



“COVID-19 and Obesity: Postoperative Risk in Patients Who Have Undergone Bariatric Surgery. Preliminary Report from High Volume Center in Italy (Lombardy)”

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Published online: 27 June 2020

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Dear Editor,

The spread of coronavirus disease 2019 (COVID-19) has reached—from the beginning of March—the necessary epidemiological criteria for it to be declared a pandemic [1]. Only 3 cases of COVID-19 were identified in Italy in the first half of February 2020 and all involved people who had recently travelled to China. On February 20, 2020, a severe case of pneumonia due to SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) was diagnosed in northern Italy’s Lombardy region in a man in his 30s who had no history of possible exposure abroad. Within 14 days, many other cases of COVID-19 in the surrounding area were diagnosed [2]. Italy has had 177,143 confirmed cases according to the Istituto Superiore di Sanità as of April 23, and 23,188 deaths [3]. It was hypothesised that Covid-19 had been circulating within the population since January [4]. Although the effects of COVID-19 on patients with obesity have not yet been well described, the need for increased vigilance, priority on detection and testing, and aggressive therapy for patients with obesity and COVID-19 infections has however been suggested

[5]. Some studies have identified a higher Body Mass Index (BMI) as a risk factor for severe disease in patients with Covid-19 [6, 7]. Patients with obesity have reduced chest wall elastance and lower total respiratory system compliance with a decrease expiratory reserve volume [8]. The spread, especially in northern Italy, has been wide since January [4]. In that period, hospitals worked normally until the end of February. In the absence of knowledge of the spread of Covid-19, there is a high risk of intra-hospital infection, because the necessary precautionary measures are not implemented [9].

We conducted a retrospective analysis to investigate the incidence of Covid-19 infection in patients who have recently undergone bariatric surgery. This is a retrospective review about 218 patients undergoing elective bariatric surgery (both primary and redo-surgery) for morbid obesity at the same Bariatric Surgery Centre (Public Hospital, Italy) from January 7, 2020, to March 2, 2020. A total of 218 Bariatric Surgery were performed in this period (152 females; 66 males). All patients suffered from morbid obesity (according to the recommendations of the Italian Society for Bariatric and

