



Research Article

Surgical Profile Comparison of the SARS-CoV-2 Pre-Pandemic and Pandemic Periods at the Gaffrée E Guinle University Hospital

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Abstract

Introduction: At the beginning of the SARS-CoV-2 pandemic, Brazil became the 2nd country with the highest number of cases, with the city of Rio de Janeiro having the highest mortality rate: 177 deaths/105 inhabitants. There was a significant reduction in surgical productivity, with a drop of 19% in the total surgical volume and 40% in the elective volume at the national level when compared to 2019.

Objective: Assess the impact of the pandemic on the number and profile of surgeries between April 2018 and March 2022.

Results: During the pandemic, there was a drop of 23% in total and 41% in the monthly average of surgeries, with the video modality being the most affected (-25%).

Conclusion: There was a major surgical deficit during the pandemic and lasting effects on the healthcare system.

Keywords: COVID-19; Surgery; Drop in Productivity; Surgical Deficit; Health System

Introduction

In Brazil, the virus would only be identified in February 2020, in São Paulo and the country would become second in terms of cases in the following quarter, behind the USA [1,2]. Meanwhile, the city of Rio de Janeiro would reach the highest municipal mortality rate: 177 deaths per 105 inhabitants [3]. This scenario led to a significant reduction in surgeries and an increase in transfers, longer hospital stays, challenges in postoperative follow-up and surgical delays [4-8]. Between March and December 2020, there was a total reduction of 1.119.000 surgeries compared to expected numbers for Brazil (22% of the total, 6% for emergency surgeries and 69% for elective) [9].

The prioritization of emergency procedures and postponement of elective surgeries was recommended by the Brazilian National Health Agency (ANS) starting March 25, 2020, with a guideline for resumption by June 7th, a directive supported by national surgical societies and aligned with international protocols [9-12]. Contributing to this situation were a reduced healthcare workforce, limited resources and hospital beds, lower patient circulation, avoidance of early seeking of medical assistance and reduced overall public mobility [4-9].

Our objective is to evaluate the pandemic impact on a surgical service at the Gaffrée e Guinle University Hospital (GGUH), Rio de Janeiro and analyze the observed changes.

Methods

The period of this cross-sectional, analytical and retrospective study extends from April 2018 to March 2022, being partitioned

into "Pre-pandemic" and "Pandemic", with 25 months each. For better evaluation, the Pre-pandemic period is further divided into subperiods: "Pre 1" (9 months), "Pre 2" (12 months) and "Pre 3" (3 months). The Pandemic period is divided into "Pan 1" (9 months), "Pan 2" (12 months) and "Pan 3" (3 months).

Our sample consists of surgical procedures performed by Surgical Clinic A (SCA), stratified as follows: Open surgeries: executed primarily through open approaches or converted from video-assisted approaches; Video-assisted surgeries: entirely performed using video assistance; and Minor procedures: carried out under local anesthesia.

The Surgery Registry Books were the primary data source. Descriptive analysis was conducted based on the following variables: Number and Types of surgeries. For statistical analysis, we used Instat3® and all data underwent the Kolmogorov-Smirnov normality test, non-parametric Spearman test and Mann-Whitney tests.

Results

Of the 1618 surgeries performed, 922 were during the Pre-pandemic period and 696 were during the Pandemic, thus posing a 24.5% reduction. Video-assisted surgeries were most affected (Table 1). No substantial changes in surgical profile (relative percentage variation of strata proportion) were found: -0.2% for open surgeries, -1.7% for video-assisted surgeries and +5.7% for minor procedures.

Stratum	Pre-pandemic	Pandemic	Variation (%)
Open	550	415	-24.5
Video	275	204	-25.8
Minor procedures	97	77	-20.6
TOTAL	922	696	-24.5

Table 1: Relative variation in surgeries between pre-pandemic and pandemic.

Table 1 was found significant in the Linear Regression test ($p=0.0124$), but it did not show significance in the non-parametric Spearman test ($p=0.3333$) or the Mann-Whitney test ($p=0.6667$).

Surgical monthly averages and sample standard deviations (σ) by subperiods are shown in Fig. 1, demonstrating a progressive decline. The largest variation was -62.7% (Pre 1 to Pan 1), with a total decrease of -41.9%. The significantly lower average in "Pre 2" is likely due to the General Surgical Center restoration closure (January to May 2019), when a capacity loss of 72.6% compared to the five months prior was observed. Graph 1 was highly significant ($p=0.0003$) in the Fisher test.

