24.4	63.0± 24.3
	DS	47.0± 27.4	53.0± 28.1	61.5± 53.8
Calcium (mg/dL)				
	SG	9.1± 0.45	9.0± 0.49	9.2± 0.50
	RYGB	9.1± 0.45	9.2± 0.99	9.1± 0.31
	DS	9.1± 0.48	9.0± 0.53	9.0± 0.63
25-hydroxyvitamin D (ng/mL)				
	SG		32.0± 10.1	37.0± 12.2
	RYGB	16.0± 3.8	34.5± 13.7	30.0± 10.7
	DS	28.0± 14.6	25.2*± 13.0	25.0*± 11.6

Table Median levels and standard deviation of parathyroid hormone, calcium, and 25-hydroxyvitamin D.

19. THE IMPACT OF ROUTINE AND LONG-TERM FOLLOW-UP CARE ON WEIGHT LOSS FOLLOWING LAPAROSCOPIC GASTRIC BYPASS.

Jon C Gould, MD; Gretchen Beverstein, NP; Susan Reinhardt, RN; Michael J Garren, MD
University of Wisconsin School of Medicine and Public Health Department of Surgery and the UW Health, Madison, WI

Background:

Weight loss following laparoscopic Roux-en-Y gastric bypass varies from patient to patient. Continued and long-term follow-up care at a dedicated bariatric surgery clinic may impact EWL. Our clinic follow-up routine calls for visits at 2 weeks, 6 weeks, 6 months, and annually after surgery. We recently made a concerted effort to reestablish contact with a number of patients who had been lost to follow-up for 2 or more years.

Methods:

Current weight and health status was determined via phone interviews or clinic appointments when feasible. Patients were divided into 3 groups. Group A, patients attended every scheduled post-operative appointment. Group B patients attended every appointment for a year and Group C patients were lost to follow-up prior to one year.

Results:

We identified 34 patients more than 3 years post-op who met Group A criteria. An additional 51 patients lost to follow-up for more than 2 years were recaptured (41 Group B, 10 Group C). Overall time since surgery was similar at just over 3 years. The most common explanation for missed follow-up appointments was a lack of insurance coverage for on-going visits (21/51 = 41%). Mean EWL in Group A was 74.1 +/- 15.8%. Group A EWL was significantly greater than Group B and C (60.7 +/- 15.2 and 56.3 +/- 26.1 respectively; $p < 0.05$). Patients in all groups were of similar gender, age, and pre-operative BMI.

Conclusion:

Laparoscopic gastric bypass patients who attend all scheduled follow-up appointments experience greater long-term weight loss after surgery. The importance of on-going multidisciplinary follow-up care should be emphasized to payers and patients alike.

	n	Age (years)	Gender (%F)	Pre-op BMI	EWL
Group A	34	47.2 +/- 9.9	91% (31)	50.7 +/- 6.9	74.1 +/- 15.8
Group B	41	43 +/- 10.3	78% (32)	50.5 +/- 7.5	60.7 +/- 15.2
Group C	10	40 +/- 6.6	80% (8)	48.2 +/- 5.9	56.3 +/- 26.1
Group B and C	51	42.4 +/- 9.7	78% (40)	50.1 +/- 7.2	59.8 +/- 17.6

Bold = $p < 0.05$ = significant. EWL Group A > B, A > C, and A > B+C all with $p < 0.05$

20. ARE STAGED BARIATRIC PROCEDURES NECESSARY IN SUPER MORBID OBESITY?

Jorge L Sosa, MD; Hector Pallavicini, MD; Eric Valladares, MD; Nancy Rubio, CST
Palmetto General Hospital, Miami, FL

Background:

It has been suggested laparoscopic gastric bypass in the super morbidly obese results in long operative times, high conversion rates, higher complication rates, and mortality. Therefore, staged operations such as a sleeve gastrectomy followed by gastric bypass have been recommended. To determine the validity of these suggestions we looked at the results of laparoscopic gastric bypass in the heaviest of our patients.

Methods:

A retrospective study on all patients with an initial BMI of ≥ 70 kg/m² in our prospective database of all laparoscopic gastric bypasses was done. Data was analyzed for operative time, hospital stay, conversion rate, morbidity, mortality and weight loss.

Results:

There were 15 patients with a BMI of ≥ 70 kg/m² or greater. Average BMI was 75.1 (70-87) kg/m². The average weight was 453 lbs (367-572). There were no conversions to open surgery. Operative time averaged 97 minutes (55-265). Length of stay averaged 3.3 days (2-9). The major complications (leak, DVT, PE) and mortality rate were zero. In the nine patients that are over 1 year post-op the average follow-up is 23 months (12-42), excess weight loss was 55.5% (33-83).

Conclusion:

We studied the heaviest of our patients to demonstrate that a one-stage laparoscopic gastric bypass is feasible. In patients with a BMI over 70 kg/m² a single stage laparoscopic gastric bypass was associated with short operative times, zero conversion to laparotomy, zero major morbidity and mortality. Thus, a two-stage approach is not necessary and may indeed expose the patient to the greater risk of two interventions requiring general anesthesia.

21. FREQUENCY DISTRIBUTION OF WEIGHT LOSS PERCENTAGE AFTER GASTRIC BYPASS AND ADJUSTABLE GASTRIC BANDING.

Marc Bessler, MD; Beth Schrope, MD; William B Inabnet, MD; Daniel G Davis, DO; Amna Daud, MD
Columbia University, New York, NY

Background:

Results of surgical procedures for weight loss are often described in terms of percent excess weight loss. Expressing outcomes using mean and standard deviation may not adequately describe clinical experience. This may in part be due to the fact that mean \pm standard deviation assumes normal or random distribution of outcomes. It has been our perception that weight loss after gastric bypass is relatively normally and tightly distributed around the mean, making it relatively predictable but that results after adjustable gastric banding are more highly variable. In fact there appears to be two groups of patients after this restrictive operation. One group that "gets it" and does not struggle much against the restriction, accepting the limits that it imposes and another group that does not easily learn to deal with the restriction and maladapt.

Methods:

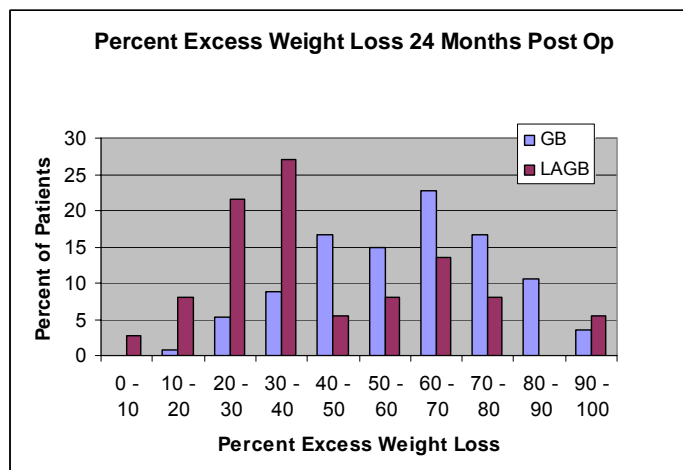
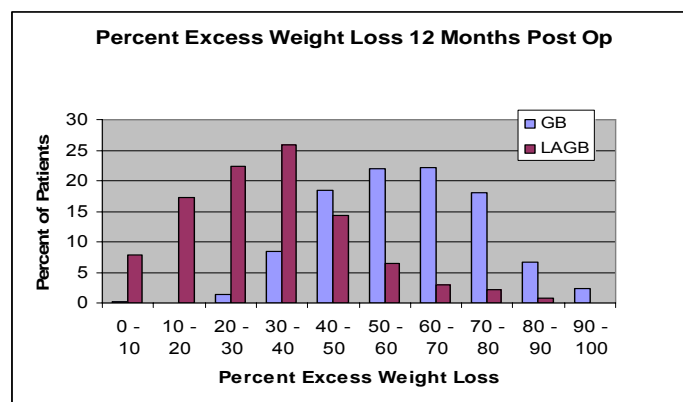
In order to evaluate the validity of our clinical experience we undertook an analysis of the distribution of weight loss by percentiles. All patients with follow up at ≥ 1 years after gastric bypass or adjustable banding were evaluated for this analysis. Demographics and percent excess weight loss (%EWL) were evaluated. The distribution of %EWL in 10% increments was evaluated.

Results:

Demographic comparison was similar between groups. As expected gastric bypass patients' weight loss fell in a normal single peak distribution at analyzed time points. Adjustable gastric band patients at one year demonstrated a normal single peak distribution with a long rightward tail. At two years band patients no longer demonstrated a normal distribution of weight loss but rather showed a 2 peaked curve.

Conclusion:

Initial weight loss results after gastric banding are less predictable than after gastric bypass. A similar analysis of long term outcomes may be enlightening and assist in making clinical decisions.



22. MORTALITY AFTER LAPAROSCOPIC ADJUSTABLE GASTRIC BANDING: RESULTS FROM AN ANONYMOUS QUESTIONNAIRE TO ASBS MEMBERS.

Michel Gagner, MD; *Luca Milone, MD*
Cornell University, New York, NY

Background:

Laparoscopic Adjustable Gastric Banding (LAGB) approved 5 years ago by the FDA, is considered a safe and simple procedure for weight loss with a reported low mortality in the literature (0.05%). The aim of the study was to probe the membership of ASBS to elucidate the incidence and causes of unreported operative and late mortality.

Methods:

A simple questionnaire on early (30 days) and late mortality after LAGB and re-operation for banding was sent to 2,500 members of ASBS. Incidence and causes were studied.

Results:

Of 2,500 questionnaires sent, 412 were returned. 68 did not do any LAGB, 320 surgeons had no operative mortality and 24 surgeons (7%) reported at least 1 operative death for a total of 33 operative deaths, 8 late deaths, for a grand total of 41. Those who had no operative deaths reported 9 late deaths. There were 5 additional deaths after reoperations for LAGB, following removal, revisions or conversions to another bariatric procedure. Of 56 deaths the causes were: 18 (32%) cardiac origin, 11 (20%) thrombo-embolic, 9 (16%) GI perforations, 3 (5%) bleeding, and 15 miscellaneous. 39% of all deaths occurred remotely from the band insertion date.

Conclusion:

Although LAGB is technically simple, it carries a non-negligible short and long-term mortality, with the majority being cardiac or thrombo-embolic. Late deaths from LAGB and reoperations seem to be under-reported.

23. LAPAROSCOPIC ADJUSTABLE GASTRIC BANDING AT 5 YEARS. CONCERNS OVER COMPLICATIONS IN OUR EARLY PATIENTS.

Uthaiyah P Kokkalera, MD; Robin Mason, NP; Gregg Bean, MD; Vinetta Hussey, NP; Karen Gallagher-Dorval, NP; Enrique Sta.Ana, MD; Don Czerniach, MD; Richard Perugini, MD; John J Kelly, MD
University of Massachusetts, Worcester, MA

Background:

Laparoscopic Adjustable Gastric Band (LAGB) surgery has been available for widespread use in the US since its FDA approval in 2001. Our tertiary care facility has been performing LAGB for more than 5 years. Due to some recent concerns in several of our patients we recalled our first 30 patients for an urgent office visit and obtained an upper gastrointestinal series (UGI) and manometry. The results obtained are presented.

