Impact of Sex Differences on Weight Loss and Complications following Bariatric Surgery

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BACKGROUND

Understanding the impact of sex as a biological variable remains largely understudied.

Examining sex differences is important as data suggests sex-based disparity in quality of care exists and a push for efforts to improve long term outcomes is needed.

Bariatric surgery is the gold standard for treating obesity and obesity-related co-morbidities, however, outcome differences between males and females remains unknown.

OBJECTIVE

To assess changes in body mass index (BMI), percentage weight loss, and 30-day postoperative complications up to one year following surgery between males and females who underwent bariatric surgery. The goal of this study is to better inform patient selection and decision-making for patients undergoing bariatric surgery.

METHODS

Patient data was collected through the Michigan Bariatric Surgery Collaborative (MBSC), a payer funded collaborative bariatric data registry.

Centrally trained data-abstractors perform chart reviews to obtain preoperative patient level demographics, preoperative comorbidities, procedural details, and 30-day postoperative events.

Seventy surgeons from 38 bariatric surgery programs submitted data to a clinical registry which provides information ranging from patient demographics to the provided outcomes of interest

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PATIENT DEMOGRAPHICS

Study included **n= 107,504 patients** who underwent bariatric surgery between June 2006 and June 2022.

Majority of patients were **Female** n=85,135, **privately insured**, and underwent **sleeve gastrectomy.**

Male patients were **older** (47.6 yrs vs 44.8 yrs; p<0.0001), had **higher baseline weight** (346.6 lbs vs 279.9 lbs; p<0.0001), and had **higher preoperative BMI** (49.9 kg/m^2 vs 47.2 kg/m^2; p<0.0001)

Males had **higher prevalence** of most comorbid conditions including hypertension, hyperlipidemia, diabetes, and sleep apnea (p<0.0001).

WEIGHT LOSS OUTCOMES

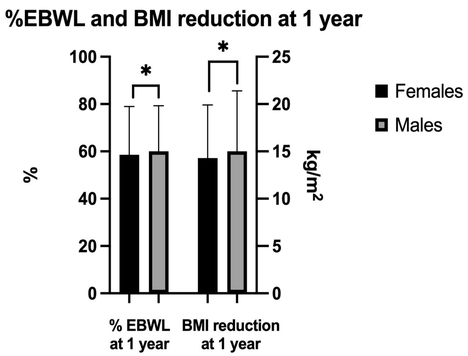


Figure 1: Examining post-operative weight loss outcomes between males and females undergoing bariatric surgery. BMI = Body Mass Index. EBWL = Excess body weight loss

	Female		Male		p-value
Weight loss outcomes	n	Mean (SD)	n	Mean (SD)	
1 year weight loss (lbs)	37452	84.9 (34.0)	9126	105.1 (45.6)	<0.0001
% Weight loss at 1 year	37452	30.1 (9.9)	9126	30.1 (10.2)	0.8527
% EBWL at 1 year	37452	58.6 (20.4)	9126	60 (19.3)	<0.0001
1 year BMI (kg/m^2)	37452	32.8 (6.8)	9126	34.0 (6.8)	<0.0001
BMI reduction at 1 year (kg/m^2)	37452	14.3 (5.6)	9126	15.0 (6.4)	<0.0001

Table 1: Primary outcome weight loss. BMI = Body Mass Index. EBWL = Excess body weight loss

POSTOPERATIVE COMPLICATIONS

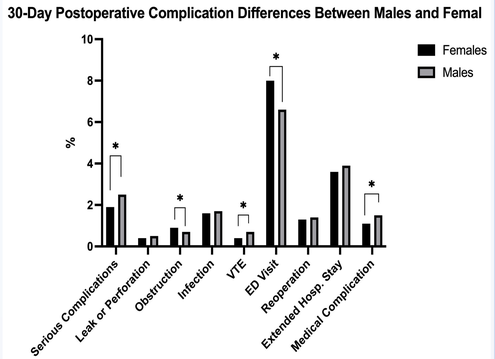


Figure 2: Examining post-operative complications between males and females undergoing bariatric surgery. VTE = Venous thromboembolism. ED = Emergency Department

	Female		Male		p-value
	n	%	n	%	
Serious complication	1638	1.9	551	2.5	<0.0001
Leak or Perforation	311	0.4	108	0.5	0.0121
Obstruction	803	0.9	150	0.7	0.0001
VTE	328	0.4	146	0.7	<0.0001
ED visit	6771	8.0	1472	6.6	<0.0001
Reoperation	1064	1.3	316	1.4	0.0544
Medical complications	890	1.1	330	1.5	<0.0001

Table 2: Primary postoperative outcomes differences between males and females. VTE= Venous thromboembolism. ED = Emergency Department

RESULTS SUMMARY

MALES HAD:

Greater **total body weight loss** (105.1 lbs vs. 84.9 lbs.; p<0.001)

Higher percentage of **excess body weight loss** at 1 year (60% vs. 58.8%; p<0.0001)

Greater **reduction in BMI** after 1 year (15 kg/m^2 vs 14.3 kg/m^2; p<0.0001) compared to female patients.

Postoperative complications including serious complications (2.5% vs 1.9%; p<0.0001), leak and perforation (0.5% vs 0.4%; p<0.0001), VTE (0.7% vs 0.4%; p<0.0001), and medical complications (1.5% vs 1%; p<0.0001)

DISCUSSION

Both patient populations clinically benefited from bariatric surgery.

Males who presented for bariatric surgery often did so later in life compared to females and general health outcomes are worse for males than females.

Physicians should focus on **referring male patients earlier** for bariatric surgery consideration rather than later in their disease progression.