


COVID-19: SPINE SURGERY AND DOCTOR TRAINING AT A HOSPITAL IN BRAZIL

COVID-19: CIRURGIAS DE COLUNA E FORMAÇÃO DE MÉDICOS EM HOSPITAL DO BRASIL

COVID-19: CIRUGÍA DE COLUMNA Y FORMACIÓN MÉDICA EN UN HOSPITAL DE BRASIL

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ABSTRACT

Objective: The study's main purpose is to identify changes in the epidemiological profile of spine surgeries before and during the pandemic. Furthermore, we seek to understand how these changes affected the training of resident doctors. **Methods:** To achieve the proposed objectives, a retrospective analysis of spine surgeries was carried out between March 2019 and February 2021. The data were obtained from the patient's medical records and subjected to a comparative statistical analysis. **Results:** The results revealed a significant change like the surgeries performed, with a notable increase in traumatic cases during the pandemic compared to the previous period. **Conclusion:** It is concluded that the pandemic caused changes in orthopedic surgical practice, with an increase in trauma surgeries and a decrease in elective surgeries. In training spine residents, the pandemic brought challenges that highlighted the need for resilience and adaptability in complex environments. **Level of Evidence II; Retrospective Observational Study.**

Keywords: Spine; COVID-19; Epidemiology.

RESUMO

Objetivo: O estudo tem como propósito principal identificar as alterações que ocorreram no perfil epidemiológico das cirurgias de coluna antes e durante a pandemia. Além disso, busca-se compreender como essas mudanças afetaram a formação dos médicos residentes. **Métodos:** Para atingir os objetivos propostos, realizou-se uma análise retrospectiva das cirurgias de coluna realizadas no período compreendido entre março de 2019 e fevereiro de 2021. Os dados foram obtidos através dos prontuários médicos dos pacientes e submetidos a uma análise estatística comparativa. **Resultados:** Os resultados obtidos revelaram uma mudança significativa na natureza das cirurgias realizadas, com um aumento notável de casos traumáticos durante o período de pandemia em comparação com o período anterior. **Conclusão:** Conclui-se que a pandemia causou mudanças na prática cirúrgica ortopédica, com aumento de cirurgias de trauma e diminuição das eletivas. Na formação de médicos residentes de coluna, a pandemia trouxe desafios que ressaltaram a necessidade de resiliência e adaptabilidade em ambientes complexos. **Nível de Evidência II; Estudo Retrospectivo Observacional.**

Descritores: Coluna Vertebral; COVID-19; Epidemiologia.

RESUMEN

Objetivos: El objetivo principal del estudio es identificar los cambios ocurridos en el perfil epidemiológico de las cirugías de columna antes y durante la pandemia. Además, buscamos comprender cómo estos cambios afectaron la formación de los médicos residentes. **Métodos:** Para lograr los objetivos propuestos se realizó un análisis retrospectivo de las cirugías de columna realizadas en el período comprendido entre marzo de 2019 y febrero de 2021. Los datos se obtuvieron a través de las historias clínicas de los pacientes y se sometieron a un análisis estadístico comparativo. **Resultados:** Los resultados obtenidos revelaron un cambio significativo en la naturaleza de las cirugías realizadas, con un notable aumento de casos traumáticos durante el período pandémico en comparación con el período anterior. **Conclusión:** Se concluye que la pandemia provocó cambios en la práctica quirúrgica ortopédica, con aumento de cirugías traumatológicas y disminución de cirugías electivas. En la formación de residentes de columna, la pandemia trajo desafíos que resaltaron la necesidad de resiliencia y adaptabilidad en entornos complejos. **Parte superior do formulário. Nível de Evidência II; Estudo Observacional Retrospectivo.**

Descritores: Columna Vertebral; COVID-19; Epidemiología.

INTRODUCTION

In December 2019, the first cases of acute respiratory infection by the new Coronavirus (COVID-19) appeared in Wuhan, China, spreading around the world and resulting in a pandemic from March 2020 declared by the World Health Organization.¹

The first case of COVID-19 infection in Brazil was confirmed on February 26, 2020, in the city of São Paulo, according to data from the Ministry of Health,² resulting in the creation of social distancing and quarantine measures on March 24, 2020 in the state of São Paulo.³

Study conducted by the Universidade de São Paulo, School of Medicine, Hospital das Clínicas Orthopedics and Traumatology Institute (IOT - HC/FMUSP), São Paulo, SP, Brazil.

