Special Article

Society of Onco-Anesthesia and Perioperative Care (SOAPC) advisory regarding perioperative management of onco-surgeries during COVID-19 pandemic

Address for correspondence:
Dr. Raghu S Thota, Department of Anesthesiology, Critical Care and Pain, 2nd Floor, Main Building, Tata Memorial Hospital, Mumbai, Maharashtra - 400 012, India.
E-mail: ragstho24@gmail.com

Submitted: 23-Apr-2020
Revised: 01-May-2020
Accepted: 10-May-2020
Published: 23-May-2020

Sohan Lal Solanki, Raghu S Thota, Rakesh Garg[1], Anjali A Pingle[2], Jyotsna Goswami[3], Namrata Ranganath[4], Sudipta Mukherjee[3], Sameer Gupta[5], Shraddha Patkar[6], Rajesh H Chikkalingegowda[7], Tarun Jindal[8], Mukur D Ray[9], Sanjay Muralidhar Upadhye[10], Jigeeshu V Divatia

Departments of Anaesthesiology, Critical Care and Pain and [6]Surgical Oncology, Tata Memorial Hospital, Homi Bhabha National Institute, [2]PD Hinduja Hospital and MRC, [10]Department of Anaesthesiology and Critical Care, Asian Cancer Institutes, Mumbai, Maharashtra, Department of [1]Onco-Anaesthesiology and Palliative Medicine and [9]Surgical Oncology, Dr BRAIRCH, All India Institute of Medical Sciences, New Delhi, [3]Department of Anaesthesiology and Critical Care, Tata Medical Center, [8]Department of Uro-Oncology, Tata Medical Center, Kolkata, West Bengal, [4]Department of Anesthesia and Pain Relief, Kidwai Memorial Institute of Oncology, [7]Consultant Anaesthesiology, HCG Hospitals, Bengaluru, Karnataka, [5]Department of Surgical Oncology, King George's Medical University, Lucknow, Uttar Pradesh, India

Access this article online

Website: www.ijaweb.org

DOI: 10.4103/ija.IJA_447_20

Quick response code

ABSTRACT

Coronavirus disease 2019 (COVID-19) has gripped the world and is evolving day by day with deaths every hour. Being immunocompromised, cancer patients are more susceptible to contract the infection. Onco-surgeries on such immunocompromised patients have an increased risk of infection of COVID-19 to patients and health care workers. The society of Onco-Anesthesia and Perioperative Care (SOAPC) thereby came out with an advisory for safe perioperative management of cancer surgery during this challenging time of the COVID-19 pandemic.

Key words: Coronavirus, COVID-19, immunocompromised host, neoplasms, pandemics, perioperative care

INTRODUCTION

Coronavirus disease 2019 (COVID-19), has taken the world in its grip and medical professionals are in a big dilemma about conducting surgeries, especially oncological surgeries, which are not entirely elective in nature. It has been reported that COVID-19 manifests with mild symptoms in little over 80% of the patients, around 14-17% develop respiratory and breathing complications and around 5% have severe disease with multi-organ failure.[1-3]

Need for planning of cancer management during COVID-19

Cancer burden is increasing worldwide including India. In a study in 2010, it was projected that the total cancer cases are likely to go up from 979,786 cases in the year 2010 to 1,148,757 cases in the year 2020 in India.[4] In the prevailing COVID-19 pandemic, any surgical procedure may entail an increased risk of infection in generally immunocompromised patients as well as attending health care workers, despite all safety precautions. Physicians have a higher risk

How to cite this article: Solanki SL, Thota RS, Garg R, Pingle AA, Goswami J, Ranganath N, *et al*. Society of Onco-Anesthesia and Perioperative Care (SOAPC) advisory regarding perioperative management of onco-surgeries during COVID-19 pandemic. Indian J Anaesth 2020;64:S97-102.

