Perioperative Management of Patients undergoing Surgery during Pandemic – Guiding Principles, Challenges and Outcomes

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Introduction

The emergency preparedness during pandemic has impacted surgical practice across the globe. These practices are aimed to benefit surgical patients and the surgical teams who are involved in peri-operative care of the patients. These changes most prominently include the perioperative screening of patients and surgical staff. Although, no change has been made in standard care of surgical patients, the pandemic can affect the postoperative outcomes of surgical patients. Patients undergoing surgeries during pandemic underwent aggressive preoperative investigation although the postoperative outcomes of these measures are unknown. Currently there is no data on complications and outcomes of surgical patients during this global crisis. It is crucial to know the safety of surgical procedures and outcomes specially to weigh the risk and benefit of performing elective surgeries during pandemic.

Study Aim

To record and study the demographical variables specially to evaluate the patients who are arriving for surgery from high-risk regions. To record the pre-operative comorbidity and identify the high-risk patient. To determine the preoperative COVID-19 status and screening performed pre, intra and postoperatively and its impact on patient related outcomes. To evaluate the percentage of patient who developed COVID-19 or related symptoms post-operatively. To evaluate the 14 days post discharge status of the surgical patients and their outcomes.

Methods

We did the retrospective data review of all the patients underwent surgery for any reason during pandemic peak March 22nd to May 6th, 2020, in our tertiary care hospital in Midwest USA. We have identified total 2658 patients of different specialties. To further narrow down the review and evaluation of patients we only included department of surgery (General surgery, trauma surgery, colorectal surgery, vascular surgery, plastic surgery, pediatric surgery, thoracic surgery, hepatobiliary surgery, transplant surgery and oral-maxillofacial surgery) and have identified 1052 patients. After excluding duplicate entries and lack of research authorization we have evaluated 951 patients for detailed perioperative variable and surgical outcomes. We used our anesthesia clinical research unit and our departmental database to review data. We analyzed perioperative demography and variable, comorbidities, and post-operative outcomes after 14 days of dismissal.

Results

Mean age was 53.7 years (0-98), female to male ratio 1.01, mean BMI 28.0 kg/m2 (7.5-60.7), 942 patients were from USA, and 9 were international patients (high risk regions for COVID). Preexistent comorbidities included HLD (41%), HTN (40%), DM (25%), CKD (21.6%), cancer (73.1 %), and COPD (31%). Mainly operations (Figure 1) performed for acute care surgery (32%) followed by colorectal surgery (13.6%) and HPB surgery (13.2 %). Preoperative COVID swab performed in 644 patients out of 1 patient was COVID positive. Preoperative CT chest performed in 265 patients out of 1 patient was COVID positive (Figure 2). 91% patients received general anesthesia and 9% received MAC and regional. Mean ASA rating was 2.6. 72% patients got admitted and 27.8% remained as outpatient. Mean hospital stay was 5.4 days (00-150). 25 patients underwent COVID swab within 14 days of discharge from hospital due to symptoms but only one patient diagnosed COVID positive. 139 patients readmitted within 14 days of discharge but remained COVID negative.

Figure 1: Cases performed by different Subspecialties in the Department of Surgery

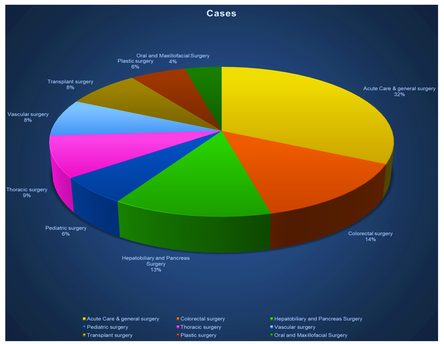
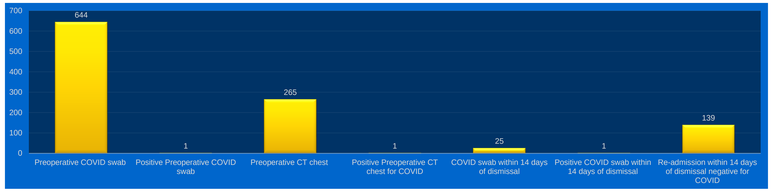


Figure 2: Pattern of Perioperative care



Challenges and Guiding Principles

- Smooth conduct of operation with minimal exposure to patients, providers, and OR staffs is difficult but not impossible by implementing preoperative safety checklist, following PPE protocols and avoiding elective cases.
- Protecting surgery residents from COVID exposure during pandemic is very important, and pivotal.
- Promoting self hygiene, use of sanitizer/wipes, wearing masks, eye shields, and encouraging vaccines to health care team as well as patients are crucial steps to combat pandemic in near future.

Conclusions

This study has demonstrated that with aggressive perioperative screening, evaluation, and standard practice, patients remained safe within 14 days of window period post discharge from hospital. Patients have achieved desired surgical outcomes without cross contamination with COVID during and after hospital stay at peak of COVID pandemic. We have minimized the COVID spread using personal protective equipment, thorough preoperative evaluation and cautious postoperative management. We have minimized the traffic with no visitor's policy in our hospital, which has further helped in spread of COVID.

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