

Loss of Medicaid insurance after successful bariatric surgery: an unintended outcome

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Abstract

Background Bariatric surgery leads to dramatic weight loss and improved overall health, which may affect insurance status for certain patients. Traditional Medicaid provides coverage for children, pregnant women, and disabled adults, while expanded Medicaid provides insurance coverage to all adults with incomes up to 138% of the federal poverty level. We hypothesized that successful bariatric surgery would lead to improved health status but an unintended loss of Medicaid coverage.

Methods All patients who underwent bariatric surgery at a single institution in a non-expansion state from 1985 through 2015 were identified using a prospectively collected database. Univariate and multivariate analyses were used to identify differences in patients who lost Medicaid coverage after bariatric surgery.

Results Over the 30-year study period, 3487 patients underwent bariatric surgery, with 373 (10.7%) having Medicaid coverage at the time of surgery. This cohort of patients had a median age of 37 years and a preoperative Body Mass Index (BMI) of 54 kg/m². At one-year follow-up, 155 (41.6%) patients lost Medicaid coverage, of which 76 (49.0%) had no coverage. The preoperative prevalence of diabetes (32.3 vs. 44.0%, $p = 0.02$), age (36 vs. 38 years, $p = 0.01$), and BMI (53 vs. 55 kg/m², $p = 0.04$) were significantly lower in

patients who no longer qualified for Medicaid after bariatric surgery. Multivariate regression demonstrated that for every 10 point increase in BMI (OR 0.755, $p = 0.01$), a patient was 25% less likely to lose their coverage at one year.

Conclusions Successful surgery in a state not expanding Medicaid resulted in over 40% of patients losing Medicaid coverage postoperatively, with half of those patients returning for follow-up with no insurance coverage at all. This barrier to care has major implications in patients undergoing bariatric surgery, which requires life-long follow-up and nutrition screening.

Keywords Bariatric Surgery · Access to Care · Medicaid Expansion · Disparities

Bariatric surgery often leads to sustainable weight loss and significant improvements in related comorbidities, such as cardiovascular disease, diabetes mellitus, pulmonary complications, and psychiatric conditions. [1–6] During the preoperative evaluation for bariatric surgery, insurance status is one of the many factors reviewed, as coverage for both the operation and the subsequent follow-up visits and counseling can be quite costly. Patients who were previously disabled due to obesity and its associated disorders may experience postoperative improvements drastic enough to allow for return to work [7]. This is an especially important consideration for patients with Medicaid insurance, considering that qualifying for their insurance may be related to their obesity.

The United States Supreme Court upheld the constitutionality of the Patient Protection and Affordable Care Act in 2012, but ruled that the expansion of Medicaid could not be forced upon state governments. [8, 9] At the time of writing this publication, 31 states and the District of Columbia have expanded Medicaid, and 19 states have

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chosen not to [10]. Non-expansion states continue to provide traditional Medicaid insurance, which is a jointly funded federal and state insurance program. In Virginia, traditional Medicaid covers pregnant women and children earning up to 143% of the federal poverty level (FPL) and disabled adults earning up to 80% of FPL [11]. States that decided to expand Medicaid now provide insurance coverage to all Americans less than 65 years of age earning up to 138% of FPL, regardless of disability status [12].

The objective of this study was to determine if bariatric surgery and the resultant improvement in overall health would have an impact on the postoperative insurance status of Medicaid patients in a non-expansion state. We hypothesized that successful bariatric surgery would lead to beneficial weight loss and improved health, but an unintended loss of Medicaid insurance coverage.

Materials and methods

Patients

All patients who underwent bariatric surgery at the University of Virginia Health System from January 1985 through December 2015 were identified using a prospectively collected database. The Institutional Review Board for Health Sciences Research approved this study (Protocol #17132) with waiver of consent. This database includes demographics such as payor status, preoperative weight, preoperative comorbidities, postoperative complications, postoperative comorbidities, and annual postoperative weights from follow-up appointments. Subsequent payor status at one year postoperatively was obtained through an institutional Clinical Data Repository (CDR) containing financial data from all patient visits. Patients were characterized as either still having Medicaid postoperatively or not. Those no longer covered by Medicaid were further classified into a self-pay group or another non-Medicaid payor group.

Statistics

Statistical analysis was performed using χ^2 for categorical variables and either t test or Mann–Whitney *U* test for continuous variables, as appropriate. Multivariate logistic regression was used to identify important predictors for loss of Medicaid coverage and subsequent self-pay status. The decision was made a priori to include variables likely to influence payor status based on prior literature, with one variable added to the model per 10 events. A *p* value of < 0.05 was used for statistical significance. SAS version 9.4 (SAS Company, Cary NC) was used for analyses.