of contracting infection, especially after prolonged exposure, and also have a higher case fatality rate (10-12% vs. 2-3%) as compared to the general public.[5] European Society of Surgical Oncology (ESSO) also emphasized the importance of ensuring that the workforce does not burn out.[6]

During this pandemic, the risks vs. benefits analysis, of continuing with the elective cancer surgeries, should be carried out from both the patients' and health care workers' safety perspectives. As COVID-19 has behaved differently in different regions of the world, it is difficult to decide about the right approach in the absence of well-defined scientific guidelines. In a retrospective study from Wuhan, China, 34 patients were operated during the incubation period and all developed COVID-19 after surgery, and 7 (20.5%) out of these 34 patients died. A total of 4 patients (57.1%) out of the 7 deceased patients had cancer and were operated for pancreaticoduodenectomy, total oesophagectomy, thoracoscopic lobectomy, and radical resection of rectal cancer.[7] This suggests that asymptomatic carriers and preclinical COVID-19 onco-surgical patients have higher mortality with a risk of infection to health care workers.

Cancer and COVID-19

Millions of the people have contracted the virus worldwide and unfortunately, many people have succumbed to it, and numbers are rising with every passing hour.[8] In a nationwide analysis in China of 1590 COVID-19 patients, 18 cases had a history of cancer. In comparison to patients without cancers, these 18 patients had more severe events requiring critical care, invasive ventilation, and death (39% in cancer patients vs. 8% in other patients) and they proposed that adjuvant chemotherapy and surgery should be postponed in an endemic area.[9] This study had a very small sample size and furthermore, only four patients had undergone surgery or chemotherapy in the recent past and 12 patients had no obvious immunosuppression after recovering completely from cancer treatment (surgery and/or chemotherapy). Therefore, outcomes in 12 patients who had COVID-19 infections, may be unrelated to cancer or cancer treatment and can possibly be attributable to other comorbidities or age-related factors. Postponement or delaying of cancer treatment should be individualised according to the risk profile of the patient, associated co-morbidities, and understanding the biology of individual cancer in the prevailing situation because general delays/postponement can possibly lead to tumour progression and ultimately poorer outcomes.[10] A pooled meta-analysis of 11 studies published till March 14th, 2020; showed an overall pooled prevalence of cancer with COVID-19 at 2%.[11]

Early estimates from China suggest an overall case fatality rate of 2%, increasing to 6% for cancer patients. This is comparable to a mortality of 7% for diabetes and 6% for chronic respiratory disease. Mortality is higher (8%) in patients of 70–79 years of age group, and 11% in patients with pre-existing cardiovascular disease.[12]

Status report across the world for cancer management during COVID-19 pandemic

Many countries have suspended elective surgeries (including onco-surgeries). In the United Kingdom, the situation of few institutions was worse, and operating theatres in those institutions were turned into critical care units to accommodate the influx and extra load of COVID-19 patients.[7] Various medical and surgical oncology societies in the world are coming up with their guidelines or advisories to fight with an increasing burden of disease as well as with the challenging situation in this pandemic. One study showed that about 20%patients who died because of COVID-19 in Italy had an active cancer.[13]

NHS England warned that certain groups like patients receiving active chemotherapy or radical radiotherapy for lung cancers and also patients with bone marrow and blood cancers are particularly vulnerable to serious illness and worse outcomes if they contracted COVID-19. ESSO advised that cancer patients above the age of 70 years should not be called for routine consultation in out-patient departments.[6]

Indian Association of Surgical Oncology (IASO) published updated IASO COVID-19/Curfew Guidelines on 25th March 2020 for lockdown period which was announced for 3 weeks initially and later on extended for approximately another 3 weeks in India. In their guideline they suggested that all emergencies should be attended as usual but for elective surgeries they advised management on a case-to-case basis, depending upon urgency, tumour staging, and response to previous chemotherapy or radiotherapy or alternate treatment prior to surgery, to buy time for definitive surgery, when things will be under better control. They also advised to limit to low-risk surgery and avoid lengthy and complicated surgeries

requiring postoperative mechanical ventilation and suggested that if there is a need for ventilators for COVID-19 patients, the ventilators should not be blocked by Surgical Oncology patients.[14]