Methods:

All patients who underwent LAGB fulfilled NIH and additional center specific criteria and were assessed by a multidisciplinary team of specialists. All early adjustments of the bands had been performed by one fellowship trained laparoscopic surgeon who also performed the primary procedure. The first 30 were recalled and offered an urgent follow up for a symptom survey, UGI series and esophageal motility

Results:

Thirty patients underwent LAGB between October 2001 and February 2003. Fourteen (46%) patients had required additional procedures of which 9 (30%) were major procedures that included 3 revisions to a laparoscopic gastric bypass, 3 band repositions and 3 explants. Five (16%) had minor procedures. Fifteen (50%) patients who maintained the original band were available for an upper gastrointestinal series and motility studies. The average excess weight loss was 31.5% at 6 months, 39.7% at 1yr and 51.9% at 2yr. Fourteen (93%) patients who underwent the UGI study were found to have esophageal dilation to > 5-9 cm. This was a change of 2-7cm when compared to earlier peri-operative studies. There were 3 incidental band slippages noted. Seven (47%) patients reported symptoms of reflux and dysphagia.

Conclusion:

The study raises concerns for re-operative rates and esophageal dilation in patients who have had adjustable gastric banding more than several years. Whether our findings represent problems in our peri- and post-operative care or patient compliance is not clear. The overall limitations in current banding technology are uncertain but warrant closer vigilance.

24. REOPERATION AFTER LAPAROSCOPIC ADJUSTABLE GASTRIC BANDING (LAGB): ANALYSIS OF A COHORT OF 500 PATIENTS WITH LONG TERM FOLLOW UP.

Gianfranco Silecchia, MD; *Vincenzo Bacci, MD*¹; Alessandro Pecchia, MD; Giovanni Casella, MD; Mario Rizzello, MD; Sabrina Bacci, MD²; Nicola Basso, MD
Dpt of Surgery P Stefanini University La Sapienza, Roma, ITALY; ¹Dpt applied medical therapy University La Sapienza, Roma, Italy; ²Dpt of Public Health University La Sapienza, Roma, ITALY

Background:

LAGB has been accepted worldwide due to its minimal invasiveness and short-term good results. Data on long-term results are still limited. We wanted to assess prevalence, incidence and causes of re-operations in a long-term follow up.

Methods:

A cohort of about 500 consecutive patients operated since 1996 was studied. The first 50 patients were excluded to avoid the learning curve bias. The perigastric technique was applied until 2002 (37% of patients) and then replaced by *pars flaccida* approach. All the patients who required band or port reposition/removal were analyzed.

Results:

445 patients (83% women, with an average follow-up of 4.2 ± 2.5 years) were evaluated. Sixty-seven (mean age 37 years; mean BMI 43.3 kg/m^2) were re-operated between 1997 and 2006; 16 were minor procedures (port complications) and 53 major reoperations (band reposition/removal or revision). 43% of the procedures within two years, 36% between two and four and 21% up to 8 years after LAGB. The average interval for the major procedures was 2.9 ± 1.8 years. Causes included pouch dilatation (40%), insufficient weight loss (25%), erosion (23%), and psychological complications (13%). Ten patients underwent revisional surgery. A 12% frequency of major reoperations was observed; in patients with a follow-up longer than five years (perigastric technique) the reoperation rate reached 24%.

Conclusion:

Need for a major reoperation appears to be substantial (12%) in patients with LAGB, particularly when long term follow-up is considered (24%), and can occur at any time after surgery. Until predictors of failure are validated, these findings underline the need for a lifelong multidisciplinary management for these patients.

25. POST-GASTRIC BYPASS HYPOGLYCEMIA IS PART OF THE DUMPING SYNDROME AND CAN BE CONTROLLED WITH DIET.

Todd A Kellogg, MD; Daniel B Leslie, MD; Bridget Slusarek, RN¹; Therese Swan¹; John P Bantle, MD¹; Henry Buchwald, MD, PhD¹; Sayeed Ikramuddin, MD¹
University of Minnesota, Minneapolis, MN
¹University of Minnesota Medical Center, Minneapolis, MN

Background:

There have been some alarming reports of hypoglycemic episodes in patients who have undergone Roux-en-Y gastric bypass (RYGB). The syndrome of hyperinsulinemic hypoglycemia with nesidioblastosis after RYGB has been reported previously and is controversial. It has been suggested that subtotal or total pancreatectomy may be needed to control symptoms in these patients. We have identified in our practice a similar cohort of patients with hyperinsulinemic hypoglycemia in whom we reviewed patient characteristics and measured glucose and insulin response to a mixed meal.

Methods:

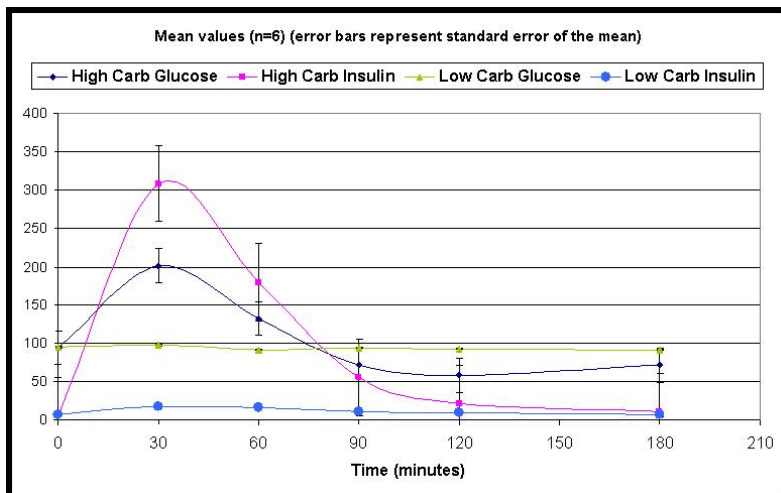
We reviewed the charts of 9 patients identified by clinic follow-up who reported episodes consistent with hyperinsulinemic hypoglycemia (lightheadedness or fainting after a high carbohydrate meal). Seven of these patients were given a mixed meal consisting of high carbohydrates on day 1 and a low carbohydrate meal on day 2. Plasma glucose was measured pre-prandial (fasting), and postprandial at 30, 60, 90, 120, 150, and 180 minutes.

Results:

After a high carbohydrate meal, 6 of 7 patients demonstrated hyperglycemia associated with profound hyperinsulinemia at 30 minutes. These patients subsequently became hypoglycemic even though plasma insulin was rapidly declining. After reaching a nadir at 120 minutes plasma glucose corrected spontaneously. After a low carbohydrate high protein meal, patients demonstrated very little change in plasma glucose and only a modest increase in plasma insulin.

Conclusion:

Hyperinsulinemic hypoglycemia noted in some patients after RYGB is likely a component of the late dumping syndrome. Approaches to treatment should involve a low carbohydrate diet and possibly surgical interventions that slow gastric emptying rather than pancreatectomy.



26. INCIDENCE, PRESENTATION AND TREATMENT OF ENTERIC LEAKS FOLLOWING GASTRIC BYPASS.

Evren Durak, MD; William Inabnet, MD; Beth Schrope, MD; Dan Davis, MD; Amna Daud, MD, PhD; Luca Milone, MD; Way Lee, MD; Marc Bessler, MD
Columbia University, New York, NY

Background:

The purpose of this study is to describe the incidence, etiology, outcomes and management of anastomotic leaks in patients who underwent open and laparoscopic gastric bypass.

Methods:

From November 1996 to November 2006, 1133 patients underwent primary gastric bypass at Columbia University, New York-Presbyterian Hospital. A retrospective review of our prospective bariatric surgery registry identified 18 patients who developed a clinically-apparent enteric leak following surgery (incidence 1.5%). Demographic and outcome data were studied.

Results:

The mean BMI was 52.3 kg/m² (35-65) and 13 of 18 patients were female. The mean # of co-morbidities/patient was 1.3 including hypertension (n=11), diabetes (n=9), and sleep apnea (n=6). Eleven patients had a history of previous abdominal surgery. Enteric leak was diagnosed by radiographic studies in 12 patients (8/12 UGI, 4/6 CT scanning); whereas, 6 patients were diagnosed at re-exploration. Eleven patients (61%) were managed by laparoscopy and 7 with laparotomy. The mean time from the completion of the index procedure to diagnose the leak was 2 (1-5) days for patients treated by laparoscopy compared to 4 (1-6) days for patients treated by laparotomy (p<0.05). The patients managed by laparoscopy experienced a shorter hospital stay [12.2 (6-36) vs. 20.0 (7-50) days (p>0.05)]. There was 1 death (5.5%).

Conclusion:

Enteric leak is a significant complication following gastric bypass surgery. Prompt treatment should be based on clinical suspicion, as contrast and cross-sectional imaging studies may not be reliable diagnostic tests. Laparoscopic treatment leads to a shorter hospital stay.

27. GASTROINTESTINAL LEAKS AFTER BARIATRIC SURGERY PRESENT WITH VARIABLE CLINICAL MANIFESTATIONS AND OUTCOME.

Salman Al-Sabah, MD; Nicolas Christou, MD, PhD¹
 McGill University, Montreal, Quebec Canada; ¹Montreal, Quebec Canada

Background: Gastrointestinal leaks after bariatric surgery lead to severe complications and adverse outcomes. We tested the hypothesis that not all leaks following bariatric surgery present with clinical symptoms and that their manifestation and outcome is dependent on the host inflammatory response.

Methods: A retrospective analysis of prospectively collected clinical data on 2,384 bariatric surgeries (49.9% open GB, 26.4% lap GB, 20.1% open VGB, 3.3% others) from 1983 to 2006. All leaks were identified from the data base and vital signs, hematology, mode of diagnosis, treatment, and outcome was recorded and analyzed.

Results: We identified 55 leaks (2.3%) with 95.1% after GB, 3.6% after VGB, 1.3% others. In 67.3% of cases, leaks were identified at 6.4±6 days post-op due to clinical signs and symptoms (SIRS), whereas in 32.7% leaks were only identified at 7.9± 5.9 days post-op after routine contrast studies (X-ray). Data ± SD are shown in the table (1 denotes day 1 post-op, L denotes day leak diagnosed). Treatment included antibiotics and open drainage 41.8%, lap 21.8%, CT 12.7%, conservative 14.5% and others 9.2%.

Five patients (4 men, 1 woman) died (9.1%) and all had a higher BMI, temperature at diagnosis, and WBC on post operative day 1. Using logistic regression BMI, sex and temperature at leak diagnosis (inflammatory response) were independent predictors of mortality.

Conclusion: Leaks after bariatric surgery are not all the same and 1/3 present without clinical symptoms. High BMI, male sex and an aggressive inflammatory response are associated with mortality.