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With the emergence of these distancing measures, only essential activities of society were maintained, such as urgent and emergency health services, and patient demand for hospitals decreased, in addition to a change in the epidemiological profile of diseases.⁴

In the context of specialized orthopedic spine care, there has been a reduction in the number of surgeries performed during the pandemic and a relatively greater decrease in elective surgeries scheduled by SUS in Brazil.⁵

This study aims to identify the change in the epidemiological profile of patients undergoing surgical procedures at a specialized referral service for spinal surgery in the state of São Paulo (Hospital das Clínicas Orthopedics and Traumatology Institute at FMUSP) and to assess the impact on the training of spine residents at the service, during the period from March 2019 to February 2020 (pre-pandemic) and March 2020 to February 2021 (during the pandemic).

OBJECTIVES

This study aims to retrospectively evaluate the surgeries performed by the Spine Group of the Orthopedics and Traumatology Institute of the Hospital das Clínicas at FMUSP between March 2019 and February 2021.

The surgeries will be evaluated in terms of gender, age, comorbidities (hypertension, diabetes, dyslipidemia, pneumopathies), reason for surgery (trauma, degenerative, deformity, infection), health system used (public or private), and complications related to the procedure.

The study's purpose is to analyze the impact of the COVID-19 pandemic on the epidemiological profile of spinal surgery and the impact of these changes on the academic training of medical residents.

METHODS

Retrospective data collection through medical records will divide the surgeries performed by the Spine Group into surgeries performed in the pre-pandemic period (March 2019 to February 2020) and during the pandemic (March 2020 to February 2021). All participants signed an informed consent form (ICF).

The surgeries will be analyzed by identifying the following topics: gender, age, comorbidities, reason for surgery, health system used, and complications related to the procedure.

Once the data has been collected, it will be used confidentially for statistical analysis and comparison between the two groups.

The Research Ethics Committee approved the study in question under protocol 68831823.6.0000.0068.

Inclusion criteria

Inclusion criteria will be all surgeries performed by the Spine Group of the Orthopedics and Traumatology Institute of HC-FMUSP between March 2019 and February 2021.

Exclusion criteria

The exclusion criteria will be surgeries performed before March 2019 or after February 2021.

Sample size

The number of surgeries performed from March 2019 to February 2021 will determine the sample size to be analyzed.

Study design

Qualitative and quantitative variables will be analyzed, creating a descriptive case series study. Statistical analysis will be conducted by a professional hired directly for this purpose, without any confluence of interest between the study's researchers and the statistician.

Risks

This research poses no risks to the patients and researchers involved.

Schedule

The project in question is feasible in a short space of time since the resources and infrastructure are already available in our institution. We will start by surveying the Spine Group's list of surgeries between March 2019 and February 2021. The second stage involves analyzing the surgeries and compiling a database. The study will be finalized by data analysis and statistical interpretation. All stages are expected to be completed in 03 months.

Feasibility of the study

The work in question will use structures that have already been installed at FMUSP's Institute of Orthopedics and Traumatology and will use retrospective data, which makes the study feasible and viable.

RESULTS

Patient characteristics were described according to the Covid period (1 year before Covid - Mar/2019 to Feb./2020 and 1 year during Covid Mar/2020 to Feb./2021) were described using absolute and relative frequencies for the qualitative variables and the association of the characteristics between the groups was verified using chi-square tests and summary measures (mean and standard deviation or median and quartiles) for the quantitative variables and the groups were compared using Student's t-tests for ages and Mann-Whitney tests for hospitalization times.⁶

IBM-SPSS for Windows version 22.0 was used to conduct the analysis, and Microsoft Excel 2010 was used to tabulate the data. The tests were carried out at a 5% significance level.

Table 1 shows that only the classification of surgery was statistically significant between the groups ($p = 0.015$). During COVID-19, the cases of deformity, infection, and degeneration were lower than before COVID-19, consequently increasing the frequency of trauma during COVID-19. The other patient characteristics were statistically the same between the groups ($p > 0.05$).

