

OBESITY

S1443

Predictors of Pancreatitis on Initiation of GLP-1 Receptor Agonists for Weight Loss

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Introduction: Glucagon-like peptide-1 receptor agonists (GLP-1RAs) have revolutionized management of obesity. GLP-1RAs are widely prescribed for treating obesity and its associated comorbidities, including type 2 diabetes mellitus (T2DM). Although GLP-1RAs demonstrate a favorable side effect profile compared to other types of anti-obesity medications, acute pancreatitis (AP) remains a serious and sometimes life-threatening adverse effect. Unfortunately, there is a paucity of data regarding which patients may be at increased risk of developing AP from GLP-1RAs. The purpose of this study is to identify patient factors that impact the risk of AP after initiation of GLP-1RA treatment for obesity.

Methods: We performed a retrospective single-center study in patients seen at an academic institution's Weight Wellness program between 1/1/2015 and 12/31/2021. We identified patients initiated on GLP-1RAs and stratified them based on the development of AP. Chart review obtained baseline patient characteristics, medical comorbidities, and surgical history. A multivariable logistic regression model was used to identify the predictors of AP with GLP-1RA use. All statistical analyses were performed using STATA 14.2.

Results: There were 2,245 patients included. The average age was 49.5 years old and 1,807 (80.5%) were female. The average body mass index (BMI) of all patients was 39.7 kg/m². Of the 2,245 patients, 49 (2.2%) developed AP after starting a GLP-1RA. A history of T2DM (adjusted odds ratio (aOR) 2, 95% CI: 1.04-3.96, $P=0.04$), tobacco use (aOR 3.3, 95% CI: 1.70-6.50, $P<0.001$), and advanced (\geq stage 3) CKD (aOR 2.3, 95% CI: 1.18-4.55, $P=0.01$) were associated with a higher risk of AP with GLP-1RA use. Compared to patients with a BMI ≤ 30 kg/m², those with a BMI 36-40 and BMI >40 were associated with a lower risk of AP after GLP-1RA use with an aOR of 0.22 (95% CI: 0.07-0.67, $P=0.007$) and 0.27 (95% CI: 0.10-0.73, $P=0.01$), respectively (Table). There was no association between age, sex, history of bariatric surgery, or history of AP and the development of AP after GLP-1RA use.

Conclusion: Our study suggests that a history of T2DM, tobacco use, and advanced CKD increases the risk of AP after initiation of GLP-1RA for obesity treatment. A higher BMI appears to be protective against AP. Recognizing the predictive factors of GLP-1RA-associated AP can inform clinicians on risk stratification and symptom monitoring.

Table 1. Baseline Patient Characteristics

Patient Characteristics	Pancreatitis After GLP-1RA Initiation (N = 49)	No Pancreatitis after GLP-1RA Initiation (N = 2196)	P-Value
Age at GLP-1RA Initiation, mean \pm SD (years)	51.3 \pm 12.3	49.2 \pm 12.6	0.8059
Weight at GLP-1RA Initiation, mean \pm SD (lbs)	235.6 \pm 69.6	243.0 \pm 54.5	0.3548
BMI at GLP-1RA Initiation, mean \pm SD (kg/m ²)	37.9 \pm 9.1	39.8 \pm 7.9	0.1083
Sex, n (%)			0.3640
Male	12 (24.5)	426 (19.4)	
Female	37 (75.5)	1770 (80.6)	
Ethnicity, n (%)			0.004
Non-Hispanic	32 (65.3)	1737 (79.1)	
Hispanic	17 (34.7)	368 (16.8)	
Declined	0 (0.0)	18 (0.8)	
Unknown	0 (0.0)	73 (3.3)	
Race, n (%)			0.6789
White	27 (55.1)	1282 (58.4)	
Black	16 (32.7)	589 (26.8)	
Other/Unknown	6 (12.2)	325 (14.8)	
Medical Comorbidities at time of GLP-1RA Initiation, n (%)			
Diabetes	33 (67.3)	1001 (45.6)	0.0034
Hypertension	37 (75.5)	1587 (72.3)	0.7471
Hyperlipidemia	44 (89.8)	1867 (85.0)	0.4228
CAD/PVD	24 (49.0)	510 (23.2)	0.0001
Advanced CKD (CKD3 or worse)	15 (30.6)	322 (14.7)	0.0042
ESRD	8 (16.3)	83 (3.8)	0.0006
Autoimmune Disease	10 (20.4)	379 (17.3)	0.5668
Polycystic Ovarian Syndrome	6 (16.2)	228 (12.9)	0.6355
Depression	20 (40.8)	545 (24.8)	0.0184
Obstructive Sleep Apnea	35 (71.4)	1381 (62.9)	0.2353
Osteoarthritis	29 (59.2)	1110 (50.5)	0.2502
Stroke/CVA	6 (12.2)	152 (6.9)	0.1528
Gestational Diabetes	1 (8.3)	49 (2.8)	0.2901
Eating Disorder	12 (24.5)	532 (24.2)	>0.9999
GERD	37 (75.5)	1324 (60.3)	0.0376
Cystic Fibrosis	0 (0.0)	6 (0.3)	>0.9999
Gallstone Disease	27 (55.1)	625 (28.5)	0.0002
Biliary Tract Abnormalities	0 (0.0)	20 (0.9)	>0.9999
Thyroid Disease	18 (36.7)	757 (34.5)	0.7622
Prior Acute Pancreatitis	5 (10.2)	37 (1.7)	0.0019
Structural Pancreatic Disease	7 (14.3)	118 (5.4)	0.0170
Liver Transplant Recipient	0 (0.0)	19 (0.9)	>0.9999
Alcohol Use Disorder	3 (6.1)	118 (5.4)	0.7456

Table 1. (continued)

Patient Characteristics	Pancreatitis After GLP-1RA Initiation (N = 49)	No Pancreatitis after GLP-1RA Initiation (N = 2196)	P-Value
Tobacco Use Disorder	15 (30.6)	224 (10.2)	< 0.0001
Substance Abuse	2 (4.0)	78 (3.6)	0.6932
Surgical History prior to GLP-1RA Initiation, n (%)			
Cholecystectomy	18 (36.7)	553 (25.2)	0.0696
Any Bariatric Surgery	9 (18.4)	295 (13.4)	0.2943
Sleeve Gastrectomy	5 (10.2)	116 (5.3)	0.1849
Roux-En-Y Gastric Bypass	0 (0.0)	97 (4.4)	0.2710
Lap Band	2 (4.0)	104 (4.7)	>0.9999
Vertical Band Gastroplasty	0 (0.0)	5 (0.2)	>0.9999

S1444 Presidential Poster Award

Depression Is Highly Prevalent in Patients Treated With Intra-gastric Balloon Therapy but Does Not Correlate With Weight Loss Efficacy

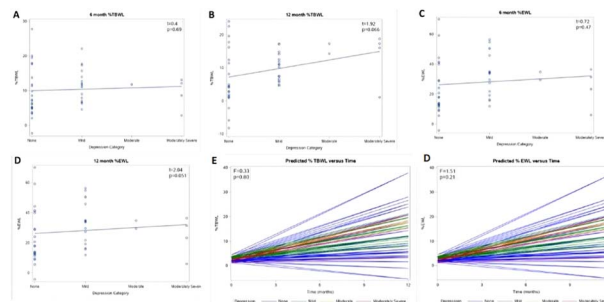
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Introduction: Depression has been shown to negatively correlate with weight loss after bariatric surgery. However, the effect of depression on weight loss after endoscopic bariatric therapy is poorly understood. The primary aims of this study were to evaluate if either the presence and severity of depression symptoms or change in symptoms over time affected weight loss after intra-gastric balloon (IGB) placement.

Methods: A retrospective cohort study was performed on patients who underwent IGB placement at a tertiary academic medical center from 2017 to present. Descriptive statistics were performed for all variables. The effects of depression on weight loss over time were investigated using both simple linear regression as well as generalized linear mixed effect models, specifying an unstructured variance-covariance matrix with random intercept and slope.

Results: Fifty-3 patients underwent IGB placement during the study period. Eight were excluded due to absence of depression measurements. Among the remaining 45 patients [gas-filled IGB, 33 patients (73.3%), single fluid filled IGB, 10 patients (22.2%), double fluid filled IGB, 2 patients (4.5%)], the mean age was 46 ± 4.3 years old, mean starting BMI was 35 ± 4.5 kg/m², and 39 patients (86.7%) were female. Twenty-2 patients (49.9%) scored positive for depression by initial scoring [mild depression, 9 patients (35.6%), moderate depression, 2 patients (4.4%), moderately severe depression, 4 patients (8.9%)]. Eight patients (17.8%) were previously diagnosed with depression, 7 (15.6%) with anxiety, and 5 (11.1%) had prior evaluation by a psychiatrist or psychologist. Weight loss outcomes are reported in Table 1. There was no significant association between depression severity and weight loss on either simple linear regression (Figure A-D), or generalized linear mixed regression (Figure E-F). Patient sex, device type, previous mental health diagnoses or treatment, and worsening or improvement in depression following IGB placement did not significantly correlate with weight loss over time.

Conclusion: A significant proportion of patients undergoing IGB placement carried a prior diagnosis of either depression or anxiety, and almost half of all patients reported depressive symptoms at initial intake visit. Contrary to the effect seen in bariatric surgery, in this cohort there was no evidence of a relationship between the presence of, severity of, or change in depressive symptoms and weight loss after IGB therapy.



[1444] **Figure 1.** Association between depression and A) %TBWL at 6 Months B) %TBWL at 12 months C) %EWL at 6 Months D) %EWL at 12 Months E) predicted %TBWL and F) Predicted %EWL over time based on depression severity. EWL, excess weight loss; TBWL, total body weight loss

Table 1. Weight Loss at 6 and 12 Months Stratified by Depression Severity

	% Total Body Weight Loss		% Excess Weight Loss	
	6 Months (n=45)	12 Months (n=29)	6 Months (n=45)	12 Months (n=29)
Overall	10.3 ± 6.2%	9.4 ± 7.7%	27.6 ± 16.4%	24.9 ± 21.3%
By Depression Class				
None	9.4 ± 7.1%	7.0 ± 8.7%	23.6 ± 17.7%	17.5 ± 22.5%
Mild	11.7 ± 4.8%	10.5 ± 4.7%	33.5 ± 14.5%	29.3 ± 16.1%
Moderate	11.8 ± 0.0%	15.8 ± 2.1%	32.0 ± 8.0%	42.5 ± 0.7%
Moderately Severe	9.2 ± 4.6%	13.3 ± 8.2%	24.2 ± 13.3%	33.5 ± 22.5%

*Categories determined via Patient Health Questionnaire 9 (PHQ-9) scoring system.

S1445 Presidential Poster Award

Effects of Heterozygous Variants in the Leptin-Melanocortin Pathway on Transoral Outlet Reduction After Roux-en-Y Gastric Bypass

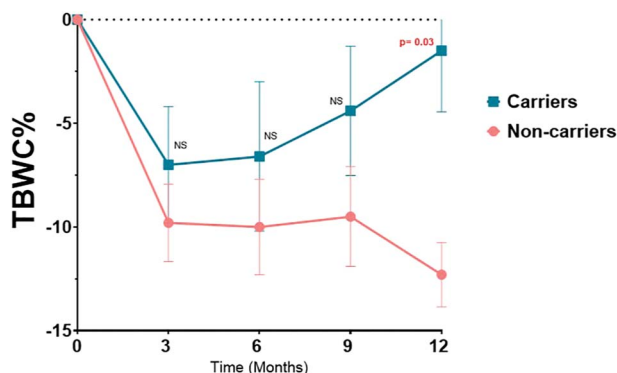
Khushboo S. Gala, MD, Wissam Ghush, MD, Alan De La Rossa, MD, Lizeth Cifuentes, MD, Fauzi Feris, MD, Alejandro Campos, MD, Daniel Sacoto, MD, Andres Acosta, MD, PhD. Mayo Clinic, Rochester, MN.

Introduction: Mutations in the leptin-melanocortin pathway (LMP) are known contributors to severe obesity. Carriers of a heterozygous variants in the LMP have greater weight regain following Roux-en-Y gastric bypass (RYGB) than non-carriers. Transoral outlet reduction (TORe) is a safe endoscopic technique to reduce the size of the gastrojejunal anastomosis aperture, counteracting the weight regain after RYGB. We aim to evaluate weight loss outcome of TORe over one year in patients with obesity and with or without heterozygous variants in the LMP.

Methods: This is a retrospective case-control study from the Mayo Clinic Biobank who were genotyped for an LMP variant and had RYGB surgery followed by TORe procedure. We excluded patients with active malignancy, on an anti-obesity medication, or pregnancy. Patient demographic and medical information were abstracted from the electronic medical records with weight records up to one year after TORe procedure. Total body weight loss percentage (TBWL%) at 1, 3, 6, 9 and 12 months was calculated based on baseline weight at TORe procedure. All continuous data are summarized as the mean and standard deviation (SD). A Wilcoxon 2-sample t-test was conducted to compare TBWL% between groups.

Results: A total of 14 patients were included in the analysis. Four patients (mean age 51.0 [5.2] years, 100% females, body mass index [BMI] 40.5 [8.7] kg/m²) with LMP variant and 10 non-carriers (age 55.4 [15.3] years, 90% females, BMI 37.3 [7.7] kg/m²). There were no baseline differences between carriers and non-carriers at time of TORe procedure (Table 1A). TBWL% was lower in carrier patients after TORe compared to non-carriers at 1, 3, 6, and 9 months. Similarly, TBWL% was lower and achieved significance at one year follow-up (1.6% in carriers vs (12.3%) in non-carriers (*P*=0.03) (Table 1B, **graph 1**).

Conclusion: Patients with a LMP variant and that underwent RYGB showed decreased weight loss after undergoing TORe. Further and larger studies are needed to comprehend the effect of TORe on patients with LMP variants. Patients with a LMP variant and that underwent RYGB showed decreased weight loss after undergoing TORe. Further and larger studies are needed to comprehend the effect of TORe on patients with LMP variants.



[1445] **Figure 1.** TBWC% of carrier and non-carrier groups at 3, 6, 9, and 12 months.

Table 1. Demographics (A) and weight loss outcomes (B) after TORe between patients with LMP gene variants carriers and non-carriers

	Carriers N=4	Non-carriers N=10	Difference (95% CI)	P-value
A) Demographics and Anthropometrics				
Females, %	100	90		0.51
Age at TORe, years	51.0 (5.2)	55.4 (15.3)	-4.4 (-16.4 - 7.5)	0.52
Height, m	1.7 (0.1)	1.7 (0.1)	0.05 (-0.1 - 0.2)	0.40
Weight, kg	118 (25.8)	102.4 (22.1)	15.8 (-22.1 - 53.8)	0.18
BMI, kg/m ²	40.5 (8.7)	37.3 (7.7)	3.2 (-9.7 - 16.0)	0.55
B) TBWC%				
1 month	-8.5 (4.0)	-9.3 (2.8)	-0.8 (-3.3 - 1.7)	0.50
3 months	-9.8 (5.6)	-7.0 (5.6)	2.8 (-5.4 - 11.1)	0.40
6 months	-10.0 (6.5)	-6.6 (7.2)	3.4 (-7.3 - 14.1)	0.35
9 months	-9.5 (4.8)	-4.4 (5.4)	5.0 (-5.8 - 15.9)	0.11
12 months	-1.5 (5.9)	-12.3 (3.2)	10.7 (1.8 - 19.6)	0.03

Values are displayed as means and standard deviation (SD).

