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THE IMPACT OF THE COVID-19 PANDEMIC ON THE PERFORMANCE OF LAPAROSCOPIC BARIATRIC SURGERY IN BRAZIL

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Abstract: Introduction: Obesity and metabolic syndrome (MS) are global public health problems, with increasing prevalence in Brazil. Bariatric surgery, especially by laparoscopy, has established itself as an effective strategy for controlling obesity and its associated factors, promoting significant clinical improvement and reduced mortality. The COVID-19 pandemic, however, has posed challenges to the maintenance of elective procedures, directly affecting access to this type of intervention. **Objective:** To analyze the impact of the COVID-19 pandemic on the performance of laparoscopic bariatric surgeries in Brazil, based on national public data. **Methodology:** This is a quantitative, retrospective epidemiological study with data extracted from the SUS Hospital Information System (SIH/SUS) between December 2017 and December 2024. All records of hospitalizations for laparoscopic bariatric surgery during the period were included. The variables analyzed were the number of annual procedures and their variation over time. As this is public domain data, the study is exempt from submission to the Ethics Committee, according to CNS Resolution No. 510/2016. **Results:** A progressive increase in the number of surgeries was observed until 2019. In 2020, there was a 33.7% drop compared to the previous year, coinciding with the peak of the pandemic. Starting in 2021, procedures resumed at an accelerated pace, reaching 5,419 surgeries in 2024, the highest number recorded in the period analyzed. **Conclusion: The** pandemic negatively impacted the performance of bariatric surgeries in 2020, but the resumption in the following years indicates both an operational recovery and an increase in demand, possibly driven by a greater perception of obesity as a risk factor for COVID-19 complications. It is essential to strengthen public policies to expand access to this treatment.

Keywords: Bariatric Surgery; COVID-19; Metabolic Syndrome; Obesity; Laparoscopy.

INTRODUCTION

The obesity epidemic is a global public health problem. In Brazil, according to the National Health Survey (PNS, 2020), more than half of adults were overweight (60.3%, representing 96 million people), with a higher prevalence among women (62.6%) than men (57.5%). In addition, about one in five adolescents in the country, aged between 15 and 17, were overweight (19.4%), and 6.7% were obese (Brazil, 2022).

Currently, there are several pharmacological and non-pharmacological alternatives to treat this condition. However, bariatric surgery remains the most effective intervention for the long-term treatment of obesity and its comorbidities, contributing to increased life expectancy for patients who meet the criteria and undergo the procedure (Carlsson et al., 2020; Onzi et al., 2024).

Metabolic syndrome (MS) is a complex disorder that brings together a set of risk factors that increase the likelihood of cardiovascular disease and type 2 diabetes mellitus. Initially described as "syndrome X" by Reaven in 1988, its current definition includes insulin resistance, hyperglycemia, dyslipidemia, hypertension, and central obesity as its main characteristics (Fahed et al., 2022). Individuals with three or more of these factors are already considered to have the syndrome, which highlights the importance of early diagnosis and appropriate intervention, as recommended by the First Brazilian Guideline for the Diagnosis and Treatment of Metabolic Syndrome (2005).

The diagnostic evaluation includes measuring abdominal circumference, fasting glucose levels, triglycerides, HDL cholesterol, and blood pressure. Although insulin resistance is a central factor in the pathophysiology of MS, its direct measurement is not included in the diagnostic criteria due to limitations in large-scale application. Body fat distribution, especially visceral obesity, is one of the main risk factors for metabolic complications. The management of MS is based on lifestyle changes, including weight loss, physical activity, and healthy eating, with patient adherence being essential (I Brazilian Guideline, 2005; Fahed et al., 2022).

Given this, bariatric and metabolic surgery has established itself as one of the most effective therapeutic strategies for controlling obesity and MS. Evidence shows that bariatric procedures not only promote significant weight loss but also improve or even reverse the components of MS, such as blood glucose, blood pressure, and lipid profile (Eisenberg et al., 2022). For individuals with MS, surgery is indicated in cases of BMI ≥ 35 kg/m² and failure of conventional clinical treatment (I Brazilian Guideline, 2005).

Minimally invasive surgical techniques, such as laparoscopic and robotic bariatric surgery, are gaining prominence. The widely adopted laparoscopic technique uses small incisions and allows for rapid recovery, being effective in weight loss and control of comorbidities (Fernandes et al., 2021; Tinoco et al., 2002).

Currently, the most commonly performed procedures worldwide are Roux-en-Y gastric bypass (RYGB) and sleeve gastrectomy, which together account for about 90% of bariatric surgeries (Eisenberg et al., 2022). In Brazil, gastroplasty was included in the SUS in 1999, with RYGB accounting for about 70% of the procedures performed (Brazil, 2021; Fahs; Oliveira; Gomes, 2024).

