

2021

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### Recommended Citation

CHEN I. Sleeve gastrectomy improves metabolic syndrome in psychologically stable patients with schizophrenia. Clin. Res. Prac. May 28 2021;7(1):eP2535. <https://doi.org/10.22237/crp/1622160000>

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# Sleeve gastrectomy improves metabolic syndrome in psychologically stable patients with schizophrenia

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**ABSTRACT** A clinical decision report appraising:

Archid R, Archid N, Meile T, Hoffman J, Wulff D, Teufel M, Muthig M, Quante M, Konigsrainer A, Lange J. Patients with schizophrenia do not demonstrate worse outcome after sleeve gastrectomy: a short-term cohort study. *Obesity Surgery*. 2019;29:506-510. <https://doi.org/10.1007/s11695-018-3578-0>

for a patient with schizophrenia and obesity.

**Keywords:** *schizophrenia, weight loss*

## Clinical-Social Context

Gilbert Cummings [pseudonym] is a 42-year-old obese African-American man with a past medical history of schizophrenia, COPD, hypertension, obesity, and tobacco use disorder who was seen for an outpatient follow-up visit post hospitalization. He reported having a 3-day history of intermittent right lower quadrant abdominal pain which intensified to 9/10 one evening after dinner. Mr. Cummings went to the emergency department a month prior for similar abdominal pain but was intoxicated with cocaine and an ethanol level of 163 mg/dL. During that visit, Mr. Cummings was observed for a few hours in the emergency department and discharged home after observation in the emergency room. Mr. Cummings's abdominal pain was exacerbated by smoking and hypertension. The treatment team recommended hypertension control and weight loss. Although these recommendations were technically correct, it was obvious that they were also impractical. Mr. Cummings requested, "Can I get weight loss surgery?" He was told that would not be a viable treatment option until he lost more weight on his own. Such interactions are often frustrating for both patients and medical providers.

Mr. Cummings was diagnosed with Schizophrenia disorder when he was 23 years old. He is homeless and has spent the last 15 years in and out of psychiatric hospitals and homeless shelters. He is unemployed and receives government assistance for food and medication assistance. During the Coronavirus pandemic, he ran out of his amlodipine for hypertension. His diet is also poor as he eats traditionally junk food.

Mr. Cummings's obesity is part of the increased prevalence we see according to the Third National Health and Nutrition Examination Survey (NHANES III) where a comparison of severe and persistent mentally ill patients are more likely to have metabolic syndrome and cardiovascular risk.<sup>1</sup> Mr. Cummings's shorter life expectancy may be due to cardiovascular disease rather than psychiatric illness.<sup>2</sup> Mr. Cummings has been repeatedly stabilized on olanzapine, a second-generation antipsychotic which can cause significant weight gain.

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ISSN: 2379-4550

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## Clinical Question

Are patients with schizophrenia poor candidates for bariatric surgery?

## Research Article

Archid R, Archid N, Meile T, Hoffman J, Wulff D, Teufel M, Muthig M, Quante M, Konigsrainer A, Lange J. Patients with schizophrenia do not demonstrate worse outcome after sleeve gastrectomy: a short-term cohort study. *Obesity Surgery*. 2019;29:506-510. <https://doi.org/10.1007/s11695-018-3578-0><sup>9</sup>

## Description of Related Literature

The PubMed database was used to search for articles with the keywords “bariatric surgery” AND “schizophrenia” AND “outcomes.” A total of six results were returned. We reviewed each of them as there were such few numbers. Our goal was to find an article that would give us more insight into answering our question of whether patients with schizophrenia would be good candidates for bariatric surgery due to their possible poor follow up to care.

A search was repeated on PubMed using the terms “(schizophrenia) AND (bariatric surgery OR gastrectomy)”, and the filter of 10 year publication date. Fourteen results were generated. One article was a prospective study on weight loss outcomes in patients with or without psychiatric comorbidities.<sup>3,4</sup> However, only four of the 75 patients with a psychiatric comorbidity had schizophrenia.

Kouidrat et al. 2017 was not selected as it involved patients with both schizophrenia and bipolar disorder.<sup>5</sup> This would not be useful in our situation as our patient in question has schizophrenia. Shelby et al. 2015 similarly involved many types of mental illness such as anxiety and depression.<sup>6</sup> Brito et al. 2020 did focus on schizophrenia patients but was a case series.<sup>7</sup> Lagerros et al. was not selected as it focused more on the delaying of discharge in patients with psychiatric co-morbidity undergoing gastric bypass surgery.<sup>8</sup>

Archid et al. 2019 was selected because it was a cohort study of patients with schizophrenia undergoing sleeve gastrectomy, a bariatric surgery.<sup>9</sup> The authors selected a cohort study design which compared surgical and psychiatric outcomes between a schizophrenia group and mentally healthy group. Due to the nature of the study where it looked at follow-up of at least 12 months after surgery, this article was appropriate to answering the question about whether or not schizophrenia patients would be good candidates. This is important because just because a patient tolerates a procedure does not necessarily mean that benefits are present or persist.