Indian Society of Anesthesiologist's (ISA) position statement on COVID-19 says that all elective and semi-urgent surgeries should be postponed. Urgent and time-sensitive surgeries like cancer should be discussed amongst a multi-disciplinary team and a team decision should be taken based on the available resources and patient's clinical condition. This will conserve the workforce, personal protective equipment (PPE), and critical care beds.[15]

Society of Onco-Anesthesia and Perioperative Care (SOAPC) advisory

SOAPC advisory was prepared with the available evidence and literature review about this pandemic with e-mail and social media discussion among committee members along with onco-surgeons. We hope that new and additional data on COVID-19 revealing risks to cancer patients including subtype of cancers and also data of cancer treatment from China, USA, Europe, and India will provide information for further understanding and management. Continued Lockdown has also adversely affected the blood bank capacity around the world with little or no blood donation drives/camps being organized because of the ban on gathering and stay at home advisory. Based on this information from various literary sources and recommendations from oncology societies and the limited data that have shown a potentially higher risk of COVID-19 infections in cancer patients with potentially adverse outcomes, SOAPC offers advisory regarding safe conduct of onco-surgeries/procedures.

For cancer surgery, which is often not elective but essential to treatment, decisions about whether to proceed with elective surgeries must take into consideration the available resources of local facilities, and institutional policies. These recommendations can be modified or changed as per institute policy or change in pandemic conditions and availability of resources.

A. Patient Factors:
   a. Age: Patients with age more than 65 years should not be routinely seen in clinics including pain clinics and pre-anesthesia clinics. If there is an urgent need to see the patient, a video-conferencing call can be an alternative with face to face consult
   b. Pulmonary function testing should be avoided (except for major lung resections) as far as possible. A 6-minute walk test could be an alternative
   c. Cancer patients with uncontrolled diabetes, uncontrolled hypertension, severe heart disease, severe liver or kidney diseases, chronic obstructive pulmonary disease, and patients on immunosuppressant drugs including steroids should preferably not undergo any elective and planned surgical treatment.

B. Emergency Surgeries:
   All emergency surgeries including obstructions, perforation, fungating mass/septic wounds, any postoperative complications requiring re-do surgery, bleeding from any site, airway emergencies, pneumothorax, etc., should be attended as and when needed, with all safety gear, such as N95 masks, PPE gowns.

C. Elective Surgeries:
   Elective surgeries are broadly divided into 3 categories based on IASO published guideline[14] for pandemic: 1) **Green Route**: These surgeries are mostly low risk or are the ones with the grave outcome if postponed or delayed; 2) **Orange Route**: In this group, elective surgeries should proceed with a multi-disciplinary discussion; 3) **Red Route**: This route includes, major elective complicated surgeries or which can be delayed without any adverse effect on survival. The surgeries included in these different routes are not exhaustive and for reference only and may be changed/modified/removed i.e., a red route or orange route surgery can go in green or orange route and vice versa as per need of patient or individual surgeon's decision or hospital policy [Table 1].

Screening of patients and testing prior to surgery

1. All patients and relatives entering in cancer care institution should be screened by thermal screening/recent travel history especially to hotspot regions/history of close contact with confirmed COVID-19 patient and/or symptoms of COVID-19 (dry cough/myalgia/fever/shortness of breath)
2. COVID-19 testing (preferably rT-PCR/antibody testing) before planned surgery is helpful for infection prevention among health care workers but paucity of testing-kits and other