Abbreviations: BMI, Body mass index; TBWC%, Total body weight change percentage; TORe, Transoral outlet reduction.

S1446 Outstanding Research Award in the Obesity Category (Trainee) Presidential Poster Award

Cost-Effectiveness Analysis of Endoscopic Sleeve Gastroplasty

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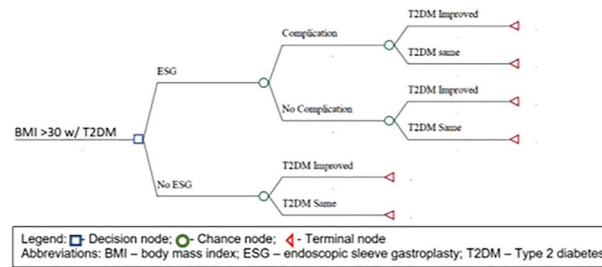
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Introduction: Obesity continues to increase at an alarming rate. Endoscopic sleeve gastroplasty (ESG), a minimally invasive endoscopic weight loss procedure, has been shown to produce effective weight loss and improvement in obesity-related disease; however, it is unclear whether ESG is cost-effective. This study was created to assess the cost-effectiveness of endoscopic sleeve gastroplasty for weight loss in patients with obesity with or without type 2 diabetes (T2DM).

Methods: A decision analytic model with time horizon of 5 years and lifetime, respectively, from a health system’s perspective was constructed to compare ESG to no weight loss intervention (no ESG) in obese patients aged 35-45 years with a body mass index (BMI) ≥30 kg/m² with or without T2DM. Parameters including probabilities and utility weights were obtained based on published meta-analyses and retrospective studies (Table). Costs were taken from institutional data and were evaluated in 2022 U.S. dollars (2022\$). Life expectancy with or without T2DM was obtained from a prospective cohort study. One-way and 2-way sensitivity analyses were performed to evaluate the impact of variations in the probability of T2DM resolution following ESG as well as variations of the cost of ESG.

Results: Quality-adjusted life-years (QALYs), cost (in 2022\$), and incremental cost-effectiveness ratios (ICERs) were calculated. For the 5-year time horizon in patients with T2DM, ESG produced 4.28 QALYs and incurred a total cost of \$77,874, compared to 3.99 QALYs and a total cost of \$73,738 for no ESG, resulting in an ICER of \$13,922 per QALY gained. For the lifetime horizon, ESG produced 29.57 QALYs and incurred a lifetime cost of \$451,261, compared to 26.69 QALYs and incurred a lifetime cost of \$493,806 for no ESG, resulting in a negative ICER (i.e., cost-saving). The 5-year time horizon in patients without T2DM demonstrated that ESG produced 4.42 QALYs, compared to 4.08 QALYs with no ESG, resulting in an ICER of \$39,116 per QALY gained. For the lifetime horizon ESG produced 34.21 QALYs, compared to 31.60 QALYs for no ESG, resulting in an ICER of \$4,752.

Conclusion: This cost-effectiveness analysis suggests that ESG is cost-effective in 5 years and cost-saving over a lifetime for patients with obesity and type 2 diabetes (Figure). ESG remains cost-effective at 5 years and over a lifetime in patients without T2DM.



[1446] Figure 1. Decision Analytic Model

Table 1. Parameters and data sources		
Parameters		Source
Endoscopic Sleeve Gastroplasty		
Cost of ESG (2022\$)	\$12,999	(Institutional data)
Cost of Complication of ESG (2022\$)	\$13,851.96	AHRQ (Avg hospital stay)
Rate of Complication of ESG	2.2%	Hedjoudje et al
Annual Medical Costs (2022\$)		
Obese with T2DM, age 40	\$14,767.52	Chang et al
Obese w/o T2DM age 40		Chang et al
Probability of T2DM improvement after ESG	0.19	Wing et al
Life expectancies		
Obese with no T2DM, age 40	38.7 years	Leung et al
Obese with T2DM, age 40	33.48 years	Leung et al, Chang et al
Utility weight		
Obese with T2DM	0.797	Boye et al
Obese w/o T2DM	0.817	Boye et al
Obese with T2DM, 15% weight loss	0.850	Boye et al
Obese w/o T2DM, 15% weight loss	0.884	Boye et al

S1447 Outstanding Research Award in the Obesity Category Presidential Poster Award

Monoclonal Antibodies (mAbs) to Glucose-Dependent Insulinotropic Polypeptide (GIP) Prevent and Treat Obesity in Wild-Type (wt) and Leptin-Deficient (ob/ob) Mice

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Introduction: GIP, a physiological incretin, is also insulin mimetic and thereby plays a critical role in promoting nutrient uptake and storage. We previously reported development of a GIP mAb that decreased weight gain in wt C57BL/6 mice fed a high-fat diet without any effect on food intake. The aim of this study was to investigate whether our GIP mAb will promote weight loss in wt mice, and (2) to determine the effects of this mAb in preventing weight gain in ob/ob mice, a model of extreme hyperphagia.

Methods: PBS or GIP mAbs (50 mg/kg BW/week) were injected *ip* to wt C57BL/6 mice fed a 60% high-fat diet HFD. At the end of 12 weeks, mice that received PBS were divided into 2 groups and were fed a 40% HFD for 5 weeks; one received PBS, and the other was administered GIP mAbs (50 mg/kg BW) *ip* per week. Both body weight and food consumption were measured weekly. In a separate study, PBS or GIP mAbs (60 mg/kg BW/week) were injected *ip* to ob/ob mice fed normal mouse chow for 8 weeks, and body weight and food consumption were measured weekly.

Results: As previously reported, wt mice treated with PBS gained significantly more than mice that were injected with GIP mAbs. No difference in food consumed was detected between the 2 groups. In addition, magnetic resonance demonstrated that GIP mAb-treated mice had significantly less subcutaneous ($P < 0.001$), omental ($P < 0.001$), and hepatic fat ($P < 0.03$) than control mice. In the second portion of the study, wt mice fed a 40% HFD and PBS continued to gain weight ($+2.1 \pm 0.9\%$), while mice administered GIP mAbs lost $4.1 \pm 1.4\%$ BW ($P < 0.01$). Leptin-deficient ob/ob mice in both groups fed regular mouse chow consumed similar amounts of food, and significant differences in weight were detected by week 4. At the end of 8 weeks, the group administered PBS and GIP mAbs gained $250.4 \pm 9.1\%$ and $192.4 \pm 7.3\%$, respectively, a reduction of 21.9% in the latter group ($P < 0.01$).

Conclusion: A specific GIP mAb effectively attenuates weight gain in mice fed a HFD while decreasing fat deposition. In addition, GIP mAbs can effectively produce consistent, linear weight loss in obese wt mice without any change in food consumption. Finally, GIP mAbs can prevent weight gain in hyperphagic mice without any effect on food consumption. The results of these studies support the hypothesis that a reduction in GIP signaling appears to affect body weight without suppressing food intake and might provide a useful method for the treatment and prevention of obesity.

S1448 Presidential Poster Award

Outcomes of Endoscopic Sleeve Gastroplasty in the Elder Population

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Introduction: With the ageing of the population and the epidemic spread of obesity, the frequency of older individuals with obesity is steadily growing. To date, no data evaluating the use of endoscopic sleeve gastroplasty (ESG) in the elderly have been published. In this case series, we evaluate the short and medium-term outcomes of ESG in patients with obesity aged 65 years and older.

Methods: A retrospective analysis was done on a prospective database; patients aged 65 years and older were included in our analysis. EWL%, TBWL%, the Bariatric Analysis and Reporting Outcome System (BAROS) questionnaire and the presence of comorbidities were assessed.

Results: Eighteen patients aged 65 years and older underwent ESG between November 2017 and July 2021. The median age was 67 years and the mean baseline BMI was 41.2 kg/m². After ESG the median TBWL% was 15.1%, 15.5%, and 15.5% at 6, 12 and 24 months, while the median %EWL was 39%, 37%, and 41% at 6, 12 and 24 months, respectively (Table). The median BAROS score was 3.0, 3.4 and 2.5 at 6, 12, and 24 months, respectively. 6/12 patients with hypertension and 3/4 diabetic patients reduced or removed their medications within 12 months following ESG. 2/6 patients with OSA stopped therapy with CPAP. No adverse events were recorded.

Conclusion: According to our experience, ESG is a promising therapeutic option for elder individuals with obesity who fail non-invasive methods, and who refuse or are deemed not suitable for bariatric surgery because of age and comorbidities.

Table 1. Retrospective analysis

Variable	1 month N*=18	3 months N=18	6 months N=18	12 months N=12	18 months N=10 ¹	24 months N =10 ¹	P-value #
EWL% Median (25%-75%)	21 (19-30)	36 (30-43)	39 (34-45)	37 (30-49)	44 (25-48)	41 (34-48)	0.034
TBWL% Median (25%-75%)	9.4 (7.4-11.8)	13.0 (11.6-15.3)	15.1 (10.9-18.8)	15.5 (10.5-19.6)	16.3 (9.3-22.1)	15.5 (9.6-21.6)	0.009
BAROS score Median (25%-75%)	2.6 (1.1-2.5)	2.6 (2.0-3.4)	3.0 (2.3-3.9)	3.4 (2.4-3.9)	3.0 (2.5-3.5)	2.5 (2.1-3.4)	0.2

*N = Number of patients
#Kruskal-Wallis rank sum test
BAROS, Bariatric Analysis and Reporting Outcome System; EWL, excess weight loss; TBWL, total body weight loss.

S1449

Prior Bariatric Surgery and Labor/Delivery and Pregnancy Complications

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Introduction: As rates of obesity rise, the incidence of bariatric surgery (BaS) has increased. Included amongst these patients are women with plans for pregnancy and labor and delivery (L&D). Bariatric surgery has been shown to improve menstrual irregularities and conception rates; but there is limited data on its effects on pregnancy and L&D outcomes.

Methods: A retrospective cohort analysis of the 2012 Nationwide Inpatient Sample (NIS) database. Inclusion criteria were ICD-9 codes for pregnancy and L&D. Exposure of interest was ICD-9 code for history of BaS. Primary outcomes were pregnancy and L&D complications in women with BaS compared to women without BaS with and without obesity. Secondary outcomes were length of stay (LOS) and hospitalization cost. Differences between cases and controls were compared with student t-test and chi-square tests; multivariable logistic regression was used to control for confounders.

Results: A total of 8,185 inpatient admissions of pregnant subjects with BaS were captured in the 2012 NIS with 212,945 admissions of pregnant women with obesity without BaS and 211,155 admissions of pregnant women without obesity or BaS. A total of 3,608,876 deliveries were captured in the United States in 2012 with 9,159 with history of BaS. Patients with prior BaS were older (33 vs 28 years, $P < 0.01$), had longer mean LOS (3.3 vs 2.6/2.8 days, $P < 0.01$), and higher cost (18,945 vs 15,071 USD, $P < 0.01$; 19,107 vs 14,971 USD, $P < 0.01$). Pregnancy complications like gestational diabetes, hypertension, pre-eclampsia were more common in the BaS cohort than the general cohort, but lower than the cohort with obesity. Alcohol and mental health disorders, hyperemesis, spontaneous abortions, and thromboembolism were more common in pregnant women with BaS compared with both other cohorts (Table A). The rate of cesarean and breech delivery, fetal distress, anesthesia complication, ectopic pregnancy, and infection was higher in women with BaS compared to those without (Table B). Bariatric surgery remained a significant predictor for cesarean delivery and longer LOS after controlling for age.

Conclusion: Pregnant women with history of bariatric surgery have increased risk of pregnancy and L&D complications and should be considered high-risk pregnancies and deliveries as the rate of potential complications is higher compared to those without prior bariatric surgery, including when compared to pregnant women with obesity.

Table 1. A. Common pregnancy complications in pregnant women with prior bariatric surgery compared with pregnant women without obesity and with pregnant women with obesity
Table 1b. Common labor and delivery complications in cases (pregnant women with prior bariatric surgery) and controls (pregnant women, no bariatric surgery, no obesity).

