

## OUTCOME OF COVID-19 RELATED PRECAUTIONS AND PREVENTIVE MEASURES FOR EMERGENCY SURGERY AT CMH OKARA

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### ABSTRACT

**Objective:** To find out effectiveness of precautions and preventive measures against COVID-19 for emergency surgery at CMH Okara with limited resources.

**Study Design:** Cross sectional observational study.

**Place and Duration of Study:** Combined Military Hospital Okara, from Mar 2020 to Jun 2020.

**Methodology:** All emergency surgery patients were included while excluding elective cases done under spinal or general anaesthesia. The clinical symptoms along with complete blood count and X-ray chest were our method for corona screening. Personal protective measures were adopted for suspected patients who were operated in a separate room with restricted entry. The data was collected for total operated patients, suspected patients, and health care workers contracting infection. SPSS-16 was used for analysis.

**Results:** Four hundred and fifty (100%) emergency surgeries were performed during this study period. Twenty patients had clinical suspicion of COVID-19 and 7 patients had X-ray chest findings suggestive of COVID-19 infection. Computerized tomography scan done in 2 patients, was negative. 425 (94.4%) were operated under spinal anaesthesia whereas 25 (5.55%) patients had general anaesthesia. One staff member was positive for corona after 15 days of study. All the other staff (30 health care workers) did not develop any clinical symptoms suggestive of corona.

**Conclusion:** Strict preventive measure, screening of patients and teaching of health care workers may help control this infection.

**Keyword:** Alcohol based sanitizer, COVID-19, Personal protective equipment.

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### INTRODUCTION

Infectious diseases like the Influenza epidemic were the biggest cause of human morbidity and mortality since the history of mankind in 1918, killing people more than the casualties during World War I<sup>1</sup>. The diagnosis of this killer disease is on clinical symptoms, ground glass appearance on X-ray chest or computed tomography (CT) scan and confirmation on PCR (polymerase chain reaction)<sup>2</sup>. Mortality is high in elderly patients with co morbid and WHO has declared it a as a public health emergency<sup>3</sup>.

It is absolutely necessary to communicate with staff to address their phobia due to information available on media and for their awareness

of adopting preventive measures<sup>4</sup>. It is pertinent to note that there is no specific treatment available for COVID-19 so preventive measures are essential to prevent spread of this pandemic. Routine pre-anaesthesia clinics are to be closed and telemedicine desk established to guide patients to stay at home to prevent cross infection<sup>5</sup>. Most centers have recommended that hospital staff should work in two teams with 14 days on duty and off for next two weeks gaining advantage of giving rest due to fatigue and also providing 14 days quarantine as COVID-19 incubation period varies from 2-14 days<sup>6</sup>. Similarly all elective procedures should be held forthwith and allowing only emergency surgeries<sup>7</sup>. Spinal anaesthesia to be preferred over general anaesthesia and patients who are given spinal anaesthesia or sedation should wear face mask all times within operating room<sup>8</sup>.

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We have conducted this study in our hospital with limited resources where no PCR (polymerase chain reaction) test facility is available. Clinical suspicion and X-ray chest findings were the main diagnostic tool for patients presenting for emergency surgery. The aim was to find effective manners to prevent infection transmission to our health care workers while conducting safe emergent surgery.

## METHODOLOGY

The study was started after approval from hospital ethical committee (ERC-10) for patients presenting for emergency surgery to our hospital. Inclusion criteria was all emergency surgery patients of both genders, American Society of Anesthesiologist status 1, 2, 3, the age groups were 15 years to 50 years, obstetric and emergency general surgery. Elective surgery, eye and ear, nose throat surgery were excluded. WHO calculator was used to calculate sample size of 384 but we included 450 patients for this study. Confidence level was set 95% and significance level of 5%. Anticipated population proportion at this confidence interval was 50%. Power of study was 90%. Consecutive non-probability sample technique was used for collecting sampling data.

We declared one operating room for suspected COVID-19 patients and spinal anaesthesia was the technique of choice whereas general anaesthesia was only used where deemed necessary. Intubation was performed by senior anaesthetist, with all precautions and personal protective equipment (PPE). The PPE included N95 mask, shield helmet along with complete wearing of gown and gloves. All the patients coming to operating room were given face mask. After completion of surgery, the PPE were discarded in a separate polythene bag before leaving the OR. We used separate entry and exit from OR. The donning was done in changing rooms but doffing was done at exit point of OR and hand washing was done immediately after doffing. The blood stained shoes were also removed in OR which were cleaned with hypochlorite solution after washing with simple water. The entries of health

care workers in OR were restricted during operations and recommended social distances maintained where possible. Each OR was thoroughly cleaned after every operation and we nominated one individual for each OR to check and report if someone is not following instructions. Any health care worker developing fever or flue like symptoms was immediately isolated from OR till his symptoms improve or develop other symptoms of COVID-19. The record of each patient was kept with a single person recording all details. All staff members were divided into two teams with 15 days working and 2 weeks quarantine. We used clinical symptoms and X-ray chest to declare patient is suspected of COVID-19. The suspected patients were done in separate operating room. Follow up of obstetric patients was not possible but surgical patients were observed for symptoms. All the staff members involved in operations were using PPE all the time. The PCR test (Polymerase chain reaction) test for corona was not available in our hospital and CT scan chest in obstetric emergencies was not possible. The data was collected as mentioned and analyzed by SPSS-16. The categorical data was presented in frequencies and percentages. Numerical data was presented for gender of patient.