Table 1:

	BMI	Age	HR 1	HR L	Temp 1	Temp L	WBC 1	WBC L
SIRS (n=37)	52.4±8.7	39.6± 10.3	99±16	121±16	37.1±.6	38.2±.9	12.7±4.5	15.5±6.2
X-ray (n=18)	53.1±8.4	43.9±9.6	103±10	110±16	37.5±.9	37.8±.8	11.7±4.2	12.2±4.2
P value	0.77	0.15	0.63	0.02	0.13	0.11	0.45	0.06
Alive (n=50)	51.5±7.6	40.3±9.9	100±15	116±16	37.3±0.8	37.9±.05	11.9±4.1	14.4±5.1
Dead (n=50)	64.4±9.4	48.5±10.4	99±14	131±15	36.9±0.5	39.1±0.8	17.1±3.9	16.2±10
P value	0.001	0.089	0.871	0.052	0.333	0.004	0.010	0.489

28. EMERGENCY ROOM VISITS AFTER LAPAROSCOPIC ROUX-EN Y GASTRIC BYPASS FOR MORBID OBESITY.

Minyoung Cho, MD; Orit Kaidar-Person, MD; Samuel Szomstein, MD; Raul J Rosenthal, MD
Cleveland Clinic Florida, Weston, FL

Background:

Laparoscopic Roux-en Y gastric bypass (LRYGB) has become a popular treatment option for morbid obesity. Patients can be symptomatic after the procedure, either due to surgical complications or physiological changes and adjustment to the new anatomy.

The aim of this study was to evaluate factors that may influence the rate of postoperative emergency room admissions (ERA) and the clinical implication of these visits in patients who underwent LRYGB.

Methods:

The medical records of patients who underwent LRYGB for morbid obesity between 2001 and 2004 were retrospectively reviewed. The data of patients with a history of ERA after surgery were compared to the data of patients without a history of ERA. Data collected included demographics, weight, body mass index (BMI), operating time and more. Emergency room admissions were subdivided into early ERA and late ERA, and data were further analyzed.

Results:

Out of 733 patients 228 (31.1%) had a history of ERA. Patients with early postoperative complications (< 7 days after the procedure) had a higher rate of ERA (60.9% vs. 30.1%). The operating time was significantly longer in the ERA group (91.4 vs. 86.5 minutes). The most frequent complaint in the ER was abdominal pain (61.4%) followed by vomiting (35.5%). Gastric outlet obstruction was the most frequent cause of ERA two weeks after surgery. The majority of patients were managed conservatively.

Conclusion:

Our results suggest the rate of potential ERA cannot be disregarded. Prolonged operating time and early postoperative complications are significant predictors for late ERA. Abdominal pain with or without vomiting is the most common presenting symptom. Most patients can be managed conservatively.

29. PREVALENCE OF HELICOBACTER PYLORI INFECTION IN PATIENTS UNDERGOING LAPAROSCOPIC ROUX-EN-Y GASTRIC BYPASS.

Pavlos K Papasavas, MD; Daniel Gagne, MD; Patricio E Donnelly, MD; Javier Salgado, MD; Kristen K Burton; Jorge E Urbandt, MD; Philip F Caushaj, MD;
The Western Pennsylvania Hospital, Pittsburgh, PA

Background: Previous studies showed a high prevalence of *Helicobacter pylori* infection in patients undergoing LRYGB leading to recommendations for routine preoperative screening. Our objective was to evaluate the prevalence of *H.pylori* infection in patients undergoing LRYGB and its role in predicting the risk of developing anastomotic ulcer or pouch gastritis.

Methods: Retrospective analysis of a prospective database focusing on *H.pylori* serology, postoperative need for upper endoscopy and development of anastomotic ulcer or pouch gastritis. All seropositive patients for *H.pylori* were treated with one of the standard therapies. The median postoperative follow-up was 11.6 months. Hypothesis testing was performed using chi-square and logistic regression as appropriate.

Results: 422 patients underwent LRYGB between July 2004 and July 2006 in our institution. 257 patients (61%) were tested preoperatively with *H.pylori* serology. 54 (21%) of the patients tested were positive, 198 (77%) negative and 5 (2%) equivocal. A total of 49 patients (11.6%) underwent upper endoscopy in the postoperative period. 16 patients (3.8%) had a positive endoscopy for anastomotic ulcer or pouch gastritis; 3.7% of patients positive for *H.pylori*, 4.5% of patients negative for *H.pylori*, and 3% of patients with unknown *H.pylori* status. There was no difference in the incidence of anastomotic ulcer or pouch gastritis between patients tested for *H.pylori* (4.3%) and patients not tested (3%). *H.pylori* testing did not predict development of anastomotic ulcer or pouch gastritis.

Conclusion: The prevalence of *H.pylori* infection is in the range of general population. *H.pylori* testing does not appear to lower the risk of anastomotic ulcer or pouch gastritis.

30. THE EFFICACY OF PROPHYLACTIC IVC FILTER IN BARIATRIC SURGERY.

Farouck N Obeid, MD; William Bowling, MD; Janet S Fike, MHA; Jacob A Durant
Hurley Medical Center, Flint, MI US

Background:

This is a retrospective study of all patients in the Hurley Bariatric Center database who underwent surgery between April 2000 and June 2006. This study compared the incidence of DVT, PE and all-cause peri-operative mortality in patients who received prophylactic IVC filters and those who did not. Patients received prophylactic filters for risk factors identified in their pre-operative evaluation.

Methods:

Charts and electronic medical records were reviewed retrospectively for any DVT, PE and death within thirty days.

Results:

1,851 patients were identified as low risk and did not receive an IVC filter. Among these patients there were 12 DVTS, 11 PE s and 4 deaths. Among the two hundred forty-eight high-risk patients who received IVC filters, there were 3 DVTS, 2 PE s and 2 deaths. The difference in the rates of PE were not significant ($p=0.69$). These results are summarized in the table below.

Conclusion:

The incidence of PE in the high-risk group was not significantly different from the low risk group. Thus, the use of prophylactic IVC filters reduces the risk of PE in high-risk patients, a group known to have a much higher incidence of morbidity and mortality, to a rate comparable to the baseline risk of a low risk group. Further study is necessary to better define the risk groups.

	With IVC	%	Without IVC	%
N	248		1851	
DVT	3	1.21	12	0.65
PE	2	0.81	11	0.59
Death	2	0.81	4	0.22

31. HEMORRHAGE AND VENOUS THROMBOEMBOLISM RATES IN LAPAROSCOPIC VS. OPEN GASTRIC BYPASS.

Christopher J Northup, MD; Daniel McCullough, MD; Sang A Lee, MD; Bruce D Schirmer, MD
University of Virginia Health System, Charlottesville, VA

Background:

Venous Thromboembolic(VTE) events remain a source of morbidity and mortality in the bariatric population. This has led to the addition of VTE prophylaxis pre- and postoperatively, accepting a potential increased risk of hemorrhage. However, little data exists in regards to the approach for VTE prevention. Our database was reviewed to identify the rates of hemorrhage and VTE events using our Enoxaparin, weight based protocol.

Methods:

Our bariatric database was reviewed retrospectively from 1994 to 2004. The rates of bleeding and VTE events were identified in patients undergoing Laparoscopic (LGB) and Open (OGB) Gastric Bypass. All patients received Enoxaparin pre- and postoperatively using a weight based protocol. Bleeding complications were defined as requirement of a blood transfusion or intervention for bleeding.

Results:

During this period, 1128 bariatric procedures were performed. Of these 363 were in the OGB group and 765 in the LGB group. Fifteen (4.1%) patients in the OGB group had significant hemorrhage compared to 11 (1.4%) in the LGB group. Incidence of DVT (0.3%) and PE (0.3%) were also lower in the laparoscopic group than in the open group (1.9%, 1.7%). The decreased rates of bleeding, DVT and PE in the LGB group were all statistically significant ($p < .05$).

Conclusion:

LGB carries a statistically significant decrease in bleeding and VTE events when compared with OGB. Our weight based Enoxaparin prophylaxis protocol provides a very low rate of VTE events with a low risk of significant hemorrhage.

32. TRANSDERMAL SCOPOLAMINE REDUCES INCIDENCE OF POSTOPERATIVE NAUSEA AND VOMITING IN LAPAROSCOPIC ROUX-EN-Y GASTRIC BYPASS PATIENTS.

Daniel D Dearing, MD; David Martin, MD, FACS; Wes J Powell, MD, FACS; David J Lourie, MD, FACS
Huntington Memorial Hospital, Pasadena, CA

Background:

Nausea following gastric bypass is a common problem which can extend the length of stay in some patients. Transdermal scopolamine patch (TDS) may decrease postoperative nausea and vomiting (PONV) experienced by laparoscopic Roux-en-Y gastric bypass patients.

Methods:

150 consecutive gastric bypass patients were studied over 6 months. There were 32 males (21%) and 118 females (79%). Median age was 42 years, ranging from 17 to 62 years. Median BMI was 45, ranging from 35 to 77. 1.5 mg scopolamine patch was administered at induction of anesthesia in a nonrandomized fashion.

Results:

73 patients (49%) received the patch preoperatively. There were similar demographics, comorbidities and perioperative care in the groups studied. 86 patients (57%) required some form of IV anti-emetic for symptoms of PONV postoperatively. 48% of patients with the patch required at least one anti-emetic, compared to 66% of patients without a patch ($p = 0.04$). LOS correlated with incidence of PONV ($p = 0.0001$). The average LOS for patients receiving TDS was 1.6 days compared to 1.8 days for those not. The surgeon who routinely used TDS achieved a significantly lower incidence of PONV, 46% vs. 56% and 69% ($p = 0.03$).

Conclusion:

The use of TDS showed a significant decrease in PONV in gastric bypass patients. There were also trends toward shorter LOS and decreased amount of postoperative anti-emetics in the group receiving TDS, but further analysis must be performed to determine their significance.

33. COMPLICATIONS AFTER LAPAROSCOPIC SLEEVE GASTRECTOMY.

Peter F Lalor, MD; Olga Tucker, MD; Samuel Szomstein, MD; Raul J Rosenthal, MD
Cleveland Clinic Florida, Weston, FL

Background:

Laparoscopic sleeve gastrectomy (LSG) has recently become a feasible and successful option in the management of morbid obesity. It can be used as a primary procedure for weight loss, an effective tool in revisional surgery, or as a bridge to Roux-en-Y gastric bypass in super-super morbid obesity. The aim of this study was to examine the morbidity arising from laparoscopic sleeve gastrectomy.

Methods:

We retrospectively reviewed a prospectively collected database and studied a series of 121 LSG patients between November 2004 to November 2006. Cases included LSG as a primary procedure, as a revisional surgery after failed surgical weight loss, and as the first stage procedure en route to Roux-en-Y gastric bypass. Short term morbidity and mortality were examined.

Results:

121 patients underwent LSG. One stage LSG was performed in 106 patients (87.6%). LSG was used as revisional surgery in 15 patients (12.4%). 12 of these patients had LSG after failed laparoscopic adjustable gastric banding, 1 patient had LSG after aborted laparoscopic Roux-en-Y gastric bypass, and 2 patients underwent LSG after failed jejunio-ileal bypass. All cases except one were completed laparoscopically. There were 2 staple line leaks (1.6%) requiring re-operation, 1 case of choledocholithiasis requiring cholecystectomy (0.8%), and no deaths. The major complication rate was 2.5%.