A. Diagnosis-Pregnancy	Post-Bariatric Surgery, % (95% CI)	Controls (no obesity), % (95% CI)	P ₁	Controls (with obesity), % (95% CI)	P ₂
Total charges per admission, USD	19,107	14,971	< 0.001	19,148	0.9
Mean age, years	33	28	< 0.001	28.5	< 0.001
Length of stay, days	3.33	2.8	< 0.001	3.27	0.4
Hypertension	8.4 (7.0, 9.7)	4.4 (4.2, 4.6)	< 0.001	12.4 (12, 12.7)	< 0.001
Diabetes	4.8 (3.7, 6.0)	1.4 (1.3,1.5)	< 0.001	5.5 (5.3, 5.7)	0.2
Gestational diabetes	9.3 (7.9, 11)	6.3 (6.0,6.5)	< 0.001	16.4 (16, 16.8)	< 0.001
Mental antepartum	3.2 (2.3, 4.0)	1.1 (0.9, 1.2)	< 0.001	1.0 (0.9, 1.1)	< 0.001
Mental health disorders	15.4 (14,17)	10 (10,11)	< 0.001	9.6 (9.3,9.9)	< 0.001
Alcohol dependence	3.2 (2.3, 4.0)	1.4 (1.3, 1.5)	< 0.001	1.1 (1.0, 1.2)	< 0.001
Liver disease in pregnancy	0.6 (0.2, 1.0)	6.4 (5.6, 7.1)	0.9	0.5 (0.5, 0.6)	0.7
Spontaneous or missed abortions	1.0 (0.5, 1.5)	0.6 (0.5, 0.6)	0.04	0.4 (0.3, 0.5)	< 0.001
Thromboembolic complications	1.2 (0.7, 1.8)	0.6 (0.5, 0.7)	< 0.001	0.7 (0.7, 0.8)	0.03
Hyperemesis	2.6 (1.8, 3.3)	0.7(0.6, 0.8)	< 0.001	0.8 (0.7, 0.9)	< 0.001
Severe pre-eclampsia	1.8 (1.1,2,5)	1.9 (1.8,2.1)	0.08	3.3 (3.2, 3.5)	0.001
Pre-eclampsia	8.4 (7.0, 9.7)	4.4 (4.1, 4.6)	< 0.001	12.4 (12, 13)	< 0.001
Nutritional deficiencies	41(38, 43)	30 (29, 30)	< 0.001	39 (38, 40)	0.2
B. Diagnosis- L&D	Post-Bariatric Surgery,% (95% CI)	Controls (no obesity),% (95% CI)	P		
Total charges per admission, USD	18,945	15,071	< 0.001		
Mean age, years	33	28	< 0.001		
Length of stay, days	3.3	2.6	< 0.001		
C-section	46 (44,49)	32 (31,32)	< 0.001		
Breech delivery	1.5 (1.0,2.1)	1.0 (0.9,1.0)	0.001		
Assisted vaginal delivery (forceps, others)	51 (49, 53)	65 (65.1, 65.4)	< 0.001		
Anesthesia complications	0.7 (0.3, 1.0)	0.3 (0.3, 0.3)	0.02		
Placenta previa	2.7 (1.9,3.4)	1.9 (1.8,1.9)	0.01		
Fetal distress	47.4 (45,50)	26 (25.8,26)	< 0.001		
Puerperium, infections	1.9 (1.3,2.5)	0.8 (0.8,0.9)	< 0.001		

Table 1. (continued)

A. Diagnosis-Pregnancy	Post-Bariatric Surgery, % (95% CI)	Controls (no obesity), % (95% CI)	P ₁	Controls (with obesity), % (95% CI)	P ₂
Ectopic pregnancies	0.5 (0.2,0.8)	0.1 (0.1, 0.1)	< 0.001		
Bleeding after delivery	2.3 (1.6, 3)	3.0 (2.9, 3.0)	0.12		
Spontaneous or missed abortions	0.65 (0.3, 1.0)	0.12 (0.1, 0.9)	< 0.001		
Thromboembolic complications, puerperium	0.9 (0.4, 1.3)	0.56 (0.54, 0.58)	0.07		
Retained placenta	0.4 (0.1, 0.7)	0.5 (0.5, 0.5)	0.8		
Disproportion, fetal	1.4 (0.8,1.8)	1.7 (1.6,1.7)	0.3		
Early membrane rupture	8.6 (7.3, 9.9)	8.7 (8.7,8.8)	0.8		

95 %CI, 95% confidence interval. Significant comparisons in bold. P1 value refers to the comparison between the post-bariatric cohort and the general cohort without obesity, and P 2 for comparison between the post-bariatric cohort and the cohort with obesity. B. Common labor and delivery complications in cases (pregnant women with prior bariatric surgery) and controls (pregnant women, no bariatric surgery, no obesity). Table B footnote: 95%CI, 95% confidence interval. Significant comparisons in bold. P value reported for the comparison between the post-bariatric cohort and the cohort without obesity.

S1450

Global Adoption and Practice Patterns in Placing Intra-gastric Balloons

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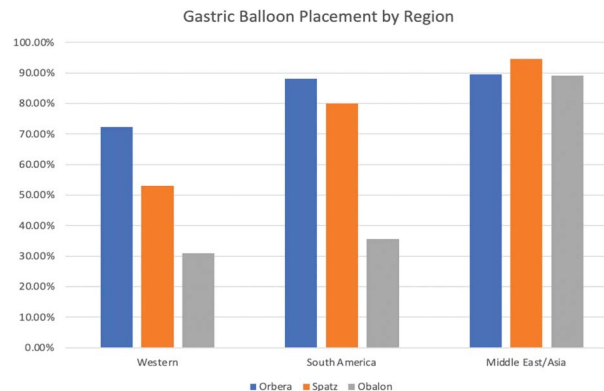
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Introduction: Intra-gastric balloons (IGB) have been used for over 30 years to treat obesity and have been approved in the US since 2015. Our objective was to globally survey IGB placement and management patterns.

Methods: A survey evaluating bariatric endoscopy (BE) practice patterns was distributed online via a digital platform to practitioners, participants in virtual international seminars in BE and in-person at the annual Association for Bariatric Endoscopy and Flexible Endoscopic Surgery meetings. The survey consisted of 3 parts. 1- physician demographics (practicing specialty, type and location of practice), 2- types of bariatric procedures offered 3- practice patterns for IGB placement/removal. The main comparisons were among geographic areas (Western, Middle East and Asia, South America), private vs academic, and surgical vs gastroenterology practice, using Pearson chi-square test, with $P < 0.05$ considered significant.

Results: In total, 110 participants responded to the survey. 79 (73.8%) were gastroenterologists, 25 (23.3%) were surgeons, and 3 (2.6%) participants were obesity medicine specialists. 62.8% were practicing in academic centers and performing procedures in ambulatory surgical center (ASC) settings (50%) (Table). Orbera (Apollo Endosurgery; Austin, TX, USA) was the most common IGB placed in South America and Western countries, while Spatz (Spatz FGIA; Great Neck, NY, USA) was more commonly placed in the Middle East/Asia (Figure). Gastroenterologists were more likely to place and remove IGB under monitored anesthesia care while surgeons were more likely to use general anesthesia with endotracheal intubation (52% vs 25% and 17.9% vs 1%, $P = 0.0013$; respectively). Private practitioners were more likely to use conscious sedation and start a liquid diet sooner (1 week) compared to those in academic centers, 60% vs 40%, $P = 0.03$ & 56% vs 40% $P = 0.0041$, respectively. Providers in the South America and Western countries were more likely to use ET for placement/removal compared to those in the Middle East/Asia.

Conclusion: Based on this global survey, most IGB procedures are performed by gastroenterologists practicing in academic centers. Variation exists in the type of anesthesia and timing of diet initiation following IGB placement, with no significant difference in adverse events. Larger survey/registries and data are needed to inform best practice recommendations.



[1450] Figure 1. Gastric Balloon Placements by Region

Table 1. Provider Demographics

Variable	N (%)
Specialty	
Gastroenterology	79 (73.8%)
Surgery	25 (23.3%)
Obesity Medicine	3 (2.6%)
Practice	
Private practice	42 (37.2%)
Academic*	71 (62.8%)
Region	
Western**	30 (27.2%)

Table 1. (continued)

Variable	N (%)
Middle East & Asia	39 (35.4%)
South America	41 (37.2%)
Location	
ASC	33 (50%)
Hospital	21 (31.8%)
N/A	12 (18.2%)
Multidisciplinary team	94 (87%)
Endoscopist	69 (19.2%)
Surgeon	66 (18.4%)
Registered Dietitian	83 (23.1%)
Psychologist	62 (17.3%)
Endocrinologist	31 (8.6%)
Social Worker	17 (4.7%)
Virtual	8 (2.2%)
Other	22 (6.1%)
Team Size – Median [IQR]	4 [1,5]

ASC: Ambulatory surgery center; N/A not applicable.
 *Including Veteran Affairs.
 **North America, Europe, Australia.

S1451

Global Adoption of Bariatric Endoscopic Procedures and Practice Patterns in Performing Endoscopic Sleeve Gastroplasty

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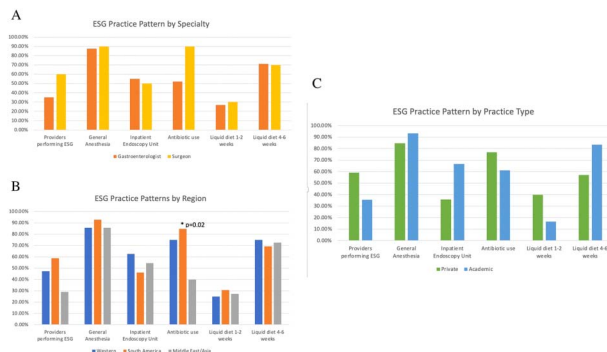
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Introduction: Bariatric endoscopic (BE) procedures are an important bridge to address the unmet need of curbing the obesity epidemic. Endoscopic sleeve gastroplasty (ESG) has gained popularity over the past few years as studies have shown promising results. However, there are no practice guidelines or consensus on its implementation in practice. We aimed to perform a survey to inquire about ESG practice patterns across the globe.

Methods: A survey evaluating ESG practice patterns was distributed online via a digital platform to BE practitioners, participants in virtual international seminars in BE and in-person to participants of the annual Association for Bariatric Endoscopy and Flexible Endoscopic Surgery meetings. The survey consisted of 3 parts. 1- physician demographics (practicing specialty, type and location of practice), 2- types of bariatric procedures offered 3- practice patterns of each procedure offered. The main comparisons were among geographic areas (Western, Middle East and Asia, South America), private vs academic, and surgical vs gastroenterology practice, using Pearson chi-square test, with $P < 0.05$ considered significant.

Results: In total, 110 participants responded to our survey: 37% from South America, 35.4% from the Middle East and Asia, and 30% from the US and Europe (Western). From the total cohort, 79 (73.8%) were gastroenterologists, 25 (23.3%) were surgeons, and 3 (2.6%) participants were obesity medicine specialists. The majority were practicing in academic centers (62.8%) and performing procedures in ambulatory surgical center (ASC) settings (50%) with a median multidisciplinary team size of 4 providers (Table). The use of perioperative antibiotics was significantly higher in those practicing in South America when compared to those in the Middle East/Asia (84.6% vs 40%; 0.022). There was a trend for a shorter duration of post-operative liquid diet in private compared to academic practices ($P=0.05$). Otherwise, there was no difference in number of ESG procedures performed, type of sedation, setting (ASC vs hospital), and adverse events among the different groups (Figure).

Conclusion: Across the globe, most ESG procedures are currently performed by gastroenterologists in academic centers. Practice patterns of ESG are consistent across the globe in regard to use of general anesthesia, peri-procedural antibiotics and post-operative liquid diet, with some variations across regions and practices. Larger studies are needed to inform best practice recommendations.



[1451] Figure 1. Practice Patterns for Endoscopic Sleeve Gastroplasty among (A) different specialties, (B) regions, and (C) practice types.

Table 1. Provider Demographics

Variable	N (%)
Specialty	
Gastroenterology	79 (73.8%)
Surgery	25 (23.3%)

Table 1. (continued)

Variable	N (%)
Obesity Medicine	3 (2.6%)
Practice	
Private practice	42 (37.2%)
Academic*	71 (62.8%)
Region	
Western**	30 (27.2%)
Middle East & Asia	39 (35.4%)
South America	41 (37.2%)
Location	
ASC	33 (50%)
Hospital	21 (31.8%)
N/A	12 (18.2%)
Multidisciplinary team	94 (87%)
Endoscopist	69 (19.2%)
Surgeon	66 (18.4%)
Registered Dietitian	83 (23.1%)
Psychologist	62 (17.3%)
Endocrinologist	31 (8.6%)
Social Worker	17 (4.7%)
Virtual	8 (2.2%)
Other	22 (6.1%)
Team Size – Median [IQR]	4 [1,5]

Abbreviations: ASC: Ambulatory surgery center; N/A not applicable.
 *Including Veteran Affairs.
 **North America, Europe, Australia.

S1452

Metabolic Syndrome Is Not Associated With Mesenteric Ischemia

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Introduction: Metabolic syndrome (MetS) is an increasingly prevalent pathological condition with multiple components such as insulin resistance, hyperlipidemia and increased abdominal adiposity. MetS has previously been associated with increased risk of coronary artery disease (CAD), myocardial infarction (MI), stroke and diabetes. It has been well established with many atherosclerotic processes, however its impact on the development of mesenteric ischemia has not been studied. The purpose of this study is to evaluate if an association between mesenteric ischemia and MetS exists.

Methods: We queried a commercial database (Explorys Inc, Cleveland, OH) with electronic medical record data from 26 major U.S. healthcare systems. Adult patients (>=18 years old) with and without MetS between 1999 and 2021 were identified based on systematized nomenclature of medicine-Clinical Terms (SNOMED-CT). Differences in baseline characteristics and demographics were analyzed using chi-squared tests. Odds ratio analyses were performed between MetS and non-MetS patients for the presence of acute mesenteric ischemia (AMI), chronic mesenteric ischemia (CMI), coronary artery disease (CAD), peripheral vascular disease (PVD), myocardial infarction (MI), cerebrovascular accident (CVA). We defined P-values less than 0.05 to be statistically significant.

Results: A total of 102,360 individuals were found to with and without MetS in the database. Of those patients, 1360 (1.3%) had MetS. MetS patients were more likely to be under the age of 65 (35.3% vs 20.9%, $P < 0.0001$), more likely to be female (66.9% vs 63.6%, $P = 0.0399$), identified more commonly as White (84.6% vs 80.8%, $P < 0.0001$) and were more likely to be smokers (86.8% vs 71.5%, $P < 0.0001$). MetS patients were more likely to have CAD (OR: 1.65, $P < 0.0001$), PVD (OR: 1.99, $P < 0.0001$), MI (OR: 1.42, $P < 0.0001$) and CVA (OR: 1.44, $P < 0.0001$) (Table). There was no difference in acute or chronic mesenteric ischemia.

Conclusion: This study found no association between MetS and mesenteric ischemia but did have similar findings relating to other established cardiovascular conditions in other studies. This suggests that another atherosclerotic mechanism exists which contributes to mesenteric ischemia, particularly chronic mesenteric ischemia.

