




Performing Bariatric Surgery on Previously COVID+ Patients Is Safe and Effective

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Introduction

The greatest pandemic in the last 100 years resulted in a temporary halt in elective surgery. As procedures resume, there has been concern that a COVID diagnosis may increase the risk of complications and lessen effectiveness particularly for patients with obesity. Here we present the first experience with bariatric surgery in patients with a previous COVID diagnosis.

Methods

Our local MBSAQIP registry was queried for patients with a previous COVID diagnosis in 2020. In both groups, we examined demographics, 30-day complications, and weight loss by benchmarking to national results.

Key Points

- The optimal timing for surgery after a COVID diagnosis is unknown.
- Bariatric surgery is an essential contributor to patient health.
- Bariatric surgery is safe and effective in patients who have previously had COVID.

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Results

Four hundred twenty-seven bariatric procedures were performed during the study period in 2020. These procedures included primary laparoscopic sleeve gastrectomy or Roux-en-y gastric bypass (RYGB) and conversions of prior band/vertical banded gastroplasty to sleeve or RYGB. Of these procedures, 7 patients were identified as having a previous COVID diagnosis. Six patients presented with mild to asymptomatic disease, with symptoms including fever or cough, and were managed with 2 weeks of home quarantine. One patient was admitted to the MICU with hypoxia and required a non-rebreather mask and high flow nasal cannula and was weaned to room air within 1 week of admission. The average time from a COVID diagnosis to surgery ranged from 17 to 253 days, with an average of 82 days and a standard deviation of 80. The average time between diagnosis and surgery with the outlier excluded was 54.5 days, with a standard deviation of 31 days. All patients were re-tested within 72 h of their surgery date with a PCR test. No patient with an active COVID diagnosis received surgery, and thus, no patients were symptomatic at the time of surgery. COVID+ patients were compared to non-COVID+. Demographically, the COVID+ patients were more frequently older (mean age 50 vs 43), Hispanic (29% vs 27.3%), African-American (57% vs 30%), and more comorbid with higher rates of diabetes (29% vs 21%), OSA with CPAP (78% vs 49%), and hypertension (57% vs 36%). BMI was similar between the two groups (45.3 vs 47.4, $p > 0.05$). Sleeve gastrectomy was utilized less in the COVID+ population (57% vs 69%). For the COVID+ population, the only complication was one superficial skin infection which required incision and drainage and outpatient antibiotics. The weight loss for COVID+ patients was compared with the MBSAQIP calculator weight loss prediction tool [1] with six of seven patients losing more than predicted at 1-month post-op. The average amount of weight loss at 1 month was 10.3 kg, which was higher than the

predicted weight loss of 7.6 kg, although our study lacked sufficient power to demonstrate significance ($p = 0.13$). A similar analysis was performed for weight loss at 3 months and 6 months (mean \pm standard error of mean; actual: 16.4 ± 2.0 kg, predicted: 15.4 ± 1.5 kg, $p = 0.34$) and 6 months (actual: 24.6 ± 5.0 kg, predicted: 25.4 ± 3.2 kg). These results are presented in Table 1.

Conclusion

Elective surgery was halted during the initial phase of the COVID-19 pandemic. Many of these interventions including bariatric surgery can be considered essential contributors to patient health as they have direct impacts on quality and quantity of life and medical comorbidities and contribute directly to minimizing negative outcomes that occur because of delays in care [2, 3].

Initial studies examining the question of optimal timing for surgery after a COVID diagnosis have suggested a 4-week minimum due to increased mortality and pulmonary complications. One study found that patients who underwent surgery before 30 days had higher rates of complications when surgery was performed within 1–2 weeks as compared to 2–4 weeks and > 4 weeks [4]. Only one of our patients had surgery within this 4-week period (17 days from positive test to surgery), and this was the single patient in our study who had any complication (SSI). Specifically, no patients in our cohort had any complications with regard to pulmonary status despite being at higher risk by the nature of their obesity diagnosis. Importantly, our results show that weight loss outcomes are non-inferior in patients with previous COVID-19 diagnoses (Fig. 1).

COVID-19+ obese patients have an increased risk of developing critical illness compared to normal weight

Table 1 Patients and treatment characteristics ($n = 7$)

Variable	Average	sem
Age	21.6	0.2
Days from positive test to surgery	82.9	32.7
Procedure		
Sleeve gastrectomy or band to sleeve	$n=5$	
RYGB or sleeve to bypass	$n=2$	
Average preoperative weight	115.3 kg	9.3 kg
Predicted 1-month weight loss	7.6 kg	1.9 kg
Actual 1-month weight loss	10.3 kg	1.0 kg
Predicted 3-month weight loss	15.4 kg	1.9 kg
Actual 3-month weight loss	16.5 kg	2.4 kg
Predicted 6-month weight loss	24.7 kg	2.5 kg
Actual 6-month weight loss	24.8 kg	4.7 kg
Number of complications	1 (superficial SSI)	

sem standard error of mean, SSI surgical site infection

Predicted and Actual Weight Loss

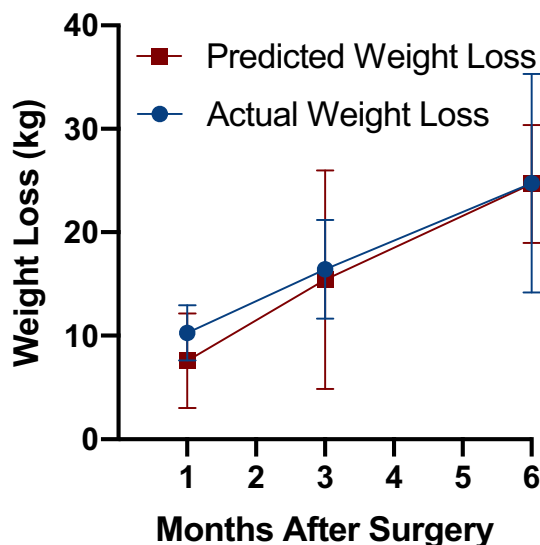


Fig. 1 Predicted and actual weight loss. Bariatric surgery in patients with previous diagnoses of COVID-19 results in non-inferior weight loss compared to patients without a previous diagnosis

counterparts likely due to ACE2 gene expression (COVID-19 viral entry receptor) being higher in both visceral and subcutaneous adipose tissue in humans than in lung tissue [5]. Thus, although limited by sample size and single institution, these results suggest that bariatric surgery is safe and effective in patients who have previously had COVID. With age and obesity being the leading risk factors for contracting COVID and its complications, bariatric surgery may afford the ability to decrease risk by mitigating one modifiable risk of weight.

Declarations

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. For this type of study, formal consent is not required.

Informed Consent Does not apply to this study.

Conflict of Interest The authors declare no competing interests.

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