The Bariatric Surgery Patient Journey: Comparing the Healthcare and Medication Utilization Before and After Bariatric Surgery

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BACKGROUND

Metabolic and bariatric surgery (MBS) is firmly established as an effective treatment for patients with severe obesity.[1] Studies showed MBS efficiently reduced obesity-related comorbidities. However, numerous studies have shown approximately 30% of patients regain more than 15% of their body weight within three years after MBS resulting in exacerbations of comorbidities.[2]

Recently, accumulated evidence showed that bariatric surgery significantly reduces body weight and the risk of cardiovascular diseases. However, fewer studies focused on obesity-related medication utilization and healthcare utilization post-MBS[3].

OBJECTIVE

This study aims to explore real-world trends in weight change, medication prescribing patterns, and healthcare utilization pre- and post-metabolic bariatric surgery (MBS).

METHODS

Retrospective, longitudinal, observational, single-site study design

Data sources: Electronic health record (EHR)

Study Design:
- Index date = date of bariatric surgery
- Pre-index period = 0-12 months before the Index Date
- Post-index period = 30-42 months after the Index Date

Primary outcome: trends in average body mass index (BMI) and the proportion of patients who achieved a 10%, 15%, and/or 20% loss of total body weight in the post-index period:

Secondary outcome: comparison of lab measurements, medication prescribing patterns, and healthcare utilization in the pre-and post-index period.

Descriptive statistics were expressed in aggregates and percentages to demonstrate the trends in BMI changes, lab measurements, medication prescribing patterns, and healthcare utilization.

McNemar tests were used for categorical data and a paired t-tests were used for continuous data to compare the differences between pre- and post-index periods.

STUDY CRITERIA

Patients were included in this study:
- Age ≥ 18 years
- Patients received bariatric surgery between June 1, 2016, and December 31, 2017
- Patients received regular care (≥ 1 office visits per year) at the organization during the study period
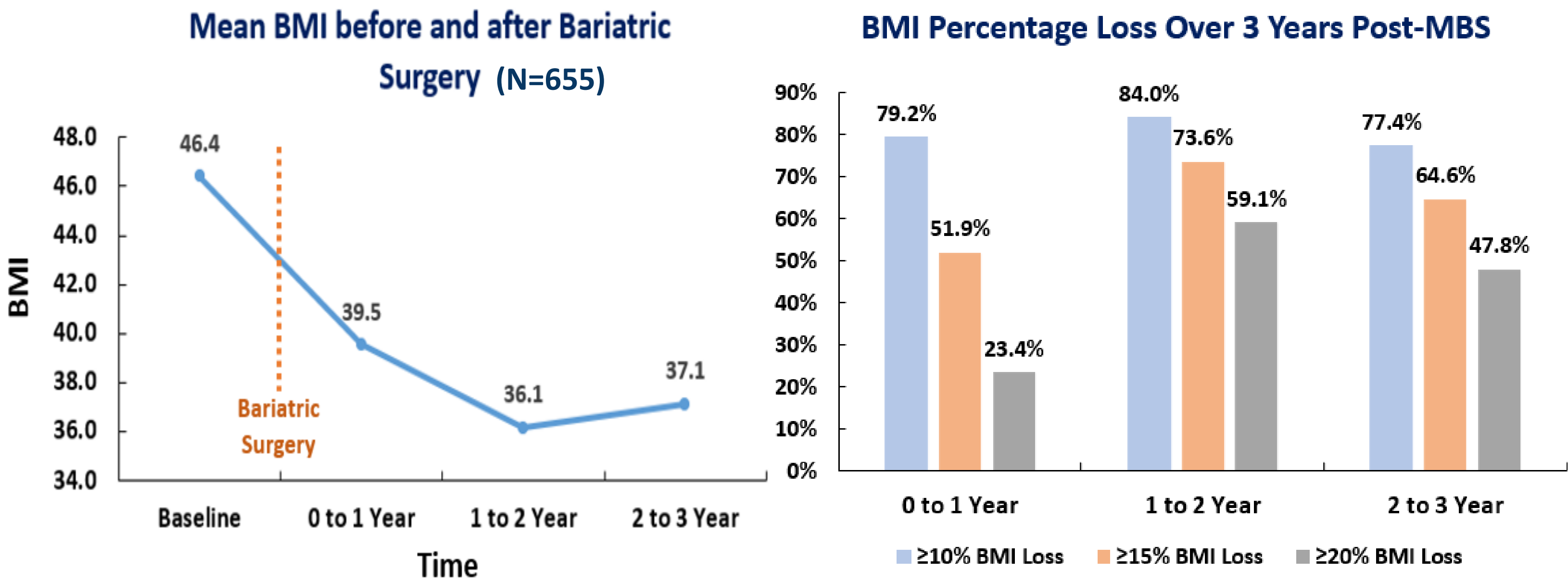
RESULTS