Table 1. Comparison of Outcomes Between Metabolic Syndrome (MetS) and Non-Metabolic Syndrome (non-MetS) Patients

Event	MetS (N=1,360)	MetS (%)	No MetS (N=101,000)	Non-MetS (%)	P-Value	Odds Ratio	CI (95%)
Acute mesenteric ischemia	540	39.7%	38,110	37.7%	0.1361	1.0867	0.9741, 1.2123
chronic mesenteric ischemia	300	22.1%	22,540	22.3%	0.8204	0.9852	0.8659, 1.1208
Coronary artery disease	710	52.2%	40,170	39.8%	< 0.0001	1.6541	1.4860, 1.8412
Peripheral arterial/vascular disease	960	70.6%	55,140	54.6%	< 0.0001	1.9961	1.7752, 2.2445
Myocardial infarction	390	28.7%	22,220	22.0%	< 0.0001	1.4255	1.2662, 1.6048
Stroke	490	36.0%	28,380	28.1%	< 0.0001	1.4412	1.2891, 1.6113
Characteristics							
Female	910	66.9%	64,270	63.6%	0.0399		
Male	450	33.1%	36,720	36.4%	0.1481		
>65	880	64.7%	70,450	69.8%	0.0011		
18-65	480	35.3%	21,150	20.9%	< 0.0001		
White	1,150	84.6%	81,580	80.8%	0.0011		
AA	150	11.0%	10,580	10.5%	0.8428		
Asian	20	1.5%	1,340	1.3%	0.9376		

Table 1. (continued)

Event	MetS (N=1,360)	MetS (%)	No MetS (N=101,000)	Non-MetS (%)	P-Value	Odds Ratio	CI (95%)
Multirace	20	1.5%	910	0.9%	0.7803		
Unknown	210	15.4%	13,210	13.1%	0.3276		
Other	50	3.7%	2,450	2.4%	0.5543		
Refused	30	2.2%	1,590	1.6%	0.796		
Hispanic/Latino	N/A	N/A	610	0.6%	N/A		
asian/pacific islander	N/A	N/A	180	0.2%	N/A		
native america/alaskan native	N/A	N/A	120	0.1%	N/A		
Cardiomyopathy	220	16.2%	10,430	10.3%	0.0046		
CHF	470	34.6%	27,770	27.5%	0.0006		
COPD	530	39.0%	31,960	31.6%	0.0003		
HTN	1,250	91.9%	76,780	76.0%	< 0.0001		
HLD	1,230	90.4%	65,310	64.7%	< 0.0001		
DM	910	66.9%	34,430	34.1%	< 0.0001		
CKD	600	44.1%	29,730	29.4%	< 0.0001		
ESRD	160	11.8%	7140	7.1%	0.023		
Presence of cirrhosis	140	10.3%	5,100	5.0%	0.0051		
Alcohol abuse	80	5.9%	5,860	5.8%	0.9697		
tobacco abuse/smoking	1,180	86.8%	72,240	71.5%	< 0.0001		
Obesity	920	67.6%	23,330	23.1%	< 0.0001		

S1453

Weight Loss in Bariatric Surgery Patients Treated at a Novel Clinic Incorporating Obesity Medicine for Treatment of Nonalcoholic Fatty Liver Disease

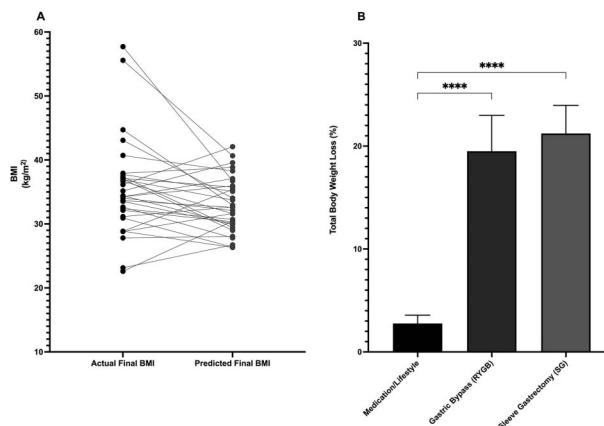
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Introduction: The Yale Fatty Liver Disease Program (YFLDP) is a patient care model incorporating weight management with standard hepatology care for targeted treatment of nonalcoholic fatty liver disease (NAFLD). Weight management is the mainstay treatment for NAFLD, with 10% total body weight loss (TBWL) leading to disease improvement. Bariatric surgery is an effective treatment for obesity and associated metabolic diseases, though only an estimated 1% of eligible patients receive referral nationwide. We studied YFLDP patient referral rates to bariatric surgery, clinical and surgical characteristics, and weight loss outcomes.

Methods: We retrospectively extracted demographic, surgical, and weight loss outcome data of adult YFLDP patients from 10/2015 to 5/2022. Standard eligibility criteria included body mass index (BMI) >40 kg/m² or >35 kg/m² with an obesity-associated comorbidity. Actual 1-year weight loss outcomes were compared to predicted weight-loss outcomes calculated using the MBSAQIP Bariatric Surgical Risk/Benefit Calculator and assessed with a 2-tailed t-test.

Results: There were 1,166 patients, of whom 596 (51.1%) were eligible for bariatric surgery (Table). Of these, 150 (25.3%) received referral, 32 patients (21.3%) underwent surgery (22 received sleeve gastrectomy (SG) and 10 had a Roux-en-Y gastric bypass [RYGB]). Patients who received surgery were more likely female and upper class compared to those who continued with lifestyle/medication management. Patients receiving SG and RYGB had mean TBWL 21.5% and 20.0%, respectively, while patients who continued medication/lifestyle management had TBWL of 3%. There was no significant difference comparing actual vs predicted final BMI ($P=0.12$), actual vs predicted weight loss ($P=0.13$), and actual vs predicted TBWL ($P=0.13$) post-bariatric surgery for all procedures (Figure).

Conclusion: Integration of weight management with hepatology medical care is an effective model for NAFLD weight loss treatment. Patients receive referral for bariatric surgical evaluation at a rate 25 times greater than the national average, and those that receive surgery have comparable weight loss to that predicted in all patients receiving these surgeries, and on average exceeded the treatment threshold expected to treat NAFLD. Further study to identify patients who would most benefit from bariatric surgery would help to inform better patient selection and proactive referral efforts.



[1453] **Figure 1.** Predicted vs actual bariatric surgical outcomes in patients referred for surgery. (A) Actual vs Predicted Final Body Mass Index (BMI) post Bariatric Surgery: Comparison between YFLDP (Yale Fatty Liver Disease Program) patients' actual BMI post bariatric surgery vs predicted BMI post bariatric surgery using the MBSAQIP Bariatric Surgical Risk/Benefit Calculator. There was no statistically significant difference between actual and predicted BMI ($P=0.12$). (B) Total Body Weight Loss (TBWL) in Patients given Bariatric Surgery Referral: Comparison between YFLDP patients' total body weight % reduction in patients given a bariatric surgery referral who either underwent a gastric bypass or sleeve gastrectomy or did not have surgery and continued with lifestyle/medication management. Patients who underwent surgery had a statistically significant percent reduction in TBWL compared to patients managed with only lifestyle/medications. Error bars represent standard error. *** $P < 0.001$

Table 1. Demographic and surgical characteristics of Yale Fatty Liver Disease Program patients who were referred for bariatric surgery

Patient Characteristics		Referred, Underwent Bariatric Surgery (+) (n=32)	Referred, Did Not Undergo Bariatric Surgery (-) (n=118)	P
Sex n (%)	Male	6 (19)	35 (30)	0.22
	Female	26 (81)	83 (70)	
Age years (SD)		49 (10.3)	51 (12.98)	0.60
Medicare Qualifying n (%)		2 (6)	19 (12.98)	0.15
Race n (%)	White	22 (69)	86 (73)	0.29
	Black	4 (13)	15 (13)	
	Asian	1 (3)	0 (0)	
	Other/Declined	5 (15)	17 (14)	
Ethnicity n (%)	Hispanic	6 (19)	27 (23)	0.62
	Non-Hispanic	26 (81)	91 (77)	
Insurance Status n (%)	Uninsured	0 (0)	0 (0)	0.045
	Medicaid	14 (44)	31 (26)	
	Medicare	2 (6)	27 (23)	
	Private	16 (50)	60 (51)	
Median House Income by Zip Code n (%)	< \$50k	7 (22)	29 (25)	0.48
	\$50k-100k	19 (59)	75 (63)	
	>\$100k	6 (19)	14 (12)	
Anti-Obesity Medications n (%)	Lifetime	16 (47)	38 (32)	0.78
	Since YFLDP	10 (31)	29 (25)	
BMI Reduction mean (SD)	RYGB (n=10)	8.3 (5.4)	Predicted 1.3 (3.9)	< 0.001
	SG (n=22)	9.4 (6.1)		< 0.001
TBWL % (SE)	RYGB (n=10)	20.5 (3.5)	Predicted 3 (0.8)	< 0.001
	SG (n=22)	21 (2.73)		< 0.001

(+) Surgery denotes patients who underwent bariatric surgery after referral. (-) Surgery denotes patients who did not undergo bariatric surgery after referral. Patients who underwent bariatric surgery had statistically significant greater reduction in mean BMI compared to patients who did not have surgery. SD is standard deviation, SE is standard error, BMI is body mass index (kg/m²), RYGB is Roux-en-Y gastric bypass, SG is sleeve gastrectomy, TBWL is total body weight loss.

S1454

Association of Body Mass Index in Patients After Bariatric Surgery With the Onset of Pancreatic Cancer: A Nationwide Inpatient Sample Database Analysis

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Introduction: Obesity (Body Mass Index [BMI] ≥ 30) has been associated with a 3.5-fold increased risk of cancer. Higher BMI has led to increased cancer-related mortality and chemotherapy resistance. Prior studies have demonstrated a protective effect of weight loss in certain cancers such as endometrial, breast, and pancreatic. However, the literature behind weight loss and the protective effect on pancreatic cancer remains controversial. In this study, we evaluate the relationship between different BMI ranges in patients who underwent bariatric surgery and the onset of pancreatic cancer.

Methods: The National Inpatient Sample (NIS) database was used to identify hospitalized patients over 18 years old who had bariatric surgery between 2012 to 2017 using ICD9 and ICD10 codes. Patients were divided into a cancer and non-cancer group. Those with pancreatic cancer were identified and were matched by age, race, and gender. Primary outcomes were associations between BMI ranges in patients who underwent bariatric surgery and pancreatic cancer. Multivariate analyses were performed to assess outcomes.

Results: From 2012 to 2017, there was a total of 1,695,860 patients who had bariatric surgery. Of these patients, 4,225 patients had pancreatic cancer. The mean age was 60 years old, 27.3% were male, and 79.2% were White. The results were significant ($P < 0.001$) for decreased risk of cancer in patients who underwent bariatric surgery and had BMI 40-49.9 (OR 0.46) and BMI ≥ 50 (OR 0.31) (Table).

Conclusion: Weight loss through bariatric surgery has been shown to reduce the risks of various cancers. This is likely due to the reduction in adipose tissue regulated chemokine signaling involved in oncogenesis. Our data suggests that patients with higher stages of obesity (BMI ≥ 40) who underwent bariatric surgery would benefit the most by risk reduction from pancreatic cancer. These findings could be a platform for future prospective studies to investigate risk reduction strategies in pancreatic cancer, which still is the 3rd leading cause of cancer-related deaths.

Table 1. Association between Body Mass Index in Patients with Bariatric Surgery and the Onset of Pancreatic Cancer

	Odds Ratio (95% CI)	P-Value
BMI 30-34.9	0.96 (0.80-1.15)	0.645
BMI 35-39.9	1.02 (0.85-1.23)	0.814
BMI 40-49.9	0.46 (0.39-0.55)	< 0.001
BMI ≥ 50	0.31 (0.23-0.44)	< 0.001

CI = Confidence Interval

S1455

Real World Weight Loss Outcomes of Semaglutide in Patients With Overweight and Obesity After Bariatric Surgery

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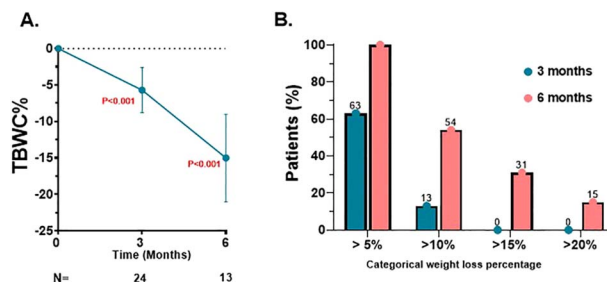
Introduction: Bariatric surgeries have shown to be the most effective weight loss intervention. However, some patients may experience weight recurrence which requires further management. Recent randomized trials demonstrated the effectiveness of semaglutide, a GLP-1 agonist, in achieving weight loss. Little is known about real-world outcomes of semaglutide use in patients with overweight and obesity who underwent bariatric surgeries.

Methods: We performed a retrospective data collection on the use of semaglutide in adults who underwent bariatric surgery (i.e., Roux-en-Y gastric bypass [RYGB] or sleeve gastrectomy [SG]). We included patients with a body mass index ≥ 27 kg/m² who used any dose of weekly semaglutide subcutaneous injections for ≥ 3 months after their surgery. We excluded patients taking other anti-obesity medications or with an active malignancy. The primary end point was the total body weight loss percentage (TBWL%), and secondary end points were TBWL% of each of RYGB and SG and the proportion of patients achieving $\geq 5\%$ and $\geq 10\%$ TBWL at 3 and 6 months of taking semaglutide. Continuous end points were analyzed using matched paired t test. Data are presented as mean \pm standard deviation.

Results: A total of 24 patients who underwent bariatric surgery were included in the analysis (96% female, mean age 48.9 \pm 9.5 years, body-mass index 44.3 \pm 15.4 kg/m²). The median number of years between the bariatric surgery and semaglutide initiation was 8 years. There was a statistical difference in weight loss of 6.3 kg equivalent to a TBWL% of 5.7% (n = 24; $P < 0.001$) at 3 months and a weight loss of 15.0 kg equivalent to 13.0% (n = 13; $P < 0.001$) at 6 months. Patients with RYGB had a TBWL% of 5.5% (n = 16) and 13.7% (n = 8) while those with SG had 6.1% (n = 8) and 11.9% (n = 5) at 3 ($P = 0.69$) and 6 months

($P=0.58$), respectively. In our cohort, 15/24 patients (63%) achieved $\geq 5\%$ TBWL while 3/24 (13%) achieved $\geq 10\%$ TBWL in 3 months. In addition, 13/13 patients (100%) achieved $\geq 5\%$ TBWL while 7/13 (54%) achieved $\geq 10\%$ TBWL in 6 months (Table, Figure). In our cohort, 10/24 (42%) patients reported experiencing side effects with nausea/vomiting (25%) being the most common.

Conclusion: This study demonstrates significant weight loss outcomes of semaglutide in patients after undergoing bariatric surgery. More studies with larger sample size are needed to further evaluate the effectiveness of this medication to counteract the weight recurrence after bariatric surgeries.



[1455] **Figure 1.** Total body weight change percentage (TBWC%) (A), and categorical TBWL% at 3 and 6 months (B).

Table 1. Demographic and clinical information

Demographic Information	All Patients
N	24
Age, years (SD)	48.9 (10)
Sex, Female (%)	23 (96)
Race, White (%)	18 (75)
Bariatric Surgery	
Roux-en-Y gastric bypass, n (%)	16 (67)
Sleeve gastrectomy, n (%)	8 (33)
Baseline Clinical and Laboratory Information	
Weight, kg (SD)	118.6 (42.5)
BMI, Kg/m ² (SD)	44.3 (15.4)
Overweight, n (%)	1 (4)
Obesity Class 1, n (%)	7 (29)
Obesity Class 2, n (%)	4 (17)
Obesity Class 3, n (%)	12 (50)
SBP, mmHg (SD)	127.7 (21)
DBP, mmHg (SD)	96.7 (22)
Glucose, mg/dL (SD)	112 (38)
HbA1c, % (SD)	5.4 (0.5)
Total Cholesterol, mg/dL (SD)	171.8 (24.7)
Total Triglycerides, mg/dL (SD)	81.8 (31.6)
LDL, mg/dl (SD)	91.5 (24.5)
HDL, mg/dl (SD)	63.7 (12.8)
Obesity Comorbidities	
Dyslipidemia, n (%)	6 (25)
Diabetes mellitus, n (%)	2 (8.3)
Hypertension, n (%)	7 (29.2)
GERD, n (%)	9 (37.5)
Obstructive sleep apnea, n (%)	7 (29.2)
NAFLD, n (%)	2 (8.3)
Visits Information	
Patients with dietitian visits, n (%)	8 (33.3)
Patients with psychologist visit, n (%)	2 (8.3)
Patients with 3 months follow-up, n (%)	24 (100)
Patients with 6 months follow-up, n (%)	13 (54)

Abbreviations: BMI, body mass index; DBP, diastolic blood pressure; GERD, gastroesophageal reflux disease; HbA1c, Hemoglobin A1C; HDL, High-density lipoprotein; LDL, Low-density lipoprotein; NAFLD, Nonalcoholic fatty liver disease; SBP, Systolic blood pressure.
Data are presented as mean and standard deviation for continuous variables, and as frequency and percentage for categorical variables.

