MORBID OBESITY MANAGEMENT INSIGHTS: PRE-OPERATIVE CLINCIAL VARIABILITY BY INSURANCE CARRIER IN 8,966 SLEEVE GASTRECTOMY PATIENTS

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INTRODUCTION

The obesity epidemic continues to bring unique medical issues to the operating room. Obese persons (Body Mass Index (BMI) > 30 kg/m²)[1] make-up more than 1/3 of the US adult population (35.7%)[2], while morbidly obese (BMI > 40 kg/m² or > 35 kg/m² with an obesity related comorbidity)[1] patients count as approximately 6% of the population[3]. These numbers could be extrapolated into the surgical patient population. Obese patients and morbidly obese patients present a greater likelihood of complications.[4] Complications arise not only from obesity itself, but also from the comorbid conditions most commonly found including acid reflux/GERD, cancer, depression, female reproductive health disorders, heart disease, high blood pressure, high cholesterol, obstructive sleep apnea, osteoarthritis/joint pain, stress urinary incontinence, and type 2 diabetes.[5]

Every pre-surgery clinical insight contributes to positive outcomes in the often perilous peri-operative management of medically fragile sleeve gastrectomy patients. Post-operative complications in obese patients showed a higher prevalence of wound infection, peripheral nerve injury, urinary tract infection, and myocardial infarction.[6] At a rate of 7.7% these complications significantly affect morbidity and mortality. [6] Morbidly obese patients are more profoundly affected with an increased tracheal re-intubation rate, a mortality rate of 2.2% compared to 1.2% for all other patients, and increased rate of cardiac arrest.[6]

While problems the obese and morbidly obese patient present to surgeons have been studied and documented, the differences in their prevalence by the most common types of medical insurance carrier are unknown. The objective of this study was to identify variation in the clinical characteristics of sleeve gastrectomy patients according to insurance type. Knowing the variation of these weight-related illnesses and how they are distributed among insurance carriers could enable surgeons to better anticipate problems and improve peri-operative management of these patients.

OBJECTIVE

To identify and differentiate the medical characteristics and weight related obstacles among obese and morbidly obese patients according to health insurance carrier to improve peri-operative management and better anticipate complications.

METHODS and PROCEDURES

We reviewed pre-operative data on obese and morbidly obese patients about to undergo sleeve gastrectomy. Divided into four health insurance groups, we studied 8,966 patients from the Surgical Review Corporation's BOLD database. The four insurance groups included Medicaid, Medicare, Private, and Self-Pay. Analysis of variance tested continuous variables was made and dichotomous parameter distribution was assessed by the Chi-squared equation.

Data included patient demographics including weight, BMI, gender, and socio-economic factors as well as medical co-morbidities including cardiopulmonary, abdominal, hepatobiliary, metabolic, hormonal, musculoskeletal, and mental health.

RESULTS

	MEDICAID	MEDICARE	PRIVATE	SELF PAY	p value
DEMOGRAPHICS AND WEIGHT: %					
Age	39+-10	56+-13	45+-11	44+-12	<0.0001
Weight (kg)	139+-35	149+-41	134+-31	131+-31	<0.001
BMI	51+-11	53+-13	47+-9	46+-9	<0.0001
Sex (F/M %)	83/17	64/36	74/26	75/25	<0.0001
CARDIOPULMONARY CO-MORBIDITIES					
Hypertension	50.27	75	56.57	48.84	<0.0001
Angina	3.23	7.24	2.39	2.05	<0.0001
CHF	2.96	11.51	1.69	1.05	<0.0001
DVT/PE	2.15	12.17	2.44	1.44	<0.0001
Ischemic Heart Disease	3.49	14.47	3.79	2.66	<0.0001
Peripheral Vascular Disease	0.81	3.29	0.9	0.83	<0.001
Pulmonary Hypertension	2.96	9.54	4.33	2.21	<0.0001
OSA	47.85	61.18	45.44	32.89	<0.0001
Obesity Hypoventilation	1.61	7.57	1.25	1	<0.0001
Asthma	28.76	27.63	15.55	10.8	<0.0001
ABDOMINAL AND HEPATOBILIARY CO-MORBIDITIES					
Abdominal Hernia	8.6	18.09	8.12	6.87	<0.0001
Abd Skin Pannus S&S	12.19	10.96	7.4	7.3	<0.0001
Cholelithiasis	20.97	30.92	18.69	14.73	<0.0001
GERD	39.25	51.32	44.59	40.14	<0.0001
Liver Disease	15.32	8.55	4.53	4.04	<0.001
Stress Urinary Incontinence	23.12	32.57	21.69	18.11	<0.0001
METABOLIC AND HORMONAL CO-MORBIDITIES					
Diabetes	36.29	59.87	31.16	24.03	<0.0001
Gout	5.11	10.53	3.65	2.71	<0.0001
Hyperlipidemia	35.22	54.93	40.48	32.89	<0.0001
Irregular Menses	22.04	25	23.3	19.27	<0.01
Polycystic Ovary Disease	3.49	1.32	5.24	5.26	<0.01
Pseudotumor Cerebri	1.61	1.97	1.05	0.83	0.2199
MUSCULOSKELETAL CO-MORBIDITIES					
Back Pain	56.72	58.88	46.54	37.87	<0.0001
Fibromyalgia	4.3	7.57	2.59	2.16	<0.0001
Lower Extremity Edema	32.26	44.08	29.39	20.27	<0.0001
Musculoskeletal Pain	41.67	61.84	40.82	32	<0.0001
MENTAL HEALTH CO-MORBIDITIES					
Mental Health Diagnosis	14.78	17.43	10.3	10.47	<0.0001
Disabled Functional Status	4.84	19.41	2.62	2.21	<0.0001
Depression	36.02	40.13	33.14	32.23	<0.05
Psychologic Impairment	20.16	25.33	15.92	17.66	<0.0001
SOCIAL CO-MORBIDITIES					
Alcohol Use	16.67	19.41	36.36	38.21	<0.0001
Substance Abuse	0.81	0.66	0.22	0.28	0.1054
Tobacco Use	9.95	3.95	6.56	8.91	<0.001
Unemployed	40.59	67.76	10.32	11.35	<0.0001