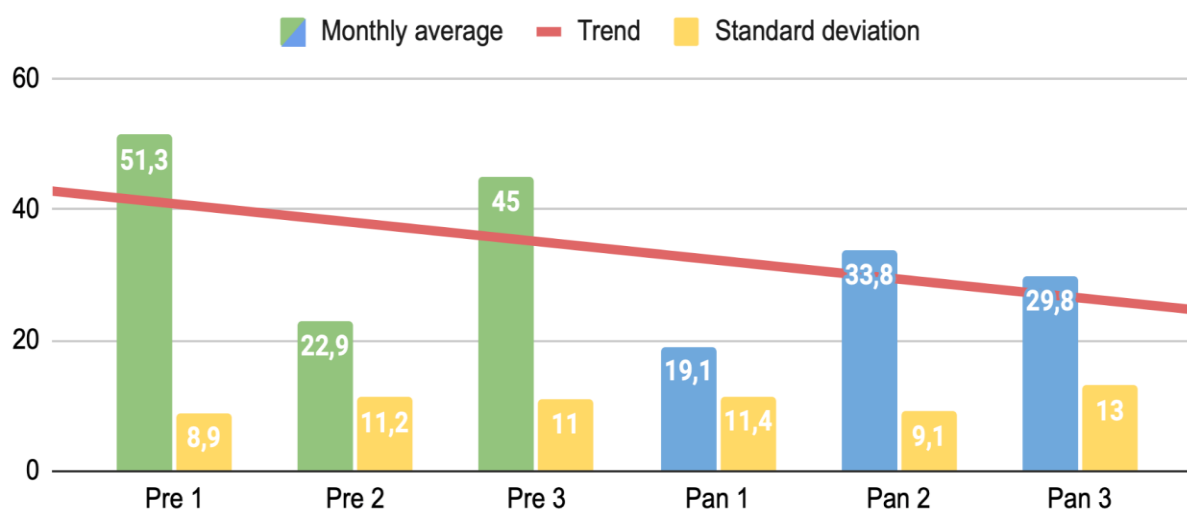


Figure 1: Monthly average and standard deviation of surgeries.

Laparoscopic cholecystectomy summed 413 cases in total (231 Pre-pandemic and 182 Pandemic), being the most common procedure. Herniorrhaphies were the most frequent open surgeries. As for minor procedures, biopsies surpassed excisions of small lesions during the Pandemic.

Discussion

Brazil was severely affected by COVID-19, with high rates of hospitalization and intensive care patients [7]. The fear of the disease and isolation policies led to reduced visits to emergency departments as well as the cancellation and postponement of elective surgeries. This significantly impacted surgical productivity across the country [1,2,4-9,13]. Our findings reflect this reality through the notable decrease in the total number of surgeries and monthly averages. Additionally, the reorganization of healthcare services, with necessary adaptations to prevent patient and healthcare worker contagion, played a crucial role [4-9,10]. Regarding the impact of video-assisted surgeries, the complexity of these procedures is key. This modality requires dedicated operating rooms, a robust auxiliary team (including an anesthesiologist, circulating nurse and recovery room) and surgical infirmity admission. The inherent demands of more complex techniques posed additional challenges during the exceptional pandemic period, making their execution more difficult. Conversely, we can infer that the lower complexity of minor procedures contributed to their reduced loss.

Despite the significant reduction in overall surgeries, changes in the surgical profile were not substantial. Notably, there was a slight relative increase in the representation of minor procedures. This data reflects the ease of handling less complex cases that require minimal operative and perioperative resources [4-8].

Among the most common surgeries analyzed, there was a specific change related to minor procedures with a shift in focus from excisions to biopsies. This alteration could be explained by the higher priority given to oncological diagnostic procedures over excising small (often benign) lesions and relief procedures (such as drainage) during the pandemic, as oncological surgeries are considered urgent [6,14].

Conclusion

We conclude that, with the adopted containment measures, a significant surgical deficit has emerged, which needs to be addressed in the coming years. Endorsing the current literature on this topic, we recognize that the pandemic direct impact and the mitigation strategies chosen during that context leave lasting effects on the healthcare system.

Conflicts of Interest, Ethics and Financing

The authors have no conflicts of interest. The research project was approved by the Research Ethics Committee, with no need for an Informed Consent Form (CAAE 64309222.2.0000.5258). The research was self-funded by the authors.

Conflict of Interests

The authors have no conflict of interest to declare related to this article.

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