The impact of the COVID-19 epidemic on surgically treating inguinal hernias- A retrospective Study

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Abstract

Aim: In this investigation, we looked at how the COVID 19 pandemic affected the number, complication rates, and epidemic features of patients who had surgery at our facility for inguinal hernias. Methods: We conducted a retrospective analysis of all patients who underwent inguinal hernia operations at the Department of General Surgery Meenakshi Medical College and Research Institute, Kanchipuram, between November 2020 and November 2021. The descriptive statistics employed were percentages, means, standard deviations, medians, and interquartile ranges. When comparing two groups, the Mann-Whitney U test was applied to changes that deviate from the normally distributed spectrum. The Pearson Chi-Square test and Fisher's Exact test were used to investigate the relationships between qualitative variables. For all statistical analyses, 0.05 was deemed to be the significant value. Results: 65 individuals (Group 1) underwent surgery between November 2020 and November 2021, and 26 patients between March 11, 2020, and 2021. (Group 2). In Group 2, there was a statistically significant rise in the rate of incarceration and strangulation (44.6% in Group 1, 84.6% in Group 2, p=0.008) as well as a statistically significant rise in the proportion of female patients (4.6% in Group 1, 23.1% in Group 2, p=0.008). Conclusions: The rate of detention and strangling increased as during COVID-19 pandemic. The precipitous decline in elective procedures or the rise in the proportion of female patients admitted during the COVID period can be blamed for the rise in complication rates.

Keywords: Inguinal Hernia, COVID, strangulation, Retrospective, surgery.

Introduction

A novel virus called acute Respiratory Syndrome Corona Virus 2 is the source of the highly transmissible respiratory sickness known as the coronavirus 2019 (COVID-19) (SARS-CoV-2). The World Health Organization (WHO) classified the COVID-19 outbreak a pandemic on March 11, 2020 [1, 2]. Fever, coughing, chest pain, and, in more severe cases, dyspnea and bilateral lung infiltration are all signs of this viral pneumonia. [3].

The tremendous contagious potential of the virus caused hospitals all over the world to swiftly become overrun with the number of sick patients and their need for respiratory support. Numerous nations subsequently proclaimed states of emergency and advised their populations to remain at home, while hospitals were advised to postpone elective surgery [4-6].

These elements, along with the concern over COVID-19, resulted in fewer emergency room visits but a higher complication risk for urgent surgeries such those for acute appendicitis [7, 8].

With much more than 10 million operations performed annually worldwide for inguinal hernias, they rank among the most common abdominal surgeries. When the hernia's contents become imprisoned inside of it and are unable to pass through again, this condition is known as hernia imprisonment.

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The physiological function of the trapped component is affected by the hernia's pathological repercussions, which are primarily pain and discomfort, in the symptoms of the imprisonment. The imprisoned component becomes strangulated if the blood supply is interrupted. [9]. The interval between the onset of symptoms and hospital admission is an important risk factor for complex inguinal hernia [10, 11]. Admission to hospitals for abdominal crises like incarcerated hernias fell considerably with the start of the COVID-19 pandemic.

While some authors claimed that the number of emergency operations and incarcerated hernias had significantly decreased during the pandemic, others claimed the opposite [14,15]. In order to determine whether the COVID-19 pandemic had any impact on urgent inguinal hernia surgeries, we compared the number of inguinal hernia surgeries and the rate of incarceration within those cases in the year following the declaration of COVID-19 as a pandemic to the same period of time prior to november, 2020.

Material and methods

Study

The pandemic period for this single-center retrospective analysis was from November 2020 to November 2021 (Group 1) and from March 11 to March 11 of the following year (Group 2) at the Department of General Surgery Meenakshi Medical College and Research Institute, Kanchipuram. All patients who underwent inguinal hernia surgery at the Meenakshi Medical College and Research Institute and Hospital were part of the investigation. The Meenakshi Medical College and Research Institute's Scientific Research Ethics Committee gave its approval to this project.

By looking at the hospital system, the records of just patients who underwent emergency surgery were examined. Patients who were younger than 18 or who had hernias other than inguinal hernias are excluded. Those who displayed signs of mechanical intestinal obstruction, confinement, and/or strangulation required urgent surgery, whereas patients who had a history of confinement during the pandemic or acute pain who did not qualify for emergency surgery underwent elective surgery. The survey's weaknesses include its single-center design and its limited sample size of patients

Results

Number of Inguinal Hernia Cases

A total of 110 patients with inguinal hernias were admitted to our hospital during November 2020 and November 2021. 19 of those patients were not included in our study due to a false diagnosis.Of the remaining 91, 26 patients underwent surgery during the first year of the COVID-19 Pandemic, and 65 patients underwent surgery before November, 2020.