Conclusion:

Laparoscopic sleeve gastrectomy is a safe surgical option as a primary procedure and as a revisional surgical option for weight loss. It has a complication rate equivalent to laparoscopic Roux-en-Y gastric bypass.

34. REVERSE JEJUNAL INTUSSUSCEPTION, MAY NOT BE SUCH A RARE PROBLEM: A SINGLE GROUP'S EXPERIENCE OF 19 CASES.

Steven C Simper, MD, FACS; Joanna Erzinger; Sherman C Smith, MD, FACS; Rodrick D McKinlay, MD
Rocky Mountain Associated Physicians, Salt Lake City, UT

Background:

Background: Reverse intussusception of the jejunum is thought to be a rare occurrence, reported approximately 8 times in the literature. A review of our experience found 19 cases treated since 1996. This is the largest single center report to date.

Methods:

Methods: A search dating back to 1996 revealed 19 patients with reverse intussusception involving the jejunum. All patients with the diagnosis had their charts reviewed. A variety of data were evaluated in order to identify risk factors for developing intussusception as well as the presentation, findings and treatment.

Results:

Results: 19 patients with reverse intussusception involving the jejunum were identified. All had prior Roux-en-Y gastric bypass (GBP). One (5%) gastrojejunal and 18 (95%) jejunojejunal intussusceptions were identified. All patients were female. At the time of GBP average age was 30.5 years and average BMI was 45.1 mg/kg². Fifteen (78.9%) had open GBP, 4 (21%) had laparoscopic GBP. Median duration from GBP to diagnosis was 55 months. 7 (36.8%) presented with gangrene or perforation, 6 (31.6%) spontaneously reduced, 6 (31.6%) were successfully reduced at the time of surgery. 13 (68.4%) were treated with surgical resection with one recurrence (7.7%), 2 (10.5%) with simple reduction with 1 recurrence (50%), and 4 (21%) with plication with 1 recurrence (25%).

Conclusion:

Conclusions: Reverse intussusception of the jejunum after GBP is more common than previously believed. While resection and revision of the area of intussusception appears to be an effective treatment, more research is needed about other possible treatments and prevention of this problem in the future.

35. CUMULATIVE META-ANALYSIS OF THERAPEUTIC TRIALS FOR WEIGHT-LOSS SURGERY USING THE SWEDISH ADJUSTABLE GASTRIC BAND OR LAP-BAND®.

Scott A Cunneen, MD; Edward Phillips, MD
Cedars-Sinai Medical Center, Los Angeles, CA

Background:

Swedish Adjustable Gastric Band (SAGB) and LAP-BAND® are commonly used weight-loss devices. A large body of literature describing adjustable gastric banding exists, but few studies directly compare devices.

Methods:

Systematic review of studies published from 1998 to 2005 with at least 10 patients implanted with SAGB or LAP-BAND® reporting efficacy or safety outcomes. Quantitative summaries were prepared using meta-analytic techniques.

Results:

34 SAGB and 111 LAP-BAND® studies met criteria. Only 8 studies contained both SAGB and LAP-BAND®. There were 4,857 patients in 36 treatment groups in the 34 SAGB studies. In the 124 LAP-BAND® groups, there were 24,399 patients. Mean BMI at baseline was similar for SAGB and LAP-BAND® (42.2 kg/m² vs. 45.8 kg/m²). The *pars flaccida* technique was used for all or some of the patients in 15/36 SAGB groups and 34/124 LAP-BAND® groups. In the 8 studies comparing both bands, weight-loss outcomes appeared greater for SAGB at 2 years (48.4 vs. 41.9 kg). Adjustment techniques/strategies weren't reported. The frequency of late band revisions was lower for SAGB vs. LAP-BAND® (1.5% vs. 5.4%). Removal rates were similar (4.8% vs. 4.0%) as was leakage (2.1% vs. 1.7%). SAGB appears to have less frequent slippage/migration (3.7% and 7.0%). Complication rates varied widely in magnitude and differences were not significant.

Conclusion:

At all time points up to 3 years, SAGB weight loss appeared equal to or greater than LAP-BAND®. Rates of complications between devices were not significantly different, except slippage, which was less in SAGB.

36. BANDING OR BYPASS? CHOICE OF THE PROCEDURE CANNOT BE INFLUENCED BY THE PRESENCE OF HIATUS HERNIA AND ESOPHAGEAL REFLUX.

Luigi Angrisani, MD; Michele Lorenzo, MD; Monica Ciannella, MD; Paola Iovino, MD¹; Giuliana Vitolo²; Pierpaolo Cutolo, MD²; Francesco Persico, MD
Endoscopic Surgery Unit, S.Giovanni Bosco Hospital, Naples, Italy; ¹Gastroenterology Unit, Federico II University, Naples, Italy; ²Federico II University, Naples, Italy

Background:

Indication for Laparoscopic Adjustable Gastric Banding (LAGB) or Laparoscopic Roux-en-Y Gastric Bypass (LRYGB) in patients with Hiatus Hernia (HH) and Gastro-Esophageal Reflux Disease (GERD) is controversial. Retrospective comparison of esophageal symptoms in patients who underwent both operations was performed.

Methods:

From January 2000 to October 2005, 61 obese patients with HH and GERD underwent LRYGB (n=26, Group A) or LAGB (n=35, Group B). All patients underwent hernia reduction and posterior repair (HHR). Group A patients were: 5M/21F, mean age: 37.0±15.6 yrs, range: 18-58, mean BMI: 42.5±12.1 range: 35.1-52 kg/m². Group B patients were: 2M/33F, mean age: 41.7±18.1 yrs, range: 18-68, mean BMI: 38.8±10.9, range: 32.8-47.0 kg/m². Frequency and intensity of heartburn, regurgitation, and pyrosis were evaluated pre and postoperatively at a minimum of 12-months follow-up by a standardized questionnaire. Weight loss, intra and postoperative complications and hospital stay were evaluated. Data were reported as mean ± SD, statistical analysis was by Fisher's exact test (p<0.05 was significant).

Results:

Follow-up was achieved for all patients. Median hospital stay was 4±1 (Group A) and 3±1 (Group B) days (p=NS). Significant improvements (p<0.05) were observed in GERD symptoms: heartburn from 78.5% to 42.8% (Group A) and from 75.2% to 26.3% (Group B); regurgitation from 57.1% to 0% (Group A) and 78.9% to 47.3% (Group B); pyrosis from 57.5% to 0% (Group A) and 78.5% to 0% (Group B). After one year the mean BMI was 31.1±9.4 (range: 26.9-36.5 kg/m²) in LRYGB and 32±10.1 (range: 27.6-39.5 kg/m²) for LAGB.

Conclusion:

Concomitant HHR and LRYGB or LAGB can be safely performed with significant improvement of GERD symptoms. HH with GERD should not influence the choice between these two bariatric operations.

37. MAXIMUM WEIGHT LOSS AFTER STANDARD AND RINGED LAPAROSCOPIC ROUX-EN-Y GASTRIC BYPASS. A RANDOMIZED CONTROLLED TRIAL.

Ricardo Arceo-Olaiz, MD; Jorge Montalvo, MD; Nayvi España, MD; Eduardo Garcia-Garcia, MD; David Velazquez-Fernandez, MD, PhD; Juan P Pantoja, MD; Miguel F Herrera, MD, PhD
Instituto Nacional de la Nutricion, Mexico City, Mexico

Background:

The Laparoscopic Roux-en-Y Gastric Bypass (LRYGB) leads to significant weight loss and correction of comorbidities in most patients. However, weight regain may occur years after surgery. The ringed LRYGB was designed to 1) enhance weight loss and 2) avoid weight regain.

Methods:

A randomized controlled trial to compare maximum weight loss and weight regain in patients with standard and ringed (6.5cm) LRYGB was designed. The present study analyzes maximum weight loss.

Results:

Patients were divided in two groups: Group 1. Standard LRYGB (n=30) and Group 2. Ringed LRYGB (n=30). There were no differences between both groups in terms of age, gender, body mass index (BMI) and surgical time. Weight loss results are described in Table 1. The % of patients who lost $\geq 50\%$ of EBW at 1, 2, and 3 years was 87%, 100%, 100% and 90%, 85%, 75% respectively for the groups 1 and 2.

Conclusion:

There was no difference in maximum weight loss in patients undergoing standard or ringed LRYGBP.

Follow-up Months	BMI kg/m ²			%EBWL		
	Group 1	Group2	p	Group 1	Group2	p
Preop	47 \pm 5	48 \pm 5	0.52	-	-	-
6	34 \pm 5	35 \pm 4	0.52	54 \pm 15	53 \pm 11	0.69
12	30 \pm 4	31 \pm 4	0.34	71 \pm 14	68 \pm 14	0.39
24	30 \pm 4	31 \pm 5	0.60	71 \pm 15	69 \pm 16	0.65
36	29 \pm 4	34 \pm 5	0.09	74 \pm 15	57 \pm 19	0.09

38. ELIMINATION OF DUODENO-GASTROESOPHAGEAL REFLUX IN OBESE PATIENTS WITH BARRETT'S ESOPHAGUS: THE EFFECT OF ROUX-EN-Y GASTRIC BYPASS (RYGB).

Scott G Houghton, MD; Yvonne Romero, MD; Michael G Sarr, MD
Mayo Clinic College of Medicine, Rochester, MN

Background:

Esophageal reflux of gastroduodenal contents (acid, bile) contributes to development of Barrett's esophagus (BE) and progression to the dysplasia-carcinoma sequelae. Obese patients have a high incidence of gastroesophageal reflux and may be at increased risk for developing BE and esophageal adenocarcinoma. The effect of eliminating esophageal reflux of duodenogastric content on BE is not known. HYPOTHESIS: RYGB, by eliminating reflux of acid and/or bile, induces regression of BE. AIM: To assess changes in length of BE and presence of dysplasia in patients undergoing RYGB.

Methods:

Retrospective review of all patients with pre-existent, clinically important, biopsy-proven, LONG SEGMENT (>3 cm) BE undergoing RYGB at our institution. Only patients with >1 yr of endoscopic, biopsy-controlled follow-up (mean 34 mo) were included.

Results:

Five patients (3 men, 2 women) were identified. Preoperative length of BE was 6 ± 2 cm (mean \pm SEM), 2 patients had low-grade dysplasia, and 1 had indeterminate dysplasia. At postoperative follow-up (>1 yr), length of BE decreased in 4, while overall length was 2 ± 1 cm; only 1 patient had dysplasia. In the 1 patient in whom no change in length was noted at 38 mo after conversion of prior symptomatic (GERD) vertical banded gastroplasty to RYGB, the low-grade dysplasia was not seen. All patients experienced either reduction of Barrett's length (n=4), resolution of BE (n=2), or improvement in degree of dysplasia (n=3). Body mass index (BMI) decreased from 43 ± 4 to 33 ± 3 , and all experienced subjective improvement in reflux symptoms postoperatively.

Conclusion:

SUMMARY: RYGB resulted in complete or partial regression of BE in 4 of 5 patients and improvement in reflux symptoms in all. CONCLUSIONS: RYGB may be the procedure of choice in morbidly obese patients (and even in less obese subjects?) with BE requiring surgical treatment for gastroesophageal reflux disease.

