Guideline on Utilization of Operation Theatre during COVID-19 Pandemic

June,2020

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This guideline is intended to be used as a guidance tool to prepare operation theatres in Myanmar to manage both suspected and confirmed cases of COVID-19 undergoing emergency and elective surgeries during pandemic.

1. General Considerations

- For confirmed COVID-19 positive cases and patient under investigation (PUI), a suitable room of operation theatre (OT) should be dedicated and prepared.
- Testing and categorizing of suspected cases must be followed by the MOHS guideline.

2. Patient Transport

- The patient must wear a surgical mask during transfer to and fro the ward and OT.
- The persons assisting transport must use Level-3 PPE.
- The trolley used for transport must be disinfected after use.
- Communication between isolation ward and operation theatre team must be established before transport.

3. Recommendations on Level of PPE

- Level-3 PPE must be used for COVID-19 confirmed cases and PUI cases whose results are pending (reinforced fluid-resistant long-sleeved surgical gown, disposable fluid resistant hood, full-length disposable plastic apron, FFP3 respirator or powered air-putrifying respirator-PAPR, disposable full face visor and googles, 2 sets of long or extended cuff non-sterile gloves, surgical boots or closed shoes, disposable shoes covers)
- For PUI cases whose results are negative for the first PCR testing, Level-2 PPE (Disposable full face visor, N-95 or FFP 3 mask, disposable surgical gown, double layers of long or extended cuff non-sterile gloves) should be used.
- Recovered COVID-19 patient (at least two consecutive negative test following infection with COVID-19) should be managed using routine surgical precautions.

4. Operation Theatre Preparation

- Only minimum number of health care providers taking care of patients should be present in the operation theatres.
- Only essential equipment should be kept in the OT.
- Anaesthesia machine, monitors, diathermy and medical equipment in operation theatre must be covered with plastic sheet.
- Communication between isolation ward and operation theatre is important and all necessary preparation must be completed before the patient arrive to operation theatre.
- Surgical safety checklist must be completed for all patients.
- Management of airway should be practiced according to protocol for airway management (see below).
- Aerosol Generating Procedures (AGPs) such as bag and mask ventilation, intubation, use of diathermy and orthopaedic drill, should be minimized to prevent aerosol generation.
- OT room must be sealed at the doors with plastic sheet and COVID-19 signage must be labeled throughout the procedure. Use scrub door with limitation of traffic.
- Simultaneous utilization of other OT room: Only for limb or live saving cases should be done in the other room of same operation theatre when a room is occupied with COVID-19 suspected or confirmed case. In this situation, use level-2 PPE for non-COVID cases operating simultaneously. Separate team members must be deployed and there should be no physical contact between two team members.
- Practice mock drills for correct donning and doffing of Personal Protective Equipment (PPE) including cover all gown, N 95/FFP3 face mask, eye shields/face shields/visor and gloves.
- Mock drill of a surgical procedure from wheeling-in to wheeling-out the patient from operation theatre should also be done to get accustomed to practical issues.

4.1. Anaesthetic Technique and Airway Management

4.1.1. Choice of Anaesthetic Technique

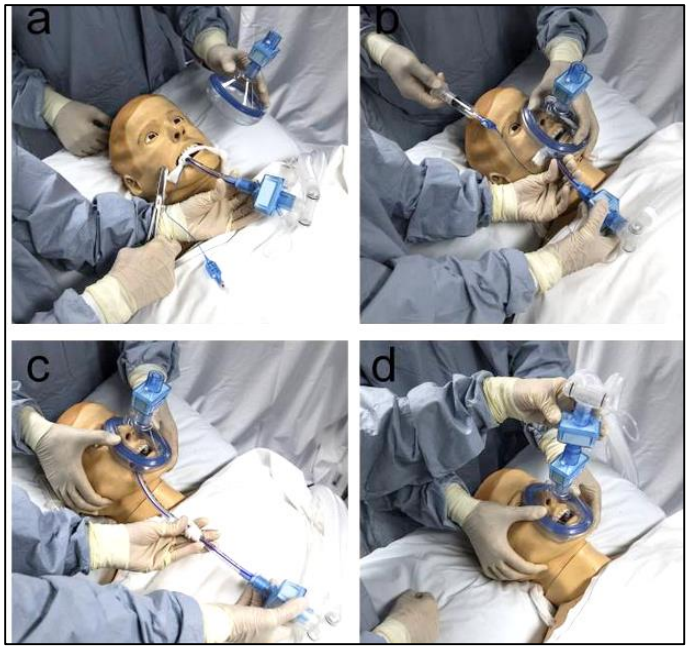
Regional anaesthesia is preferred over general anaesthesia whenever possible.

4.1.2. Protocol for Airway Management

For tracheal intubation and other aerosol generation procedures (AGP), the followings should be followed.

