

Research Article

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

Garritano C^{1*}, Lima MM², Lobo MR², Quintanilha MR², Nogueira VA²

¹General Surgery, Department of General Surgery, Federal University, State of Rio de Janeiro, Brazil

²Medical Student at the Federal University of the State of Rio de Janeiro, Brazil

*Correspondence author: Celia Garritano, General Surgery, Department of General Surgery, Federal University, State of Rio de Janeiro, Brazil;
Email: cgarritano@gmail.com

Citation: Garritano C, et al. Diagnostic Profile Comparison of the SARS-CoV-2 Pre-Pandemic and Pandemic Periods at the Gaffrée E Guinle University Hospital. J Surg Res Prac. 2024;5(2):1-4.

<https://doi.org/10.46889/JSRP.2024.5209>

Received Date: 23-07-2024

Accepted Date: 19-08-2024

Published Date: 26-08-2024



Copyright: © 2024 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CCBY) license (<https://creativecommons.org/licenses/by/4.0/>).

Abstract

Introduction: Within the first year of the SARS-CoV-2 pandemic, Brazil was second only to the USA in number of cases. An important change was observed in the profile of patients, notably oncology patients, with an estimated diagnostic deficit of at least 15,000 new cases of cancer per month across the country in 2020 (a drop of 35.5%).

Objective: Investigate the impact of the SARS-CoV-2 pandemic on the quantity and profile of surgical diagnoses between April 2018 and March 2022.

Results: There was a 22.8% decrease in surgical diagnoses during the Pandemic and a 39.0% lower monthly average, being the Gynecological diagnoses the most affected (-69.4%).

Conclusion: A significant diagnostic deficit was created and changes in the diagnostic profile were observed.

Keywords: COVID-19; Surgery; Clinical Surgery; Diagnostic Deficit

Introduction

During the first year of the pandemic, Brazil would be second to the USA in the number of cases [1-3]. This highly dynamic scenario had a significant impact on surgical practices with a reduction in surgical productivity, an increase in hospitalization time, challenges in postoperative follow-up and delayed approaches [4-9]. There also was a change in the profile of patients, notably oncology patients, estimating a diagnostic deficit of at least 15,000 new cases of cancer per month in Brazil in 2020 (a drop of 35.5%) [4-8,10].

At the same time, there was a reduction of 44.6% in cytopathological exams, 42.6% in mammograms, 35.3% in biopsies, 35% in bronchoscopies, 26.7% in anatomopathological exams, 32.6% in uterine cervix excisions and 15.7% of the oncological surgical productivity in the Brazilian public health system compared to 2019 [11,12]. Contributed to this scenario: public policies to combat the pandemic, the collapse of health services, patients' resistance to seeking health care due to the fear of contamination, the lower number of health professionals and available resources, as well as the low circulation of people [1,2,4-8,13].

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

Methods

This is a cross-sectional, analytical and retrospective study. The time period extends from April 2018 to March 2022, being partitioned into "Pre-pandemic" and "Pandemic", with 25 months each. The Pre-pandemic period was then divided into 3 subperiods: "Pre 1" (9 months), "Pre 2" (12 months) and "Pre 3" (3 months). Similarly, the Pandemic period was divided into

"Pan 1" (9 months), "Pan 2" (12 months) and "Pan 3" (3 months).

The sampled data was extracted from the Surgery Registry Books, comprising surgical diagnoses made by the Surgical Clinic A (SCA) that resulted in surgical interventions and was stratified as follows: 1) Biliopancreatic pathologies: non-neoplastic conditions primarily affecting the liver, hepatobiliary system, gallbladder, pancreas or pancreatic ducts; 2) Tumors: neoplastic conditions, excluding cystic formations; 3) Abdominal wall hernias: all hernias involving the abdominal wall; 4) Proctology: non-neoplastic conditions affecting the rectum, anal canal or anus; 5) Digestive system: non-neoplastic conditions of the esophagus, stomach, small intestine, colon, peritoneum or peritoneal cavity; 6) Gynecology: non-neoplastic conditions of the uterus, fallopian tubes, ovaries, vaginal canal, vulva and bladder (in females) and 7) Others: any conditions not covered previously.

Descriptive analysis was conducted considering two variables: Number of diagnoses and Types of diagnoses. Instat3® was used for statistical analysis and all data underwent the Kolmogorov-Smirnov normality test and the non-parametric Spearman test.

Results

A total of 1586 diagnoses were recorded: 895 during the Pre-Pandemic period and 691 during the Pandemic, translating into a 22.8% decrease. Gynecology was the most affected stratum (-69,4%) and the digestive system experienced an increase (Table 1).

Stratum	Pre-pandemic	Pandemic	Variation (%)
Gynecology	62	19	-69.4
Tumors	168	99	-41.1
Abdominal hernias	211	162	-23.3
Biliopancreatic	249	201	-20.3
Proctology	93	78	-16.1
Others	48	47	-2.0
Digestive system	64	85	+32.8
Total	895	692	-22,8

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

Table 1 proved highly significant: Linear Correlation Test ($p < 0.0001$), Linear Regression Test ($p < 0.0001$) and Non-Parametric Spearman Correlation Coefficient ($p = 0.0001$).