39. GASTRIC BANDING FOR THE TREATMENT OF TYPE 2 DIABETES MELLITUS IN THE MORBIDLY OBESE.

Tony Brancatisano, B Appl Sc; Sara Wahlroos, B MedSc; Roy Brancatisano, MB BS
Institute of Weight Control, Sydney, NSW Australia

Background:

Obesity is a leading cause of type 2 diabetes (DM). Our aim was to assess the efficacy of the Swedish Adjustable Gastric Band (SAGB) in the treatment of diabetes in the morbidly obese.

Methods:

We identified all patients with either DM or impaired glucose tolerance (IGT) at the time of surgery from our database of 774 consecutive patients who underwent placement of the SAGB between January 2001 and November 2006. Patients were followed up by our multidisciplinary team and their diabetes managed by their treating General Practitioner and/or Endocrinologist.

Results:

There were 450 patients with greater than 6 months follow up. Of these, 46 patients had DM and 53 had IGT. The median age was 50 (range: 24-67) years with a mean (\pm SD) of initial weight and BMI of 131 ± 25 kg, and 46 ± 8 kg/m², respectively. At a median follow up of 14 months (range: 6-48), the percentage excess weight loss (%EWL) was $38 \pm 18\%$. Of the patients with DM, mean (\pm SD) HbA1c significantly decreased from $8.5 \pm 1.9\%$ to $6.7 \pm 1.4\%$ ($p < 0.0001$). Sixteen patients normalized their HbA1c (reference range < 6). Of the 15 patients previously on insulin, 7 (47%) ceased, 6 (40%) reduced insulin dose by greater than 50% and 2 (13%) had no change. Of the 38 patients treated with oral hypoglycemics, 9 (24%) stopped medication, 13 (32%) reduced by greater than 69% and 12 (32%) did not change. Four patients increased their tablet dose; two of which had reduced insulin dosage. Of the patients with IGT, mean fasting blood glucose (mmol/l) significantly decreased from 6.3 ± 1.4 to 4.9 ± 0.8 ($p < 0.0001$). No patient with IGT developed diabetes. None of the 46 patients who were diet controlled progressed to require medications.

Conclusion:

Sustainable weight loss following gastric banding is an effective treatment of DM in morbidly obese patients. It may even prevent the occurrence of DM in patients with IGT.

40. LONG LIMB ROUX-EN-Y GASTRIC BYPASS IS MORE EFFICACIOUS IN THE TREATMENT OF TYPE 2 DIABETES AND HYPERLIPIDEMIA IN SUPEROBESE PATIENTS.

Ricardo V Cohen, MD; *Jose Pinheiro, MD*; Jose L Correa, MD; Carlos A Schiavon, MD
Hospital Sao Camilo, Sao Paulo, Brazil

Background:

Superobese patients (BMI over 50 kg/m²) achieve adequate weight loss in spite of the length of the Roux limb. These patients, however, might need a longer Roux limb to resolve comorbidities such as type 2 diabetes, hyperlipidemia, hypertension, sleep apnea, and GERD.

Methods:

105 patients with BMI over 50 (50.6-76) kg/m² were randomly divided into 2 groups matched for sex, age, and number of comorbidities (mean of 2.6 comorbidities). All were submitted to laparoscopic gastric bypass. In group 1 (G1) the length of Roux limb was 150 cm and in group 2 (G2) was 250 cm.

Results:

Follow-up was 48 months. Diabetes resolved in 62% (G1) and in 87% (G2), $p < 0.05$. Hyperlipidemia resolved in 57% (G1) and in 70% (G2), $p < 0.05$. There were no statistical differences in the resolution of hypertension, sleep apnea, and GERD between the 2 groups. EWL was faster in G1, but was similar in both groups at 48 months (70% in G1, 74% in G2).

Conclusion:

Patients with long limb Roux-en-Y gastric bypass achieved higher type 2 diabetes and hyperlipidemia resolution. Patients with long limb Roux-en-Y gastric bypass had a faster EWL, but had equivalent weight at 4 years.

41. LAPAROSCOPIC BARIATRIC SURGERY IMPROVES CANDIDACY IN MORBIDLY OBESE PATIENTS.

Mark C Takata, MD; Campos Guilherme, MD; Ruxandra Ciovisa, MD; John Cello, MD; Stanley Rogers, MD; Andrew Posselt, MD

University of California San Francisco, San Francisco, CA

Background:

Morbid obesity is a relative contraindication for kidney, liver, or lung transplantation since it is associated with higher rates of postoperative complications and reduced graft survival.

Objectives: To evaluate the safety and efficacy of laparoscopic Roux-en-Y gastric bypass (LGBP) in patients with end stage renal disease (ESRD) and laparoscopic sleeve gastrectomy (LSG) in patients with cirrhosis or end stage lung disease (ESLD).

Methods:

Design: Retrospective review.

Setting: University tertiary referral center.

Patients: Eleven patients not eligible for transplantation due to morbid obesity.

Outcome Measures: Operative data, postoperative complications, weight loss expressed as percentage of excess weight loss (%EWL), quality of life, and status of transplant candidacy. Demographic, clinical, peri-operative and follow-up data were prospectively collected. Quality of life measured with the Moorehead-Ardelt questionnaire.

Results:

Six patients with ESRD underwent LGBP, three patients with cirrhosis and two with ESLD underwent LSG (Table I).

Complications developed in two of the eleven patients (both after LSG) and there was no mortality. The mean follow-up period after LGBP and LSG was 9 and 6 months, and mean %EWL was 46% and 34%, respectively. Quality of life was significantly improved in all patients. Three of the six patients with ESRD, two of the three patients with cirrhosis, and one patient with ESLD have now reached our institution's body mass index (BMI) limit for transplantation and are undergoing pretransplant evaluation.

Conclusion:

This pilot study demonstrates that LGBP in patients with ESRD and LSG in patients with cirrhosis or ESLD appears safe and can improve their candidacy for transplantation.

42. INFLUENCE OF OBESITY AND BARIATRIC SURGERY ON THYROID HORMONES.

Silas M Chikunguwo, MD PhD; Naveen Ballem, MD; Vijaya Nirujogi, MD; Suthep Udomsawaengsup, MD; Bipan Chand, MD; Philip R Schauer, MD
Cleveland Clinic Foundation, Cleveland, OH

Background: The pathophysiological relationship between Morbid Obesity and thyroid hormones is not well understood. The goal of this study was to evaluate the influence of weight reduction following surgery on thyroid hormones. We hypothesize that weight loss bariatric surgery leads to improvement in the functional status thyroid hormones.

Methods: Patients who had undergone Laparoscopic Roux-en-Y gastric bypass and adjustable gastric banding were selected. Routine pre-and post-operative endocrinological laboratory chemistries, previously measured by standard endocrinological methods, were retrospectively analyzed for both TSH and free T4. Correlations between the levels of these hormones and changes in BMI were determined up to 12 months post-bariatric surgery. The results were statistically analyzed using Student's t-test.

Results: TSH was shown to be positively correlated with BMI ($r>0.6$) within the BMI range 30 to 67 kg/m². Mean BMI change from 49 to 32 kg/m² was associated with mean reduction of TSH levels from 3.5 μ U/mL to 1.9 μ U/mL. Although free T4 showed no correlation with lower BMI values (<40 kg/m²), it was negatively correlated ($r=-0.7$) with higher BMI >50 kg/m². Prior to bariatric surgery, 40% of the patients had elevated TSH levels >5.5 μ U/mL (Normal range 0.4-5.5 μ U/mL) associated with free T4 levels within normal range, consistent with subclinical hypothyroidism. Following bariatric surgery, 100% of these patients had significant decreases in their BMI levels with simultaneous complete resolution of their subclinical hypothyroidism status by the 12-month postoperative period. Similar trends were noted with both procedures.

Conclusion: Subclinical hypothyroidism might act in concert with several other factors to sustain morbid obesity. One of the favorable outcomes following surgery is the resolution of the metabolic syndrome. It is possible that one of the pathways by which surgically induced weight loss causes the resolution of the metabolic syndrome is by modulating thyroid hormones. However, the regulatory role of inflammatory cytokines on thyroid function remains to be elucidated.

43. BARIATRIC SURGERY IMPROVES URINARY INCONTINENCE IN MORBIDLY OBESE INDIVIDUALS.

Rajesh Kuruba, MD; Ferdinand Martinez, MD; Tracy Torrella, MABMH; Krista Haines, MABMH; Lana Nelson, DO; Taghreed Almahmeed, MD; Scott F Gallagher, MD; Michel M Murr, MD
University of South Florida, Tampa, Florida

Background:

Urinary incontinence is common in obese individuals. We aimed at reporting the prevalence of urinary incontinence in patients undergoing bariatric surgery and the impact of surgically-induced weight loss on urinary incontinence.

Methods:

Prospectively collected data on 201 consecutive bariatric surgery candidates was evaluated; patients were surveyed with a urinary incontinence questionnaire regarding duration, stress/urge incontinence symptoms, and severity before and after undergoing bariatric surgery. The severity was quantified using a validated index developed by Sandvik et al. Data are mean \pm SD

Results:

Sixty-five patients (32%) reported urinary incontinence; out of those, 43 women and 1 man (age: 49 ± 11 and BMI: 48 ± 7 kg/m²) had undergone RYGB (n= 41) and LapBand (n= 3). Data on 36 patients who reported severe (50%), moderate (48%) and mild (2%) urinary incontinence preoperatively and who had complete follow-up at ≥ 6 months post-operatively, demonstrated resolution of urinary incontinence in 47%; the remaining patients had mild-moderate (38%) or severe urinary incontinence (14%); The overall severity score improved from 5.4 ± 2.3 to 2.3 ± 2.8 ($p < 0.001$; t-test postop vs. preop); EBWL was $61\pm 19\%$. Patients reported significant improvement after losing ≥ 50 lbs at 4 months postoperatively.

Conclusion:

Urinary incontinence is prevalent in bariatric surgery patients. Surgically- induced weight loss results in significant improvement or resolution of urinary incontinence in 66% of patients. Data from this large cohort warrants further investigation with urodynamic studies especially in the subgroup of patients who did not report improvement in urinary incontinence.

44. LAPAROSCOPIC TRUNCAL VAGOTOMY FOR SEVERE OBESITY: SIX MONTH EXPERIENCE IN 10 PATIENTS FROM A PROSPECTIVE, TWO-CENTER STUDY.

Thad J Boss, MD; Jeffrey Peters, MD; Marco G Patti, MD¹; Robert H Lustig, MD; John G Kral, MD²;
University of Rochester, Rochester, NY; ¹University of California, San Francisco, CA; ²SUNY Downstate Medical Center, Brooklyn, NY

Background:

The vagus nerve provides important motor, sensory and hormonal signals regulating satiety and hunger. Early open vagotomy studies in severely obese patients demonstrated weight loss. This prospective study tests the hypothesis that truncal vagotomy via a laparoscopic approach causes weight loss and improvements in comorbidities among severely obese men and women.