1. Limit persons in the OT during endotracheal intubation: one anaesthesiologist and two assistants for airway management and drug administration.
2. Preferably, the most experienced anaesthesiologist should perform the intubation.
3. Create a COVID-19 tracheal intubation trolley that can be used in OT, ICU or elsewhere.
4. Wear level-3 PPE at all times.
5. Everyone should know the plan before entering the room – use checklist.
6. Plan how to communicate before entering the room.
7. Before the airway procedure, ensure patient, equipment and drugs are ready. Check difficult airway trolley is ready.
8. Ensure ventilator and suction are functional.
9. Focus on safety, promptness and reliability.
10. Aim to succeed at the first attempt because multiple attempts increase the risk of COVID-19 transmission.
11. Do not rush but make each attempt the best it can be.
12. Place an HME with viral filter between the catheter mount and the circuit at all times. Keep it dry to avoid blocking.
13. Avoid aerosol-generating procedure, including high-flow nasal oxygen, non-invasive ventilation, bronchoscopy and tracheal suction whenever possible.
14. Closed suction catheter is preferred for endotracheal tube suction.
15. Use rapid sequence intubation (RSI) with or without cricoid pressure.

16. Five minutes of preoxygenation with oxygen 100% and RSI in order to avoid manual ventilation and potential aerosolization of infectious respiratory droplets.
17. If manual ventilation is required, apply small tidal volumes only.
18. Use ketamine 1–2 mg/kg, propofol 1.5-2 mg/kg suxamethonium 1.5 mg/kg for intubation.
19. Vasopressor should immediately available for managing hypotension.
20. Communicate clearly: simple instructions, closed loop communication (repeat instructions back).
21. Place a nasogastric tube after tracheal intubation is completed and ventilation established safely.
22. For endotracheal extubation,
    a. Minimum suction should be applied.
    b. Intravenous lignocaine (1-1.5 mg/kg) should be considered to prevent coughing and airway reflexes.
    c. Position the patient 30° head up.
    d. The anaesthesiologist and assistant are positioned behind the patient's head, attempting to avoid exposure to any coughing.
    e. Use two viral filters: one in the end of endotracheat tube and another one connected to the face mask (see in the figure below).
    f. Position the endotracheal tube (ETT) to one side of the mouth.
    g. Position the face mask with second airway filter using a two-handed technique to ensure a seal over the mouth and nose with the ETT exiting under the face mask.
    h. There should be no positive airway pressure during extubation: ventilator off with no or low fresh gas flow.
    i. Consider attempting to extubate at end-expiration.
    j. Deflate ETT cuff and extubate whilst maintaining face-mask seal.
    k. Maintain a two-handed mask seal until any immediate post-extubation coughing has subsided and regular breathing is confirmed.



D'Silva et al. (2020) Extubation of COVID-19 patients, Btitish Journal Of Anaeshtesia. Jul; 125(1): e192–e195. (https://www.ncbi.nlm.nih.gov/core/lw/2.0/html/tileshop_pmc/tileshop_pmc_inline.html?title=Click%20on%20image%20to%20zoom&p=PMC3&id=7144617_gr1_lrg.jpg)

23. Discard disposable equipment safely after use. Decontaminate reusable equipment according to manufacturer's instructions.
24. After leaving the room, make ensure doffing of PPE is meticulous.

5. ***Sterilization and Decontamination***

- There should be enough time between two cases to allow OT staff to send the patient back to the ward, conduct thorough decontamination of all surfaces, screens, keyboard, cables, monitors, anaesthesia machine, etc.
- The agents used in decontamination: vaporized Glutaraldehyde (ANIOS) or hydrogen peroxide generator (VHPG), 1% sodium hypochlorite solution, or 75% alcohol wiping off solid surfaces of the equipment and floor.
- All floors and walls to be cleaned with 1% sodium hypochlorite solution.
- High energy UV lamp sterilization is recommended after chemical disinfection of OT.

- Surgical instruments to be collected into a bin containing disinfectant solution (1% sodium hypochlorite solution/ 1% Glutaraldehyde/ Surgitol/ Aseptol) for 30 minutes before washed and wiped clean for autoclaving.
- General waste products must be disposed according to infectious products disposal guideline of individual hospital.

6. ***Postoperative Care***

- Post-anesthetic care must be provided in same OT until the patient is stable to be referred back to the isolation ward.
- Patients should always wear surgical mask.
- Supplemental oxygen can be provided under the mask.
- For patient transport, accompanied health care staff must wear Level-3 PPE.
- Trolley must be disinfected after use.

7. ***Further Reading***

Infection prevention during transfer and transport of patients with suspected COVID-19 requiring hospital care. WHO. https://iris.wpro.who.int/handle/10665.1/14504

Covid-19 and Surgery. American College of Surgeons. Resources for surgical community. https://www.facs.org/covid-19

Principle of airway management in Coronavirus Covid-19. WFSA, version 1.0 Feb 2020. https://www.google.com/search?client=firefox-b-d&q=airway+management+covid+wfsa