We also observed significant changes in the diagnostic profile (relative percentage variation of strata proportion). The most substantial shifts occurred in gynecology (-60.9%) and the digestive system (+70.8%) (Table 2).

Stratum	Pre-pandemic (pp)	Pandemic (pp)	Variation (%)
Gynecology	6.9	2.7	-60.9
Tumors	18.8	14.3	-23.9
Abdominal hernias	23.6	23.4	-1.0
Biliopancreatic	7.2	12.3	+70.8
Proctology	5.4	6.8	+26.0
Others	10.4	11.3	+8.6
Digestive system	27.8	29.1	+4.7

Table 2: Variation in pp of diagnoses between pre-pandemic and pandemic.

Table 2 yielded high significance in both Linear Regression and Correlation (Pearson r) tests, with $p = 0.023$ in both cases.

Diagnostic monthly averages and sample standard deviations (σ), are presented in Fig. 1, showing a downward trend. The most significant variation was -61.6% (Pre 1 to Pan 1) and the overall decrease totaled -39.0%. The prominent decrease in average in “Pre 2” was likely caused by 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. Fig. 1 scored a p-value of 0.3744 using both the Linear Regression Test and the Correlation (Pearson r) Test.

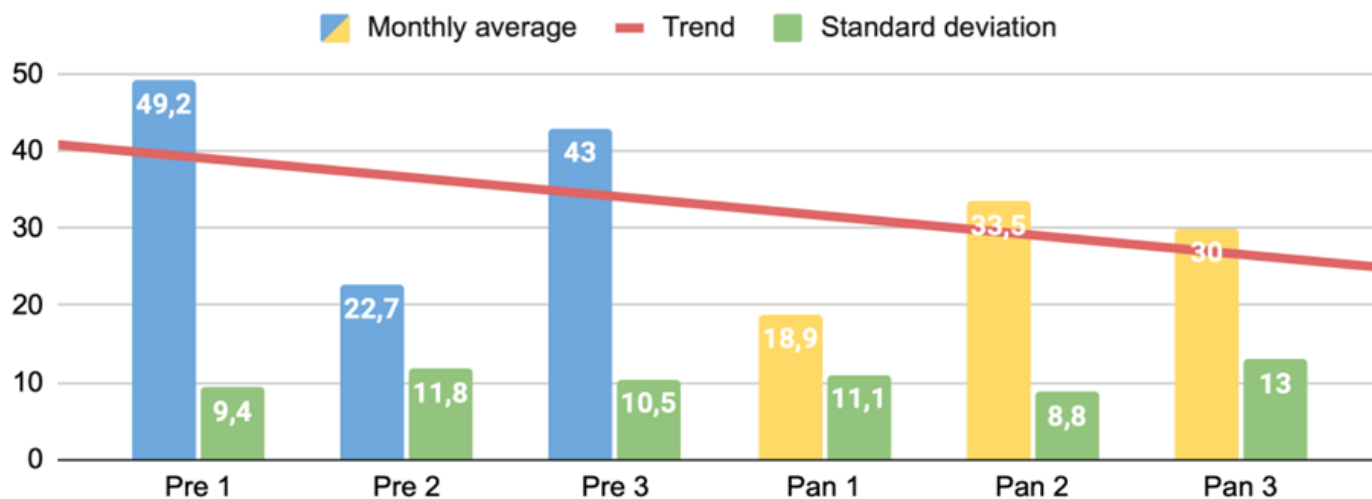


Figure 1: Monthly average and standard deviation of diagnoses in the subperiods.

Cholecystitis accumulated 418 cases (234 Pre-pandemic and 184 Pandemic), thus being the most frequent diagnosis. Inguinal hernia, umbilical hernia and colon tumor remained constant as the second, third and fourth places.

Discussion

The decrease in surgical productivity and diagnoses was a direct consequence of the protocols implemented by the Crisis Office in Brazil, beyond the direct effects of the public health emergency context [4-8]. We observed a significant decline in 5 out of the 7 analyzed strata, while the digestive system experienced an increase and the “other” category remained virtually unchanged.

Consistent with reports in the Brazilian national literature, oncological diagnoses, represented by “tumors”, underwent a substantial reduction, becoming the second most impacted stratum and exceeding the Brazilian average deficit of 35.5% [10]. Notably, the Southern and Southeastern regions were most affected from an oncological perspective, experiencing a decline of 10.8 per 100,000 inhabitants in admissions [10]. We can also attribute part of this decrease to changes in treatment approaches, utilization of cancer diagnostic tools and a shift in priorities away from follow-up due to the focus on COVID-19 cases [5].

Intriguingly, we observed an absolute increase in the number of diagnoses related to the digestive system (+32.8%). This observation likely results from the higher urgency associated with these diagnoses compared to proctological and biliopancreatic diagnoses (primarily represented by cholecystitis), especially considering that our unit lacks an emergency service.

