

# **A comparative study on Changes in Postoperative care of patients undergoing emergency surgeries in a tertiary care centre between COVID and non-COVID patients.**

## **ABSTRACT**

**Aim:** To observe and analyze changes in postoperative management between Covid and non-Covid patients who undergo emergency surgeries in a tertiary care hospital in Kanchipuram, Chennai. **Objective:** To analyze the postoperative care and compare the hospital stay, incision, drugs used and other system complications between Covid and non-Covid patients. **Materials and Methods:** A retrospective observational study of 40 subjects who came to the general surgery department for emergency procedures were studied. The study duration was 4 months. The exclusion criteria were obstetric and orthopaedic emergencies and patients below the age of 16 years and above 60 years. All the emergencies in the general surgery department done under anaesthesia between the age of 16 to 60 years were included in the research. **Result:** The postoperative outcome between the subjects who were covid positive and negative was quite similar but an increased postoperative stay due to delay in wound healing was observed. This was not found to be directly caused by the COVID infection but mostly due to the drugs used in its management and the patient's comorbidities and lifestyle choices.

**Keywords:** COVID19, emergency surgery, laparoscopy

## **INTRODUCTION**

The COVID19 pandemic has changed the healthcare system and has created a huge impact on the management of patients. The number of Patients undergoing emergency as well as elective surgeries went down markedly. This study was done to compare the postoperative outcome between COVID and non-COVID patients who underwent emergency surgery. The implications of this disease COVID in the lung, as well as the other systems, were yet to be explored efficiently, therefore, creating a dilemma in its management. With respect to the provision of emergency surgery, the option of delaying the definitive operative management leads to only an increase in morbidity and mortality due to the disease. Therefore it was essential to weigh the implications and complications when it came to the management of emergency procedures. In the past few months, several surgical societies issued protocols in aspects of providing for acute surgical care which focused on personal and patient safety preoperatively and postoperatively. It is of immense importance to assess the impact of the COVID-19 infection on the emergency surgery's postoperative outcome. The aim of this study was to present our experience relating to COVID-19-associated postoperative morbidity and mortality after emergency general surgery procedures over a 4-month period, between November 2020-April 2021, during which our tertiary care hospital continued to provide emergency general surgery services.

## MATERIALS AND METHODS:

A retrospective observational study was done on COVID and non-COVID patients in the General Surgery department in a tertiary care hospital. The subjects were patients who underwent emergency surgeries from November 2020 to April 2021. The data collected included the patient's age, gender, type of surgery, postoperative complications and stay. COVID19 screening was done with the help of RTPCR(nasopharyngeal swab) and a lung CT. The patients who met the criterion during the study period of 4 months were included in the study. Obstetric and orthopaedic emergency surgeries which came to the ER were excluded from the study. Patients who were between the age of 16 years and 60 years were only included in the study. Ethical approval was obtained from the ethical committee of the institution before beginning the study. Frequency and descriptive statistics were used to analyse the general characteristics of the patients and the postoperative outcome. Data was presented in the form of tables and figures.

## RESULT

A total of 40 patients were assessed of which 14 (56%) were females and 26(44 %) were males, with an age span of 17-59 years (46years mean age). Among the subjects, the incidence of covid was higher in the age group of 45-60years (46%) and 34.65 between the age of 30 and 45 years and comparatively low in the age group of 16 to 30 years, this shows that the covid incidence increased with increase in age. On comparing the sex of the subjects and the incidence of covid, it showed there was an increase in incidence in males (56%) compared to females(46%). This difference seen in incidence between females and males may be due to the lifestyle and social habits like smoking and having to travel more for work or even basic needs like grocery shopping making males more susceptible and exposed to contracting the virus. Concerning the type of surgery performed, out of 40 patients, 32 underwent an emergency laparoscopic procedure. In detail, the following procedures were undertaken,15 cases of laparoscopic appendectomies of which 7 subjects tested positive for covid and 8 negatives. Out of the 8 cases of laparoscopic cholecystectomies of which 2 subjects tested positive for covid and 6 negatives. Out of the 7 cases of laparoscopic closure of perforated duodenal ulcer 5 subjects tested positive for covid and 2 tested negatives. Out of the 8 abscesses requiring drainage under spinal anaesthesia, 4 tested positive for covid and 6 tested negatives.