Results

One year after bariatric surgery, 41.6% of patients covered by Medicaid for their surgery no longer had this coverage. In general, these patients had lower rates of medical comorbidities, including diabetes mellitus (44 vs 32%, $p = 0.02$), and lower BMI (56.1 ± 11.0 vs 53.7 ± 11.1 kg/m², $p = 0.04$) preoperatively (Table 1). However, there was no difference in the coverage at 1 year based on procedure type, as a majority of both groups underwent Roux-en-Y Gastric Bypass (RYGB) (83 vs 84%, $p = 0.96$). Finally, patients no longer covered by Medicaid at one year were younger (36 vs 38 years, $p = 0.01$).

Of the patients no longer covered by Medicaid, 49.0% no longer had insurance coverage and were listed as self-pay at one year. This accounted for 20.4% of the entire population resulting in no coverage falling into the self-pay category. Patients with self-pay status at 1 year were significantly younger (34 vs 38 years, $p < 0.0001$) and generally had lower preoperative BMI (52 vs 56 kg/m², $p = 0.02$). There were no statistical differences in any of the preoperative medical comorbidities between the groups (Table 2).

Multivariate logistic regression demonstrates that preoperative medical comorbidities are a poor predictor of future Medicaid coverage (c-statistic = 0.654). The only independent predictor for loss of Medicaid coverage at one year in our model is preoperative BMI (OR = 0.755, $p = 0.01$), which is inversely associated (Table 3). For every 10 point increase in BMI, a patient was 25% less likely to lose their coverage at one year.

Finally, regression modeling for self-pay status demonstrated better predictive performance (c-statistic = 0.714). Again, BMI was inversely correlated with the likelihood of self-pay status at 1 year with each 10-point increase in BMI associated with a 30% reduction in the risk of progression to self-pay (OR 0.69, $p = 0.01$). Similarly, patient age was independently associated with self-pay status, with older patients having a lower risk (OR 0.52, $p = 0.0002$). Female gender resulted in a three times increased risk (OR 3.26, $p = 0.01$), while type of operation was also independently predictive of self-pay status (Table 4).

Discussion

The present study importantly demonstrates that over 40% of patients with Medicaid coverage at time of bariatric surgery no longer have that coverage at 1 year. Additionally, half of these, or over 20% of the entire population, will have no insurance coverage for long-term care and

Table 1 Characteristics of Medicaid patients based on persistence of Medicaid coverage at 1 year

Variable	Medicaid	No Medicaid	<i>p</i> value
Patients	218 (58.4%)	155 (41.6%)	–
Age (years)	38 ± 9	36 ± 9	0.013
Sex (female)	201 (92.2%)	140 (90.3%)	0.523
Race (white)	185 (84.9%)	124 (80.5%)	0.271
Body Mass Index (kg/m ²)	56.1 ± 11.0	53.7 ± 11.1	0.044
Diabetes Mellitus	96 (44.0%)	50 (32.3%)	0.022
Hypertension	131 (60.1%)	78 (50.3%)	0.061
Obstructive Sleep Apnea	96 (44.0%)	53 (34.2%)	0.056
Degenerative Joint Disease	80 (36.7%)	68 (43.9%)	0.163
Chronic Obstructive Pulmonary Disease	26 (11.9%)	23 (14.8%)	0.411
Gastroesophageal Reflux Disease	93 (42.7%)	60 (38.7%)	0.445
Psychiatric Disease	65 (29.8%)	45 (29.0%)	0.870
RYGB	181 (83.0%)	130 (83.9%)	0.963

Table 2 Baseline characteristics of patients no longer covered by Medicaid at 1 year

Variable	Self-pay	Any payor	<i>p</i> value
Patients	76 (20.4%)	297 (79.6%)	–
Age (years)	34 ± 8	38 ± 9	<0.0001
Sex (female)	67 (88.2%)	274 (92.3%)	0.255
Race (white)	60 (79.0%)	249 (84.1%)	0.283
Body Mass Index (kg/m ²)	52.4 ± 9.7	55.8 ± 11.4	0.023
Diabetes mellitus	23 (30.3%)	123 (41.4%)	0.076
Hypertension	38 (50.0%)	171 (57.6%)	0.235
Obstructive sleep apnea	24 (31.6%)	125 (42.1%)	0.095
Degenerative joint disease	26 (34.2%)	122 (41.1%)	0.275
Chronic obstructive pulmonary disease	9 (11.8%)	40 (13.5%)	0.708
Gastroesophageal reflux disease	27 (35.5%)	126 (42.4%)	0.275
Psychiatric disease	18 (23.7%)	92 (31.0%)	0.214
RYGB	54 (71.0%)	257 (86.5%)	0.005

