ROUX-EN-Y GASTRIC BYPASS VS. VERTICAL SLEEVE GASTRECTOMY IN BMI <50: LONG TERM SURGICAL OUTCOMES

Nouf Alotaiby MD, Hanu Chaudhari MD, Vanessa Boudreau MD, Karen Barlow Hons BSc, Tyler Cookson Hons BSc, Scott Gmora MD, Mehran Anvari MD, PhD; Center for Minimal Access Surgery, McMaster University, Ontario, Canada.

Introduction

Vertical Sleeve Gastrectomy (VSG) is becoming an increasingly popular surgical treatment for morbid obesity compared to Roux-en-Y Gastric Bypass (RYGB) which used to be the gold standard in North America. The aim of this study was to evaluate the 5 year outcome of VSG in comparison to RYGB in patients with BMI<50 who did not have VSG due to operative difficulty or as part of two stage duodenal switch.

Methods

Data collected in Ontario Bariatric Registry between 2010–2021 was used to compare long term outcomes of patients undergoing VSG or RYGB (currently the gold standard) with BMI less than 50. Intention to treat analysis was performed. Results include conversions.

Characteristics	RYGB (n=15311)	VSG (n=1956)
Age, mean(sd)	44.4 (10.2)	49.0 (10.9)
Female, N(%)	13104 (85.6)	1582 (80.9)
Ethnicity- Aboriginal, N(%) Caucasian, N(%) Other, N(%) Unknown, N(%)	 330 (2.2) 11127 (72.7) 1852 (12.1) 2002 (13.0)	 49 (2.5) 1457 (74.5) 210 (10.7) 240 (12.3)
BMI, mean(sd)	44.0 (3.6)	43.8 (3.7)
DM2, mean(sd)	4013 (26.2)	594 (30.4)
Dyslipidemia	4428 (28.9)	689 (35.2)
Hypertension	6018 (39.3)	932 (47.6)
GERD	6596 (43.1)	860 (44.0)
OSA	6476 (42.3)	911 (46.6)
MSK pain	9976 (65.2)	1355 (69.3)

Table 1. Baseline Demographic Characteristics

Results

- Of the 17 267 patients that underwent surgical treatment, 15 311 (88.7%) had RYGB (baseline BMI 44.0; age 44.4 years; 85.6% female) and 1956 (11.3%) had VSG (baseline BMI 43.8, age 49.0 years; 80.9% female). The follow-up data were available for 3344 RYGB at 3 years and 1220 at 5 years. For VSG, 313 patients had 3 year follow-up and 105 patients had 5 year follow-up.

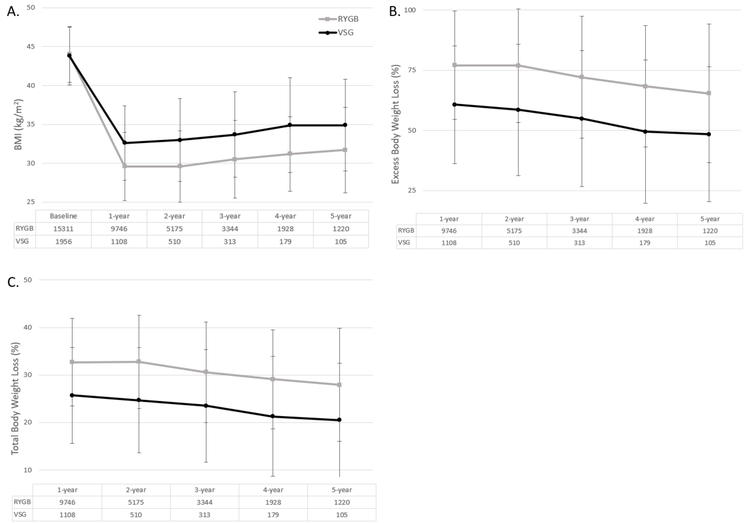


Figure 1. Mean changes in (A) BMI, (B) Excess weight loss (EWL), and (C) Total weight loss (TWL). Data are presented with standard deviation error bars and the number of patients at each time point to the corresponding value.