The Grade of Recommendation using the SORT criteria for sleeve gastrectomy for patients with Schizophrenic disorder is B— limited quality patient-oriented evidence.<sup>10</sup>

## Critical Appraisal

The study identified patients from a database at a German institution during period of January 2008 and December 2013 for this archival cohort study. This study was able to find a homogenous group of patients with schizophrenia whereas many studies seen had heterogenous psychiatric comorbidities. It is not known whether this was an academic institution similar to the hospital where Mr. Cummings received his care. The study group had a confirmed diagnosis of schizophrenia whereas the control group was mentally healthy. This study had a Level 2 level of evidence as it was a cohort study with smaller sample size.<sup>10</sup> No funding bias was identified as there were no disclosures made by authors.

The primary outcomes of the study looked at sleeve gastrectomy for weight loss, hemoglobin A1C levels and psychiatric status. The comparison was not blind. Chart review methods were not described. The study had follow-up from baseline, 6 months, 12 months and 24 months. There were no significant differences in BMI between the schizophrenia group and control group after repeated ANOVA of BMI. Both groups lost weight. There was no significant group effect and a clear time effect in both groups. There were no significant differences between both groups from surgery time and periods of 6-, 12-, and 24-month follow-up ( $p = 0.79, 0.88, 0.82, 0.73$ ). Both groups showed decrease in HbA1c levels.<sup>9</sup> All patients showed improvement in mood and satisfaction. The self-estimated



mood was significantly greater in the schizophrenia group compared to control at 24 months ( $p = 0.001$ ). There was no psychological instability mentioned in these patients at follow-up.<sup>9</sup>

The schizophrenia group did require psychological stability during the last 12 months prior to surgery. It is notable that patients presumably were allowed to have psychiatric symptoms—just not severe enough to require hospitalization. Exclusion criteria was shown to be psychological instability which was considered as hospitalization or suicidal risk. The schizophrenia group only had 8 patients which were all psychologically evaluated preoperatively. However, at time of follow-up only 7 schizophrenia patients were adherent. Majority of patients stayed within the study as adherence to follow-up was 75%. The control group had 59 patients. There was a significant difference in the number of patients in the experimental versus the control group. This could have been due to the length of requirement of psychological stability.

This differs from the common schizophrenia population and the patient I encountered as many schizophrenia patients do not achieve long length of stability. This would display some selection bias. The study also looked at these patients after one year which also then requires patients to be stable for 2 years. Patients did not seem to be recruited in any particular manner.

This study could have been more convincing if it had another treatment group of receiving a medication like metformin. Metformin is the most common or gold standard treatment for weight loss and metabolic syndrome associated with antipsychotic use in schizophrenia. It would be worth seeing whether the changes in hemoglobin A1c and weight loss are comparable in these two groups. My patient had already been taking metformin and still had untreated metabolic syndrome. Although there are no guidelines, it would be interesting to see if patients who have failed medication management for metabolic syndrome may become candidates for sleeve gastrectomy or bariatric surgery.

### Clinical Application

Mr. Cummings was interested in losing weight to help his overall self-esteem as well as his medical health. Mr. Cummings's overall medical condition suffered for many reasons including lack of access to care during the Coronavirus pandemic. He also struggled to obtain healthy foods given his living situation in a food desert lacking access to affordable fresh foods. Mr. Cummings also has little options to exercise and stay healthy during the wintertime. On top of that, the medication he took to improve his schizophrenia predisposes him to weight gain.

During the previous hospitalization, to tell Mr. Cummings to lose weight and control his hypertension does not inform him of things he doesn't already know—and might be considered condescending or rude. It certainly didn't seem helpful from Mr. Cummings's perspective, which provoked the current clinical question.

Archid et al. 2019 showed that stable patients with schizophrenia received the same benefits and outcomes compared to mentally healthy controls after 24 months of sleeve gastrectomy for weight loss.<sup>9</sup> Unfortunately, the patients selected for the study are different than Mr. Cummings in that he would not be an appropriate candidate based on psychological instability. There can be potential consequences with applying this knowledge to a large sample size and not a case-by-case basis some patients with poor treatment adherence can be at high risk of post-operative complications. Mr. Cummings met the inclusion criteria based on having obesity and metabolic syndrome but as a means of treatment and management of his abdominal pain and weight would be better through medication management.

### New Knowledge Related to Clinical Decision Science

Patients with schizophrenia commonly have difficulty with medication adherence which leads to psychological instability. However, it is important to take into account the desires of the patient to empower them to live a healthier life. Despite the article receiving Level 2, Class B recommendation status to provide a sleeve gastrectomy as a treatment option, it is important to take into account several factors that impact the ability to follow-up. Our patient and his social circumstance make it difficult for him to follow-up especially at the time of this pandemic.

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The important question from the perspective of Clinical Decision Science is how much stigma of mental illness changes management recommendations. Demonstrating that patients with schizophrenia can do well with surgery means that doctors need to be seeking out those patients that have potential to do well.

Considering the elaborate screening and supportive care teams that exist for organ transplant patients, one wonders why similar systems of care don't exist for patients like Mr. Cummings. As advocates for our patients, we need to contemplate how to address these inequities and deal with them on a system-level basis.

## Conflict Of Interest Statement

The author declares no conflicts of interest.

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