<b>Gender</b>	<b>Number</b>	<b>Percentage</b>
Male	26	65%
Female	14	35%

**Table1.1 Characteristics of the subjects**

<b>COVID Status</b>	<b>Number</b>	<b>Percentage</b>
COVID+ve	26	65%
COVID-ve	14	35%

**Table 1.2 Covid status**

Gender	COVID STATUS	Percentage
Male	14	54%
Female	12	46%

**Table 1.3 Gender wise ratio**

Overall about 65% of the admitted patients had a CT lung preoperatively which showed typical COVID-19 related changes. For RT-PCR nasopharyngeal and oropharyngeal swabs were preoperatively taken in all the patients admitted for emergency surgery and 35% of the patients tested negative. Postoperatively similar swabs were taken in 4(40%) patients upon the development of respiratory symptoms suggestive of COVID19, with none being positive. Regarding the postoperative outcomes, the mortality rate was 0%. It was seen that the subjects who tested positive had CT showing lung involvement subjected to a longer hospital stay leading to an increase in cost. The rate of infection in the surgical site was nil but the healing was slow comparatively but this doesn't imply to COVID per se influencing wound healing but the drugs used in the management of COVID which were also steroids, anticoagulants and other drugs in the already immunocompromised patient factors.

Age	COVID STATUS	Percentage(*100/26)
16 - 30	5	19%
31-45	9	34.6%
46-60	12	46%

**Table 1.4 Age wise ratio**

**Table 1.5 TYPE OF EMERGENCY SURGERY DONE**

TYPE OF SURGERY	COVID+ve	COVID-ve	TOTAL	Percentage of COVID+ve	Percentage of COVID-ve	Total percentage(*/40%)
Lap Appendectomy	7	8	15	46.6%	53.3%	37.5%
Incision and drainage	4	6	10	40%	60%	25%
Lap Cholecystectomy	2	6	8	25%	75%	20%
Lap closure of perforated duodenal ulcer	5	2	7	71.4%	28.5%	17.5%

As the earlier data showed most of the patients already had poor lifestyle choices like smoking and alcohol and obesity which also plays a role in the patient's response to the surgery. No re-operation was required and there were no cases of mortality. None of the subjects returned as unplanned readmission to our ICU for ventilator support or any surgery related late complications. About 35% of patients who were tested positive for COVID-19 had a longer duration of hospitalisation compared to the rest of the subjects. This longer stay in the hospital led to an increased cost of about 15% for an average of 2 days increase in-hospital stay.

**Table 1.6 Laparoscopic appendectomy and cholecystectomy**

COVID Status	Hospital stay	Wound outcome	management
COVID-	3-5 days	No signs of infection	Antibiotics and analgesics
COVID+	Mean increase was 1 day	No signs of infection but delay in healing was observed	Broad-spectrum Antibiotics, analgesics were added with the drugs used in the covid protocol along with anticoagulants

**Table 1.7 Laparoscopic closure of perforated duodenal ulcer**

COVID Status	Hospital stay	Wound outcome	management
COVID-	4-6 days	No signs of infection	Antibiotics and analgesics
COVID+	The mean increase is 3 days	No signs of infection but delay in healing was observed	Broad-Spectrum Antibiotics, analgesics added with the drugs used in the covid protocol associated with anticoagulants

**Table 1.8 Incision and drainage**

COVID Status	Hospital stay	Wound outcome	Management
COVID-	1-2days	No signs of infection	Antibiotics and analgesics
COVID+	The mean increase is 2 days	No signs of infection but delay in healing was observed	Broad-Spectrum Antibiotics, analgesics added with the drugs used in the covid protocol associated with anticoagulants

## **DISCUSSION**

The COVID-19 pandemic has had a significant impact on elective general surgery procedures, mostly due to the implementation of local rules that limit operations to those that must be conducted on an expedited basis by default such as GI and other malignancies. In the elective setting, however, because the procedure and perioperative care can be planned ahead of time, patients can follow self-isolation protocols and COVID-19 screening can be done at a convenient time, allowing surgical teams to change the admission and care plans if the patients test positive for COVID-19, reducing chances of postoperative complication. In contrast, even if patients are checked for COVID-19 on their admission, the results are frequently disclosed 48-72 hours later, forcing acute care surgeons to make decisions about surgical vs conservative treatment of these patients without knowing their COVID-19 infection status. At this junction other factors such as the patient's comorbidities (Diabetes, HTN, any chronic illness), lifestyle choices and gender to a very minimal extent help the doctors to have an idea of the postoperative outcome. During the 4 months of the trial period, our facility provided uninterrupted acute care surgery services, while our medical and intensive care units admitted and treated patients with suspicion or confirmation of COVID-19 infection in a similarly continuous way. During a 3-month follow up period, we looked at postoperative morbidity and mortality after emergency gastrointestinal surgery and found no severe respiratory problems, despite the COVID-19 global pandemic.

Our study is one of the few to address the overall prevalence of COVID-19 infection and its impact on postoperative morbidity and in a group of patients undergoing emergency general surgery procedures in an extended time period. Based on the assessment it is clear that emergency procedures must not be delayed in favour of medical management when the patient is Covid positive due to the fear of morbidity and mortality.

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