However, during the COVID-19 pandemic, the performance of these surgeries was impacted due to hospital overload, the need for beds, and the restructuring of health services, especially in developing countries (Steenblock et al., 2021). In addition, the pandemic exposed a new vulnerable group: individuals with metabolic diseases and obesity, whose complications were aggravated by COVID-19 (Steenblock et al., 2021).

Given this context, the present study aims to analyze the impact of the COVID-19 pandemic on the performance of laparoscopic bariatric surgeries in Brazil, evaluating changes in the frequency of procedures, challenges faced by the healthcare system, and possible implications for the treatment of obesity and metabolic syndrome in the post-pandemic period.

METHODOLOGY

This study is a retrospective quantitative epidemiological study that analyzes data on laparoscopic bariatric surgery in Brazil between December 2017 and December 2024. These data were obtained from the SUS Hospital Information System (SIH/SUS) of the Department of Informatics of the Unified Health System (DATASUS).

The information was obtained from the SIH/SUS by searching for hospital admissions (AIH) in the Unified Health System (SUS) for the chosen procedure (laparoscopic bariatric surgery) and the period to be analyzed (2017-2024).

The following variables were taken into account for the interpretation of the collected data: Number of procedures and year of performance. Due to the unavailability of data in the SIH/SUS, the interpretation of the data did not take into account issues such as the type of technique used in each procedure, gender, and age group of the patients.

It should be noted that the use of data found only on public domain platforms exempts this study from submission to the Research Ethics Committee (CEP), according to Resolution No. 510, dated April 7, 2016.

RESULTS

Analysis of data extracted from the SUS Hospital Information System (SIH/SUS) revealed a significant increase in the number of hospital admissions approved for laparoscopic bariatric surgery in Brazil between 2017 and 2024 (Table 1).

In 2017, 239 hospitalizations were recorded for the procedure. In 2018, there was an increase of 57.1% (319), and it continued to rise in 2019, increasing by another 32.4% (268) compared to the previous year. However, in 2020, the first year of the COVID-19 pandemic, there was a significant reduction, with only 548 procedures recorded, representing a 33.7% drop compared to the previous year (Graph 1).

With the pandemic cooling down and elective hospital activities resuming, the numbers began to grow again in 2021, reaching 886 procedures (an increase of 61.7% compared to 2020). The growth trend accelerated in subsequent years, with 1,868 surgeries performed in 2022 and 2,804 in 2023, representing growth of 110.9% and 50.1%, respectively, compared to the previous year.

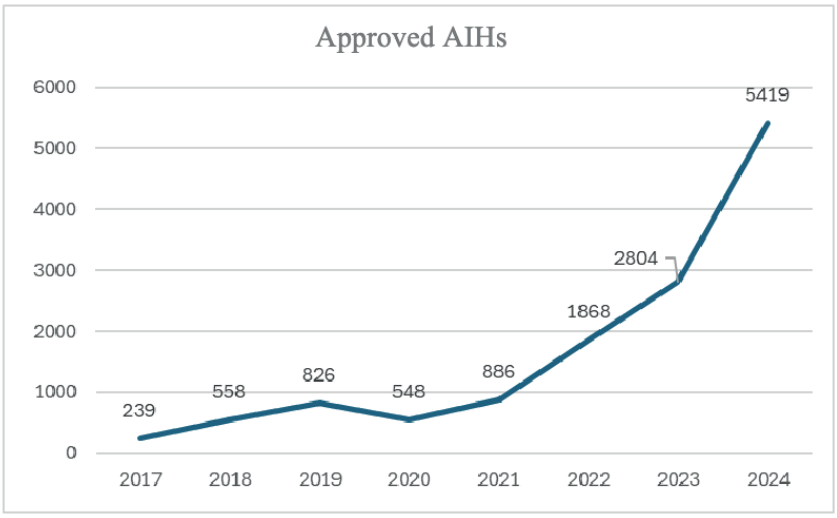
In 2024, the data show an exponential increase, reaching 5,419 surgeries, representing a 93.3% increase over the volume in 2023.

In total, between 2017 and 2024, 13,148 bariatric surgeries were performed by laparoscopy in Brazil.

Procedure	2017	2018	2019	2020	2021	2022	2023	2024	Total
Laparoscopic Bariatric Surgery	239	558	826	548	886	1868	2804	5419	13,148

Table 1 - Number of AIHs approved per year in Brazil between 2017 and 2024

Source: Ministry of Health - SUS Hospital Information System (SIH/SUS)



Graph 1 - Number of AIHs approved per year in Brazil between 2017 and 2024

Source: Ministry of Health - SUS Hospital Information System (SIH/SUS)

DISCUSSION

Analysis of data extracted from SIH/SUS (DATASUS) revealed a significant impact of the pandemic period, with a sharp drop in the number of surgeries in 2020, followed by a gradual recovery and exponential growth in subsequent years. These findings reflect not only the overload of the health system during the Covid-19 pandemic, but also the effect of pent-up demand, a phenomenon widely observed in elective procedures around the world (TRUCHE et al., 2021). A study published in The *Lancet Regional Health – Americas* estimated that more than 1 million elective and emergency surgeries were not performed in Brazil in 2020 due to the pandemic, highlighting the widespread impact of the health crisis on health services.