S1456

Efficacy of Endoscopic Sleeve Gastroplasty in Treatment of Metabolic Syndrome: A Systematic Review and Meta-Analysis

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Introduction: Endoscopic sleeve gastroplasty (ESG) is a novel technique developed as a minimally invasive alternative to laparoscopic sleeve gastrectomy. A minimum of 10% total body weight loss (%TBWL) is required to reverse the metabolic syndrome. Our aim from this meta-analysis is to evaluate if ESG can consistently achieve the minimum %TBWL required to reverse the metabolic syndrome.

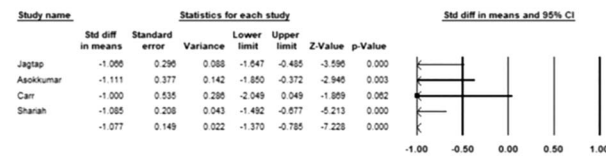
Methods: This systematic review and meta-analysis followed PRISMA guidelines and included studies from PubMed up until May 2022. We included peer reviewed studies that contained at least 10 adult patients and tracked (%TBWL) after at least 1-month post-procedure and included no other weight loss intervention besides ESG. We looked at improvement in surrogate markers of metabolic syndrome (Ex: Non Alcoholic Steato-Hepatitis (NASH), Diabetes, Dyslipidemia).

Results: Our search resulted in 33 studies that fit inclusion criteria, including 4087 patients in total. Average BMI before intervention was 37.5 kg/m². After pooling weight loss data, we found that percent total weight loss (%TBWL) at 1, 3, 6, 12, 18, and 24 months was 8.9%, 12.9%, 15.6%, 18.0%, 16.4%, and 17.1% respectively. Age, gender, starting BMI, and number of sutures did not correlate with %TBWL at one year. A subgroup analysis of these studies showed an improvement in NASH (decrease of ALT by 19.3 IU/L, CI: 13.3 to 25.8); diabetes (decrease in HBA1C of 1.2 mmol/mol, CI: 0.83 to 1.5); and dyslipidemia (decrease in triglycerides of 0.6 mmol/L, CI: 0.2 to 1.0). No mortality was reported and severe adverse events were rare (1.8%, CI 1.4% to 2.2%) and associated with older age, but not starting BMI ($P=.015$; .26) (Figure).

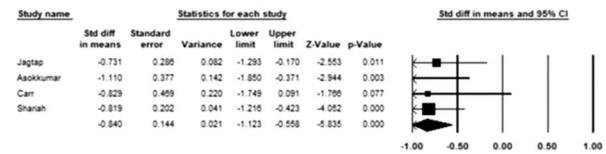
Conclusion: ESG results in sustained weight loss for up to 2 years with low complication rates. This was associated with reversal of metabolic syndrome. Further studies should examine long term weight loss results.

Forest Plots- Change in HA1c, ALT, and Triglycerides at 1-year post-ESG

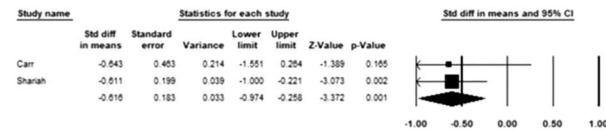
HA1C



ALT



Triglycerides



[1456] Figure 1. Forest Plots for Markers of Metabolic Syndrome

ACCEPTED: OBESITY

S1457

Endoscopic Vacuum Therapy for Treatment of Bariatric Surgery Complications: A Systematic Review and Meta-Analysis

Matthew M. Agnew, MD¹, David Farrow, MD², Bryanna Jay, MD².

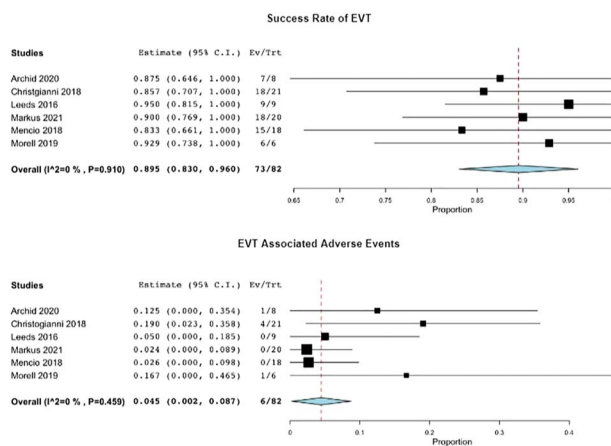
¹Wake Forest Baptist Health, Winston-Salem, NC; ²University of Toledo, Toledo, OH.

Introduction: Sleeve gastrectomy (SG) and Roux-en-Y gastric bypass (RYGB) are 2 common bariatric surgeries for treatment of obesity. Although the complication rate for post-bariatric surgery gastric leaks are low, given how frequently these surgeries are being performed, having safe and effective therapies available for complications is crucial for patient outcomes. Revisional surgeries can significantly increase the risk of mortality in these patients so avoiding them is ideal but if revisional surgery does occur, having post-op management options would be valuable. Endoscopic vacuum therapy (EVT) has emerged in recent years as a potential option for management of luminal wounds. EVT is based upon endoscopically applying sponges to the area of a leak and negative pressure is applied to draw off fluid and promote granulation tissue formation along with healing. In this study we aim to review and analyze all currently available data on applying EVT to post-bariatric surgery leaks specifically focusing on success rate, complication rate, mean duration of therapy, and number of sponge changes to see if it's a therapy warranting further research.

Methods: Pubmed, Embase, and Cochrane were searched from inception to through May 2022 for studies reporting success and complication rates for EVT used for bariatric surgery associated gastric leaks whether it was for initial therapy or after revisional therapy for SG and RYGB surgeries. We included both retrospective and prospective studies in our analysis. Using I2 we assessed heterogeneity and calculated 95% confidence intervals using fixed or random effect models.

Results: Six studies, totaling 81 patients, were included in the analysis. The total clinical success rate was 89.5% (CI: 83-96%. $P < 0.001$). The adverse event rate among all studies was 4.5% (95% CI: 0.2-8.7%. $P = 0.041$). There were 6 adverse events related to EVT noted in this review. The one mortality event that occurred in this review was presumed to be secondary to deconditioning during the recovery period and not EVT itself and thus wasn't counted in adverse outcomes. EVT associated complications were related to bleeding and abscess formation.

Conclusion: Based upon our currently available data, EVT appears to be a viable and safe option for the treatment of post-bariatric surgery (specifically SG and RYGB) gastric leaks. Larger prospective studies appear reasonable and would allow for a more powerful meta-analysis to further evaluate EVT as a potential therapy.



[1457] Figure 1. Success and adverse event rates for endoscopic vacuum therapy

S1458

A Novel Suturing Device for Endoscopic Gastroplasty in Routine Clinical Practice: Prospective Registry Trial

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Introduction: Endoscopic gastroplasty is safe and effective in patients with class I and II obesity (Body Mass Index 30-40 Kg/m²). The total number of bariatric endoscopic procedures is constantly increasing in routine clinical practice. In fact this technique, associated with diet and lifestyle modifications is safe, mini-invasive and is characterized by a lower rate of complications compared to bariatric surgery. In the past years several endoscopic techniques have been used for the gastric endoscopic tubulization. We present our results from a prospective clinical trial evaluating the role of the Endomina system (E-ESG, Endo Tools therapeutics, Belgium). The aim was to evaluate the mean total body weight loss (TBWL) and the mean excess weight loss (EWL) at 6 and 12 months.

Methods: From July 2020 to May 2021 we enrolled in our Center 23 patients (19 female, 4 male) with class I and class II obesity (Body Mass Index 30-40 Kg/m²). The mean age was 45.9 years. Endoscopic gastroplasty was performed under general anesthesia using CO₂ insufflation. No procedure complications or device-related severe adverse events were observed and patients were discharged 24 hours following the procedure. All patients were followed by our multidisciplinary team (gastroenterologist, nutritionist, endocrinologist, psychologist) for a total of 12 months after the endoscopic gastroplasty (1,3,6,9,12 months visit).

Results: At 6 months mean EWL was 62,56 % and mean TBWL was 16,89 % with a higher mean quality of life (QoL) compared to that before the procedure. The 12 months follow-up after the endoscopic gastroplasty is still ongoing; from the 23 patients initially enrolled 12 completed the follow-up with good results. In fact at 12 months the mean EWL was 58,76 % and the mean TBWL was 16,25%.

Conclusion: In our clinical experience, endoscopic vertical gastroplasty in combination with diet and lifestyle modifications is a safe and effective option for patients with class I and II obesity. Further data on a larger sample of patients is needed.

S1459

Incidence of Biliary Complications After Roux-en-Y Gastric Bypass Surgery

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Introduction: The incidence of biliary complications (BI) such as choledocholithiasis (CLD), cholangitis, gallstone acute pancreatitis (GAP), acute cholecystitis (AC) is not clear, and they pose a unique treatment challenge in patients with history of Roux-en-Y gastric bypass (RYGB) due to altered upper gastrointestinal anatomy. We aimed to identify the incidence of BI in RYGB patients.

Methods: Retrospective study from 1999 – 2022, using commercially available IBM Explorers database (Somers, NY), a de-identified cloud-based database. Diagnosis were based on Systematized Nomenclature of Medicine – Clinical Terms (SNOMED-CT). We identified patients with history of RYGB and excluded patients who had prior cholecystectomy. Among those who underwent RYGB, we identified our study population as those who developed new onset AC, GAP, CLD with or without cholangitis at least 30 days after RYGB. GAP was identified by including cases of acute pancreatitis plus CLD while excluding alcoholism, hypertriglyceridemia, and drug-induced pancreatitis. Among our study population, we evaluated those who underwent ERCP and cholecystectomy (CCY). Logistic regression models were constructed using as well as odds ratio analysis.

Results: We identified 19,450 patients who underwent RYGB, after exclusion of prior CCY, our final cohort had 9,490 RYGB patients; of which 930 patients (9.8%) had new onset BI after their RYGB, and were as follow: AC (710 patients, 7.6%), CLD without cholangitis (60 patients, 0.6%), CLD with cholangitis (50 patients, 0.5%), and GAP (40 patients (0.4%) (Figure). 70% of AC cases were reported within 5 years of RYGB surgery. 370 patients (40%) underwent CCY and only 20 patients (2.2%) required ERCP for CLD. BI patients were more likely to be elderly, Caucasian, and had higher rates of diabetes mellitus type II and hyperlipidemia. Those who underwent CCY were less likely to be African American or to have comorbidities of diabetes mellitus type II and cardiovascular disease.

Conclusion: Among patients who underwent RYGB, nearly 10% of patients developed new onset biliary complications (Table). Of which, 40% required cholecystectomy post-RYGB, and 2% required ERCP post-RYGB. Our study found that the incidence of biliary complications post-RYGB is high and is likely to be of multifactorial etiology, such as rapid onset weight loss, malabsorption, and other possible mechanisms that still need to be elucidated. Further studies are needed to investigate if CCY at the time of RYGB is needed.

Demographics		RYGB with biliary complications		RYGB without biliary complications		OR	CI	p value
Age	Adults	630	68%	6100	71%	1		
	Elderly	300	32%	2460	29%	1.18	1.02-1.37	0.02
Gender	Male	190	20%	1890	22%	1		
	Female	740	80%	6650	78%	1.11	0.94-1.31	0.23
Race	Caucasian	800	86%	6640	78%	1		
	African American	130	14%	1390	16%	0.78	0.64-0.94	0.01
Medical comorbidities	DM2	390	42%	2400	28%	1.85	1.61-2.13	<0.0001
	HLD	520	56%	3300	39%	2.02	1.76-2.32	<0.001
	CVD/ PVD/ CAD	160	17%	1400	16%	0.93	0.78-1.12	0.443

DM diabetes mellitus; HLD hyperlipidemia; CVD cerebrovascular disease; PVD peripheral vascular disease; CAD coronary artery disease

[1459] Figure 1. Clinical Characteristics of RYGB Patients With and Without Biliary Complications

Demographics		Adults with cholecystectomy		Adults without cholecystectomy		OR	CI	P value
Age	Adults	260	70%	370	66%	1		
	Elderly	110	30%	190	34%	0.82	0.62-1.09	0.18
Gender	Male	70	19%	120	21%	1		
	Female	300	81%	440	79%	1.17	0.84-1.62	0.35
Race	White	320	86%	480	86%	1		
	African American	30	8%	100	18%	0.45	0.29-0.69	0.0003
Medical comorbidities	DM2	110	30%	280	50%	0.42	0.32-0.56	< 0.0001
	HLD	160	43%	360	64%	0.8	0.60-1.09	0.161
	CVD/ PVD/ CAD	50	14%	110	20%	0.64	0.44-0.92	0.016

S1460

Endoscopic Reversal of Roux-en-Y Gastric Bypass Prevents Worsening of Nutritional Outcomes in Patients With Severe Malnutrition

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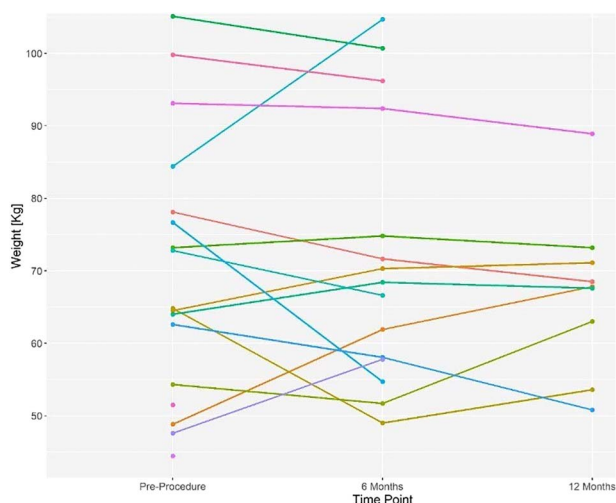
¹University of Minnesota Medical School, Minneapolis, MN; ²University of Minnesota - Twin Cities, Minneapolis, MN; ³University of Minnesota Medical Center, Minneapolis, MN.