Table 1: Division of elective surgeries based on urgency and time sensitiveness

Green Route (Can Proceed)	Orange Route (Proceed with caution/ Multidisciplinary Discussion)	Red Route (Be Cautious/Reschedule)
Early malignancies which are resectable (e.g. colon cancers) and not yet locally advanced should be addressed as the possibility of surgical cure is high with potentially good outcomes.	Cancers after neo-adjuvant treatment (NACT/NACTRT) with no response to treatment	Surgeries with a high risk of chest complications, blood transfusion and more likely to be shifted on ventilators like peritoneal mesothelioma and pseudomyxoma and hyperthermic chemotherapy infusion.
Low risk surgeries not requiring blood transfusion and postoperative mechanical ventilation.	Cancers post NACT/NACTRT waiting for a long time with partial response	Slowly progressing tumors like renal cancers, thyroid (other than those with local invasion and airway compression), parotid, basal cell carcinomas, thymomas, post radiotherapy rectal cancers, gastro-intestinal stromal tumors, prostate cancers, primitive neuro-ectodermal tumors (PNET) and intraductal papillary mucinous neoplasm (IPMN).
Surgeries of aggressive nature where delaying or postponing can have worse outcomes- Gall bladder cancers, T4a oral cavity squamous cell cancers (OCSCC) with potential to bleed/ fungate, symptomatic brain tumours with raised intracranial pressure, spinal decompression, multiple myeloma patient with pathological fractures, aggressive sarcomas of bones, colectomies and thyroid cancers only which are locally aggressive/causing airway compression and uncontrolled hyperparathyroidism	Surgeries may or may not require blood transfusion and postoperative ICU stay or mechanical ventilation like- Major gastro-intestinal surgeries like gastrectomies, Whipple's procedure, major/segmental liver resections and large retroperitoneal tumors requiring multi-visceral resections. Complex hepato-biliary surgeries should preferably done at high volume centres	Hormone positive breast cancers/locally advanced breast cancers can be offered neoadjuvant chemotherapy.
Diagnostic procedures like bone marrow biopsies, CT Scans, MRI scans in Pediatric patients.	Thoracic surgeries which may require prolonged ICU or mechanical ventilation like oesophagectomies or lung resections.	Micro-laryngeal Surgeries.
Pediatric minor surgeries like chemo-port insertion if planned for urgent chemotherapy.	Pediatric solid tumour surgeries	Aerosol generating surgeries like robotic/ laparoscopic abdominal surgeries, pressurised intra-peritoneal aerosolized chemotherapy.
	Robotic thoracic surgery or Video-assisted thoracoscopic surgery without use of gas.	Microvascular reconstructions and cosmetic reconstructions
		Liver metastatectomy can be delayed/avoided or administered chemotherapy or embolised

logistics issues may limit its implementation and should be followed as per institutional/ local policy. However, SOAPC suggests (but not mandatorily), rT-PCR COVID -19 testing before scheduled cancer surgeries as per institutional policy. The timing of COVID-19 testing should also consider the incubation period and COVID-19 reports need to be interpreted according to the incubation period as well. Besides, the 30% false-negative rate of rT-PCR tests needs to be kept in mind. Antibody tests may be integrated with rT-PCR tests, if available. Scheduled surgery in patients with positive rT-PCR reports or positive IGM should be deferred for 2-4 weeks and surgery should be planned after 2 negative rT-PCR reports[16]

3. Minimum attendants to be allowed with the patient and they should be sensitised about the need for maintaining social distancing/wearing of masks at all times while in hospital.

Care of staff

SOAPC recommends that minimal anesthesia/operating room staff should be exposed to the patients directly to preserve our workforce. If the institute/hospital is reducing the number of functional operating rooms, the workforce including residents and consultants at work should be reduced proportionately by on and off working pattern rotation. As per local institutional policy, elderly staff (more than 60 years), staff with comorbidities like diabetes mellitus, heart disease, severe liver and kidney disease, COPD, pregnant ladies, staff on immunosuppressant medications, can be spared from working if possible or they can be allotted work in non-patient area. Social distancing should be maintained all the time in clinics, operating rooms, and intensive care units as much as possible.