Pre-operative Characteristics

There was no discernible variation in the groups' median ages (59 for Group 1, 62 for Group 2). As comparing to the Pre-Pandemic Group 1 (5%) there was a statistically significant increase in female patients in Group 2, (23%) with a p-value of P=0,008. In Groups 1 and 2, the incidences of indirect inguinal hernia were 52%–46%, direct inguinal hernia were 35%–30%, and femoral hernia were 12%–23% (p=0.005). Most notably, there was a statistically significant difference between Group 2 (85%) and Group 1 (56%) when the incarceration rate was compared between the groups. Table 1 summarizes the demographic and clinical information for Groups 1 and 2.

Operative and Post-operative Characteristics

While comparing groups (10 laparoscopic, 55 traditional surgeries in Group 1, and 4 laparoscopic, 22 conventional operations in Group 2), there was no discernible difference between conventional and laparoscopic surgical techniques. In neither group were there any post-operative fatalities. When assessed, the mean duration of stay between both the groups did not differ significantly (2.86 2.03 days for Group 1 and 2.15 0.78 days for Group 2, p=0.208).

Discussion

We observed that there was a considerable rise in the rate of imprisonment severely in our study, which was intended to determine whether the COVID-19 pandemic had any impact on inguinal hernia operations. In contrast to the prior year, we discovered that the rate of incarceration climbed dramatically from 56% to 85% during the first year of the COVID-19 pandemic.

Table 1. Demographic and clinical characxteristics of the groups.

		Group I (Pre-Pandemic) (n=65)	Group II (Pandemic) (n=26)	p
Age (year) †		59 (22-85)	62 (28-89)	0.662
Sex ‡	Male	62 (95.4)	20 (76.9)	0.008
	Female	3 (5.6)	6 (23.1)	
Length of stay (day) §		2.86 ± 2.03	2.15 ± 0.79	0.208
Reductable ‡		36 (55.4)	4 (15.4)	
Incarceration ‡		29 (45.6)	22 (85.6)	0.001
Approach ‡	Conventional	55 (84.6)	22 (84.6)	1.000
	Laparoscopic	10 (15.4)	4 (15.4)	

†: median (range), ‡: n (%), §: mean standard deviation

Our centre has seen a relative decline in operations, which is similar with research by Surek et al. [13], Lima et al. [14], and Kurihara et al. [16]. The decline in surgeries could be attributed to the government's advice to stay at home, the postponement of elective procedures, and patients' anxiety about obtaining the virus and being ill. The delay in hospital admission, which is

probably the result of the same circumstances that led to the reduction in surgeries, is another factor contributing to the rise in incarceration rates.

It is also possible to demonstrate that the increased proportion of female patients and femoral hernias during the COVID period contributed to the rise in incarceration rates. Femoral hernias are recognized to be a high-risk subset of inguinal hernias and to commonly be accompanied by complications [17]. A tiny percentage of elective surgeries involve femoral hernias, which account for 3% of inguinal hernias. However, the rate of femoral hernia might increase by up to 20–40% in emergency situations involving imprisonment and strangling. According to Glassow et alstudy .'s [18], which spanned 17 years and included 2105 patients with femoral hernia, the risk of femoral hernia in women increased by up to 38%. Femoral hernia and, consequently, feminine gender as a consequence are thought to constitute a risk group for emergency incarcerated hernia operations when compared with elective operations [17].

Unexpectedly, our research revealed that during the pandemic, considerably more women had inguinal hernia operations than they had the year before. This may have occurred because having a difficult hernia puts women at higher risk than men, and problems may occur more frequently if hospital admission is already delayed [10, 11]. Our patient populations, however, are too tiny to draw such conclusions. This factor might be investigated more thoroughly with a larger study group.

We discovered from our post-operative data that the Pre-Pandemic group had a lengthier hospital stay. The length of hospital stays were greater during the pandemic, according to research for abdominal surgeries like colorectal surgeries by Changzheng et al. [8] and the complex appendicitis study by Marie Burgard et al. [19]. It can be presumed that patients were sent home earlier than the pre-pandemic group to reduce any further risk due to the increased risk of developing COVID-19 disease [4-6].

The following are the current limitations of our study: single-centeredness, retrospective nature, and limited sample size. We only used information from one hospital that was collected between november, 2020, and november, 2021. The outcomes might have been different if the control group had been used for a longer duration. The curfew during the pandemic and patients' or doctors' underestimations of signs could have resulted in fewer patients, but since the majority of our patients had been receiving conservative follow-up care from our surgeons, we think the number of people who did not check into our hospitals was relatively low.

Conclusion

As a result, both elective and emergency hernia surgery decreased as a result of the COVID-19 pandemic in our study, while the incarceration rate increased significantly. Our research is constrained by its small sample size and retrospective approach. Thanks to prospective and bigger series investigations to be conducted in the future, it will be helpful to show a clearer surgical planning calendar in order to lessen our incidence of encountering challenging cases in pandemic scenarios such as covid.

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