## RESULTS

Four hundred and fifty emergency patients (100%) were operated during this time period in which twenty patients had clinical suspicion of COVID-19 based on clinical symptoms and 7 (1.5%) patients had X-ray chest findings suggestive of COVID-19 infection.

**Table-I: Gender ratio and distribution.**

Gender	Frequency (%)	Mean $\pm$ SD
Male	25 (5.6)	29.84 $\pm$ 8.39
Female	425 (94.4)	
Total	450 (100)	

425 (94.4%) were operated under spinal anaesthesia and 25 (5.55%) had general anaesthesia (table-II). Mean age was 29.84  $\pm$  8.39. Spinal anaesthesia was converted to general anaesthesia in 7 (1.5%) imputable to procedural requirements. Total, 411 (91.3%) patients were of emergency

cesarean sections and 25 (5.5%) were surgical patients. Spinal anaesthesia was used for 425 (94.4%) cases and 25 (4.4%) patients were given general anaesthesia with endotracheal tube intubation, LMA (laryngeal mask airway) or sedation with combination of drugs (midazolam, ketamine, nalbuphine) was used in 3 (0.66%) cases. One staff member was positive confirmed with

the report was negative. Geoffrey *et al* have recommended chest imaging only for patients having serious symptoms of this disease and had very limited role in mild symptom cases. Our patients chest X-ray, were suggestive in patients with symptoms whereas others had negative imaging<sup>14</sup>.

In a research by Sasmita *et al*, they have

**Table-II: Surgical procedures, workload and Anaesthesia types.**

Operations	Total patients 450 (100%)		Spinal	General	Remarks
	425 (94.4%)		400 (88.8%)	25 (5.55%)	
Obstetrics	C-Sections	411 (91.3%)	407 (90.4%)	4 (0.8%)	Obstetrics cases
	Hysterectomy following C-Section	7 (1.5%)	7 (1.5%)	-	Spinal was converted to GA
	Cervical stitch	5 (1.11 %)	-	5 (1.11%)	LMA
	D&C	2 (0.44%)	-	2 (0.44%)	LMA
Surgical	25 (5.55%)				Surgery cases
	Appendectomy	2 (0.4%4)	1 (0.2%)	1 (0.2%)	GA
	Breast abscess	3 (0.66%)	-	2 (0.2%)	LMA
	I & D	11 (2.44%)	8 (1.77%)	3 (0.66%)	Sedation
	Close reduction	6 (1.33%)	-	6 (1.33%)	GA
	Wound closure	3 (0.66%)	2 (0.4%)	2 (0.4%)	GA

Abbreviations; D&C (Dilatation and curettage), I&D (Incision and Drainage), GA (General Anaesthesia), C-Section (Cesarean Section), LMA (Laryngeal mask airway).

PCR during the study. No HEPA filter facility was available in our OR.

**DISCUSSION**

Clinical sign and symptoms can be used to identify cases with a high index of suspicion and should be enough to label a patient as suspected case of COVID-19<sup>9</sup>. We had no PCR test available and we conducted our study on these guidelines. A study published by D Nepogodiev has supported our point of teaching surgical staff about this pandemic and suggested context specific preparedness<sup>10</sup>. A teaching cadre for COVID-19 awareness was regularly done in our hospital for this purpose<sup>11</sup>. Moreover it is clear that, the accuracy of perioperative PCR is unknown and in a study of 1000 patients, PCR has sensitivity of 71% and CT scan 98%<sup>12</sup>. We did not have PCR facility. Lymphopenia and eosinophilia on complete blood count is also suggestive for clinical diagnosis which was absent in our patients<sup>13</sup>. We did have CT scan of one surgical patient suspected of COVID-19 symptoms but

recommended development of valid and reliable methods to manage this emergency which is now demanding more prevention than treatment<sup>15</sup>. Despite all efforts we are lacking research in this field and following research from other resources.

Jacobi *et al*, in his study has stressed upon utilization of X-ray chest and clinical symptoms for the reliable diagnosis of COVID-19 in areas with limited CT scan availability<sup>16</sup>. Our CT scan resources are limited, so we were dependent on clinical symptoms, complete blood count and X-ray chest for diagnosis. However, CT scan chest where available was considered better choice with higher sensitivity than reverse transcription polymerase chain reaction (RT-PCR)<sup>17</sup>. Pre admission thorough testing is advised for all surgical patients in various studies but only possible in advanced health care systems.

It is pertinent to note that the vertical transmission is not confirmed but asymptomatic person can transmit this disease and more research is required in this field<sup>18</sup>. It can be transmitted by

asymptomatic patients, but vertical transmission from mother to child remains to be confirmed. Clinical features, epidemiological history and pathogen detection are important in the diagnosis of COVID-19.

Our study is based on emergency surgery with limited resources where no RT-PCR is available.

**LIMITATION OF STUDY**

We have limitations to our study which include no availability of RT-PCR at source, no HEPA filter in operating rooms, less educated/low income patients, We could not carry out CT scan for screening of all patients. We could not compare our study with local studies due to non-availability of literature.

**CONCLUSION**

Strict preventive measures like using recommended personal protective equipment, proper disinfection with sodium hypochlorite and alcohol based sanitizers may help restrict transmission of COVID-19. Clinical diagnosis may be enough in most emergent cases in hospitals with limited or no resources of testing facility. Teaching and awareness of health care workers is essential for dealing with this novel virus, while allowing only emergency surgery will help to minimize the contract exposure. We need to strengthen our basic health system while prioritizing our resources. Awareness about the spectrum of COVID-19 sign and symptoms is essential for health care workers to prioritize the patients for scarce resource.

**CONFLICT OF INTEREST**

This study has no conflict of interest to be declared by any author.

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