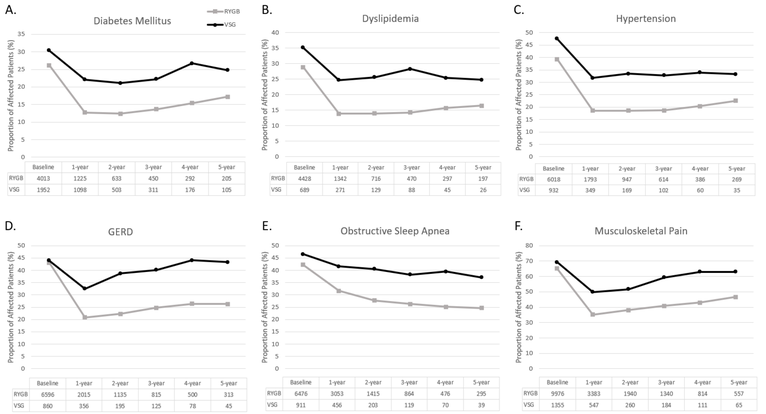


Figure 2. The number of patients affected by DM2, DLD, HTN, GERD, OSA, and MSK pain at each time point during the five-year follow-up.

Intraoperative Complications; N (%)	RYGB	VSG	p-value
Respiratory	5 (0.0)	0 (0.0)	1.000
Major Bleeding	18 (0.1)	3 (0.2)	0.212
Organ Injury	67 (0.4)	11 (0.6)	0.199
Cardiac	12 (0.1)	3 (0.2)	0.212
Death	0 (0.0)	0 (0.0)	1.000
Other	112 (0.7)	18 (0.9)	0.325

A. Totals: RYGB – 15311; VSG – 1956

1-Month Post-operative Complications; N (%)	RYGB	VSG	p-value
Leak Perforation	30 (0.3)	5 (0.3)	1.000
Bowel Obstruction	0 (0.0)	0 (0.0)	1.000
DVT/PE	9 (0.1)	2 (0.1)	1.000
Hernia	15 (0.1)	2 (0.1)	1.000
Wound Infections	86 (0.8)	18 (1.2)	0.113
Erosions/Ulceration	34 (0.3)	4 (0.3)	1.000
Stenosis/Stricture	21 (0.2)	2 (0.1)	0.401
Bleeding	157 (1.5)	20 (1.3)	0.547
Other	0 (0.0)	0 (0.0)	1.000

B. Totals: RYGB – 10703; VSG – 1505

3 mo. Post-operative Complications; N (%)	RYGB	VSG	p-value
Leak Perforation	46 (0.3)	4 (0.2)	0.456
Bowel Obstruction	0 (0.0)	0 (0.0)	1.000
DVT/PE	12 (0.1)	1 (0.1)	1.000
Hernia	39 (0.3)	10 (0.6)	0.037
Wound Infections	100 (0.7)	10 (0.6)	0.628
Erosions/Ulceration	145 (1.0)	5 (0.3)	0.003
Stenosis/Stricture	92 (0.6)	3 (0.2)	0.031
Bleeding	129 (0.9)	7 (0.4)	0.029
Other	132 (0.9)	14 (0.8)	0.670

C. Totals: RYGB – 14500; VSG – 1803

Table 2. Intraoperative (2A), one-month postoperative (2B), and three-month postoperative (2C) incidence of complication rates.

	RYGB-N(%)	VSG-N(%)	p-value
Total	11/15311 (0.07)	43/1956 (2.2)	<0.001
Conversion to:			
Roux-en-Y Gastric Bypass (RYGB)		37 (86.0)	-
Vertical Sleeve Gastrectomy (VSG)	10 (90.9)		-
Planned Duodenal Switch (DS)		3 (7.0)	-
Unplanned Duodenal Switch (DS)	1 (9.1)	3 (7.0)	0.811
Reason for Conversion:			
Drug Intolerance	0	1 (2.3)	0.610
Malnutrition	3 (27.3)	2 (4.7)	0.021
Hypoglycemia	0	0	1.000
Planned Staged Procedures		3 (7.0)	-
Ineffectiveness/Weight Regain	3 (27.3)	21 (48.8)	0.199
GI Symptoms	6 (54.5)	21 (48.8)	0.736
Dumping Syndrome	0	2 (4.7)	0.466
Nausea/vomiting	5 (45.5)	12 (27.9)	0.264
GERD Symptoms	0	5 (11.6)	0.235
Dysphagia	1 (9.1)	2 (4.7)	0.566

Table 3. Rates of surgical conversion and reasons for conversion.

Conclusion

In patients with pre-operative BMI less than 50, RYGB results in more favorable weight loss, better resolution of co-morbidities, and less surgical conversions at 5 years after surgery.

Vanessa Boudreau, Division of General Surgery, St. Joseph's Healthcare, 50 Charlton Avenue East, Hamilton, ON L8N 4A6, Canada.
Email: boudreav@mcmaster.ca

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