DISCUSSION

The COVID-19 pandemic has posed an unprecedented challenge to healthcare systems globally, requiring significant adaptations in surgical practice and resource allocation.⁷ Several studies have explored the consequences of this crisis on surgery, highlighting changes in therapeutic priorities and surgical practices worldwide.⁸

During the pandemic, there was a relative increase in spinal trauma surgeries, reflecting the need to treat orthopedic emergencies and reallocate resources to acute cases.⁹ In the Brazilian context, guidelines issued by medical societies emphasized the importance of prioritizing emergency procedures, which align with global trends.¹⁰

In contrast to the increase in trauma surgeries, there was a relative decrease in elective procedures related to degenerative diseases, deformities, and infections of the spine. This trend can be attributed to the restrictions on non-essential surgeries and the allocation of resources to more urgent cases, as discussed in the literature.^{8,11}

It is important to note that, despite the changes observed in surgical practice, statistical analysis did not reveal significant differences in variables such as age, gender, comorbidities, length of hospitalization, and type of service (SUS or private). These results suggest an equitable approach to orthopedic case management during the pandemic, focusing on clinical severity and the need for intervention.¹²

The COVID-19 pandemic has profoundly impacted the training of spine residents at a leading hospital in Brazil. With the reorganization of surgical priorities and the concentration of resources on emergency cases, residents faced significant challenges in gaining practical experience in elective surgeries and the management of degenerative diseases and deformities of the spine. The need to adapt quickly to new guidelines, participate in emergency

Table 1. Description of characteristics according to groups and results of statistical tests.

Variable	Group		Total (N = 412)	p
	Before Covid (N = 238)	During Covid (N = 174)		
Age (years), mean + SD	48 ± 19.2	47.1 ± 18.5	47.7 ± 18.9	0.623**
Sex, n (%)				0.153
Female	114 (47.9)	71 (40.8)	185 (44.9)	
Male	124 (52.1)	103 (59.2)	227 (55.1)	
Service, n (%)				0.520
SUS	224 (94.1)	161 (92.5)	385 (93.4)	
Private	14 (5.9)	13 (7.5)	27 (6.6)	
Classification, n (%)				0.015
Trauma	65 (27.3)	70 (40.2)	135 (32.8)	
Degenerative	119 (50)	79 (45.4)	198 (48.1)	
Deformity	18 (7.6)	5 (2.9)	23 (5.6)	
Infection	36 (15.1)	20 (11.5)	56 (13.6)	
Length of stay (days), median (p25; p75)	7 (3; 20.3)	9 (5; 16)	8 (4; 18)	0.056£
Clinical complications related to surgery, n (%)				0.600
No	195 (81.9)	139 (79.9)	334 (81.1)	
Yes	43 (18.1)	35 (20.1)	78 (18.9)	
SAH, n (%)				0.554
No	173 (72.7)	131 (75.3)	304 (73.8)	
Yes	65 (27.3)	43 (24.7)	108 (26.2)	
DM, n (%)				0.114
No	218 (91.6)	151 (86.8)	369 (89.6)	
Yes	20 (8.4)	23 (13.2)	43 (10.4)	
Dyslipidemia, n (%)				0.827
No	216 (90.8)	159 (91.4)	375 (91)	
Yes	22 (9.2)	15 (8.6)	37 (9)	
Pulmonary diseases (COPD, asthma, etc.), n (%)				0.123
No	199 (83.6)	135 (77.6)	334 (81.1)	
Yes	39 (16.4)	39 (22.4)	78 (18.9)	

Chi-squared test; ** Student's t-test; £ Mann-Whitney test

procedures, and manage limited resources has shaped a unique training experience, emphasizing resilience, flexibility, and decision-making skills in complex and dynamic scenarios.

CONCLUSION

The COVID-19 pandemic has triggered significant transformations in orthopedic surgical practice, with a relative increase in spinal trauma surgeries and a relative decrease in elective surgeries. Clinical guidelines, COVID-19 restrictions, and the reorganization of

health services have influenced this dynamic. Statistical evaluation revealed no significant differences in clinical variables, reflecting an equitable approach to managing orthopedic cases. In the context of training spine residents at a reference hospital in Brazil, the pandemic has shaped a challenging training experience, emphasizing resilience and adaptability in complex scenarios.

All authors declare no potential conflict of interest related to this article.

CONTRIBUTIONS OF THE AUTHORS: Each author contributed individually and significantly to the development of the manuscript. Authors VSM and LWAT were responsible for data collection and writing the manuscript; AFC, TEPBF, and RMM supervised the work, revised the manuscript, and performed most of the surgeries during the study period.

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