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Prevalence of COVID-19 Infection and COVID-19 Sequelae in Patients Undergoing Anaesthesia for Elective Surgical Procedures During the COVID-19 Pandemic

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Abstract

The COVID-19 pandemic has significantly impacted healthcare services, particularly elective surgical procedures. Patients undergoing anaesthesia for elective surgeries may be at risk of COVID-19 infection or sequelae, affecting perioperative outcomes. Healthcare workers are also at risk of getting COVID 19 infection from patients undergoing elective surgeries. This study was conducted as a cross-sectional analysis at the ACS Medical college and Hospital between October 2020 and October 2021 with sample size of 40. The population consists of Patients undergoing anaesthesia for elective surgical procedures. In a recent study, the average age of participants was 38.10 years, with a standard deviation of 10.68 years, indicating a diverse age range among the subjects. Notably, there was a higher proportion of male participants compared to females. COVID-19 prevalence among these individuals was assessed using two diagnostic methods: RT-PCR Testing: 15% of participants tested positive, reflecting active or recent infections. Contrast-Enhanced Computed Tomography (CECT) Scans: A higher prevalence of 27.5% was detected, suggesting that CECT scans may identify additional cases not captured by RT-PCR alone. A significant association was found between preoperative and intraoperative SpO₂ levels, as well as between preoperative and postoperative SpO₂ levels. This underscores the importance of monitoring oxygen saturation before surgery to anticipate and manage potential respiratory challenges during and after the procedure. In light of the findings from the recent study, it is evident that comprehensive preoperative assessments are crucial for optimizing surgical outcomes in patients with a history of COVID-19. The higher detection rate of COVID-19 via Contrast-Enhanced Computed Tomography (CECT) scans compared to RT-PCR tests suggests that incorporating both diagnostic methods may provide a more accurate evaluation of a patient's infection status. Moreover, the significant associations between preoperative and both intraoperative and postoperative SpO₂ levels highlight the importance of vigilant monitoring of oxygen saturation throughout the surgical process. Implementing these comprehensive assessment strategies can enhance patient safety and improve postoperative outcomes in the Covid pandemic period.

INTRODUCTION

The COVID-19 pandemic has significantly impacted healthcare services, particularly elective surgical procedures^[1-5]. Elective surgeries were postponed in most parts of the country, to utilize the available resources for the care of patients with Covid-19. However, elective surgeries resumed, as the pandemic situation eased. The natural course of this disease, its severity and the virulence of the virus are dynamic and may vary across countries. Hence, the reported morbidity and mortality rates of Covid-19 infection in the global literature may not be reflective of our patient population, including surgical patients. Patients undergoing anaesthesia for elective surgeries may be at risk of COVID-19 infection or sequelae, affecting perioperative outcomes. Healthcare workers are also at risk of getting COVID 19 infection from patients undergoing elective surgeries^[6,7]. The purpose of this study is to evaluate the Prevalence of COVID-19 Infection and COVID-19 Sequelae in Patients Undergoing Anaesthesia for Elective Surgical Procedures During the COVID-19 Pandemic.

Objectives:

- To determine the prevalence of COVID-19 infection in patients undergoing anaesthesia for elective surgical procedures.
- To evaluate the impact of COVID-19 infection and sequelae on perioperative outcomes.

MATERIALS AND METHODS

This study was conducted as a cross-sectional analysis at the ACS Medical college between October 2020 and October 2021 with sample size of 40. The population consists of Patients undergoing anaesthesia for elective surgical procedures with inclusion criteria of Adult patients (>18 years) and exclusion criteria of Emergency surgeries. Data was collected from MRD at ACS medical college and hospital only after explaining purpose and method of data collection of the study. The structured questionnaire, consisting of basic demographic characteristics, Type of surgery, Anaesthesia technique post operative follow up (30 days).

Statistical Analysis: Descriptive statistics were reported as mean (SD) for continuous variables, frequencies (percentage) for categorical variables. Chi square was used to find the association between categorical variables. Independent t test was used to find the association between the continuous variables of two groups. Data were statistically evaluated with IBM SPSS Statistics for Windows, Version 16.0.

RESULTS AND DISCUSSIONS

The Mean and SD of age of study participants was 38.10±10.68. More number of study participants were

belong to male compared to female. Prevalence of Covid infection was 15% as per RT-PCR results and 27.5% as per CECT results. In this study there was significant association between Pre Op SPO2 and Intra OP SPO2, Pre OP SPO2 and Post OP SPO2.

