

Impact of COVID-19 pandemic in the management of Surgical patients during the Nationwide COVID-19 Lockdown in a Military hospital

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Abstract

Introduction: The COVID-19 pandemic has had a major impact on healthcare in many countries. This study assessed the effect of a nationwide lockdown during the second wave of COVID-19 on surgical management for acute surgical conditions and the subsequent impact on postoperative mortality.

Methods: This was a retrospective study, evaluating data from the hospital discharge database during the second wave of COVID-19 pandemic. All adult patients admitted through the emergency and outpatient department requiring surgical treatment between April 29 and June 29, 2021 were included in the study. The primary outcome was the change in number of hospital admissions for acute surgical conditions. Mortality was assessed among the patients with COVID-19 infected cases.

Results: During the second wave of nationwide COVID-19 lockdown period, a total of 329 patients were provided surgical consultation either in emergency or outpatient basis. Among them, 227 cases required surgery. Out of this 122 (53.74%) required minor surgeries and were performed in minor operation theatre in local anesthesia (LA) while 105 (46.2%) underwent major surgical procedures. Of all the patients who underwent major surgical procedures 76 (72.3%) were surgical emergencies, 15 (14.2%) were GI and breast malignancies while 14 (13.3%) were elective cases. The mortality rate due to COVID-19 in surgical patients was 02 (16.66%) during the lockdown period.

Conclusion: A decrease in hospital admissions for elective surgical cases with prioritization to emergency and malignant cases was observed during the lockdown period.

Keywords: COVID-19; Outbreak; Surgery.

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Introduction

The corona virus 19 (COVID-19) pandemic has forced healthcare workers (HCWs) into the frontline. They have faced many unknowns and confusions. At the beginning, elective surgeries were usually postponed and only high-priority and urgent operations were continued.¹ But, as time progresses, surgical interventions and preoperative screening have become clinical problems to be solved, particularly for asymptomatic cases.^{2,3}

The corona virus-19 pandemic has had a substantial effect on surgeons and patients who require surgical care.^{4,5} As such, the surgical workforce has faced distinct challenges compared with nonsurgical specialties during the COVID-19 pandemic.⁶ Specific issues include the best approach to protect health care personnel and the patient; the ability to efficiently regulate delivery of surgical care and the detrimental effects on patients with surgical disease due to delay in care.^{7,8}

Operating on patients with either asymptomatic or symptomatic COVID-19 increases the risk for perioperative morbidity and mortality. With this in the background, elective surgery has been comprehensively drastically limited.^{9,10} Recognizing the impending peril, Nepal government affected countrywide lockdown for second wave of COVID 19 from April 29- June 29, 2021. At the end of the second lockdown (June 29, 2021), Nepal had 6,54,212 confirmed cases and 6,18,361 recovered cases of COVID-19 with mortality of 9,632 as per the data provided by Ministry of Health and Population of Nepal.

The second wave of COVID-19 halted the elective medical services in Nepal, while major resources were redirected for diagnosis and treatment. Shree Birendra Hospital (SBH) however, had limited its elective surgical services and remained open for only emergency and those with malignant cases during the period. This study aims to identify the impact of COVID-19 during the management of surgical patients at the Department of surgery during the lockdown and our preparation to the management of COVID-19 pandemic during the second wave.

Methods

This is a retrospective study conducted at the department of Surgery, Shree Birendra Hospital (SBH), Chhauni, a 750-bedded military hospital during the second wave of nationwide COVID-19 lockdown from April 29- June 29, 2021. All the patients who presented to the hospital requiring surgical consultation at outpatient department (OPD) and emergency department were included in the study. Data were collected from Surgical Outpatient department daily registration book and case sheet of the admitted cases in the study hospital. High-risk patients suspected of COVID-19 as defined by the national testing guidelines were admitted through fever clinics for further treatment. The PCR test for detection of SARS-COV-2 was conducted among all the cases admitted in the department of surgery with

prioritization among patients with suspected cases or close contact with a confirmed case and in all cases coming from high-risk areas distributed by the government of Nepal.¹¹ Demographic information, injury characteristics, diagnosis, and treatment, including operative procedures were recorded in a predesigned proforma. Those patients with incomplete data sheet were excluded from the study. We used Statistical Package for Social Sciences (SPSS) software program version 21 for data analysis. Descriptive statistics included mean, standard deviation for quantitative variable, number and percentage for categorical data. The study was performed in accordance with the principle of the declaration of Helsinki and after approval by the Institutional Institutional Review Board (IRB) obtained from Nepalese Army Institute of health sciences (NAIHS) Ref. no. 245/ Reg. no. 481.