Introduction: Roux-en-Y gastric bypass (RYGB) can precipitate protein-caloric malnutrition and micronutrient deficiencies. Sonographically guided endoscopic reversal (ER) via deployment of a stent from the gastric pouch to the remnant stomach is emerging as a novel option for increasing intestinal transit time and increasing absorptive surface area. In this investigation, short-term nutritional outcomes after endoscopic reversal for malnutrition were assessed.

Methods: Patients (age \geq 18) who underwent ER of RYGB for malnutrition from a single academic health center in Minneapolis over a 7-year period (2015-2021) were reviewed. Nutrition status (assessed by a registered dietitian (RD) or a gastroenterologist (GI)), mode of nutrition (per oral (PO), tube feed (TF), or total parenteral nutrition (TPN)), weight and body-mass index (BMI) were obtained pre-procedurally, at 6 months, and at one year post-procedurally.

Results: Seventeen patients underwent ER for severe protein caloric malnutrition or dependence on TF / TPN. In this cohort, at the time of the ER procedure, median age was 49 [IQR 46, 58] years and median BMI was 25.2 [IQR 21.18, 29.03] kg/m², 70% of patients were female, and 82% were White, and 96% had health insurance. Weight and BMI were not significantly different at 6-month or at one year follow-up (P >0.05; Figure demonstrates individual weight trends). At 6 months post-ER, 2 patients were no longer malnourished by RD/GI assessment and only on PO nutrition; 3 patients previously on TPN were liberated from TPN. A panel of laboratory values including markers of protein calorie malnutrition (e.g. albumin), renal function (e.g. creatinine and GFR) and micronutrients (e.g. Vitamin B12) were not significantly different at 6-month or at one year follow-up (P >0.05; Table). In all patients, access to the remnant was maintained throughout the study period and no complications were noted after the procedure.

Conclusion: ER is a nuanced, advanced technique useful for when remnant access is desired in RYGB patients, and is safe in experienced hands. Despite small sample size, this investigation revealed that ER of RYGB may prevent worsening weight loss, and worsening macro and micro-nutrient deficiencies; though improvement in weight and nutritional parameters was not observed. As ER affords patients a potential alternative to revisional bariatric surgery, further studies are warranted to examine longer-term nutritional and medical outcomes.



[1460] **Figure 1.** Individual weight trends before RYGB Endoscopic Reversal and at 6 months and 1 year following RYGB Endoscopic Reversal

Table 1.

	Pre-procedure	Post-procedure at 6 months	Post-procedure at 1 year
Malnutrition Status by dietitian or gastroenterologist assessment (n, %)	N=17	N=17	N=9
Severe Malnutrition or on TF / TPN	17 (100%)	15 (88%)	8 (89%)
Moderate	0	0	0
Non-severe	0	0	0
Not malnourished	0	2 (12%)	1 (11%)
Nutrition Route	N=17	N=17	N=9
Oral intake (PO)	6	6	2
Tube feeding (TF)	3	6	3
Total parenteral nutrition (TPN)	8	5	4
Weight / Body Mass Index, median (IQR)	N=17	N=15	N=9
Weight (Kg)	64.8 (54.3, 78.1)	68.4 (57.9, 83.6)	67.8 (63.0, 71.1)
BMI (Kg/m ²)	25.2 (21.2, 29.0)	25.1 (23.1, 30.3)	23.2 (20.5, 24.9)
Nutritional Laboratory Values, median (IQR)	N *	N *	**
Albumin (g/dL)	2.6 (2.3, 3.1)	2.4 (1.92, 3.05)	x
Prealbumin (mg/dL)	14 (10, 15)	14 (8, 16)	x
Hemoglobin (g/dL)	9.4 (8.8, 11.5)	10.6 (8.8, 12.4)	x
Creatinine (mg/dL)	0.88 (0.62, 0.99)	0.72 (0.66, 1.06)	x
Glomerular filtration rate (mL/min)	86 (61, 90)	84 (52, 90)	x
Iron (ug/dL)	59 (29, 71)	34.5 (19, 49.3)	x
Ferritin (ng/mL)	113 (27.8, 409)	39 (28.5, 114)	x
Vitamin B12 (pg/mL)	893 (554, 1405)	1271 (731, 1422)	x
Folate (ng/mL)	6.6 (5.4, 21.4)	10.6 (6.5, 11.8)	x
Vitamin D (ug/L)	14 (13, 39)	24.5 (14.5, 27.8)	x
Zinc (ug/dL)	56 (55, 71)	56.5 (48, 62)	x

*Various different sample size based on lab availabilities.

**1 Year nutritional laboratory values not assessed.

S1461

Investigating the Obesity Paradox in Hospitalized Patients With Chronic Obstructive Lung Disease Exacerbation in the United States

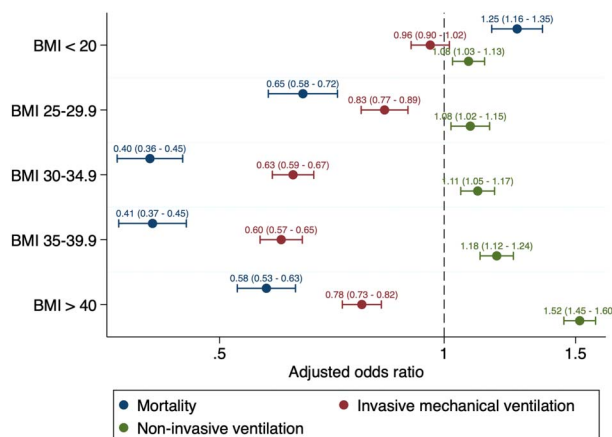
Mahmoud Mansour, MD, Andy Lee, MD, James Dorroh, MD, Darian Fard, MD, Austin Reed, MD, Sanket D. Basida, MD, Tahan Veysel, MD, University of Missouri Columbia, Columbia, MO

Introduction: Obesity is a public health concern that is common among individuals with chronic obstructive pulmonary disease (COPD) and is associated with increased dyspnea and poor quality of life. Despite these negative associations, however, evidence suggests that obese patients with COPD have lower mortality than underweight COPD patients. This “obesity paradox” has been studied in long-term outcomes of COPD, but studies evaluating the effect of obesity on in-hospital outcomes of COPD exacerbation are few. Herein we evaluate the obesity paradox in hospitalized patients with COPD exacerbation using the National Inpatient Sample (NIS) database.

Methods: A cohort study was conducted using NIS data from 2016 to 2019. Adult hospitalizations with an admitting diagnosis of COPD exacerbation and a documented body mass index (BMI) were included in the study. Patients were stratified by BMI as underweight, normal weight, overweight, class 1 obesity, class 2 obesity, and class 3 obesity. The primary outcome was in-hospital mortality. Secondary outcomes were invasive mechanical ventilation (IMV), non-invasive ventilation (NIV), and hospital length of stay (LOS). Multivariate analysis was used to adjust for outcomes. Covariates were selected using a univariate screen and literature review.

Results: A total of 1,474,985 COPD exacerbation admissions were identified. In-hospital mortality was 6.1% in underweight, 5.8% in normal weight, 3.4% in overweight, and 1.9%, 1.7%, and 2.1% in class 1, class 2 and class 3 obesity groups, respectively (Table). Obesity class 1 and 2 had the lowest rates of IMV. Compared to normal weight patients, obese patients had greater rates of NIV, with class 3 obesity having the highest rate. LOS was lower in obese patients. After adjusting for potential confounders, both overweight and obesity were independently associated with higher rates of NIV and lower rates of IMV and mortality (Figure).

Conclusion: This study demonstrates lower rates of mortality and IMV in obese patients admitted with COPD exacerbation. These findings support the existence of the obesity paradox in hospitalized patients with COPD exacerbation. However, several factors may confound the relation between obesity, COPD, and mortality, thus further prospective studies are needed to shed light on this complex phenomenon and its implications on healthcare.



[1461] **Figure 1.** Adjusted odds ratios for mortality, invasive mechanical ventilation, and non-invasive ventilation across the different ranges of BMI in reference to normal weight (BMI 20-24.9).

Table 1. In-hospital outcomes in COPD exacerbation hospitalizations across multiple BMI ranges

Outcome	Underweight	Normal weight	Overweight	Obesity class 1	Obesity class 2	Obesity class 3
Mortality	6.1% (5.9% - 6.3%)	5.8% (5.4% - 6.1%)	3.4% (3.2% - 3.7%)	1.9% (1.8% - 2.0%)	1.7% (1.6% - 1.9%)	2.1% (2.1% - 2.2%)
Invasive ventilation	9.9% (9.7% - 10.2%)	10.7% (10.3% - 11.2%)	9.5% (9.1% - 10.0%)	7.5% (7.1% - 7.6%)	7.4% (7.1% - 7.6%)	9.8% (9.6% - 10.0%)
Non-invasive ventilation	15.4% (15.0% - 15.8%)	14.8% (14.2% - 15.4%)	16.0% (15.3% - 16.6%)	16.2% (15.7% - 16.8%)	16.9% (16.4% - 17.4%)	20.8% (20.3% - 21.3%)
> 5 days length of stay	44.7% (44.3% - 45.2%)	48.7% (47.9% - 49.6%)	42.5% (41.7% - 43.4%)	35.8% (35.3% - 36.7%)	35.1% (34.6% - 35.6%)	38.9% (38.6% - 39.3%)

Parentetical ranges represent 95% confidence intervals.

S1462

Generation of a High-Affinity, Humanized Monoclonal Antibody (mAb) That Effectively Neutralizes Glucose-Dependent Insulinotropic Polypeptide (GIP)

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Introduction: GIP, a peptide hormone synthesized in intestinal K-cells, is both insulinotropic and insulin mimetic and accordingly plays a critical role in promoting nutrient uptake and storage. We recently developed a mouse mAb (mmAb) and reported that this mmAb decreased weight gain in C57BL/6 mice fed a high-fat diet by nearly 50%, without affecting food intake. The aim of this study was to "humanize" our GIP mmAb by grafting its complementary determining regions onto a human IgG "scaffold" and to characterize its binding characteristics.

Methods: Surface plasmon resonance was performed to determine the binding affinity of GIP to the humanized GIP mAb (hmAb). A reporter cell line expressing the GIP receptor, which is activated by GIP in a concentration-dependent manner, was used in a modified Schild's assay to demonstrate mAb-dependent GIP neutralization. Next, GIP hmAbs were administered *ip*, and blood samples were collected over 2 weeks, and peak plasma concentration (C_{max}), and $T_{1/2}$ were determined. Finally, a recently created tool was used to calculate the "humanness score" of our derived GIP hmAb. This score represents the degree to which the mAb's variable region possesses human-like characteristics.

Results: The binding affinity (K_D) of the GIP hmAb was calculated to be 0.9 nM, which is greater than the original GIP mmAb K_D of 3.3 nM. Similar to the original mmAb, GIP hmAbs neutralized GIP signaling *in vitro* in a concentration-dependent manner. The Schild's assay plot showed human and mouse mAb equilibrium dissociation constants of 2.2 μ M and 3.2 μ M, respectively, indicating similarly that the GIP hmAb binds more avidly to GIP than the mmAb. The calculated C_{max} values for the 10 and 30 mg/kg BW doses of GIP mAb were 10.12 ± 0.7 μ g/ml and 32.6 ± 1.0 μ g/ml, respectively, and the $T_{1/2}$ was determined to be ~7-10 days for both doses. Finally, the variable heavy and light chain (VL) humanness scores that were used to create the hmAb were 75.81 and 84.86, respectively, indicating human-like properties of this GIP mAb.

Conclusion: A GIP hmAb was shown to bind GIP with higher affinity than the mmAb, and similarly the hmAb more potently inhibited GIP signaling *in vitro* than the original GIP mmAb. Furthermore, the calculated $T_{1/2}$ for the GIP hmAb *in vivo* is comparable to other biological agents, and along with its excellent humanness score, indicate that this mAb could represent an effective biological agent for treating obesity and related disorders in humans.

S1463

Utility of Transient Elastography in Fibrosis Assessment in Veterans Undergoing Sleeve Gastrectomy: A Cross-Sectional Study

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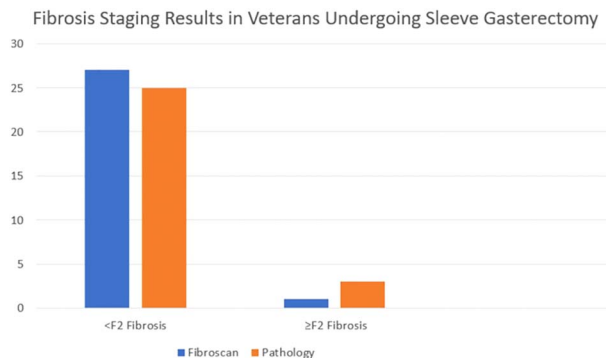
Introduction: Sleeve gastrectomy is the most common bariatric surgery performed in the US and leads to significant weight loss and improvement in metabolic syndrome. Based on manufacturer's recommendations, accuracy of vibration controlled transient elastography (VCTE) with ECHOSENS Fibroscan results are uncertain in patients with body mass index (BMI) greater than 30 kg/m². However, we routinely utilize Fibroscan to identify liver fibrosis stage prior to sleeve gastrectomy. We evaluated the accuracy of Fibroscan results in individuals with obesity compared to the gold standard liver biopsy performed at time of sleeve gastrectomy.

Methods: This is a retrospective study of 90 patients who underwent sleeve gastrectomy between January 1, 2018- September 19, 2021 at a Veterans Affairs medical center. Liver biopsy at the time of surgery is standard practice at our center. Patients with known alcohol use, without a Fibroscan prior or without a liver biopsy at the time of surgery were excluded. 28 patients had both liver biopsy and pre-operative Fibroscan. Summary statistics were used to determine the prevalence of NAFLD at time of surgery and sensitivity and specificity for Fibroscan testing compared to liver biopsy.

Results: Thirty four percent of patients had abnormal ALT and 21% had abnormal AST prior to bariatric surgery (Table). There was no evidence of liver synthetic dysfunction with normal INR, bilirubin and albumin. Pre-operative median liver stiffness measurement was 5.2 kPa. Fibroscan results showed 93% of patients with no to mild fibrosis (stage F0-F1) and 7% with F2, and no patients had F3 or F4 fibrosis

preoperatively. Ninety percent of patients had no evidence of fibrosis or mild fibrosis (stage 0-1) and 10% of patients had stage 2 (moderate) fibrosis on liver biopsy. There were 2 patients (6%) with liver stiffness consistent with F1 and liver biopsy showing F2 fibrosis. Fibroscan results had a negative predictive value of 92%.

Conclusion: There is a high prevalence of fatty liver disease without fibrosis in the veteran patients undergoing sleeve gastrectomy (Figure). Although the utility of Fibroscan to determine fibrosis in BMI above 30 is uncertain, fibrosis staging is nearly 94% accurate in our patient population with high negative predictive value. Non-invasive testing utilizing Fibroscan predicted the lack of advanced fibrosis and may be useful for risk stratification prior to bariatric surgery.



