Issa Lab at UCLA

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Outcomes of Anti-Obesity Glucagon-Like Peptide 1 Agonists vs Revisional Endoscopic Sleeve Gastroplasty for Weight Regain After Laparoscopic Sleeve Gastrectomy: A Case-Control Real World Experience

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Award: Outstanding Research Award in the Obesity Category (Trainee)

Introduction: Weight regain following laparoscopic sleeve gastrectomy (LSG) is a common and challenging scenario. Minimally invasive options include anti-obesity glucagon-like peptide 1 (GLP1) agonists or revisional endoscopic sleeve gastroplasty (R-ESG). While GLP1 agonists are popular, their efficacy in LSG patients compared with R-ESG or controls with intact stomach is unclear. We share a real-world experience with GLP1 agonists & R-ESG for weight regain after LSG.

Methods: This is a retrospective study of all adult patients with a history of LSG who were treated with Sub-Q Semaglutide or Tirzepatide or underwent R-ESG for weight regain at UCLA Health from Jan 2019 till Jan 2023. A propensity-matched control group of obese patients on GLP1 agonists with no prior bariatric surgery was identified. Primary outcomes included total body weight loss (TBWL%), excess weight loss (EWL%) and adverse events (AE) on follow-up. Secondary outcomes included changes in A1c and lipid panel.

Results: The study groups included 68 (LSG+ GLP1), 20 (LSG + R-ESG), and 87 control patients. Results are presented [Table 1]. R-ESG patients were significantly younger than LSG+ GLP1 or control groups (45.2 vs 52.9 vs 51.6 yrs, P=0.03), respectively. There was no significant difference in patients baseline BMI, diabetes prevalence, %weight loss and regain after LSG, or medication dosage between groups. Difficulty with GLP1 refills was encountered in 31 LSG (45.6%) and 33 controls (37.9%). Regarding outcomes, R-ESG offered a significantly higher TBWL% than GLP1 agonists at three (10% vs 4.3%,P=0.0001) and six months (11.5% vs 6.8%,P=0.03) in LSG patients. GLP1 agonists achieved significantly lower TBWL% in LSG patients than controls at three (4.3% vs 5.7%,P=0.02), six (6.8% vs 9.2%,P=0.02), and twelve months (9.2% vs 12.7%, P=0.03). While LSG + R-ESG patients had significantly higher post-op abdominal pain than LSG+ GLP1 (10% vs 0%,P=0.04), there was no significant difference in other AE. No significant difference in the change of A1c (0.05 vs 0.6, P=0.06), LDL (-8 vs -1.1, P=0.56) or triglyceride levels (15.2 vs

27.6, P=0.59) was seen at 12 months in LSG+ R-ESG vs LSG+ GLP1, respectively.

Discussion: In a real-world experience, anti-obesity GLP1 agonists achieved significantly lower weight loss in LSG patients than those with intact stomach. R-ESG offered significantly higher weight loss than GLP1 agonists in LSG patients with weight regain while also avoiding the difficulties of GLP1 refills, making it an attractive option.

Table 1: Baseline Characteristics

	Prior SG + GLP1/GIP RA	Prior SG + R-ESG	Intact Stomach + GLP1/GIP RA	
	(N= 68)	(N= 22)	(N=87)	P value
Age (years)	52.9 ± 11.9	46 ± 11.4	51.6 ± 11.5	0.058
Gender:				
. Male	17 (25%)	6 (27.3%)	15 (17.2%)	0.39
. Female	51 (75%)	16 (72.7%)	72 (82.8%)	
Ethnicity				
. Caucasian	38 (55.9%)	9 (40.9%)	37 (42.5%)	0.2
. Hispanic	18 (26.9%)	5 (22.7%)	18 (20.7%)	0.69
. African American	8 (11.8%)	4 (18.2%)	11 (12.6%)	0.73
. Asian	2 (2.9%)	0 (0%)	**10 (11.5%)**	**0.04**
. American Indian	1 (1.5%)	1 (4.5%)	2 (2.3%)	0.7
. Pacific Islander	1 (1.5%)	1 (4.5%)	1 (1.1%)	0.53
. Declined to answer	0 (0%)	2 (9%)	8 (9.2%)	0.9
Baseline BMI (Kg/m^2)	43.9 ± 7	37.8 ± 6.5	39.3 ± 6.1	0.13
Obesity-related comorbidities:				
. Essential hypertension	47 (69.1%)	13 (59.1%)	58 (66.7%)	0.68
. GERD	40 (58.8%)	13 (59.1%)	**27 (31%)**	**<0.001**
. Diabetes mellitus	30 (44.1%)	4 (18.2%)	39 (44.8%)	0.06
. Hyperlipidemia	**48 (70.6%)**	9 (40.9%)	47 (54%)	**0.02**

. Obstructive sleep apnea	**48 (70.6%)**	9 (40.9%)	30 (34.5%)	**<0.001**
. Fatty liver disease	10 (14.7%)	2 (9.1%)	10 (11.5%)	0.73
. Coronary artery disease	8 (11.8%)	2 (9.1%)	4 (4.6%)	0.25
Baseline Hemoglobin A1c (%)	6.1 ± 1	**5.8 ± 0.6**	6.5 ± 1.4	**0.04**
Baseline LDL cholesterol (mg/dl)	102 ± 38	114 ± 31	101.1 ± 37.8	0.44
Baseline Triglyceride (mg/dl)	121 ± 61	120.2 ± 88	**158 ± 92**	**0.02**
Number of baseline BP meds	1 [1,2]	**1 [0.25,1]**	2 [1,2]	**0.01**
Baseline GERD meds	32 (47.8%)	11 (50%)	**23 (26.4%)**	**0.01**
Baseline pain meds	30 (44.1%)	10 (45.4%)	33 (37.9%)	0.67

Statistics presented as mean (±SD), median [Q25,Q75], or frequency (%). P < 0.05 was considered statistically significant.

SG: sleeve gastrectomy, GLP1/GIP RA: glucagon-like peptide 1 +/- glucose-dependent insulinotropic peptide receptor agonists, R-ESG: revisional endoscopic sleeve gastroplasty, BMI: body mass index, GERD: gastroesophageal reflux disease, BP: blood pressure

Table 1: Study Results

Footnotes: Statistics presented as mean (±SD) or frequency (%). P was calculated using chi-square test for categorical data & one-way ANOVA for numerical data. P < 0.05 was considered statistically significant. LSG: laparoscopic sleeve gastrectomy, GLP-1: glucagon-like peptide 1, R-ESG: revisional endoscopic sleeve gastroplasty, BMI: body mass index, GERD: gastroesophageal reflux disease, TBWL: total body weight loss, EWL: excess weight loss.

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