Methods:

Laparoscopic truncal vagotomy via three or four 5mm access ports was performed on 10 female obese patients: Mean Weight = 109±14 kg (range: 86-129); BMI= 41±4.4 kg/m² (range: 35-49.2); Mean Age 41±9.7 years (range 25-50)). At least two vagal trunks were identified, clipped, and segments removed for pathologic review. Careful esophageal dissection identified and divided any additional nerve fibers. Completeness of vagotomy was assessed by intraoperative endoscopic Congo Red test under IV baclofen stimulation. Outcome measures include total weight loss, BMI changes, percent excess body weight loss, operative morbidity and adverse events. Follow-up was between 6 and 13 months. Comorbidities will be assessed after 1 year.

Results:

Ninety percent(n=9) of patients lost weight (Mean Weight Loss= 7.1±2.32 kg). BMI change and % excess weight loss (%EWL) is shown in the table 1.

Conclusion:

Although early, these data suggest that truncal vagotomy should be considered for the treatment of obesity.

Group	No. of Pts.	ΔBMI kg/m ²	ΔBMI Range	%EWL	%EWL Range
All Patients	10	2.3	-1.2 to 4.4	16.4	-7.5 to 44.1
Responders	9	2.7	1.4 to 4.4	19.0	7.9 to 44.1

45. LAPAROSCOPIC TRUNCAL VAGOTOMY WITHOUT DRAINAGE: IS IT SAFE AND CAN IT AUGMENT WEIGHT LOSS WITH LAGB?

Kristen R Earle, MD; Matt Martin, MD; Ben T Hoxworth, MD; David H Newman, MD
Moses H. Cone Memorial Hospital Systems, Greensboro, NC

Background:

Conventional surgical wisdom has taught us that truncal vagotomy should never be performed without concomitant gastric drainage. Perhaps the drainage procedures are more responsible for the diarrhea and dumping that were originally attributed to truncal vagotomy. Since the vagus nerve provides important motor, sensory, and hormonal signals regulating satiety and hunger, then vagotomy alone may achieve some degree of weight loss. This study examines the outcomes of combining truncal vagotomy with LAGB to assess its impact on weight loss and evaluate complications.

Methods:

Since May 2006, 13 of the 25 IRB approved patients have undergone laparoscopic gastric banding with truncal vagotomy. The adequacy of vagotomy was assessed by intraoperative and pathologic inspection of the vagus and endoscopic Congo Red test with IV baclofen stimulation. Outcome measures included total weight loss, BMI change, percent excess body weight lost, operative morbidity and adverse events.

Results:

All patients report anorexia. There were no adverse events and all patients were discharged in < 23 hours. No patients reported diarrhea, bloating, or other historical side effects from vagotomy. Average pre-op BMI was 43 kg/m², 10/13 patients were female with an average age of 45. Thus far we have seen over 3 pounds per week weight loss in these patients with no issues of hunger. Most patients do not request a LapBand fill at 6 weeks in contrast to our standard LAGB patients.

Conclusion:

Truncal vagotomy can be added to LAGB with no additional morbidity providing a sense of satiety in all patients. Diarrhea and dumping have not been observed.

46. GASTRIC BYPASS SURGERY IN RATS PRODUCES WEIGHT LOSS MODELING THAT FOLLOWING HUMAN GASTRIC BYPASS.

David S Tichansky, MD; John Boughter, PhD; Jason L Harper, MD; Atul K Madan, MD
University of Tennessee Health Science Center, Memphis, TN

Background:

Study of the mechanisms of weight loss following bariatric surgery requires an animal model which mimics the human procedure and subsequent weight loss. A rat model eliminates the cognitive efforts associated with human weight loss and gain.

Methods:

A technique for gastric bypass (RYGB) was developed in Sprague-Dawley rats. A 1-2 cc pouch is created from the uppermost stomach using a linear stapler. A 10 cm biliopancreatic limb and 15 cm Roux limb are anastomosed side-to-side with running non-absorbable suture. The gastrojejunostomy is created with a single layer of running non-absorbable suture. Four rats underwent RYGB. Weight loss was compared to 4 sham rats which had a midline incision and left 60 minutes with an open abdomen prior to closure.

Results:

RYGB rats lost an average of 19.2% body weight (BW) at 1 week, 20.9% BW at 2 weeks, 20.8% BW at 3 weeks, and 13.8% BW at 4 weeks. The RYGB rats' weight was basically level after 4 weeks. The sham rats gained an average of 3.1% BW at 1 week, 2.2% BW at 2 weeks, and 4.8 % BW at 3 weeks. The sham rats' weight was basically level after 3 weeks. Subjectively, the RYGB rats were less interested in chow and frequently had chow left in their cage.

Conclusion:

A Sprague-Dawley Rat model for gastric bypass has been developed and yields approximately 14% sustained BW loss. This will allow investigators to objectively view factors associate with weight loss without the confounding cognitive factors in humans.

47. FIRST HUMAN EXPERIENCE WITH AN ENDOSCOPICALLY DELIVERED AND RETRIEVED DUODENAL-JEJUNAL BYPASS SLEEVE.

Leonardo Rodriguez, MD; Munir Alamo, MD; Percy Brante, MD; Almino Ramos, MD¹; Galvao Neto, MD¹; Michael Tarnoff, MD²

¹Centro de Cirug de la Obesidad, Hospital DIPRECA, Santi, Santiago, Chile; ¹Gastro Obeso Center, Sao Paulo, Brazil;

²Department of Surgery, Tufts-New England Medical Center, Boston, MA

Background:

We report the first human experience with an endoscopic duodenal-jejunal bypass sleeve (DJBS).

Methods:

The DJBS is a 61cm sleeve anchored in the duodenum creating a duodenal-jejunal bypass. In a 12-patient prospective, open label, single center, 12- week safety study, the device was endoscopically implanted, left in situ and retrieved. The study included 5 males and 7 females, mean BMI=43 kg/m². Four patients had type 2 diabetes (T2DM). The primary endpoints were incidence/severity of adverse events. Secondary outcomes included % excess weight loss (%EWL) and changes in co-morbid status.

Results:

The DJBS was endoscopically delivered and retrieved in all patients (mean implant/explant time 26.6 and 43.3 minutes, respectively). Ten patients maintained the device for 12-weeks while 2 patients underwent explant after 9 days secondary to poor device placement. Several self-limited adverse events were possibly or definitely related to the device including: (6) abdominal pain; (18) nausea and (16) vomiting mainly within two weeks of implant; (2) partial pharyngeal tears occurred during explant. Implant site inflammation was encountered in all patients. No event was considered severe. The average %EWL for the ten 12-week patients was 24% with all patients achieving at least 10% EWL. All 4 diabetics went 12-weeks without hypoglycemic medications with normal fasting plasma glucose levels. Three of these 4 patients decreased HbA1c by at least 0.5% by week 12.

Conclusion:

The DJBS can be safely delivered and removed endoscopically and left in-situ for 12-weeks. The device has a favorable safety and encouraging efficacy profile. Randomized prospective trials are warranted.

48. DECREASED VISCERAL ADIPOSE TISSUE NINE MONTHS AFTER BARIATRIC SURGERY IS ASSOCIATED WITH DRAMATIC CHANGES IN METABOLIC GENE EXPRESSION.

Joshua G Leicman, MD; Terri King, PhD; Snehal Mehta, MD¹; Benjamin Clapp, MD; Sherman Yu, MD; Terry Scarborough, MD; Erik B Wilson, MD; Heinrich Taegtmeier, MD, DPhil
UT Houston, Houston, TX; ¹River Oaks Imaging and Diagnostics, Houston, TX

Background:

The decrease in visceral adipose tissue (VAT) after bariatric surgery is associated with improved systemic glucose and free fatty acid metabolism. These alterations may have an important regulatory impact on skeletal muscle metabolism. We hypothesized that the decrease in visceral adipose tissue after bariatric surgery alters gene expression responsible for fatty acid partitioning and glucose flux in skeletal muscle.

Methods:

A cohort of 13 consecutively enrolled patients underwent abdominal MRI, to quantify VAT area, and a percutaneous muscle biopsy of the vastus lateralis to measure metabolic gene expression by quantitative reverse transcriptase polymerase chain reaction. Fasting blood samples were also obtained to measure metabolites, insulin, and adipokines. We compared studies performed before surgery and 9 months after surgery using repeated measures ANOVA.

Results:

At 9 months all subjects showed a significant decrease in BMI and VAT area [Mean change (+/-SEM), p value: 12.86 kg/m² (1.7), p<0.0001 and 98.47 cm² (26.4), p=0.004, respectively]. In addition, serum insulin and leptin, as well as plasma free fatty acid concentrations decreased after 9 months of sustained weight loss [12.54 μU/mL (3.7), p=0.003, 42.77 ng/mL (7.8), p<0.0001, and 0.14 mmol/L (0.06), p=0.029, respectively]. Skeletal muscle stearoyl Co-A desaturase (SCD) and pyruvate dehydrogenase kinase-4 (PDK4) gene expression levels significantly decreased (% change in expression: -86%, p=0.007 and -87%, p=0.001, respectively).

Conclusion:

9 months after bariatric surgery decreased VAT and favorable systemic metabolic changes may contribute to improved fatty acid partitioning and glucose metabolism in skeletal muscle.

49. CORRELATION BETWEEN INSULIN RESISTANCE AND OMENTAL GENE EXPRESSION OF ADIPONECTIN BEFORE AND AFTER GASTRIC BYPASS SURGERY.

Alfonso Torquati, MD, MSCI; William Richards, MD; Joan Kaiser, RN, MA; Sherry Kernodle, RD; Anna Spagnoli, MD
Vanderbilt University, Nashville, TN

Background:

Compelling evidence indicate that adiponectin, an adipose tissue-specific protein, has a mechanistic role in the pathogenesis of insulin resistance and atherosclerosis. This adipokine is known to correlate negatively with insulin resistance in patients with obesity and type 2 diabetes. The aim of this study is to assess the effect of gastric bypass surgery on adiponectin gene expression in omental tissue.

Methods:

Omental and subcutaneous adipose tissues and plasma were obtained from 25 subjects undergoing gastric bypass surgery, 15 normal weight subjects, and 12 subjects after gastric bypass (specimens were obtained > 12 months after surgery). We used real-time quantitative reverse transcription polymerase chain reaction (RT-PCR) for analysis of microdissected fresh adipose tissues. The threshold cycle (CT) value for each reaction, reflecting the amount of PCR needed to identify a target gene, and the relative level of adiponectin for each sample were calculated. Specimens were run in duplicate and the values averaged. To confirm the specificity of the PCR reaction, PCR products were electrophoresed on a 1.2% agarose gel. Adiponectin expression was normalized for GAPDH (housekeeping gene) and expressed as percentage of subject-matched subcutaneous expression which was given an arbitrary value of 100%. The relative measures of adiponectin expression were compared with unpaired t-tests on log-transformed values. Insulin resistance was assessed by the homeostatic model assessment (HOMA-IR).

