

The handling of safety concerns among anaesthetists when restarting full surgical lists during the COVID-19 pandemic

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SUMMARY

Around June 2020, many institutions restarted full operating schedules to clear the backlog of postponed surgeries because of the first wave in the COVID-19 pandemic. In an online survey distributed among anaesthetists in Asian countries at that time, most of them described their safety concerns and recommendations related to the supply of personal protective equipment and its usage. The second concern was related to pre-operative screening for all elective surgical cases and its related issues. The new norm in practice was found to be non-standardized and involved untested devices or workflow that have since been phased out with growing evidence. Subsequent months after reinstating full elective surgeries tested the ability of many hospitals in handling the workload of non-COVID surgical cases together with rising COVID-19 positive cases in the second and third waves when stay-at-home orders eased.

KEY WORDS:

COVID-19, pandemic, anaesthetic practice, aerosol box, elective surgery, Personal Protective Equipment (PPE), N95 respirator

INTRODUCTION

The pandemic had changed the delivery of medical care in many ways. When the focus was mainly on the management of COVID-19 cases during the first wave, many institutions suspended elective surgeries to conserve resources and manpower.¹ But when the outbreak slowed down, full surgical lists restarted to clear the backlog of postponed cases and allowed operating theatre (OT) schedules to return to their previous pace. As anaesthetists resumed duties in OT, their roles interchanged from being front-liners, intensivists and anaesthesia providers. The inherent risk of contracting COVID-19 remained, although personal risk was accepted as part of the responsibility in patients' best interest. In most hospitals, although perioperative guidelines prioritising patient and health care workers' (HCW) safety were in place, many techniques and equipment were newly implemented and improvised. Some were practiced with limited evidence as the new 'norm', leading to difficulty in standardising the best practice.

METHODS

A brief anonymous online survey was sent to anaesthetists in the Asian region in May 2020 to determine their views on

three domains (Table I) – own safety when restarting full OT services, the new anaesthetic practice and personal experience with COVID-19. Responses received from practicing colleagues in Malaysia, Singapore, Thailand, China, Korea, Philippines and Vietnam are presented in Table II.

RESULTS

Personal Protective Equipment

We ascertained that there was anxiety about their safety in restarting full OT services. Two main themes identified repeatedly were related to either personal protective equipment (PPE) or pre-operative screening of surgical cases. "PPE supply is not constant" and "Staff does not have full PPE!" were examples describing the shortage of PPE as it had become a tightly monitored commodity under the control of non-anaesthetic departments in some centers. PPE shortage posed a tremendous challenge to healthcare systems around the world because of the sudden surge capacity and institutions chose to conserve the use in the coming load of surgical procedures unless required. Among all PPE, the most commonly mentioned was unsurprisingly the N95 respirator as it controls exposures to airborne infections when fitted and used properly. Strategies to overcome the unbalanced supply-demand matching included recognising the institutional capacity as being conventional, contingency or critical to precisely calculate the PPE 'Burn Rate' and estimate the added volume.² In some centers, KN95 respirators replaced N95's and subsequently 3-ply masks were used. Regular steps to adjust the level of protection based on epidemiological risks will overcome unnecessary wastage. Added concerns about the cost especially with PPE's escalating price was also noted as a reason for its limitation in practice. Furthermore, issues with incorrect use and non-compliance among colleagues were also raised and these required constant education, training and reassessment of the current epidemiological risks.

Viral screening

Pre-operative screening was another dilemma with most anaesthetists preferring to test even asymptomatic patients. Many were aware that the initially available screening test with real-time polymerase chain reaction (PCR) identification of viral RNA had its share of setbacks with a false negative rate of 30%, delayed results and limited test capacity.³ Thus, recommending the surveillance for every case remained

Table I: Outline of the questions in the anonymous survey from May 26th to 7th June 2020