Medicare patients tend to be older, heavier, unemployed, and the highest rates of comorbidities. Specifically, the Medicare patients tend to have the highest rates of cardiopulmonary comorbidities except asthma, increased abdominal and hepatobiliary comorbidities except liver disease and abdominal skin pannus signs & symptoms, more metabolic and hormonal comorbidities except for polycystic ovarian disease, the most musculoskeletal comorbidities, and elevated mental health comorbidities. Socially, the Medicare patients were the most unemployed, but used tobacco the least with moderate alcohol and substance abuse.

Medicaid patients trend toward being the youngest with fewer comorbidities. Overall Medicaid patients had less cardiopulmonary comorbidities except for more asthma, decreased abdominal and hepatobiliary comorbidities excluding liver disease, limited metabolic and hormonal comorbidities, fewer musculoskeletal comorbidities, moderate mental health comorbidities, and socially had the most substance and tobacco abuse with the least alcohol use and moderate unemployment.

Private insurance and self-pay patients were similar in demographics. Tending toward the least comorbidities, but drank the most alcohol while smoking more than Medicare patients and less than Medicaid patients.

CONCLUSIONS

In obese and morbidly obese patients, medical conditions vary widely by insurance status. Among pre-operative sleeve gastrectomy patients, the subset of obese and morbidly obese patients studied, expected medical conditions seemed to indicate that Medicare and Medicaid patients had the highest co-morbidities.

Medicare patients are the oldest, heaviest, and manifest the highest rates of cardiopulmonary, hepatobiliary, metabolic, musculoskeletal, and mental health problems, in addition to having the highest unemployment rate. Medicaid patients, though youngest, have the highest F/M ratio, asthma, liver disease, and tobacco abuse. Private and Self-Pay drink and smoke but have the fewest co-morbidities. Awareness of increased surgical risks for obese Medicare and Medicaid patients should benefit both patients and surgeons in improving peri-operative outcomes.

Medicare patients would require more medical optimization peri-operatively to ensure maximization during their recovery. These patients would benefit from review of antihypertensive regiments and cardiac maximization possibly with the assistance of a cardiologist, close follow-up of diabetic regiments to prevent complications post-operatively as weight is lost, and careful appropriate pain management in light of increased chronic pain conditions likely leading to tolerance to medications and increased pain. Additionally the anesthesiologists would benefit from knowing that Medicare patients were most likely to have obstructive sleep apnea and gastro-esophageal reflux disease so as to alter and improve intra-operative management.

Medicaid patients would benefit from maximization of breathing regiments for asthma peri-operatively with close follow-up of liver function tests. Medicaid patients would also benefit from addressing substance abuse in light of pain management concerns as well as tobacco cessation as part of pulmonary maximization. On the other hand, the private insurance and self-pay patients would benefit from education regarding alcohol consumption post-operatively and careful observation for potential withdrawal.

Overall no matter what the insurance status of the patient, each patient's individual comorbidities should be addressed for maximization of perioperative outcomes. Knowing the insurance status would enable the surgeon to be aware of comorbidities the patient would tend toward, thus better enabling the physician to tailor care to best maximize recovery and reduce complications.

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