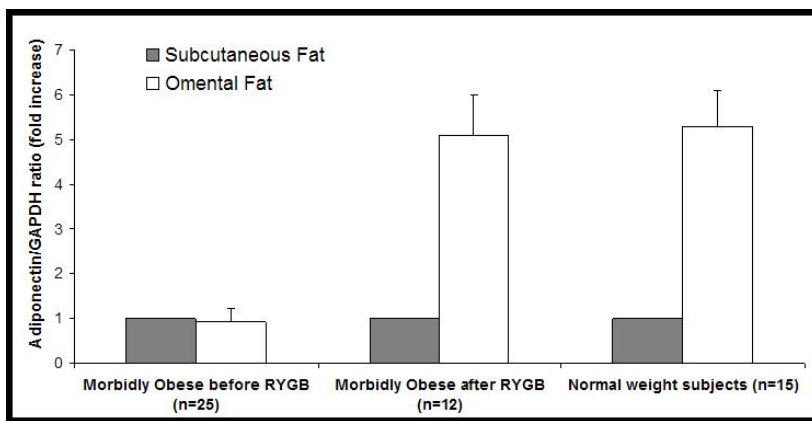
Results:

As shown in the Figure, omental adiponectin gene expression is 5-fold higher in morbidly obese subjects after RYGB when compared with matched morbidly obese subjects before RYGB ($P < 0.01$). There were no statistical differences in omental adiponectin gene expression observed in subjects after RYGB and age and gender matched normal weight subjects.

For the entire cohort of subjects there was a significant negative correlation between omental adiponectin expression and insulin resistance expressed by HOMA-IR values ($r = -0.62$, $P < 0.001$).

Conclusion:

Omental adiponectin gene expression significantly increased after RYGB reaching levels equal to age and gender matched normal weight subjects. Omental adiponectin expression has a significant negative correlation with insulin resistance status.



50. SCLEROTHERAPY AT THE GASTROJEJUNOSTOMY FOLLOWING GASTRIC BYPASS TO MANAGE WEIGHT REGAIN.

Mark Loewen, MD; Honore Gormley, APRN¹; Carlos Barba, MD, FACS¹
University of Connecticut, Hartford, CT
¹Connecticut Surgeons, Hartford, CT

Background:

Gastric bypass is effective treatment for morbid obesity with 60-80% excess weight loss in 18 months. It has been reported that 10-15% weight regain occurs in these patients. There are few options available to prevent this weight regain. Injection of morrhuate sodium (sclerotherapy) has been suggested to decrease the diameter of the gastrojejunostomy (GJ) anastomosis.

Methods:

A retrospective study was performed of patients receiving scleroinjections at their GJ from July 2004 to August 2006. Charts were reviewed, and follow-up data including weight checks were obtained.

Results:

There were 71 patients who underwent sclerotherapy at their GJ. Average age was 45, and all but four patients were women. These procedures were done an average of 33 months after GB and the average weight loss prior to injection was 85 lbs (EWL of 52%). Diameter of GJ was 2.5 cm average. An average of 13cc morrhuate sodium was injected circumferentially. Repeated therapy was performed in 28%. There were no admissions or complications related to the procedure. Seventy-five percent of patients maintained or lost weight in the 12 months follows up period. Average weight loss was 12 lbs.

Conclusion:

Sclerotherapy at the GJ is safe and effective to treat weight regain after dilatation of GJ anastomosis in gastric bypass patients and is moderately successful for weight loss.

51. BILIOPANCREATIC DIVERSION WITH DUODENAL SWITCH OR GASTRIC BYPASS FOR FAILED GASTRIC BANDING: WHAT IS BEST?

Philippe A Topart, MD¹; Guillaume Becouarn, MD²; Patrick Ritz, MD³

¹CHU Brest & Clinique de l'Anjou, Angers, France; ²Clinique de l'Anjou, Angers, France; ³Medecine B, CHU Angers, France

Background:

Adjustable gastric banding is a restrictive bariatric surgery with a nearly 40% 5 year failure rate. Malabsorptive procedures can provide an alternative solution.

Methods:

Between February 2002 and October 2006, 53 patients had revisional surgery after adjustable gastric band and were offered biliopancreatic diversion with duodenal switch (DS) or Roux-en-Y gastric bypass (RYGB) according to the institution/surgeon. Eight bands had to be removed prior to the DS but all the RYGB included band removal. Seven of the DS were done open; whereas, all the other procedures were laparoscopic.

Results:

The initial BMI was 49.6 ± 5.2 kg/m² for the DS and 45.8 ± 6.4 kg/m² for the RYGB patients. The lowest BMI after the band was 39.3 ± 6.02 kg/m² (DS) and 35.9 ± 6.9 kg/m² (RYGB) during a 39.5 ± 14.5 months of band placement. In the DS group, 4 of the laparoscopic procedures were converted to open (none for RYGB). There were significantly less complications after RYGB compared to DS (9.3% vs. 61.9%, $p=0.0002$). There was no postoperative death. No statistical difference was found regarding weight loss between the 2 procedures.

Conclusion:

RYGB and DS appear equally effective for revision after gastric banding with a slight advantage in terms of weight loss after DS. The lesser rate of complications is in favor of RYGB but half of the DS were in fact open cases and were done during a learning curve process. Because of the potential complications and side effects DS should be reserved for very high BMI patients.

52. TREATMENT-REFRACTORY ANASTOMOTIC ULCERS POST-ROUX-EN-Y GASTRIC BYPASS (RYGB): EXPERIENCE FROM A LARGE VOLUME BARIATRIC PRACTICE.

Aviv Ben-Meir, MD; Dawn Miller, MD; John B Marshall, MD; Helmut Schreiber, MD; IM Sonpal, MD; Karen Schulz, RN, MSN
St. Vincent Charity Hospital, Cleveland, OH

Background:

Approximately 5 - 10% of RYGB patients develop anastomotic ulcers at the gastrojejunostomy. Published evidence on the incidence and management of persistent/recurrent and treatment-refractory ulcers is limited, but research suggests eight weeks of 40 mg daily PPI (proton pump inhibitor) therapy may be insufficient (ulcers persisted in 42% of non-smokers and 77% of smokers after two months of PPI therapy; three to six months of treatment are recommended [Marshall et al., SOARD 2006, 2(3):327]). Yet, even after up to 12 months or more of PPI therapy, a few of our patients presented with bleeding and/or penetrating ulcers that required surgical intervention.

Methods:

We reviewed records for all RYGB patients (Jun 1, 1999 to Jun 30, 2006) to determine anastomotic ulcer incidence and the number of persistent/recurrent and treatment-refractory cases. We categorized ulcers as persistent (without resolution after 12 weeks of 40 mg PPI twice daily), recurrent (reappearing after healing), and treatment-refractory (presence of bleeding and/or penetrating ulcers despite up to 12 months or more of maximum dose PPI therapy).

Results:

Of 4767 patients, 312 (6.5%) developed anastomotic ulcers (median 20.1 weeks). Most ulcers healed after 2-3 months of PPI therapy, although 42 patients experienced recurrent/persistent ulcers requiring extended treatment before healing. Eight patients (Table 1) developed treatment-refractory ulcers requiring resection of the gastrojejunal anastomosis with gastrojejunostomy. There were no deaths or leaks in this group. Post-revision, seven patients have remained symptom-free without PPI therapy.

Conclusion:

Revisional surgery should be considered as a viable treatment option for patients with treatment-refractory anastomotic ulcers.

Table 1

Treatment-refractory patients, n=8	Median (range)
RYGB to first ulcer diagnosis	44.8 wks (7.3 – 77.4)
RYGB to revisional surgery	80.0 wks (40.6 – 152.7)
Time since revisional surgery	45.7 wks (9.3 – 107.4)
Revisional surgery	
Length of stay (days)	4 (3 – 7)
BMI (kg/m ²)	31.0 (25.4 – 48.2)
Age (yrs)	50.6 (38.6 – 54.5)

53. MANAGEMENT OF SLIPPED ADJUSTABLE GASTRIC BANDS.

Michael B Tempel, MD; Marc Manganiello, BA; Sharfi Sarker, MD, MPH, F; Vafa Shayani, MD, FACS
Loyola University Medical Center, Maywood, IL

Background:

A small percentage of patients undergoing laparoscopic adjustable gastric banding (LAGB) experience band slippage, which may require a subsequent surgical procedure. We present our experience with band slippage in 660 LAGB's.

Methods:

Management options for patients with slipped bands include band removal, revision, or replacement. Data from electronic medical records as well as phone interviews were collected and tabulated.

Results:

Of 660 LAGB patients, 37 (5.6%) experienced band slippage requiring 45 operative procedures. Seven patients underwent multiple procedures. Nineteen bands were replaced, 14 revised, and 12 bands removed. There were no complications associated with any re-operations. Seven of the 14 patients with band revisions (50%) had subsequent recurrence of their slippage resulting in 8 additional operations (5 replacements and 3 removals). Data for 34 procedures in the 27 patients (73%) for whom follow-up was available are presented in the following table:

Conclusion:

Although several options following band slippage exist, none appear to result in long-term weight loss. Given the long-term consequences of band slippage, further investigation into the etiology of band slippage and its prevention is warranted.

	Mean Initial Weight	Mean Initial BMI kg/ m ²	Mean Weight before Rescue	Mean %EWL at Rescue	Mean BMI at Rescue kg/ m ²	Mean Current Weight	Mean Current %EWL	Mean Current BMI kg/ m ²
REVISION(11)	145.8	50.8	102	59	36.4	98.9	66	35.3
REPLACEMENT(16)	144.1	51.7	98	65	35.4	107.3	48	38.7
REMOVAL(7)	142.5	49.9	101	63	34.5	108.9	48	37.2

54. DIAGNOSTIC LAPAROSCOPY FOR CHRONIC ABDOMINAL PAIN AFTER GASTRIC BYPASS.

Tracy S Pitt, DO; Stacy Brethauer, MD; Matt Metz, MD; Silas Chikunguwo, MD; Suthep Udomsawaengsup, MD; Bipan Chand, MD
Cleveland Clinic, Cleveland, OH

Background:

The purpose of this study was to evaluate the utility of diagnostic laparoscopy as a diagnostic and therapeutic modality in gastric bypass patients with chronic abdominal pain.

Methods:

A retrospective analysis of patients that underwent laparoscopy for diagnosis or treatment of chronic abdominal pain was performed. Group A (n=10) included patients with a negative preoperative radiographic and/or endoscopic evaluation. Group B (n=34) included patients with a positive finding on imaging or endoscopy.

Results:

44 patients who had previous gastric bypass underwent evaluation for chronic abdominal pain. In group A, the findings on laparoscopy were internal hernia (3), ventral hernia, partial small bowel obstruction secondary to adhesions, and omental necrosis. Four patients had no abnormal findings. After an average follow-up of 4.1 months, 4 of these patients had unresolved abdominal pain. Of the patients with unresolved pain, 3 were from the group found to have a hernia and one had a negative laparoscopy. In group B, the primary indication for laparoscopy included: gallbladder disease (12), small bowel obstruction (10), gastro-gastric fistula (6), ventral hernia (4), and other (2). Five patients had persistent pain after laparoscopy, one was lost to follow-up, and 28 had resolution of symptoms.

Conclusion:

Diagnostic laparoscopy will identify an abnormality in 60% of patients with a negative preoperative evaluation, yet pain may persist in 50% of these patients. In patients with a positive preoperative workup laparoscopy leads to resolved symptoms in 82%.