The reduction in bariatric surgeries during the pandemic can be explained by multiple factors, including the prioritization of resources for the care of patients with COVID-19, the shortage of intensive care beds, and the temporary suspension of elective procedures in several regions of the country (MASUKO, 2023). This scenario was reflected in a drop of approximately 33.7% in surgeries performed in 2020 compared to the previous year, corroborating international data that point to a similar reduction in other countries that also experienced challenges in maintaining non-emergency health services (RUBINO, 2020). A survey of 83 Argentine bariatric surgeons in 2020 indicated that about two-thirds of surgeons chose to suspend their activities until the pandemic was under control, while most specialized centers progressively reduced the number of procedures (BESKOW et al., 2020).

However, starting in 2021, with the advancement of vaccination and the decrease in hospitalization rates for COVID-19, there was a gradual resumption of bariatric surgeries, reaching pre-pandemic levels in 2022 and significantly exceeding these values in 2023 and 2024. The exponential growth recorded in 2024, with an increase of 93.3% over the previous year, may be associated with the resumption of hospital capacity, the return of patients who had their surgeries postponed, and greater awareness of obesity as a risk factor for severe complications from COVID-19 (CUMMINGS et al., 2020). The study by Cummings et al. with 257 adults in severe condition with COVID-19 pointed out that 119 (46%) patients were obese (BMI ≥30kg/m²), reinforcing the importance of bariatric surgery.

In fact, evidence such as that observed in a series of 219 cases (SANTA-CRUZ et al., 2022) suggests that the pandemic has reinforced the perception of obesity as a chronic disease with a high impact, driving a greater search for effective interventions, such as bariatric surgery. In addition, another factor that may have contributed to this significant increase is the greater acceptance of bariatric surgery in Brazil over the years. The procedure, widely performed in the public health system since its inclusion in the SUS in 1999, has become progressively more accessible, especially with the advancement of minimally invasive techniques, which provide faster recovery and lower risk of complications (ANDRADE, 2020). In addition, public policies aimed at tackling obesity, such as the "Manual of Guidelines for Tackling Obesity in Brazilian Supplementary Health" (BRASIL, 2018) and the expansion of eligibility criteria for surgery, may have impacted the volume of procedures performed recently.

The relationship between obesity, metabolic syndrome, and COVID-19 may also explain the increased demand for bariatric surgery in recent years. During the pandemic, it became clear that obese individuals with metabolic syndrome were at greater risk of serious complications, prolonged hospitalization, and mortality associated with COVID-19 (ZAKKA, 2020). Metabolic syndrome, characterized by central obesity, insulin resistance, dyslipidemia, and hypertension, is one of the criteria for bariatric surgery and is associated with a significant increase in cardiovascular and metabolic mortality (EISENBERG et al., 2022). Thus, the pandemic acted as a catalyst for more obese patients to seek surgery as a long-term strategy to control these conditions and reduce the risk of future adverse events.

In addition to the direct impact of the pandemic on the performance of surgeries, another relevant point to be discussed is the distribution of procedures over the years. The trend of progressive increase was already observed before 2020, but was abruptly interrupted by the pandemic. However, post-pandemic figures suggest not only a recovery but an accelerated growth ( ), indicating that pent-up demand was partially offset in subsequent years. This phenomenon reinforces the need for strategic planning by health managers to ensure that the installed capacity of public services is sufficient to meet the growing number of patients eligible for bariatric surgery (RAMOS et al., 2024).

Although this study provides a comprehensive overview of the impact of the pandemic on bariatric surgeries in Brazil, some limitations should be considered. The analysis was based exclusively on SIH/SUS data and did not include procedures performed in the private network, which may underestimate the total number of surgeries performed in the country. In addition, due to limitations of the database used, the absence of information on patient characteristics, such as gender, age, and comorbidities, limits the understanding of possible changes in the profile of individuals undergoing the procedure over the years. Future studies could explore these aspects in greater detail, providing a more complete analysis of the impact of the pandemic and current trends in bariatric surgery in Brazil.

CONCLUSION

The findings of this study demonstrate that the COVID-19 pandemic had an initial negative impact on the performance of bariatric surgeries in Brazil, followed by a recovery and significant growth in subsequent years. The relationship between obesity, metabolic syndrome, and COVID-19 has demonstrated a possible influence on the increased demand for the procedure, reinforcing its importance as an effective therapeutic strategy for the management of obesity and its complications. Given this scenario, it is essential that public health policies continue to promote access to bariatric surgery, ensuring that the growing demand is met equitably and efficiently.

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