Results

During the second wave of COVID-19 nationwide lockdown, we received 329 cases requiring surgical consultation. In the Surgical Outpatient Department (SOPD) 814 patients were seen and 115 patients were seen in the Emergency Department (ED). A total of 227 cases underwent surgical procedures. Among them, 105 (46.2%) surgeries underwent major surgical procedures requiring General Anesthesia while 122 (53.74%) underwent minor surgical procedure requiring Local Anesthesia in the procedure room. All the patients who underwent surgeries underwent PCR test for detection of SARS-COV-2.

Among the patients who underwent major surgical procedures, 76(72.3%) were surgical emergencies, 15(14.2%) were GI and breast malignancies while 14(13.3 %) were elective

Table 1. Number of cases performed during the COVID-19 pandemic

S.no		No.	Percentage
1.	Total surgical consulted patients	929	100
	Emergency	115	12.37
	Outpatient department	814	87.62
2.	Total cases requiring surgery	227	100
3.	Total Surgeries Performed	227	100
	Major surgical procedure	105	46.2
	Minor surgical procedure	122	53.74
4.	Major Surgeries performed	105	100
	Surgical emergencies	76	72.3
	Malignancies	15	14.2
	Elective cases	14	13.3
5.	Specialty of surgery performed		
	GI and HPB*	67	63.8
	Urology	29	27.6
	Paediatric surgery	06	5.7
	Plastics and Burn	03	2.8

*GI & HPB- Gastrointestinal and Hepatobiliary

cases which included GI and General surgical cases such as laparoscopic cholecystectomy [11(78.5%)], open mesh hernioplasty [02(14.28%)], and open hemorrhoidectomy [01(7.1%)] (Table 1). Most of the major surgeries in our study belonged to GI and Hepatobiliary surgeries [76(82.8%)] followed by Urosurgery, pediatrics, Burn and plastics surgery. Among these cases, the most common surgical procedure done was acute appendicitis [47(70.18 %)].

The average age of the patients was 45.16±15.71 years (range 8-74 years), male: female ratio was 2.16:1 and the average duration of hospital stay was 4.27±3.21 days (range 1-14 days). Average presentation to surgery interval for surgical operative cases was 1.12±3.48 days (range 0-5 days). The mean hospital stay among the patients during the period was 4.27±3.21 (range 0-5 days) (Table 2).

Table 2. Mean evaluation of demographic profile and hospital indices of patients admitted for major surgeries

S.no	Particulars	Mean	Range
1.	Age of the patients	45.16± 15.71	8-74 years
2.	Average surgery interval time	1.12 ± 3.48	0- 5 days
3.	Hospital stay of the patients	4.27 ± 3.21	1-8 days

Among all the patients who underwent surgery 12(11.4%) were positive for COVID-19 confirmed by PCR test. Among these patients, 06(50%) were diagnosed with an acute appendicitis, 03(25%) with acute intestinal obstruction, 02(16.6%) with GB perforation for which emergency laparotomy was performed and 01(8.3%) was infected necrotizing pancreatitis. The mean hospital stay among the patients with COVID positive status during the period was 10.27±3.21 (range 1-14 days) (Table 3).

Table 3. Number and mean evaluation of COVID positive operated cases

S.no	Particulars	Number	Percentage
1.	Total COVID positive operated case	12	100
2.	Mortality	02	16.66

Among the mortality, we report 02(16.66 %) cases of COVID-19 mortality of which one was hemorrhagic necrotizing pancreatitis while the other was the case of perforated gall bladder who was initially admitted for acute cholecystitis in COVID-19 ward. Our study showed that there was a significant decrease in both surgeries and patient visiting the surgical outpatient department during the lockdown period when compared with Non-COVID period (Table 4).

