



## Surgery

## AN ANALYSIS OF SURGICAL OUTCOME IN COVID 19 PATIENTS ADMITTED AT A TERTIARY CARE TEACHING HOSPITAL IN DAKSHINA KANNADA, KARNATAKA

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**ABSTRACT** **Introduction:** We are in the midst of COVID 19 pandemic. Limited data is available regarding the patients who have undergone surgery during this period. Thus this study was undertaken to study the surgical outcomes in COVID 19 patients admitted at a tertiary care teaching hospital.

**Materials And Methods:** A retrospective study was undertaken among all surgical patients with laboratory confirmed COVID 19. A predesigned performa was used to collect the data. Follow up of the patients were done by telephonic interviews.

**Results:** Out of a total of 56 patients who were studied, 83.09% underwent emergency surgery and the rest 16.07% underwent elective procedure. Most of the patients (37.5%) belonged to the age group of 51 – 70 Years and were males (64.28%). Hypertension (7.14%) and diabetes (8.92%) were the most common comorbidities. Wound debridement and amputations were the most common surgeries performed. The most common symptoms at the onset of COVID 19 were fever, headache, myalgia, dry cough and dyspnoea. The median time from surgery to first symptom was 2 days and that from hospital admission to death was 15 days. The mortality rate among those who underwent surgery was 17.85%.

**Conclusion:** Mortality was higher in COVID 19 patients and thus whenever possible, surgery should be postponed.

### KEYWORDS : COVID 19, Surgery, Mortality.

#### INTRODUCTION

The severe acute respiratory syndrome virus-2 ( SARS-CoV-2) that causes coronavirus disease 2019 (COVID-19) was identified in Wuhan, Hubei province of China in December 2019 by the Chinese centre for Disease and Prevention from the throat swab of a patient<sup>1</sup>. The disease commonly affects the respiratory system and manifests usually as fever, dry cough, difficulty in breathing. The disease may manifest as pneumonia or acute respiratory distress syndrome as a complication<sup>1,2,3</sup>. Manifestations related to cardiac system, gastrointestinal tract, dermatological and nervous system may also occur<sup>4,5,6,7</sup>.

As of 14<sup>th</sup> December 2020, India reported 98,84,100 laboratory confirmed COVID cases and 1,43,355 deaths<sup>8</sup>. During this pandemic, there was a widespread advice to the surgeons to restrict elective surgeries. The reason for this was to restrict the patient load on the health care system, thus increasing the availability of ICUs and ventilators for COVID patients. There would also be reduced risk of nosocomial COVID -19 infections and also the resultant sequelae.

There are many guidelines which are proposed for surgical practice during this pandemic. But there are a very few studies on surgical outcomes in COVID patients in India. Thus this study was conducted to study the clinical characteristics and outcomes of COVID 19 patients admitted in a tertiary care teaching hospital in Dakshina Kannada district of Karnataka.

#### MATERIALS AND METHODS

This is a retrospective study done in a tertiary care teaching hospital in Dakshina Kannada district of Karnataka among all laboratory confirmed cases of COVID 19 admitted for surgical purpose between August 2020 and October 2020. The data was collected from the records of patients maintained at MRD (Medical Records Department) of the hospital.

Epidemiological, clinical, laboratory, radiological characteristics and treatment and outcomes data were obtained with data collection forms from electronic medical records. Follow up data of the patient was collected by telephonic interviews. Laboratory confirmation of SARS-CoV-2 was done by quantitative RT-PCR on samples from the respiratory tract. Oral consent was obtained from all the patients during the telephonic interview.

The data was entered in Microsoft Office Excel 2007 and IBM SPSS version 17 was used for analysis. The data is expressed in the form of frequency, percentage, mean and standard deviation.

#### RESULT

A total of 56 patients admitted for surgery were studied. 47 (83.92%) patients were operated on emergency basis and the rest 16.07% underwent elective surgery. The baseline characteristics of the patients are seen in Table 1. Most of the patients (37.5%) belonged to the age group of 51 – 70 Years and were males (64.28%). Hypertension (7.14%) and diabetes (8.92%) were the most common comorbidities seen among the patients.

Table 2 shows the surgical procedures which the patient underwent. Wound debridement and amputations at various levels were the highest contributors accounting for 30% and 16% respectively. The median surgical time was 146 minutes (IQR of 60 – 168). The most common symptoms at the onset of COVID 19 were fever (91.07%), headache (82.14%), myalgia (75%), dry cough (44.64%) and dyspnoea (16.07%). The median time from surgery to first symptom was 2 days (IQR of 1 to 4). The median time from hospital admission to surgery was 2.5 days (IQR of 1 to 4). ARDS (18.18%) and respiratory failure (18.18%) were the most common pulmonary complications seen among the study population. Among the non pulmonary complications, fever (28.57%) and myalgia (28.57%) were the most common complications seen. The median time from hospital admission to death was 15 days (IQR of 10 to 26).

The mean white blood cell count in the study population was  $6.3 \times 10^9/L$ , neutrophil count was  $4.0 \times 10^9/L$ , lymphocyte count was  $0.7 \times 10^9/L$ , D-dimer was 1.7 mg/L, CRP was 26.6 mg/L. The mortality rate among those who underwent surgery was 17.85%. The complications which led to mortality were ARDS / respiratory failure (11%), septic shock (4%) and acute cardiac injury (3%).