Mean BMI before and after Bariatric Surgery (N=655)

BMI Percentage Loss Over 3 Years Post-MBS

Table 1. Patients' Demographics

Demographics (N = 655)	
Age, mean (SD)	49.9 (12.2)
Female, n (%)	540 (82.4%)
Race, n (%)	
White	497 (75.9%)
Black	129 (19.7%)
Asian	7 (1.07%)
Other	4 (0.6%)
Unknown	18 (2.7%)
Ethnicity, n (%)	
Hispanic/Latino	97 (14.8%)

Table 2. Patients' Lab Measurements, Medication Prescribing Patterns, and Healthcare Utilization at baseline and Post- Index Date

Measurement	Baseline		Post-Index Period		P Value	Odds Ratio
Lab Measurements	Measure	Missing	Measure	Missing		
BMI, mean (SD)	46.4 (9.9)	41 (6.3%)	37.1 (9.0)	39 (6.0%)	**P < 0.001**	N/A
Systolic Blood Pressure (SBP), mean (SD)	136 (13)	42 (6.4%)	128 (13)	45 (6.9%)	**P < 0.001**	N/A
Diastolic Blood Pressure (DBP), mean (SD)	78 (8)	42 (6.4%)	77 (8)	45 (6.9%)	**P = 0.014**	N/A
Low Density Lipoprotein (LDL) (mg/dL), mean (SD)	106 (31)	270 (41.2%)	101 (33)	278 (42.4%)	P = 0.203	N/A
HbA1c (%), mean (SD)	7.0 (1.3)	363 (55.4%)	6.5 (1.3)	365 (55.7%)	**P < 0.001**	N/A
Medication Utilization						
GLP-1 RAs, n (%)	24 (3.7%)		46 (7.0%)		**P = 0.002**	2.5
SGLT-2i, n (%)	9 (1.4%)		13 (2.0%)		P = 0.713	1.1
Insulins, n (%)	222 (33.9%)		72 (11.0%)		**P = 0.004**	1.4
Antidiabetics, n (%)	293 (44.7%)		314 (47.9%)		P = 0.120	1.5
Anti-obesity (non-GLP), n (%)	43 (6.6%)		54 (8.2%)		P = 0.216	1.3
Antihypertensives, n (%)	303 (46.3%)		205 (31.3%)		**P < 0.001**	0.5
Antidepressants, n (%)	41 (6.3%)		56 (8.6%)		P = 0.094	1.5
Antihyperlipidemic, n (%)	127 (19.4%)		74 (11.3%)		P = 0.807	1.0
Healthcare Utilization						
Emergency Department Visits, n (%)	22 (3.4%)		21 (3.2%)		P = 0.525	0.9
Hospital Admission, n (%)	261 (39.9%)		63 (9.6%)		**P < 0.001**	0.6
Outpatient Total Visits/Patient	20.0		13.6		**P < 0.001**	N/A

LIMITATIONS

- Notable proportion of missing laboratory values including HbA1c and LDL
- Not able to capture cares if the patients' visits were outside of Baylor Scott and White Health
- Inpatient records from Dallas-Fort Worth were not on the EHR until 2019

DISCUSSION

- Patients' BMI declined gradually during the two-year post-MBS period and regained weight later.
- The highest proportion of BMI loss happened 1 to 2 years post-MBS, and this proportion declined since the second year post-MBS.
- Patients had a statistically significant decrease in BP, HbA1c, and hospitalization rates in the follow-up period when compared with baseline measurements.
- There was a statistically significant lower use of antihypertensives and insulin and a statistically significant higher use of GLP-1 RAs in the follow-up period.
- Further analysis is needed to separate within-patient effects from between-patient effects to better understand the bariatric surgery impact on weight loss.

CONCLUSIONS

In a real-world setting, bariatric surgery results in decreased BMI, BP, HbA1c, insulin use, antihypertensive use, and hospital admission rates after initiation.

REFERENCES

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DISCLOSURES

All authors are research investigators of studies sponsored by Pfizer and Sanofi but not in connection with this study.

Questions? Contact Xiaoxia.Wang@BSWHealth.org