Table 4. Comparison of number of patient before COVID pandemic and during lockdown

	2019 (Apr- Jun) (No. of patients)	2021 (Apr- Jun) (No. of patients)	Decrease (%)
OPD visits	7,649	814	89.35
Surgeries	1,173	227	80.64

Discussion

The global impact of the COVID-19 pandemic has challenged the healthcare system worldwide to provide quality care while restricting transmission to non-COVID-19 patients and health care workers (HCW). Since surgery exposes the healthcare team to blood and body fluids of infected patients, surgical specialties have been struggling all this while trying to strike a balance between the evolving guidelines of sick patient management who need surgical care and protecting themselves and their HCWs from undue exposure.^{11,12} It has opened up newer hospital management paradigms, surgical care, and postoperative management, including intensive care. It has also made us bend ways to develop newer guidelines without evidence or minimal or insignificant evidence.¹³ Because of the COVID-19 pandemic, there has been a postponement and restriction for elective surgery.

Our study showed that there was a decrease in surgical cases upto 80.64% and patient visiting the outpatient department up to 89.35% during the COVID-19 lockdown. These findings were made based on the comparison with matching three months period of non-COVID period among surgically managed hospital in the study hospital. This may be due to the fact that there was a strict restriction in movement during the lockdown. There was however an increase in minor emergency cases as compared to previous months. This finding was similar to few other national and international studies¹³⁻¹⁵ which showed marked decrease in surgical cases to around 90% during COVID 19 outbreak. Increase in minor surgical procedures may be due to the fact that the study hospital was a military hospital with continuation of surgical services even during the pandemic. As majority of hospitals were unable to provide services during the pandemic in the nation, it proved to be the vital center for availability of surgical care.

Because of the COVID-19 pandemic, there has been a postponement and minimization for elective surgery. However, prioritization has been given for oncology and emergency surgeries.¹⁶ Surgeries have also been postponed for elective inpatients with comorbidities such as diabetes mellitus, hypertension, lung diseases, obesity that could increase morbidity and mortality in COVID-19 infection. In our study, we observed that the elective operations were reduced. Reducing elective surgeries saves resources and reduces unnecessary patient flow that eventually decreases the spread of disease among patients and health care

workers. But it showed a huge backlog of elective surgical cases that have great implications and require exceptional attention in post-pandemic recovery.¹⁷ This calls for the development of specific protocols to resume previously cancelled and postponed elective surgeries balancing risk to benefit ratio.¹⁸

This study also showed that majority of the patient who underwent major abdominal surgeries were admitted from emergency department [76(72.3%)] requiring urgent surgical intervention. Among them, majority belonged to GI and HPB surgeries of which 47(70.18%) underwent emergency open appendectomy. This finding was similar to other studies which shows greater emergency surgeries during COVID-19 outbreak.¹⁵⁻¹⁸

Routine preoperative testing for COVID-19 was performed in our institute during the study period both for emergency and elective surgical cases. We followed a protocol developed by a team of Hospital Infection Committee (HIC) at Shree Birendra Hospital, SBH.

Given the unprecedented effects of COVID-19 on health systems worldwide, it is unfortunately inevitable that this pandemic will have a substantial impact on patients requiring surgical and other fields of medical care. In the short term, diagnostic and treatment pathways need to be adapted to minimize exposure to and poorer outcomes from SARS-CoV-2 infection so as to provide care to the patient even during such pandemics. The impact of the COVID-19 pandemic on the treatment and care of patients who do not have COVID-19 should not be understated.¹⁹

Conclusion

Nationwide lockdown during the second wave of COVID-19 had a serious impact among patient requiring surgical care. A decrease in number of hospital outpatient visits and surgical cases was observed during the lockdown period. This study also highlighted on prioritization of malignant surgical cases that were being performed effectively during the pandemic.

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