**Table 1: Baseline Characteristics Of The Patients**

SNO.	CHARACTERISTICS	NO. OF PATIENTS NO. (%)
<b>Age (Years)</b>		
1	< 30 Years	14 (25%)
2	31 – 50 Years	18 (32.14%)
3	51 – 70 Years	21 (37.5%)
4	> 70 Years	3 (5.35%)
<b>Sex</b>		
1	Male	36 (64.28%)
2	Female	20 (35.71%)
<b>Comorbidities</b>		
1	Diabetes	5 (8.92%)
2	Hypertension	4 (7.14%)

3	Obesity	2 (3.57%)
4	Cardiac disease	2 (3.57%)
5	Chronic Kidney disease	2 (3.57%)
6	COPD	1 (1.78%)
<b>ASA Grade</b>		
1	ASA Grade I	18 (32.14%)
2	ASA Grade II	14(25%)
3	ASA Grade III	22 (39.28%)
4	ASA Grade IV	2 (3.57%)
<b>Route of Anaesthesia</b>		
1	Spinal Anaesthesia	33 (58.92%)
2	General Anaesthesia	18 (32.14%)
3	Local Anaesthesia	5 (8.92%)

**Table 2: Surgical Procedures On The Study Population**

SNO.	PROCEDURE	NO. OF PATIENTS NO. (%)
1	Wound debridement	17 (30.35%)
2	Amputation	9 (16.07%)
3	Exploratory Laprotomy	5 (8.92%)
4	Incision and Drainage	5 (8.92%)
5	Appendicectomy	4 (7.14%)
6	Fasciotomy	3 (5.35%)
7	A V fistula	3 (5.35%)
8	Hernia repair	2 (3.57%)
9	Pleural drainage	1 (1.78%)
10	Cystolithotripsy	1 (1.78%)
11	Urethrotomy	1 (1.78%)
12	Hemicolectomy	1 (1.78%)
13	Pilonidal sinus excision	1 (1.78%)
14	Tendon repair	1 (1.78%)
15	V Y Plasty	1 (1.78%)
16	Fasciotomy and Aorto femoral bypass	1 (1.78%)

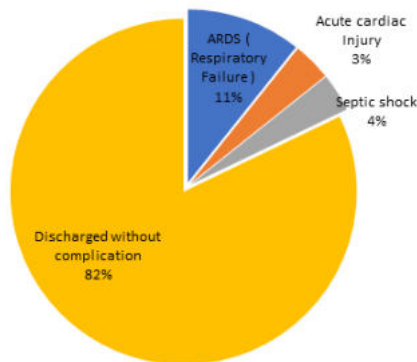
**Table 3: Complications In The Study Population**

SNO	VARIABLES	NO. OF PATIENTS NO.(%)
<b>ICU admissions Post surgery</b>		
1	Yes	6 (10.71%)
2	No	50 (89.28%)
<b>Pulmonary Complications</b>		
1	ARDS	10 (18.18%)
2	Respiratory Failure	10 (18.18%)
3	Pneumonia	2 (3.63%)
<b>Non Pulmonary Complications</b>		
1	Fever	16 (28.57%)
2	Myalgia	16 (28.57%)
3	Acute Kidney Injury	7 (12.5%)
4	Acute Cardiac Injury	2 (3.57%)
5	Septic Shock	2 (3.57%)

**Table 4: Outcome Of COVID Patients Admitted For Surgery**

SNO	OUTCOME OF PATIENTS	NO. OF PATIENTS NO. (%)
1	Mortality	10 (17.85%)
2	Discharged	46 (82.14%)

**PROPORTION OF COMPLICATIONS IN THE STUDY POPULATION**



**Figure 1: Mortality among the study population**

**DISCUSSION**

The present study was conducted among 56 COVID positive patients who underwent surgery in a tertiary care teaching hospital to study their clinical characteristics and outcome. Most of the patients belonged to 51 to 70 years in the present study. This is comparable with studies done in China and New York<sup>9,10,11</sup>. There was more male preponderance (64.28%) which is also comparable to other studies<sup>10,11</sup>. The median time between admission to hospital and surgical procedure was 2.5 days. This is much lesser than the median incubation period of the disease which is 4 days as per a study conducted in China<sup>12</sup>. This reflects that the patients admitted for surgery were probably in their incubation period at the time of admission.

10.71% of the patients received ICU care in the present study. This is much lower compared to a study done in China which reported 44.1% of ICU admissions<sup>13</sup>. Most of the patients admitted in ICU were more than fifty years and had one of the comorbidities. This suggests that these two factors can be a risk factor for ICU admission.

Most of the patients in the present study developed symptoms soon after the surgery. The median time between the surgery to development of the first symptom was 2 days. This probably suggests that any surgical procedure may accelerate the disease progression. The median time between the surgery and onset of dyspnoea was 5.2 days. This is much lesser than that seen in a study where the reported duration was 8 days<sup>9</sup>. This suggests that the surgery might exacerbate the disease.

The mortality rate was 17.85% in the present study. This is similar to a metaanalysis done by Mekonnen Abate S et al<sup>14</sup> which revealed a post operative mortality rate of 20%. But the mortality is much higher than that seen in patients without COVID 19 infection who were admitted to ICU in India<sup>15</sup>.

The median time from the time of admission to death was 15 days in the present study. This is much more than the time as mentioned in another study done by Lei S<sup>13</sup>, where the median time was 8.7 days. This is probably because of the knowledge gained over time regarding the treatment of COVID 19.

**Limitations**

The follow up period was very less and thus only the early outcomes could be noted. The study population was also small.

**CONCLUSION**

Since there is still no specific treatment for COVID 19, the patient's immune response is one of the major determinant for the disease severity. Surgery may impair the immune response and also induce inflammatory response. Thus old age, surgery, presence of comorbidities may be considered as risk factors for the exacerbation and acceleration of the disease.

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