Table 1: Age Distribution of Study Participants

Variables	Mean	SD
Age (in years)	38.10	10.68

Table 2: Sex Distribution of Study Participants

Variables	Frequency	Proportion
Female	19	47.5
Male	21	52.5
Total	40	100

Table 3: RT-PCR Findings of Study Participants

Variables	Frequency	Proportion
No	34	85.0
Yes	6	15.0
Total	40	100

Table 4: HRCT Findings of Study Participants

Variables	Frequency	Proportion
No	29	72.5
Yes	11	27.5
Total	40	100

Table 5: RTPCR and HRCT Findings of Study Participants

Variables	Frequency	Proportion
Yes	17	42.5
No	23	57.5
Total	40	100

Table 6: Vitals Distribution of Study Participants

Vitals	Mean	SD
Preop SPO2	98.85	0.36
Intra op SPO2	98.00	1.55
Post op SPO2	98.10	1.42
Pre op HR	78.43	10.21
Intra op HR	78.43	10.21
Post op HR	78.43	10.21
Preop BP(MAP)	83.98	8.37
Intra op BP(MAP)	83.25	9.20
Post op BP(MAP)	84.55	9.82

Table 7: Association Between Pre Op SPO2 and Intra, Post op SPO2

Variables		95%CI					
		Mean	SD	T value	Lower	Upper	P-value
Pair 1	Pre op SPO2	98.85	0.362	3.306	.330	1.370	0.002
	Intra op SPO2	98.00	1.553				
Pair2	Pre op SPO2	98.85	0.362	3.204	0.276	1.224	0.003
	Post op SPO2	98.10	1.42				

Over 31 million people in India had been affected by COVID-19, as reported by the World Health Organization (WHO). The devastating waves of the pandemic overwhelmed healthcare systems, forcing hospitals to prioritize emergency and critical care over elective procedures. However, as the number of new cases steadily declined, the healthcare landscape began to shift, allowing the resumption of routine surgical services. This resurgence in elective surgeries brought forth a crucial challenge-many patients scheduled for non-urgent procedures had previously battled COVID-19. This raised pressing concerns among medical professionals, including surgeons, anesthesiologists and clinicians, as well as the patients themselves. How does a past COVID-19 infection influence surgical outcomes. Could lingering

physiological effects increase the risk of complications. And most importantly, when is the safest time to proceed with surgery after a patient has recovered from the virus and also Health care workers may be possible to get Covid infection from Patients during elective surgical procedures. These unanswered questions fueled widespread debate and uncertainty within the medical community. Understanding the implications of prior COVID-19 infection on perioperative outcomes became a priority, as doctors and researchers worked tirelessly to ensure patient safety while restoring normalcy to surgical care.

Demographic Insights:

- **Age:** The average age of participants was 38.1 years, with a standard deviation of 10.68 years, indicating a predominantly young to middle-aged cohort.
- **Gender Distribution:** There was a higher representation of male participants compared to females, highlighting potential gender-related factors in surgical considerations post-COVID-19.

COVID-19 Prevalence Among Participants:

- **RT-PCR Results:** 15% of the participants tested positive for COVID-19 via RT-PCR, the standard diagnostic method for active infection.
- **CECT Findings:** Interestingly, 27.5% showed evidence of COVID-19 infection through Contrast-Enhanced Computed Tomography (CECT) scans, suggesting that some cases might have been detected through imaging despite negative RT-PCR results.

Oxygen Saturation (SpO₂) Observations:

- **Preoperative and Intraoperative SpO₂:** A significant association was found between preoperative and intraoperative SpO₂ levels, emphasizing the importance of monitoring oxygen saturation before surgery to anticipate intraoperative respiratory needs.
- **Preoperative and Postoperative SpO₂:** Similarly, a significant correlation existed between preoperative and postoperative SpO₂ levels, underscoring the predictive value of initial oxygen saturation measurements for postoperative respiratory outcomes.

Implications for Surgical Practice: These findings shed light on the critical need for thorough preoperative assessments in patients with a history of COVID-19. The elevated detection rate of past and current infections via CECT scans suggests that reliance solely on RT-PCR may underestimate prior COVID-19 exposure. Moreover, the significant correlations between preoperative and both intraoperative and postoperative SpO₂ levels highlight the necessity for

vigilant respiratory monitoring throughout the surgical process. Understanding these associations is vital for optimizing surgical outcomes and ensuring patient safety in the context of the ongoing pandemic. Healthcare workers are also at risk of getting COVID 19 infection from patients undergoing elective surgeries. "This work will be useful in throwing some light in challenges faced by anaesthetist with patients posted for elective surgery during peak and non peak COVID-19 pandemic times. This study will be helpful for anaesthetists in future if they face a similar pandemic like situation.

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