[1463] **Figure 1.** Fibrosis staging by test strategy in veterans undergoing sleeve gastrectomy

Table 1. Baseline characteristics of patients prior to elective sleeve gastrectomy for obesity

Variable		Unit
Age	47.6	Years
Sex	54%	Female
Ethnicity	50%	Black
Weight	114.8	Kilogram
BMI	39.7	kg/m ²
AST/ALT	22.4/31.0	Units/L
Albumin	4.4	g/dl
Platelet count	269	K/cm ³
HbA1C	6.2	Mmol/mol
Fasting blood sugar	111.0	Mg/dl
LDL	119.7	Mg/dl
Triglyceride	145.3	Mg/dl
NAFLD fibrosis score	0.74	
FIB-4	0.79	

S1464

Participation in a Community-Based Weight Loss Program Showed Significant Improvement in Patient Reported Outcomes of Their Mental and Physical Health

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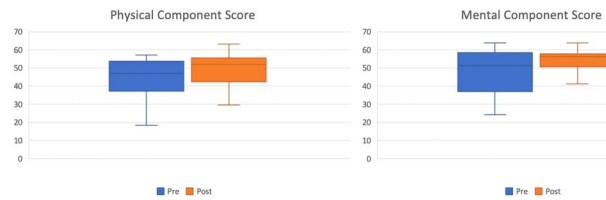
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Introduction: Obesity related GI disorders can have significant impact on mortality and quality of life. The cornerstone of treatment is lifestyle modifications through diet and exercise, in order to achieve greater than 10% total body weight loss (TBWL). We have previously shown that in our community-based weight management program 65% of participants achieve >10% TBWL. The program addresses diet, exercise, sleep and mindfulness in order to achieve weight loss. The aim of this study was to assess the impact of a structured weight loss program in patient reported outcomes of physical and mental aspects of health.

Methods: The 12-item short-form (SF-12) survey was used to assess physical and mental health. Participants filled out the SF-12 survey at the time of enrollment and after at least 3 months. Patients were placed on a 12-week 800 calorie meal replacement diet (OPTIFAST) then transitioned to a plant predominant or Mediterranean diet. A total of 43 participants from July 2020 to June 2022 were identified who had 2 surveys at least 3 months apart. Surveys were scored using <https://orthotoolkit.com/sf-12/>. Paired t-tests were performed on the mental component score (MCS) and physical component score (PCS) pre and post participation. An unpaired t-test was performed on the change in MCS and PCS in participants who achieved >10% TBWL versus those who did not (Figure).

Results: The mean MCS increased from 47.4 to 53.4 (P value=0.001009) through participation. The mean PCS increased from 44.7 to 48.6 (P value =0.006272). Of the 43 patients identified, 33 achieved >10% TBWL. The mean difference between the post participation MCS and enrollment MCS in participants who had >10% TBWL was not significantly different than participants who had < 10% TBWL (5.8 vs 6.81, P value=0.809). Likewise, the mean difference between the post participation PCS and enrollment PCS in participants who had >10% TBWL was not significantly different than participants who had < 10% TBWL (4.1 vs 2.9, P value=0.72).

Conclusion: Participation in a weekly support group focused on education about diet, sleep optimization, exercise and teaching mediation techniques was associated with improved SF-12 scores independent of achieving a 10% body weight loss. This suggests that focused education about the 4 pillars of wellness may independently improve SF-12 scores. More research is needed to corroborate these findings.



[1464] **Figure 1.** (Left) The mean physical component score was 44.7 at enrollment and 48.6 post enrollment (P value = 0.006272). (Right) The mean MCS increased was 47.4 at enrollment and 53.4 post enrollment (P value = 0.001009).

S1465

Differences in Hospital Outcomes and Demographics of Hospitalized Patients With Obesity Compared to Those Without Obesity

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Introduction: According to United States national surveys, obesity prevalence is 42.4%. It is associated with a variety of cardiometabolic diseases, such as type 2 diabetes mellitus, hypertension, cardiovascular disease, and others. With this association along with other chronic conditions, it could be inferred that individuals with obesity would have more adverse outcomes/complications than normal-weight individuals when hospitalized. The purpose of this study is to evaluate the differences in hospital outcomes such as length of stay, total charges, and mortality in hospitalized adults with/without obesity, regardless of their disease or procedure status.

Methods: We used National Inpatient Sample data from 2013 to 2017. Demographic variables such as age, gender, race, median household income for patient's ZIP Code, and hospital outcomes in terms of length of stay, total charges, and mortality were extracted. Descriptive statistics were conducted to examine the demographic distribution and assess difference in hospitalized adults with/without obesity using Wilcoxon Rank Sum, Median difference, and Chi-sq test.

Results: A total of 29,746,406 patients were hospitalized from 2013 to 2017. Patients with obesity accounted for 13.8% of the total cohort (**Table**). Comparing hospitalized adults with and without obesity, differences in age, gender, race, and median household income of patient's zip code were statistically significant. Female, Black, and patients living in low-income zip codes hospitalized with an obesity diagnosis were higher in proportion than those without obesity. Over the study period, percentage of hospitalized adults with obesity increased significantly. The median length of stay and total charges were significantly higher in adults with obesity. Of note, mortality was lower in hospitalized adults with obesity compared to the adults without obesity.

Conclusion: As obesity prevalence is increasing in the US, hospitalized adults with obesity are increasing nationally as well. Individuals with obesity had a longer length of stay and high total hospital charges, but mortality was lower compared to adults without obesity. The reason for lower inpatient mortality in patients with obesity remains unclear but could be due to unassessed factors inherent in those patients. Studies, looking at specific associated diagnosis or combinations of diagnosis, are needed to completely understand the association between obesity and lower mortality.

Table 1. Descriptive statistics of hospital outcomes in inpatient population with/without obesity, National Inpatients Sample data

Variable		Individuals with Obesity (N = 4126434)	Individuals without Obesity (N = 25619974)	P-value
Age	Mean + SD	57.5 + 20.4	56.7 + 16.4	< .0001
Gender (%)	Female	62.0	57.9	< .0001
	Male	38.0	42.1	
Race (%)	White	64.5	64.9	< .0001
	Black	17.3	14.0	
	Hispanic	9.6	10.2	
	Others	3.9	6.1	
Year (%)	2013	18.0	20.5	< .0001
	2014	19.2	20.1	
	2015	20.3	20.3	
	2016	21.0	20.2	
	2017	21.5	18.9	
Median Household Income Percentile (%)	0 - 25th	31.9	29.6	< .0001
	26th - 50th	26.7	25.6	
	51st - 75th	23.2	23.1	
	76th - 100th	16.4	19.8	
Length of Stay	Median (IQR)	3 (2 - 6)	3 (2 - 5)	< .0001
Total Charges	Median (IQR)	33745 (18241 - 62697)	26411 (14156 - 51441)	< .0001
Died (%)	Yes	1.5	2.3	< .0001
	No	98.4	97.7	

S1466

Motivational Factors of Weight Loss in NAFLD Patients: Data From University Hospital in WV

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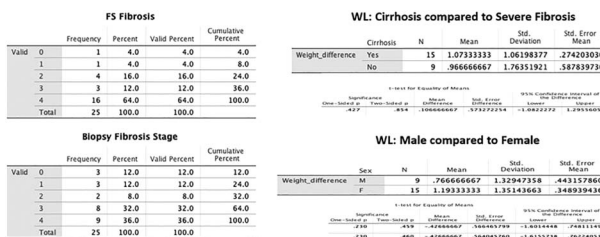
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Introduction: The obesity epidemic affects 69% of the US adult population. We investigated variables that motivate weight loss (WL) in obese patients. One study found that adults diagnosed with an illness linked to obesity had a goal towards reducing risks from excess weight OR (1.45 [1.22-1.73]) (1). The severity of liver disease in patients with NAFLD is directly linked to weight and concomitant metabolic disorders. Multiple studies have shown that WL is effective at altering the natural history of NAFLD. Our study investigates these motivations of WL and looked to ascertain a correlation between learning the diagnosis of severe fibrosis via transient elastography (TE) and lifestyle modification.

Methods: In this IRB approved retrospective analysis, 24 patients with chronic liver disease (CLD) diagnosed with severe fibrosis on TE had undergone an indicated liver biopsy (LB; **Table**). Upon diagnosis, patients were educated about their disease process, severity of disease, and the role WL has in amelioration of NAFLD. Weight loss goal of 5% was recommended to reduce steatosis (2). We recommended the Mediterranean diet. Each patient returned for a liver biopsy an average of 58 days later, and no later than 6 months. BMI, liver fibrosis, liver steatosis, and aminotransferase levels were measured at date of TE. BMI and percent steatosis on LB were recorded. Patients without TE diagnosing fibrosis and being prior to LB were excluded.

Results: Seventeen of 24 patients had lost weight (reducers) when they returned for LB. Average BMI in these patients was reduced by 0.52. At the time of TE, 9 of 17 reducers had elevated AST and/or ALT. Of those that lost weight 6 were male and 11 were female. Fourteen reducers met the criteria for Metabolic Syndrome. Thirteen reducers had a sufficient decrease in liver fat percentage to be classified into a lower stage of liver steatosis. Statistical analysis via t-test revealed female patients had a greater mean WL in comparison to men (**Figure**). Patients with cirrhosis achieved greater WL than those with severe fibrosis.

Conclusion: Our study supports the hypothesis that patients diagnosis of severe liver damage served as a catalyst for weight loss. 71% of our study population lost weight. The psychology of weight loss is still not well understood, but the level of danger perceived by our patients appeared to be a factor in their modification of lifestyle behaviors. Different weight loss results may be based on a patient's individual perception of their risk for complications.



[1466] Figure 1. Statistical analysis of Chronic Liver Disease patients and Weight Loss

Table 1. Demographics

Patients, n	24
Men, n (%)	9 (37.5%)
Women, n (%)	15 (62.5%)
Age, mean in years (std dev)	53 (+/- 12.05)
Hyperlipidemia, n (%)	17 (70.83%)
HTN, n (%)	16 (66.67%)
EtOH users, n (%)	13 (54.17%)
Stage 0-2 fibrosis, n (%)	6 (25%)
Stage 3 Fibrosis, n (%)	3 (12.5%)
Stage 4 Fibrosis, n (%)	15 (62.5%)
BMI on Fibroscan, mean (std dev)	35.7 (+/- 9.9)
BMI on Liver Biopsy, mean (std dev)	34.7 (+/- 9.33)
Fibroscan CAP score, mean (std dev)	286 dB/m (+/- 63.6)

S1467

A Comprehensive Evaluation of Predictors of Weight Gain: A Case Control Study in the Veteran Population

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Introduction: Obesity is a multi-factorial chronic illness which has been implicated as a risk factor for pathology in nearly every illness. Worldwide, 42% of the population is overweight or obese and 21% of United States healthcare spending goes towards obesity. Consequently, the World Health Organization created a global strategy for weight control initiatives. Understanding the heterogeneous variables associated with weight gain, especially over a short period of time, is paramount since this stage of obesity is potentially reversible. The aim of our study was the identification of risk factors associated with the development of weight gain in an obese veteran cohort compared to controls over a one-year period.

Methods: After obtaining IRB approval, a case-control study was performed at James A Haley VA Hospital. There were 200 subjects studied. The inclusion criteria for the study sample (n=100) were a gain in BMI of 5 in veterans with an initial BMI ≥ 30 in a span of one year or less. This sample was compared to a control group (n=100) who had a normal BMI (18.5-24) and maintained it over at least one year. 38 variables were studied.

Results: In this study, there was a significant presence of acute stressors in the weight gain cohort when compared to the control group in a univariate analysis (OR 0.02 CI 95% 0.003-0.146, P< 0.0001). Subgrouping of acute stressor revealed the control group to have fewer major stressors compared to the weight gain group in a multivariate analysis (OR 88.411 CI 95% 15.145-516.114, P< 0.0001). Additionally, there was a significantly higher presence of sleep disturbances in the weight gain cohort in a multivariate analysis (OR 0.128 CI 95% 0.028-0.583, P = 0.0079) and the presence of triglyceride abnormalities (OR 0.034 CI 95% 0.006-0.198, P = 0.0002).

Conclusion: In conclusion, the strongest association with acute weight gain was the presence of a major acute stressor. This holds promise in a clinic setting at the point of care when acute weight gain is possible but frequently missed. Future direction will focus on the incorporation of artificial intelligence with these findings to develop an application to help patients connect with clinicians and track their obesity risk.

S1468

The Inpatient Outcomes of Autoimmune Hepatitis Among Obese Patients

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Introduction: Evidence suggests that obesity may be a significant factor in the development of autoimmune diseases. However, there is a lack of data on how obesity affects the outcomes of autoimmune hepatitis. Thus, this study aims to evaluate the outcomes of autoimmune hepatitis in obese patients.

Methods: Adult patients hospitalized with autoimmune hepatitis from the National Inpatient Sample, Healthcare Cost and Utilization Project, Agency for Healthcare Research and Quality 2010-2014 were selected. Diagnoses were identified by using ICD-9 CM codes. Patient demographics and outcomes of autoimmune hepatitis were compared between the groups with and without obesity. The outcomes of interest were inpatient mortality, length of stay, total hospital charge, and hepatic complications, including cirrhosis, portal hypertension, hepatic encephalopathy, ascites, hepatorenal syndrome, varices/variceal bleeding, spontaneous bacterial peritonitis, and sepsis. Chi-squared tests and independent t-tests were used to compare proportions and means, respectively. Multivariate logistic regression analysis was performed to determine if obesity is an independent predictor of the outcomes, adjusting for age, sex, and race.

Results: Among 17,963 patients hospitalized with autoimmune hepatitis, 2,259 patients were obese. Differences in total hospital charges, length of stay, and inpatient mortality were not statistically significant. After adjusting for age, sex, and race, obesity was an independent protective factor for portal hypertension (adjusted odds ratio (aOR) 0.78, 95% confidence interval (CI): 0.68-0.90, P < 0.05), ascites (aOR 0.69, 95% CI: 0.60-0.78, P < 0.05), varices/variceal bleeding (aOR 0.79, 95% CI: 0.67-0.92, P < 0.05), and spontaneous bacterial peritonitis (aOR 0.44, 95% CI: 0.28-0.70, P < 0.05). Adjusted odds ratios of other outcomes were not statistically significant.

Conclusion: Our study shows that obesity is associated with better outcomes in patients hospitalized with autoimmune hepatitis, such as lower odds of portal hypertension, ascites, varices/variceal bleeding, and spontaneous bacterial peritonitis. The results suggest that weight loss may be associated with the progression of liver disease, and a higher weight in this population may indicate lower severity of autoimmune hepatitis.