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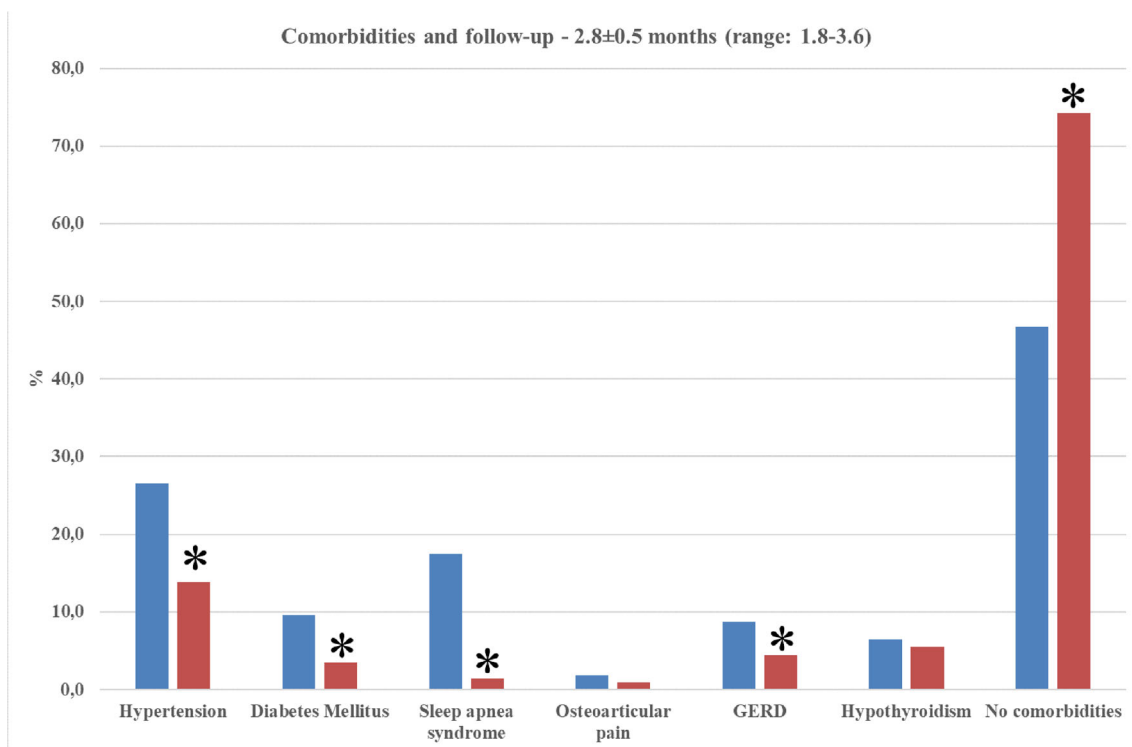
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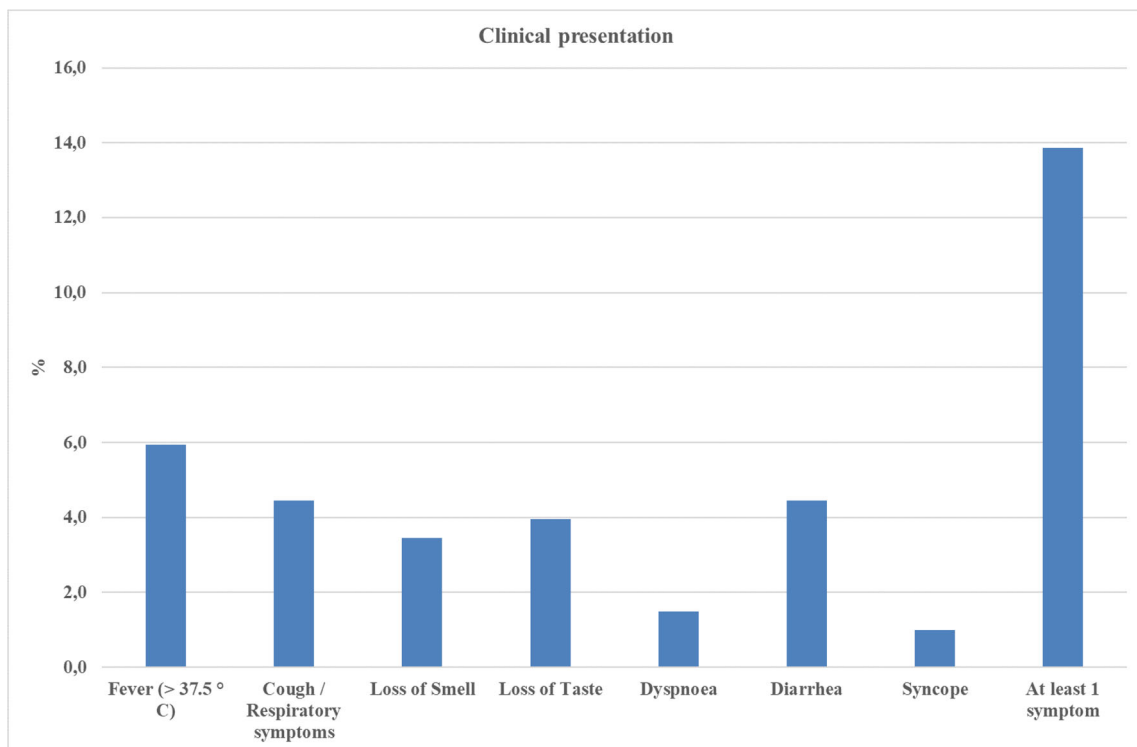
Metabolic Surgery, SICOB). Different types of surgery were performed, depending on the type of obesity, preoperative tests, and comorbidities. After surgery, the normal length of stay was 3 days, in the absence of complications. Mean BMI pre-surgery was $43.6 \pm 6.9 \text{ kg/m}^2$ (range 30.0–70.0). Mean age was 43.9 ± 12.1 years. The most performed operation during this period was laparoscopic sleeve gastrectomy (LSG), 81.2%. No intraoperative complications or conversion to laparotomy was reported. A regular postoperative course was recorded in 94.5% of the patients (206/218 patients). Complications were stratified according to the Clavien-Dindo classification, as follows: Grade I, 2/218 (0.9%); Grade II, 4/218 (1.8%); Grade IIIb, 6/218 (2.8%). For this study, we will analyse the follow-up up to 1–3 months. Starting from March in Italy, there are limitations regarding the travel from city to city and from region to region. Therefore, clinical visits could not be performed. We proceeded to contact each patient by phone. We have considered the most common clinical presentations of Covid-19 [10–14]. Each patient was asked the same series of questions: “Since the day of discharge he has had Fever ($> 37.5 \text{ }^\circ\text{C}$)? Cough/respiratory symptoms? Loss of smell? Loss of taste? Dyspnoea? Diarrhoea? Syncope? Contact with Covid + patient? Covid test, not done? Covid test, positive? Covid test, negative? Hospitalization in Covid hospital? Further questions regarding weight loss, comorbid remission, and drug therapies with an average follow-up of 2.8 ± 0.5 months, we found an average BMI of $37.5 \pm 7.5 \text{ kg/m}^2$ ($p < 0.05$). Improvements in