No	Question	Answer
1.	Do you feel safe in the current anaesthetic practice? a) If no, what is the reason? b) What is the improvement needed?	Yes/ No
2.	Describe the current anaesthetic practice in your institution regarding - a) Pre-operative COVID-19 screening b) Types of PPE worn c) The use of an aerosol box and intermission time after AGP	Free text
3.	Have you had personal experience for the following: a) Screened for COVID-19 b) Colleagues who are COVID-19 positive and their point of contact, if positive	Yes/ No

(PPE - personal protective equipment, AGP - aerosol generating procedures, PAPR - powered air-purifying respirator, OT - operating theatres, CO₂ – carbon dioxide, RT-PCR – rapid polymerase chain reaction)

difficult, especially in urgent procedures. This was frightening when the volume of surgical cases escalated together with the uncertain supply of PPE. Potential risks of exposure while anaesthetising cases with unknown status was real and felt by the respondents. So, a consultant wrote “screening should be included as a standard of care similar to performing ECG and other routine blood tests.” For serologic screening to be meaningful, the timing of the test was crucial and both false or positive results must be utilised in conjunction with clinical presentations, patient history and epidemiological information. In the end, the necessity to screen with rapid tests relied mainly on international and local guidelines according to individual disciplines and institutions, patient risk category and results from screening questionnaires.

Workflow

As predicted, peri-operative workflow was not standardised even within the same healthcare system. During the peak of the pandemic, several untested and unproven devices were invented, which initially took the medical community by storm as a pragmatic approach to meet the dual challenge of caring for infectious patients and protecting HCW.⁴ One of them was the aerosol box, used by half of the respondents but shunned by the other knowing that the evidence to support it was lacking. With more reports of its cumbersome use and problems, fewer anaesthetists used it eventually. Similarly, techniques were modified with respondents giving examples of “clamping the tracheal tube just after intubation till reconnection to the breathing circuit”, “using plastic sheet as it is more accommodating for all intubation/ extubation, suctioning and naso-gastric tube insertion”, “wipe down all surfaces after intubation” and “recovery in OT itself”. Some practiced interval time for clearance of aerosols after aerosolising generating procedures (AGP) in OT by prohibiting entry of personnel without filtering respirators but none could mention a suitable timing for this. Therefore, the new ‘norm’ in OT started with a lot of uncertainties but with time, eased to a better workflow with increased knowledge of the virus and its virology.

Personal experience

At the end of the survey, we identified personal experience of anaesthetists themselves who had to undergo COVID-19 screening. The point of contact for positive colleagues was also reported from both work-related and community acquired. An anaesthetist suggested “health care workers must be tested regularly” because non-compliance to PPE was an issue with constant exposure to high risk AGP. In a recent report, 34% of HCW who tested positive for COVID-19 can be

asymptomatic while, 59% symptomatic HCW had negative results when tested.⁵ The potential benefit of universal staff screening should be considered when the target number of tests per day could be achieved to prevent nosocomial transmission to susceptible patients, staff and the community.

CONCLUSION

The following months tested the ability to completely alleviate COVID-19 in many countries especially when the pandemic continued with second and third waves. As evidence grew, uncertainties in perioperative care ironed out and personal risk while managing patients returned to minimal when anaesthetists performed their clinical duties.

CONFLICT OF INTEREST

None

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Table II: Results and representative quotes extracted from survey responses among anaesthetic trainees, specialists and consultants in Malaysia, Singapore, Thailand, China, Korea, Philippines and Vietnam (n=77)**SAFETY**

19.5% respondents did not feel safe in their current anaesthetic practice. Representative quotes for their reasons were divided into the following major themes and their respective suggestions for improvement:-

Shortage of PPE:

- "PPE supply is not constant. We reuse our PPE whenever possible."
- "Staff does not have full PPE!"
- "Limited proper PPE and N95 masks to use daily. The Medical Department controls usage."

Suggestions for improvement:

- "Insurance companies refuse to pay for the use of PPE hence in private practice, it is a constant challenge to educate patients why it is important to protect medical staff and have them fund the cost of PPE."
- "PAPR for all AGP. We hope to have more PAPRs especially for long procedures and aerosolizing procedures."