All personnel (anesthesiologist and assistant) directly involving in tracheal intubation and extubation must wear an N95 mask, a face shield, gown, and gloves. Aerosol boxes or use of plastic sheet/cover or similar barrier between patient's airway and surroundings may be used during tracheal intubation and extubation (preferably throughout the surgeries, wherever possible).[17] However, they are not a substitute for appropriate PPE and rigorous hand hygiene should be used during the complete duration of perioperative care.

Staff should take all precautions to protect him or herself. Staff should not enter the patient care area with confirmed or suspected COVD-19 patients without proper PPE as per hospital policy. After doffing, the staff should take a shower and change into a fresh pair of scrubs. If the staff develops symptoms suggestive of viral infection, he or she is advised to consult staff physician and to go for self-quarantine.

Anesthesia techniques during COVID-19

SOAPC follows the ISA national advisory and position statement[15] during COVID-19 regarding anesthesia induction including airway management, maintenance of anesthesia, extubation procedure toward the end of surgery, shifting to recovery or intensive care unit, and postoperative management.

Specific anesthesia management for cancer surgeries

Although basic anesthesia management is the same as in other types of surgeries, head and neck cancer surgeries require special mention. Head and neck cancers are invariably considered difficult airway unless proven otherwise. Apart from airway examination in pre-anesthesia clinic (which should always be done with proper personal protection like an N95 and face-shield), examination of airway on the operating table is often needed to plan the airway management technique. Airway examination should be done from a distance of one meter with full PPE. For patients with adequate mouth opening, a video laryngoscope should be used if available. Awake fibreoptic intubation should be avoided as far as possible and if needed use a disposable fiberscope. For upfront tracheostomy in an awake patient or patient in stridor, full PPE including face shield should be used by operating surgeon and anesthesiologists. A transparent plastic drape should be covering the head and neck area, especially during incision over trachea and insertion of the tracheostomy tube, to prevent aerosol splash.

Oral and head neck surgeries with major resection require overnight endotracheal tube (ETT) in-situ for airway protection. These patients should preferably be kept in a separate area or cubicles or behind curtains in the recovery room or ICU. Tracheostomy or ETT should not be kept open and should be covered by a 3-ply mask to prevent aerosol spread. Suctioning and tracheal extubation should be done with full PPE and face shield.

Acute Pain Service (APS)/Postoperative analgesia management in wards

Postoperative analgesia is managed by the acute pain service team and it is suggested that whenever an epidural catheter is placed, a disposable elastomeric pump should be used for continuous infusion and avoid repeated handling of epidural catheter and patients for intermittent boluses of local anesthetics. During the APS rounds in the recovery room and in the wards, the doctors and the staff should always use a gown, 3 ply mask and gloves, and should check for movement-related pain only by asking the patient to get up from lying down position to sitting position or from sitting position to standing position. Coughing should only be checked in very selective thoracic surgery patients (e.g., lobectomies, pneumonectomies). During coughing, it is to be ensured that patient has a towel or tissue to cover the mouth and nose over the regular 3 ply face mask. Re-usable patient-controlled analgesia pumps should be avoided as far as possible.

Future scenario

The pandemic is currently ongoing and deaths are happening around the world, including deaths of cancer patients with or without surgery. The current state of lockdown in India and around the world is uncertain and deferring surgery for indefinite periods is not feasible, because it is likely to increase cancer-related death (if not COVID-19 related) because of tumour progression and delays in chemotherapy or radiotherapy. Post the pandemic, there will be an increase in the number of patients needing surgery in all cancer hospitals and it will be tough to clear the backlog; early planning is needed for this too.

Disclaimer: This is an advisory based on present literature and existing evidences along with expert opinion. With the emergence of literature and evidence related to COVID-19 and its impact on perioperative care in cancer surgeries, readers are advised to use the present advisory in conjunction with more evidence that would come in future.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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