comorbidities were also almost all statistically significant (Graph 1). Thirty days readmission was equal to 2/218 (0.9%). All patients were successfully contacted by phone, except for 16 patients, who are lost to follow-up. From discharge to the time of telephone contact, 12 (5.9%) of the patients reported having had a fever above $37.5 \text{ }^\circ\text{C}$. Nine patients (4.5%) reported coughing or respiratory symptoms. Three (1.5%) patients had dyspnoea. In total, 28 patients (13.9%) reported having had at least one symptom among those identified as related to Covid-19 infection (Graph 2). A total of 26 patients (12.9%) reported that they had at least one contact with a person who subsequently tested positive for Covid-19. Despite these data, testing for Covid-19 was not performed in 192 cases (95.0%) (Graph 3). Ten patients (5.0%) were tested for Covid-19. Seven patients (3.5%) tested negative. Three patients (1.5%) tested positive for Covid-19 and were all admitted to the Covid department. All three patients were hospitalized in Covid wards. None of these patients needed intubation or intensive care. All three patients developed Covid-related interstitial pneumonia. Of these 3 patients, 1 patient had been readmitted to our hospital within 30 days of surgery due to surgical complication. No cases of death were recorded in the population under investigation.

Why did we want to conduct this investigation? We work near Bergamo, in the Italian epicentre of the Covid-19 pandemic. We therefore exposed, without being able to know until the beginning of March, obese patients at risk of contagion. Furthermore, these same patients, coming from all over Italy,



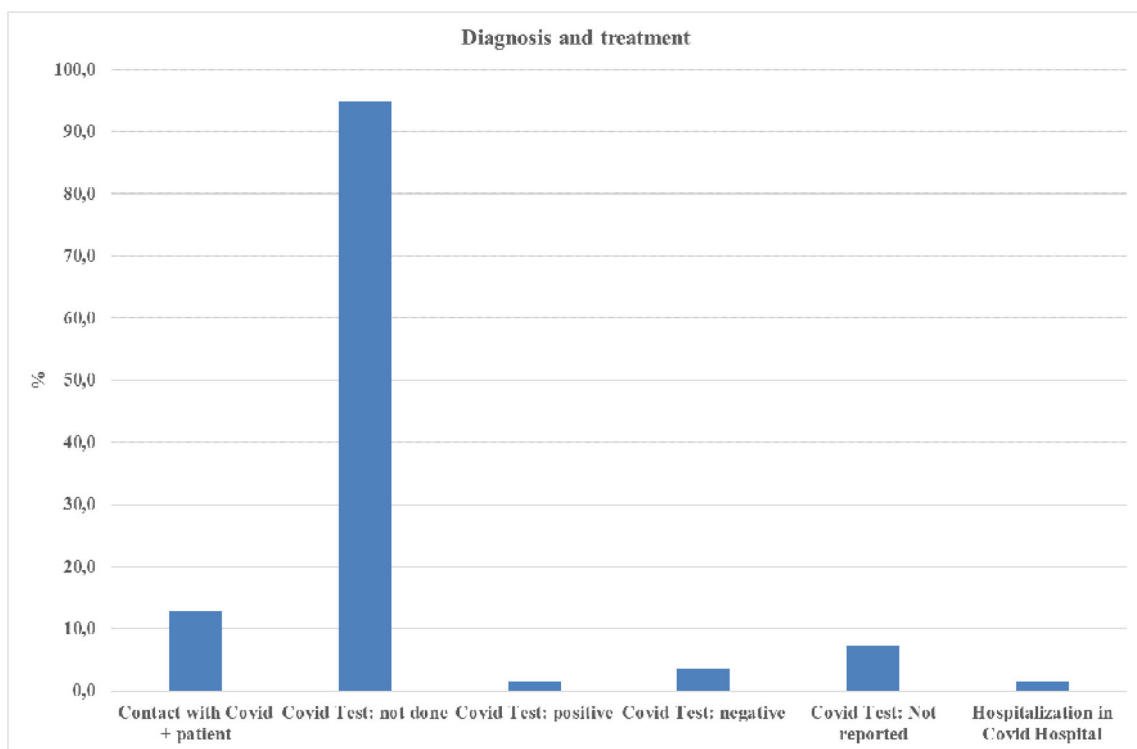
Graph 1 Comorbidities (blue, preoperative; red, follow-up). *, $p < 0.05$; GERD, Gastroesophageal Reflux Disease