The diagnostic profile (expressed as percentage points) underwent significant alterations, with increased representation of the digestive system, “others”, proctology and biliopancreatic pathologies. Except for the digestive system, this relative increase in the face of an absolute reduction in the number of diagnoses within these strata is primarily due to the substantial decline of other categories that constitute large portions of the total diagnostic volume, such as tumors and hernias.

Conclusion

Each of the seven surgical areas analyzed experienced varying degrees of impact, accompanied by a significant diagnostic deficit and changes in the diagnostic profile. Our observations align with the current literature on the topic.

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.

References

1. Santos CVB, Cavalcante JR, Pungartnik PC, Guimarães RM. Análise espaço temporal do primeiro ano da pandemia de COVID-19 no município do Rio de Janeiro. *Rev Bras Epidemiol*. 2021;24:e210046
2. Neiva MB, Carvalho I, Costa Filho E dos S, Barbosa-Junior F, Bernardi FA, Sanches TLM, et al. Brazil: the emerging epicenter of COVID-19 pandemic. *Rev Soc Bras Med Trop*. 2020;53:e20200550.
3. Werneck GL, Porto LC, Sena A, Ferreira Junior O da C, Cavalcanti AC, Santos ÂMG, et al. The incidence and geographical spread of SARS-CoV-2 in Rio de Janeiro, Brazil based on RT-PCR test results. *Rev Soc Bras Med Trop*. 2021;54:e07792020.
4. Gomes WJ, Rocco I, Pimentel WS, Pinheiro AHB, Souza PMS, Costa LAA, et al. COVID-19 in the Perioperative Period of Cardiovascular Surgery: the Brazilian Experience. *Braz J Cardiovasc Surg*. 2021;36(6).
5. Mahl C, Melo LRS de, Almeida MHA, Carvalho CS, Santos LLS, Nunes PS, et al. Delay in head and neck cancer care during the COVID-19 pandemic and its impact on health outcomes. *Braz Oral Res*. 2020;34:e126.
6. Silva GC dos A, Abe DK, Pedrenho Neto R, Vilares RN, Cordeiro MD, Coelho RF, et al. Evaluation of uro-oncological surgical treatment during the Sars-CoV-2 pandemic in a Brazilian tertiary oncology institution, the new world epicenter. *Int Braz J Urol*. 2021;47(2):378-85.
7. Miana LA, Manuel V, Caneo LF, Strabelli TMV, Arita ET, Monteiro R, et al. Impact of COVID-19 pandemic in a pediatric and congenital cardiovascular surgery program in Brazil. *Braz J Cardiovasc Surg*. 2021;36(3).
8. Motta Filho G da R, Leal AC, Amaral MVG do, Maia PAV, Duarte MEL, Bähr GL. Impacto das estratégias adotadas para enfrentar a pandemia de COVID-19 em um Instituto Brasileiro de referência em cirurgia de alta complexidade em Ortopedia e Traumatologia. *Rev Bras Ortop (São Paulo)*. 2021;56(02):161-7.
9. Truche P, Campos LN, Marrazzo EB, Rangel AG, Bernardino R, Bowder AN, et al. Association between government policy and delays in emergent and elective surgical care during the COVID-19 pandemic in Brazil: a modeling study. *The Lancet Regional Health - Americas*. 2021;3:100056.
10. Marques NP, Silveira DMM, Marques NCT, Martelli DRB, Oliveira EA, Martelli-Júnior H. Cancer diagnosis in Brazil in the COVID-19 era. *Semin Oncol*. 2021;48(2):156-9.
11. Ribeiro CM, Correa FDM, Migowski A. Efeitos de curto prazo da pandemia de COVID-19 na realização de procedimentos de rastreamento, investigação diagnóstica e tratamento do câncer no Brasil: estudo descritivo, 2019-2020. *Epidemiol Serv Saúde*. 2022;31(1):e2021405.
12. Caminha I, Távora F, Sousa J, Martins Neto F, Pamplona De Goes Cavalcanti L. Impact of the COVID-19 pandemic on the diagnosis of lung cancer in northeastern Brazil. *J Bras Pneumol*. 2022;e20220248.
13. Jardim TV, Jardim FV, Jardim LMV, Coragem JT, Castro CF, Firmino GM, et al. Alterações no Perfil dos Pacientes atendidos no Pronto Socorro durante o Surto de COVID-19 em um Hospital Geral Especializado em Tratamento Cardiovascular no Brasil. *Arquivos Brasileiros de Cardiologia*. 2021;116(1):140-3.

Journal of Surgery Research and Practice



Publish your work in this journal

Journal of Surgery Research and Practice is an international, peer-reviewed, open access journal publishing original research, reports, editorials, reviews and commentaries. All aspects of surgery health maintenance, preventative measures and disease treatment interventions are addressed within the journal. Medical surgeons and other researchers are invited to submit their work in the journal. The manuscript submission system is online and journal follows a fair peer-review practices.

Submit your manuscript here: <https://athenaeumpub.com/submit-manuscript/>