Table 3 Logistic regression for loss of Medicaid coverage at 1 year

Variable	Odds ratio	95% Confidence Interval	<i>p</i> value	
Age (10 years)	0.794	0.612	1.03	0.082
Body Mass Index (10 kg/m ²)	0.755	0.604	0.943	0.013
Chronic obstructive pulmonary disease	2.007	0.867	4.647	0.104
Degenerative joint disease	1.633	0.988	2.702	0.056
Obstructive sleep apnea	0.754	0.446	1.277	0.294
Diabetes mellitus	0.646	0.379	1.102	0.109
Gastroesophageal reflux disease	0.767	0.475	1.238	0.278
Hypertension	0.846	0.515	1.391	0.510
Race (white)	1.396	0.792	2.462	0.249
Sex (female)	1.701	0.754	3.838	0.201
Psychiatric disease	0.832	0.483	1.434	0.508
Operation (band vs RYGB)	0.686	0.28	1.677	0.408
Operation (sleeve vs RYGB)	0.873	0.414	1.842	0.722

Table 4 Logistic regression for self-pay status at 1 year

Variable	Odds ratio	95% Confidence Interval		<i>p</i> value
Age (10 years)	0.524	0.371	0.739	0.0002
Body Mass Index (10 kg/m ²)	0.693	0.518	0.927	0.013
Obstructive sleep apnea	0.775	0.406	1.479	0.440
Diabetes mellitus	1.185	0.623	2.257	0.604
Race (white)	1.508	0.768	2.957	0.233
Sex (female)	3.256	1.25	8.477	0.016
Psychiatric disease	0.808	0.424	1.54	0.517
Operation (band vs RYGB)	1.713	0.659	4.452	0.269
Operation (sleeve vs RYGB)	2.256	1.035	4.916	0.041

follow-up. Given the major long-term consequences of bariatric surgery with patients at risk for nutritional (malnutrition/hypoglycemia/vitamin deficiency) as well as surgical (hernia/bowel obstruction) complications, this represents a major disparity in care. Regression analysis demonstrates that patients at lower BMI are at the greatest risk of losing Medicaid coverage, while it is the youngest patients at the highest risk for long-term complications who are most likely to end up with no postoperative insurance coverage at all.

Several groups have demonstrated that Medicaid patients have worse outcomes after most surgical interventions, which is likely related to higher comorbid disease burden in this socioeconomically challenged population [13–17]. Furthermore, within the bariatric surgery population, Medicaid patients have been shown to have similar benefits with weight loss and comorbidity amelioration despite higher risks and longer hospital stays [18–20]. However, given the long-term implications of bariatric surgery and the focus on insurance status at time of surgery, we sought to examine the status of insurance coverage for these patients at 1 year after surgery. With over 20% of the population losing all insurance coverage by 1 year in the non-expansion Medicaid model, patients may be unable to receive the long-term care and follow-up required. This disparity should be addressed as more patients are receiving bariatric surgery every year that may not be able to afford long-term management for this chronic disease.

The strongest predictor of progression to self-pay status was younger age, with each decade of life reducing your risk of complete loss of coverage by half. Unfortunately, the young patients undergoing bariatric surgery, especially RYGB, are at the highest risk of long-term nutrition complications [21–23]. When these patients fall into a coverage gap, they are not going to get necessary nutrient screening, vitamin supplementation, and appropriate antacid therapy to

reduce the risk of marginal ulcers [24–26]. By expanding Medicaid coverage to all patients within 138% of the FPL, these patients who no longer qualify for disability due to weight loss and improved medical comorbidities will still be able to get coverage for follow-up care.

The limitation of this study includes the retrospective nature precluding demonstration of causality. Also, given the long study period and the relatively low rate of bariatric surgery in the Medicaid population (10%), there is a potential time lag bias that is not fully appreciated. Finally, we were unable to confirm that patients do not qualify for Medicaid coverage and have based our conclusions on what payor status was documented during their hospital encounter approximately one year after bariatric surgery. Additionally, comorbidities are unable to be determined at 1-year follow-up since these are not all bariatric surgery clinic follow-up visits.

Patients undergoing successful bariatric surgery in states that did not expand Medicaid are at high risk of losing their Medicaid insurance coverage postoperatively. Successful surgery results in over half of patients being off of disability and back to work with other insurance coverage. However, in a state not expanding Medicaid, over 40% of patients losing Medicaid coverage postoperatively return for follow-up with no insurance coverage at all. This barrier to care has major implications in patients undergoing bariatric surgery, which requires life-long follow-up and nutrition screening.

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Compliance with ethical standards

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