Graph 2 Clinical presentation

had further opportunities to contract Covid-19. Of patients, 13.9% reported at least one Covid-19 related symptom. Of patients, 12.9% reported at least one contact with a subject

tested positive for Covid-19. Compared with these high percentages, a high percentage of patients (95.0%) did not perform Covid test. Another not low percentage of patients (16/218–



Graph 3 Covid diagnostic tests

7.3%) was lost at follow-up. This data is interesting, because it also highlights a possible limit of telemedicine. Despite the high number of patients who reported at least one symptom, only 10 (5.0%) patients were tested for Covid-19. Seven (3.5%) were negative. Three (1.5%) were positive. All these 3 patients developed clinical forms that required hospitalization. One of these cases is a patient who was hospitalized for a surgical complication. The infection was probably contracted in the hospital. Although 3 cases (1.5%) required hospitalization, and all 3 cases were still obese with BMI > 35, none of these 3 cases needed intensive care or CPAP (continuous positive airway pressure) therapy. No case of death was recorded.

The data we have collected in this sample is encouraging. Furthermore, this sample has not yet achieved a weight loss that eliminates the obesity risk factor (average BMI 37.5 ± 7.5). Although the reported rate of symptoms is high (13.9%), few patients have developed symptoms that require investigations aimed at excluding Covid-19 infection (5.0%). At last, 3 patients (1.5%) tested positive for Covid-19 and were all admitted to the Covid department.

Main limitations of this study are represented by being a single-centre retrospective study, sample size, and heterogeneity of the population. Lastly, a strong limitation was that it was only possible to carry out a telephone investigation.

From these data, it seems evident that newly operated obese patients with risk factors developed Covid-19 infection in low percentages, superimposable to estimates regarding the general incidence of infection in the general Italian population [15, 16]. It is very encouraging that no patient has developed severe forms that require intensive care or CPAP. Further analysis is needed.

Compliance with Ethical Standards

Conflict of Interest Matteo Uccelli has no conflict of interest to report.

Giovanni Carlo Cesana has no conflict of interest to report.

Francesca Ciccarese has no conflict of interest to report.

Alberto Oldani has no conflict of interest to report.

Adelinda Angela Giulia Zanoni has no conflict of interest to report.

Stefano Maria De Carli has no conflict of interest to report.

Riccardo Giorgi has no conflict of interest to report.

Roberta Villa has no conflict of interest to report.

Ayman Ismail has no conflict of interest to report.

Simone Targa has no conflict of interest to report.

Stefano Olmi has no conflict of interest to report.

Informed consent was obtained from all individual participants included in the study.

Study did not require approval from the ethics committee.

This article does not contain any studies with human participants or animals performed by any of the authors.

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