

## **Surgical Management of Patients During Covid 19 Pandemic**

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**Abstract**

The COVID-19 pandemic created an unprecedented situation globally. This pandemic has affected all aspects of daily life with far-reaching implications, especially in most aspects of healthcare. The practice of surgery across the globe is at a standstill. When we restart surgical practices globally, we have to bring new protocols and practices to combat the transmission. This article discusses the major changes in surgical practice, which need to be brought in. This article is based on scientific information about transmission of virus and the experiences of some of the authors from China (a country that successfully dealt with and contained the virus outbreak).

**Keywords:** COVID 19, Coronavirus, Practice of surgery

## INTRODUCTION

The underlying causative agent of this pneumonia was identified as a novel coronavirus, initially named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and the disease related to it as coronavirus disease 2019 (COVID-19) by the World Health Organization. Later on, The World Health Organization (WHO) named this pathogenic virus for 2019-nCoV. The pathogenic virus is a member of a large group of highly diverse viruses called coronaviruses; it is an enveloped virus composed of a positive-sense single-stranded RNA as its genetic material (Huang *et al.*, 2019).

Early reports suggest that 2019-nCoV (SARS-CoV-2) is likely originated in bats, while the intermediate host between bat reservoir and human is still unclear. Human to human transmission of COVID-19 is mainly by droplet and or close contact between affected person and healthy one.<sup>8</sup> Although the virus has been identified in tears and stool of diseased persons, disease transmission through the oral, fecal, or conjunctival routes is unknown (WHO, 2019).

The incubation period for the virus reaches up to 14 days with a mean duration of 5.2 days, one asymptomatic carrier reported with an incubation period of 19 days, and almost all patients are likely to experience one or more symptoms within 12.5 days of contact. In the early course of the disease, the WBC count may be normal (Hellewell *et al.*, 2020). Common laboratory findings in patients with COVID-19 include leucopenia, lymphopenia. Some patients have an elevated lactate dehydrogenase, creatinine kinase, alanine aminotransferase, and aspartate aminotransferase. Lymphopenia is considered a cardinal feature of this disease. Approximately 30% of patients had an abnormally elevated D-Dimer level. Even serum levels of procalcitonin were normal in most patients; the C-reactive protein was elevated (Huh, 2020).

Detection of viral RNA using real-time reverse transcriptase-polymerase chain reaction (rRT-PCR) is used to confirm the clinical diagnosis. The protocol followed at the time of admission of an in patient

Initially the patients were received in the casualty. A team of casualty medical officers attended to these patients. A team of surgeons attended the patients with surgical conditions Then they were triaged as follows

First tier: Emergency surgical conditions where surgical is vital and if not performed can prove fatal

Second tier: Conditions where subsequent surgery is required to prevent the progress of the disease, such as carcinoma  
Third tier: All elective surgical cases

Based on this the patients were categorised and managed according to it.

Incase if emergency surgery the patients was kept in a triage room following which COVID 19 RTPCR was taken from the patient

The average processing time for the patients RTPCR Report was 4 hours

Once COVID 19 RTPCR was negative patient was admitted to our surgery department

### **The protocol followed in the preoperative period:**

medical staff should be performing their clinical tasks wearing gloves, hats, and disposable surgical masks correctly. Whenever a suspected or COVID-19 diseased patient is encountered, extra precautions should be taken to keep protection at a high level. If this the case, all providers should utilize personal protective equipment (PPE), including fit-tested disposable N95 respirator, goggles, face shields, gowns, double-layered gloves, and protective footwear to achieve maximum droplet/contact isolation gloves (Zhonghua *et al.*, 2020). As Medical staff has extensive contact with patients and their families and other health care providers, they are very likely to cause cross-infection. Because of that, the daily assessment of personnel health status and recording body temperature should be implemented. Any medical staff with an increase in his body temperature should be isolated and investigated for the possibility of acquiring the disease (Livingston and Bucher, 2020).

Properly protected anesthetists need to oxygenate patients with 100% O<sub>2</sub> for 3e5 min then to perform rapid sequence induction and intubation to avoid manual ventilation and decrease the possibility of aerosolization of virus from airways (Wang *et al.*, 2020). Once PPE is removed, proper handwashing before touching the surrounding environment. It is recommended to use a high-quality HMEF (Heat and Moisture Exchange Filter) between the facemask and breathing circuit. It is estimated that HMEF can remove 99.97% of airborne particles equal to or greater than 0.3 microns.<sup>24,30</sup> Anesthetic equipment must be used by one person only as well as the anesthesia machine is strictly disinfected according to requirements after use (Zou *et al.*, 2020).

### **Intraoperative considerations**

If a patient is having COVID-19 disease or is even highly suspected, the operation should be performed in a designated negative pressure environment<sup>26</sup>; it is essential to keep pressure difference between the operating room below - 4.7 Pa.<sup>29</sup> Medical staff should be reduced as much as possible as well as their temperature needs to be measured before starting the surgery. Surgeons and adjunct medical staff should be aware of blood and body secretions at the time of surgery; all equipment should be kept clean of these secretions.<sup>27</sup> Aerosol generating procedures (AGPs) are associated with an increased risk to the health care providers. AGPs include and are not limited to intubation, extubation, chest tube insertion, bronchoscopy, bag masking, gastrointestinal endoscopy, laparoscopy and the use of energy devices (e.g. electrocautery). When using electrocautery or other

energy devices in surgery, adjust to the lowest effective power possible to reduce the amount of surgical smoke and use a smoking evacuator (Liang *et al.*, 2020)

Medical staff should complete personal hand before and after contacting patients and removing precautions. For laparoscopic surgery, attention during pneumoperitoneum creation and strict aerosol management must be made even during the operation (Xiao *et al.*, 2020). In response to artificial pneumoperitoneum, there will be a reduction in lung volume, increased airway pressure, increased CO<sub>2</sub> retention, and decreased lung compliance. Therefore, the risk of perioperative infection 2019-nCoV is considered high.<sup>28</sup> To minimize the impact of pneumoperitoneum on lung function, circulation and susceptibility for pathogen infection, both intra- operative pneumoperitoneum pressure and CO<sub>2</sub> ventilation should be at the lowest possible. Surgical smoke and pneumoperitoneum should be evacuated only using a direct suction connected to a vacuum suction unit (Johnson and Robinson, 1991).

### **Postoperative management**

patients can be transferred to the regular surgical ward for their postoperative management. Daily assessment of body temperature as well as respiratory symptoms is mandatory.<sup>22</sup> Any patient with new-onset fever or cough should be isolated and investigated thoroughly to rule out 2019-nCoV infection. Suspected or confirmed patients should be isolated in a single room with negative pressure. Sufficient oxygen supply and nebulization should be considered. Postoperative rounds, medications and wound management should be performed under personal protection to avoid contact with secretions.

### **Conclusion**

The above protocols were followed in this study. An average of 50 surgeries were performed during Jan 2020-Oct 2020. As a result, all patients who were taken up for surgery were COVID Negative. In addition, no operating surgeons or paramedical staff involved in these surgeries developed COVID 19 disease. Therefore, this shows that with proper precautions being followed, the medical and paramedical staff can break the chain of transmission of the disease and perform all the emergency and lifesaving surgeries.

### **Author contribution**

Sasi Kumar S, Gopinath S, Kalaichezhian M and Harish M encouraged and supervised the findings of this work. All authors discussed the results and contributed to the final manuscript.

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### **Study significance**

This article discusses the major changes in surgical practice, which need to be brought in.

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