OBESITY

S3341

Clinical Manifestations of Severe Micronutrient Deficiencies in a Patient With Bariatric Surgery*Devika Dixit, MD, Amir Kamel, PharmD.**University of Florida Shands Hospital, Gainesville, FL.*

Introduction: Micronutrient deficiencies occur in patients with bariatric surgery due to disruption of normal absorption and anomaly of the gut anatomy. Patients with bariatric surgery were found to be deficient in B1, B9, B12, Copper, and Iron. Inadequate repletion of these deficiencies can lead to multi-system impairments. The clinical findings of micronutrient deficiencies may mimic other disease presentations such as those of autoimmune etiologies. The purpose of this case is to promote a high suspicion of micronutrient deficiencies in patients with bariatric surgery with specific clinical and laboratory findings.

Case Description/Methods: This is a 50-year-old severely malnourished female with a past medical history significant for gastric bypass in 2011 who presented with generalized weakness and diffuse desquamating rash. The patient had nausea, vomiting, diarrhea, leukopenia, and anemia with unintentional weight loss of 13.6 kg for 4 weeks prior to presentation. Dermatology and Nutrition were consulted. Autoimmune workup was initiated, which came back negative. Dermatology concluded the rash was due to nutritional deficiency and requested skin biopsy and micronutrient levels. Labs showed low levels of the following Vitamins: A, B1, B6, C, and E, along with Zinc and Copper (Table 1). She was also determined to be severely malnutrition due to her weight loss, low BMI, Prealbumin, Albumin, and total protein (Table 1). Skin biopsy was compatible with nutritional deficiency. Once it was determined that the patient's clinical manifestations were due to nutritional deficiency, intravenous micronutrients were administered for 2 weeks (Table 1). As a result of the supplementation, there was a tremendous improvement in her weight, strength, gait, diarrhea, ability to tolerate oral intake, skin lesions, leukopenia, and anemia (Image 1). The patient was transferred to the floor, however, later developed acute respiratory failure and subsequent cardiac arrest.

Discussion: All in all, short-term benefits of bariatric surgery may result in weight reduction, however, severe malnutrition can develop over a prolonged period eventually leading to systemic clinical deterioration. Additionally, clinical manifestations of nutritional deficiency may present like other diseases obscuring the need to consider micronutrient deficiencies as the primary cause. Clinicians should have a high suspicion of nutritional deficiency in the setting of a history of bariatric surgery and replete deficiencies to optimize clinical outcomes.



[3341] **Figure 1.** Skin Lesions Before and After Nutrition Supplementation.

	Patient Value	Normal Value Ranges
Anthropometrics		
BMI	20.36 kg/m ²	
Weight	59 kg	
Height	170 cm	
Proteins		
Total Protein	5.8 g/dL	6.4-8.3 g/dL
Prealbumin	Undetectable	20-40 mg/dL
Albumin	2.7 g/dL	3.5-5.2 g/dL

Table 1. (continued)

	Patient Value	Normal Value Ranges
Vitamins		
Vitamin A	0.09 mg/L	0.30-1.20 mg/L
Vitamin B1	70 nmol/L	70-180 nmol/L
Vitamin B6	11.1 nmol/L	20-125 nmol/L
Vitamin C	40 μ mol/L	20-114 μ mol/L
Vitamin E	3.5 mg/L	5.5-18.0 mg/L
Metals		
Zinc	33.5 μ g/dL	60-120 μ g/dL
Copper	35.8 μ g/dL	80-155 μ g/dL
Ceruloplasmin	10 mg/dL	18-58 mg/dL

S3342

Inpatient Initiation of Pharmacotherapy for Obesity to Improve Liver Transplant Eligibility: A Case Report

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Introduction: Obesity is one of the most prevalent chronic diseases worldwide, associated with cardiovascular disease and reduced life expectancy. Guidelines recommend pharmacotherapy for BMI 30 (or 27 with comorbidities). Despite this, many patients cannot access pharmacotherapy for obesity due to inadequate insurance coverage. We present a case of a patient with Wilson's cirrhosis and obesity, who was admitted for decompensated cirrhosis, but could not be listed for transplant due to elevated BMI. We discuss the challenge of inpatient initiation of pharmacotherapy for obesity.

Case Description/Methods: 36 year old woman with Wilson's/NASH cirrhosis and Class III Obesity (BMI > 60) presented with decompensated cirrhosis. She was admitted with anasarca, transaminitis, hyperbilirubinemia, spontaneous bacterial peritonitis (SBP), and a MELD-Na of 36. She was started on trientine and Zinc for her Wilson's, antibiotics for SBP, and diuresis. She was evaluated by transplant surgery, who noted that her BMI and central adiposity would prohibitively increase peri-operative risk for liver transplantation and decrease chance of post-transplant success. They recommended BMI of 50 or less prior to consideration for liver transplant. The hepatology team then recommended inpatient initiation of weekly subcutaneous semaglutide to help achieve this BMI target. While there are not robust data on the use of GLP-1 agonists in decompensated cirrhosis, based on studies in NASH cirrhosis and on its pharmacokinetic profile, we felt that the potential risks of GLP-1 agonist therapy were outweighed by the benefit of improved eligibility for liver transplantation. Unfortunately, her insurance denied coverage for any weight loss medication. However, we were able to initiate liraglutide as inpatient since it does not require prior authorization. To date, she has lost 32 lbs.

Discussion: This case reviews the inpatient initiation of pharmacotherapy for obesity to improve eligibility for liver transplant. Unfortunately, there were insurance barriers to obesity treatment. While semaglutide would have been covered for diabetes treatment, it was not covered for obesity. Insurance coverage decisions may therefore worsen existing health disparities. We advocate for increased access to pharmacotherapy for obesity in the inpatient setting and believe that obesity should be treated as intensively as other chronic diseases. In the future, we hope that insurance coverage will not present a barrier to potential life-saving pharmacotherapy for obesity

S3343

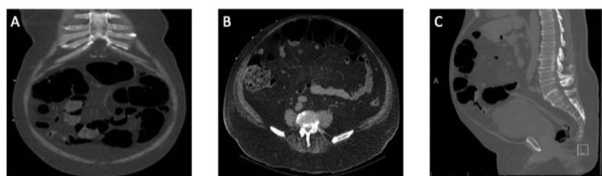
Obstipation Masquerading as Myasthenia Gravis

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Introduction: Chronic constipation in pediatric patients can lead to severe respiratory distress. We present an adult case of acute worsening of hypercarbic respiratory failure in the setting of obstipation.

Case Description/Methods: A 71 year-old man with a body mass index of 42, obesity hypoventilation syndrome on 2 liters of oxygen and ophthalmoplegia treated with intravenous immune globulin (IVIG) 1 year prior presented with acute generalized weakness. He had multiple falls and reported dropping items unintentionally for one day. Vital signs were notable for hypertension and oxygen saturation (SpO₂) of 97% on 2 liters. His exam was remarkable for dysarthric speech, bilateral ptosis, inability to perform lateral gaze with improvement on ice pack test, and 1/5 strength globally. Laboratory values revealed a carbon dioxide (CO₂) of 25 mmol/L, blood urea nitrogen was 35 mg/dL and creatinine of 1.6 mg/dL. An arterial blood gas showed a pH of 7.18, pCO₂ of 58 mmHg and a negative inspiratory force of -40 cmHg. This finding was concerning for myasthenia gravis (MG) versus chronic inflammatory demyelinating polyneuropathy. He was transferred to the ICU for respiratory monitoring. He was started on pyridostigmine and IVIG with minimal improvement in his respiratory status. While monitoring his respiratory drive, his abdomen was noted to be distended. A chest X-ray demonstrated low lung volumes and an enlarged gastric bubble. Subsequent computed tomography of the abdomen and pelvis showed extensive colonic distention with fecal impaction. He was started on an aggressive bowel regimen including neostigmine with multiple bowel movements in response. His strength improved slightly and his respiratory status improved immediately. Acetylcholine receptor antibodies came back negative. He was discharged to a skilled nursing facility for rehabilitation. (Figure)

Discussion: This case demonstrates how severe fecal impaction secondary to chronic constipation can contribute to respiratory distress in an adult, especially with possible concomitant neuromuscular disease. The increased abdominal distention from stool burden reduced functional capacity resulting in a restrictive pattern of respiratory failure. Interestingly, MG can cause Ogilvie's syndrome in rare cases as a result of autonomic dysmotility of the colon and can often be the initial presentation. It is hard to explain that despite his cardinal symptoms of MG, his neuropathy resolved not with immunosuppression, but with disimpaction.



[3343] **Figure 1.** A. Computed tomography of the abdomen and pelvis without contrast (coronal view) showed extensive colonic distention with fecal impaction B. Computed tomography of the abdomen and pelvis without contrast (axial view) showing moderate colonic distention seen with transition point in the distal sigmoid colon with increased stool burden C. Computed tomography of the abdomen and pelvis without contrast (sagittal view) showing moderate colonic distention seen with transition point in the distal sigmoid colon with increased stool burden.

S3344

The Hunt for the Lost Intra-gastric Balloon and Its Complications

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Introduction: Obesity is a global pandemic on the rise, affecting about 40% of adults in the United States. There is a need for minimally invasive methods to aid current standard of care practices. The intragastric balloon (IGB) is a temporary therapy for weight loss, with the FDA approving several devices including the Obalon® in the recent years. In 2021, AGA published clinical practice guidelines on Intra-gastric Balloons in the management of obesity. Serious adverse events are relatively rare in patients receiving IGB treatment, and include injury to the gastrointestinal (GI) tract, such as perforation (0.3%), esophageal mucosal injury (0.8%), gastric ulcer/bleeding (0.76%), and gastric outlet/bowel obstruction (0.12%).

Case Description/Methods: A 47-year-old female with a medical history including two intragastric balloon placements (Obalon®) one year ago, presented with severe acute abdominal pain. Patient's BMI was 28 kg/m². Routine labs were unremarkable and vitals were stable. Initial CT Abdomen/pelvis with contrast showed gastric and duodenal thickening; however, imaging failed to comment on a foreign object and location. A gastroscopy was performed subsequently showing one Obalon balloon found in the gastric fundus. The balloon was cut with a needle knife, collapsed and withdrawn with rat tooth forceps. To locate the second balloon, repeat imaging showed dilated bowel loops with a deflated Obalon® lodged in the distal ileum, 7 centimeters proximal to ileocecal valve, resulting in mechanical small bowel obstruction. A colonoscopy was deferred due to concern for risk of perforation given the small bowel obstruction. Subsequently, the patient underwent laparoscopic enterectomy with approximately 5 cm of bowel on either side of the enterotomy with creation of anastomosis and foreign object retrieval. (Figure)

Discussion: Intra-gastric balloons are a minimally invasive therapy for weight loss in conjunction with lifestyle modifications in the war against obesity. We present a rare, yet crucial case report of IGB complication resulting in small bowel obstruction and subsequent need for surgical intervention. IGBs are meant to be a short term, temporary tool for weight loss in obese patients generally BMI \geq 30. This case highlights the importance of a timely removal, risk of severe complications, and emphasis on the importance of assessing proper indication for placement.



[3344] **Figure 1.** (A) Coronal view of CT scan showing dislodged Intra-gastric Balloon in the distal ileum (red arrow); (B) XR Abdomen showing radiopaque density overlying the left hemisacrum (red arrow) and dilated small bowel loops; (C) XR Abdomen Complete w/ Decub/Erect showing radiopaque foreign body in the right mid abdomen and second foreign body in the stomach (red arrows).

S3345

Transoral Gastric Outlet Reduction Used to Successfully Manage a Case of Refractory Dumping Syndrome Presenting With Recurrent Admissions for Falls and Seizures

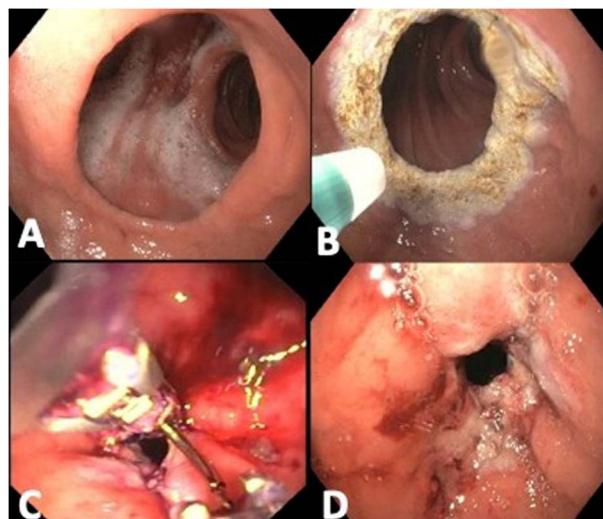
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Introduction: Surgical management of obesity through Roux-en-Y gastric bypass (RNYGB) has been proven to be a successful treatment for obesity and obesity-related comorbidities. Common adverse events following RNYGB include dumping syndrome, weight regain, vitamin deficiency, and marginal ulceration. Dumping syndrome is a postprandial state where rapid gastric emptying and delivery to the small intestine results in a pattern of GI symptoms including fatigue, tachycardia, and syncope, which can lead to seizures and shock secondary to profound hypoglycemia. Initial treatments include dietary modification and administration of glucagon and octreotide. Treatment for refractory cases previously included surgical revision, but data suggesting endoscopic treatment is promising. We present a report of a patient with RNYGB who developed dumping syndrome treated successfully with transoral gastric outlet reduction (eTOR).

Case Description/Methods: A 47-year-old female with a history of RNYGB 10 years prior with a history of post-prandial hypoglycemia managed with Acarbose, Octreotide and Glucagon was admitted after a fall for seizure-like activity. She was found to be profoundly hypoglycemic. She had a history of multiple prior ED visits and hospital admissions for hypoglycemia and recurrent falls despite multiple attempts at optimization of medical management. Following a multi-disciplinary discussion with bariatric surgery, plans were made to undergo eTOR for management of dumping syndrome. She underwent upper endoscopy which showed a dilated gastrojejunal anastomosis (GJA) measuring approximately 5cm. Argon plasma coagulation at 40 watts and a flow of 0.8L/min to ablate the tissue around the outlet. An Apollo EndoStitch device was then used to place a total of 9 sutures in a double purse-string fashion around the outlet, resulting in a reduction to 9mm. The patient was extubated and returned to the ward. She was discharged several days later, with stable blood sugar levels. Over the next two weeks, Acarbose, Octreotide and Glucagon were decreased in dose and discontinued. She had not had any additional falls nor ED visits. (Figure)

Discussion: Patients with dumping syndrome were previously managed by surgical revision, which fell out of favor due to high adverse event rates. This case highlights the ability to use endoscopic full-thickness suturing devices to treat this significant complication of bariatric surgery.



[3345] **Figure 1.** A. Dilated gastrojejunal anastomosis B. Ablation of gastrojejunal anastomosis with Argon plasma coagulation C. Endoscopic placement of sutures around gastrojejunal anastomosis D. Gastrojejunal anastomosis after reduction.