Issues with wearing PPE:

- "Face shields tend to fog, making handling of sharps a challenge."
- "Due to use of hoods and half face respirators, communication is a challenge."
- "Long surgeries are a challenge due to the higher heat and humidity in the negative pressure OT and CO2 retention among team members using the N95 respirator mask."

Suggestions for improvement:

- "Better quality face shields with good anti-fogging property and less distortion of vision."
- "We hope to have negative pressure OTs and adequate air exchange. Not all of our machines have active scavenging, so we also have to modify anaesthetic techniques as needed."
- "If there are not enough isolation rooms in the ward, all ward staff should at least wear N95 respirator masks when stepping into that ward with strict and clear guidelines to lower risks of exposure."

Non-compliance with PPE among colleagues:

- "Many surgeons are hampered by face shields and tend to remove them intraoperatively."
- "This situation creates anxiety among the nursing staff, who have to work with the surgeons day in and day out in close contact with them."
- "Staff nurses are sitting at nursing counter without putting their masks on."

Suggestions for improvement:

- "Health care workers must be tested regularly for COVID-19."
- "Clear top-down directives, good inter-departmental or inter-discipline communication."

Pre-operative COVID-19 screening:

- "Untested cases."
- "Worried about asymptomatic COVID-19 positive patients as RT-PCR test may not be positive initially."
- "Screening time is too long in my setting."
- "I hope that the testing can be done quicker and is easily performed in the paediatric age group."
- "I think all patients coming for surgery should be screened. Currently only symptomatic patients are screened."

Suggestions for improvement:

- "Screening for all patients coming for surgery regardless of symptoms."
- "A sensitive point-of-care test for COVID-19 would be better, with less time required awaiting results."
- "Pre-operative testing of COVID-19 should be included as standard of care similar to performing ECG and other routine blood tests."

NEW ANESTHETIC PRACTICE

Towards the end of the first wave in the pandemic, 81.8% respondents performed pre-operative screening in their institutions for all cases. For those who didn't, 61.5% answered that COVID-19 screening was not necessary after questionnaire screening and 15.4% did not have enough tests.

The most common items worn were full PPE such as N95 respirator (81.8%), face shield (88.3%) and water-resistant gown (74.0%) during AGP at intubation and extubation. Most respondents doffed within OT (57.1%) and performed a wipe down of surfaces after each AGP (66.2%). In addition, 58.4% and 57.1% did not practice interval time after intubation and extubation with reasons given as no evidence to do so, no time to wait and unsure (33.3% each)

57.1% utilized the aerosol box during intubation but less used it during extubation (46.8%). The majority who did not use the aerosol box said they either did not have it (38.4%) or claimed lack of evidence to support its usage (30.8%).

Representative quotes for their practice were:

- "Intubation is by modified rapid sequence induction, therefore, aerosol box is not necessary."
- "The aerosol box is not conducive for difficult intubation and obese patients."
- "Can use as a trial but not compulsory."
- "No intermission time during intubation because tracheal tube is immediately connected to the circuit."
- "Our OT is neither truly positive nor negative pressured. We just have a presumed constant air exchange for 16x per hour."
- "We are clamping the tracheal tube just after intubation till reconnection to circuit, is it necessary?"
- "At the moment, our management of non COVID-19 cases are very similar to COVID-19 cases."
- "I do not like the aerosol box as it is cumbersome and difficult to manipulate the videolaryngoscope, tracheal tube and suction plus difficult for the assistant as well. We find the plastic sheet more accommodating and use that for all intubation and extubation, suctioning and Ryles tube insertion."
- "Patients recover in OT. Once they are stable, they are transferred straight to the ward."

PERSONAL EXPERIENCE WITH COVID-19

In terms of personal experience with COVID-19 screening, 28.6% had taken the screening. Out of these 22 respondents, 62.6% had repeated the swabs twice but fortunately all turned out to be negative. 15.6% knew of a colleague who was COVID-19 positive and their point-of contact were often work-related (50.0%), non-work related (41.7%) or unsure.