55. LAPARAROSCOPIC ADJUSTABLE BAND PRESSURE MEASUREMENTS AS A POTENTIAL TOOL TO OPTIMIZE RESTRICTION.

Suthep Udomsawaengsup, MD; Stacy Brethauer, MD; Jeffrey Landers, MD; Sam Rossi, MD; Tracy Pitt, DO; Silas Chikunguwo, MD; Matthew Metz, MD; Vijaya Nirujogi, MD; Philip Schauer, MD; Bipan Chand, MD
Cleveland Clinic, Cleveland, OH

Background:

Band adjustment is a key to successful outcomes for LapBand patients. At present there is no consensus regarding the optimal method to obtain optimal band adjustment. We hypothesize that band pressure correlates with the volume of saline within the band. As a result, we hope to show that band pressure may be used to guide band adjustment.

Methods:

Band pressures were measured by a single investigator using a manometer attached to the port access needle. Band pressure readings were recorded at 1cc increments. After completing the measurements, the band was finally adjusted based on clinical parameters as routinely performed.

Results:

From 10/05 to 7/06, 67 band adjustments were performed in 27 patients. The first group included fourteen (52%) patients that had a 10 cm band and had a mean band pressure of 24 cm and 49 cm H₂O at 1 cc and 2 cc, respectively. Thirteen patients (48%) with a 11 cm band had a mean band pressure of 9, 20, 35 and 48 cm at 1, 2, 3 and 4 cc, respectively. 18 patients had two or more adjustments. There was an average decrease of 10, 8, and 9 cm H₂O at 1, 2, and 3 cc volumes, respectively. There were 2 patients who required a readjustment secondary to obstructive symptoms. Both were found to have band pressures greater than 55 cm.

Conclusion:

There is a linear relationship between band volume and pressure. In a given patient, there is a decrease in band pressure for a given volume over time. This initial investigation suggests that band pressure measurement may be a potential method to optimize restriction.

56. EARLY EXPERIENCE WITH INTRALUMINAL REINFORCEMENT OF STAPLED GASTROJEJUNOSTOMY DURING ROUX EN Y GASTRIC BYPASS (PILOT STUDY).

Alan A. Saber, MD; Keith Scharf, MD; Z. Ali Turk, MD; Ruvie LMC Martinez, MS
Michigan State University - Kalamazoo Center for Medical Studies, Kalamazoo, MI US

Background:

The use of extraluminal staple-line buttressing material during laparoscopic Roux-en-Y gastric bypass has shown the potential to reduce staple line leak and bleeding. We herein present our early experience with intraluminal reinforcement of linear cutter gastrojejunal anastomosis with the use of bioabsorbable glycolide copolymer staple-line reinforcement.

Methods:

Laparoscopic Roux-en-Y gastric bypass was performed in eighty morbidly obese patients. Gastrojejunal anastomosis was performed using a linear cutter staple without staple line reinforcement in forty patients (group A), while in the other forty patients, gastrojejunostomy was performed using linear cutter staple with intraluminal reinforcement material (bioabsorbable glycolide copolymer). Demographic data were collected. Rate of gastrojejunal anastomotic leak, bleeding, and stricture was determined.

Results:

There was a statistically significant reduction in bleeding complications between the two groups (15% bleeding in group A vs. no bleeding in group B, P-value= 0.026). Stricture rate was higher in group A (10% group A vs. 2.5% in group B); however, the difference was not statistically significant (P- value= 0.2007). None of our patients developed a gastrojejunal leak.

Conclusion:

Intraluminal reinforcement of gastrojejunal anastomosis during laparoscopic gastric bypass is safe and feasible. The use of bioabsorbable glycolide copolymer staple-line reinforcement significantly reduces the gastrojejunal bleeding and may reduce the incidence of anastomotic stricture.

57. TECHNIQUES OF LAPAROSCOPIC GASTRIC BYPASS: A SURVEY OF ASBS PRACTICING SURGEONS.

Atul K Madan, MD; Jason Harper, MD; David S Tichansky, MD
University of Tennessee Health Science Center, Memphis, TN

Background:

Various techniques of laparoscopic gastric bypass (LGB) exist. This study surveys ASBS practicing surgeons on how they perform LGB.

Methods:

An internet based survey was sent to all practicing surgeons in the ASBS database via email. The survey included surgeon experience, pouch, limbs, gastrojejunostomy (GJ), jejunojejunostomy (JJ) and adjustable band. Results were collected from the internet site after one week.

Results:

191 surgeons responded; 98% perform LGB. Surgeons performed a career average of 408 cases and 98 cases over the last 12 months. Average pouch size was 26 cc where 50% of surgeons measured the pouch via distance from the gastroesophageal junction. Almost all surgeons (99%) performed Roux-en-Y and not loop gastrojejunostomy. Average biliopancreatic limb length was 53 cm and Roux limb length was 107 cm. Most surgeons (48%) measured limb length with an open grasper; while few (8%) utilized a suture or umbilical tape. Antecolic and antegastric were more common than retrocolic GJ (64% vs. 36% and 74% vs. 26%). Percentages for technique for the GJ were circular stapler: 42%, linear stapler: 39%, handsewn: 21%, other: 9%. Most surgeons (92%) tested the GJ intra-operatively. Percentages for technique for the JJ were: stapled anastomosis and hand sewn common enterotomy: 53%, double staple: 36%, triple staple: 14%, hand sewn: 0.6%. Most surgeons (94%) closed mesenteric defects. Most surgeons (94%) do not place a band around the pouch.

Conclusion:

There are technical variations of laparoscopic gastric bypass performed by ASBS practicing surgeons. Further research is needed to explore the links between technical variations and outcomes.

58. THE EFFECT OF STAPLE HEIGHT, BUTTRESSING, AND OVERLAP ON STAPLE LINE FAILURE.

Carlos M. Mery, MD, MPH; *Shafi Bilal, MD*; Gary Binyamin, PhD; Michael Gertner, MD, MSE
Stanford University, Stanford, CA

Background:

Few studies have been designed to assess the performance of surgical staplers. This study analyzes the effect of staple height, buttressing, and overlapping of staple lines on staple line failure.

Methods:

Staple lines created on fresh porcine small bowel segments *ex vivo* were tested for leak pressure by insufflating air into the bowel under water and recording pressure at failure. Three separate experiments included: (1) staple height: white (2.5mm, n=16), blue (3.5mm, n=16), green (4.1mm, n=16), half of them buttressed; (2) absence (n=12) or presence (n=12) of an overlap in 3.5mm staple lines; (3) absence (n=14) or presence (n=11) of a buttress in 3.5mm overlapping staple lines. Data are reported as median and range; non-parametric tests were used for data analysis.

Results:

In the porcine small bowel, leak pressure was related to staple height; green loads had the worst profile (35mmHg [19-105mmHg]) when compared to blue (79mmHg [9-177mmHg]), and white loads (108mmHg [28-280mmHg]) ($p=0.006$). Buttressing uniformly improved leak pressure of all staple loads ($p<0.0001$). There was no significant difference between overlapping lines (59mmHg [32-121mmHg]) and those without (42mmHg [22-75mmHg]) ($p=0.162$). Buttressing also improved the leak pressure of overlapping staple lines, from 65mmHg (47-121mmHg) to 93mmHg (75-187mmHg) ($p=0.0014$).

Conclusion:

There is great variability in leak pressures between different applications of the same stapler. Staple height is an important determinant of leak pressure. The presence of an overlap does not affect leak pressure; in fact, a trend toward improvement was seen with overlapping staple lines. Buttressing improves all types of staple lines.

59. GASTRIC BYPASS WITH HIATAL HERNIA REPAIR AND FUNDOPLICATION IN MORBIDLY OBESE PATIENTS WITH GASTROESOPHAGEAL REFLUX DISEASE.

Celio O Burrowes, MD, FACS; Clarence Hixon
Georgia Center for Bariatric Surgery, Atlanta, GA

Background:

Gastroesophageal reflux disease (GERD) associated with hiatal hernia is a common finding in the preoperative evaluation of the morbidly obese patient. These patients often complain of multiple pillow orthopnea, epigastric pain, dysphagia and heartburn. After gastric bypass surgery for morbid obesity, considered by most to be an anti-reflux procedure; a significant number of patients continue to complain of symptoms suggestive of persistent reflux disease. Does hiatal hernia and an incompetent lower esophageal sphincter (LES) contribute to these findings?

Methods:

To begin to understand these findings, 50 morbidly obese patients from December 1999 to December 2001 diagnosed with hiatal hernia and GERD were evaluated. Twenty-five (25) patients underwent gastric bypass with a 140 centimeters Roux limb without repair of the hiatal hernia. Twenty-five (25) patients underwent a similar gastric bypass procedure with repair of the hiatal hernia and a 180 degree fundic wrap of the distal esophagus.

Results:

16 of the twenty-five patients (67%) who underwent gastric bypass alone continued to complain of significant symptoms of dysphagia, epigastric pain and multiple pillow orthopnea. Two (2) of the twenty-five (8%) had similar complaints after undergoing gastric bypass with repair of the hiatal hernia and partial fundoplication. Post-operative manometry and pH studies revealed reflux and significant intervals of low pH within the esophagus.

Conclusion:

Morbidly obese patients diagnosed with GERD and associated hiatal hernia may benefit from gastric bypass with concomitant repair of the hiatal hernia and a partial fundoplication. A larger patient population is currently being evaluated that may or may not confirm these findings.

60. A NEW MODALITY TO EVALUATE THE GASTRIC REMNANT FOLLOWING ROUX-EN-Y GASTRIC BYPASS.

Suraj Alva, MD; Andrew Duffy, MD; Gary Israel, MD; Dan Eisenberg, MD; Kurt E Roberts, MD; Robert L Bell, MD
Yale University School of Medicine, New Haven, CT

Background:

Gastric bypass surgery has become one of the most common operations performed in the United States. Exclusion of the gastric remnant has raised concerns about the difficulty for future evaluation of mucosal-based lesions. Current methods include retrograde endoscopy, which is a colossal technical feat or via a surgically created gastrotomy. Both procedures are invasive, requiring general anesthesia or conscious sedation. Virtual colonoscopy is becoming an accepted means of colonic mucosal evaluation. Hence, we employed the use of virtual three-dimensional (3-D) computed tomography (CT), also referred to as virtual gastroscopy, to evaluate the gastric mucosa in patients who have undergone laparoscopic Roux-Y gastric bypass (LRYGB).

Methods:

Following institutional review board approval, three patients who had undergone LRYGB were consented for evaluation. Virtual gastroscopy was performed using a 16-channel multi-detector CT scan and 3-D images were rendered using proprietary software (Vital Images, Inc.).

Results:

Endoluminal views of the gastric remnant were generated using perspective volume rendering. Figure 1 shows the virtual fly-through images that have been obtained by manipulating data acquired from the 3-D CT.

Conclusion:

This is the first report of performing virtual gastroscopy to evaluate the remnant stomach after LRYGB. Variations of this technique may minimize the future need for invasive and technically challenging studies in this patient population

