EMERGENCY SURGERY MANAGEMENT PROTOCOL FOR SUSPECTED OR CONFIRMED COVID-19 PATIENTS

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EMERGENCY SURGICAL PROCEDURES IN COVID-19 POSITIVE PATIENTS

- COVID-19 Is a novel coronavirus disease that has had a global effect and has been declared pandemic by the WHO.
- Across trusts in the UK protocols have been drawn up for the management of patients and the response of the surgical team in the elective and emergency setting
- Currently no standard operating procedure (SOP) exists for the management of suspected and proven COVID-19 positive patients thereby providing a safe operating environment for staff and patients.
- This protocol aims to outline an approach to the peri-operative, intra-operative and post-operative approach by the surgical team to such patients.
- The protocol is aimed initially for general surgical specialties but would be applicable to all sub specialties.
- The protocol would be subject to change dependent on local resourcing and the extent of disease penetration over the coming weeks and months.
- This protocol takes into account published research and guidance from the joint Royal College of Surgeons of GB and Ireland consensus position and is subject to change dependent on up-to-date evidence

1) Stakeholders

- General surgery (Surgeons; Consultants and registrars)
- Anaesthetists
- Operating department staff

2) Period of implementation

- March 2020 onwards

3) Pre-operative management of patient

3.1 Ward based assessment

3.1.1 Patients with suspected or proven COVID-19 disease should be assessed in isolation (side room where possible).

3.1.2 Staff should don and doff personal protective equipment (PPE) in line with current guidance and local protocols prior to seeing the patient.

3.1.3 Only staff pertinent to the consultation and care of the patient should examine the patient.

3.1.4 Consent should be undertaken in the usual manner but should consider COVID-19 specific morbidity and mortality as part of the informed consent process with patients and their relatives.

3.1.5 Where possible in suspected COVID-19 cases, the result of testing should be ascertained (positive or negative) prior to undertaking the transfer of the patient to the operating complex.

3.1.6 Where test results cannot be ascertained, there should not be a delay in decision making to operation. Decision to operate should be guided by clinical judgement alone.

3.1.7 Where suspicion of COVID-19 is high but unproven, patients should be treated as positive until proven otherwise.

3.2 Operating department briefing

3.2.2 When booking a patient with suspected or proven COVID-19 disease, this should be explicitly stated on the booking form and verbally conveyed to the theatre charge nurse and anaesthetist.

3.2.3 If required, an intensive care unit (ITU) or high dependency unit (HDU) bed should be booked and the relevant team informed of the patient's COVID-19 status.

3.2.4 A team briefing should take place prior to the transfer of the patient outlining the operation being undertaken, the equipment required (and potentially required) and precautions to be undertaken.

3.3 Operating room preparation

The potential for contamination of clothing, equipment and surfaces with COVID-19 is currently unknown. The below statements propose treating the operating room in line with those who are confirmed or suspected MRSA/HIV positive.

3.3.1 Where available an operating room with laminar flow should be utilised.

3.3.2 Non-essential equipment should be removed from the operating room and preparation room.

3.3.3 Computers should be covered and not used during the operation.

3.3.4 A paper based WHO (World Health Organisation) checklist may be necessary with manual input of data at the end of the procedure in order to keep screens and keyboards clean and prevent cross contamination.

3.3.5 Equipment that cannot be removed from the operating theatre (OT) should be adequately covered preoperatively.

3.3.6 Scrub staff should prepare their trolleys and equipment prior to patient arrival and depart the operating theatre, if appropriate, during patient intubation unless adequately covered with PPE including mask, visor, gown and gloves.

3.3.7 Patients should be transferred directly into the OT and anaesthetised and prepped here, keeping the ante room as a 'clean' area where PPE (masks and visors) can be donned by those entering into the operating room.

3.3.8 Signs should clearly be placed outside the operating room indicating that a COVID-19 suspected or positive patient is being operated on and non-essential personnel should not enter the room.

3.3.9 Non-essential entrances to the operating theatre should be locked to reduce risk of inadvertent entry into the operating theatre.

3.3.10 All personal items e.g. bags, phones, bleeps, food etc. should be stored outside of the operating theatre by staff members at all times.

3.3.11 On call bleeps should be left externally with the Senior House Officer (SHO) (if not required for procedure) or with nurse in charge if both Specialist Registrar (SpR) and SHO are scrubbed to prevent cross contamination and distraction of operating staff.

4) Peri-operative patient care

4.1 Patient transfer

4.1.1 Patients should be transferred by appropriate staff (porter, nurse accompaniment, and anaesthetic staff) in full PPE including mask, gown and gloves.

4.1.2 Where appropriate, the patient should wear a face mask when being transferred.

4.1.3 The operating department should be advised of the patient's arrival into the complex and non-essential staff cleared as the patient is taken into the operating theatre.

4.1.4 The patient should be taken directly into the operating theatre and NOT wait in the holding area or ante room of the operating theatre.

4.1.5 The ante room should be kept 'clean' in order to allow staff to safely don PPE i.e. mask and visor.

4.1.6 Surgeons should avoid being present in the operating theatre prior to the patient being anaesthetised in order to lessen exposure time.

4.2 Pre-operative check/WHO check

4.2.1 Surgeons and other staff needed should enter the OT with PPE once the patient is anaesthetised.

4.2.2 Following patient positioning and check, staff should pause for WHO check.

4.2.3 WHO checklist should be completed as usual. Additional checks recommended are:

4.2.3.1 Specifying that the patient is suspected or positive for COVID-19 virus.

4.2.3.2 Patient specific precautions taken and plan for recovery and after care.

4.2.3.3 That all team members have adequate PPE. Individual sub-teams should check that team members have appropriate PPE i.e. Anaesthetic staff, scrub staff and surgeons.

4.2.3.4 That a line of communication is available with staff outside of theatre.

4.2.3.5 The protocol for obtaining equipment that is not available in theatre i.e. the runner will doff and re don on exit and re-entry to theatre or equipment will be left in a specific theatre area to be picked up by staff.

4.2.3.6 Cases are not to be used for training i.e. where possible only staff with relevant experience and essential to the procedure should be in the operating theatre so as to minimise exposure or potential exposure and lessen operating time.

4.2.4 For surgeons this should be the primary surgeon i.e. consultant or SpR and a relevant number of assistants dependent on the case. If the procedure can be completed by a single operator then an assistant should not be brought into the OT.

4.2.5 Experienced scrub staff only should assist in the procedure. For COVID-19 cases where a full assistant is not required, scrub nurses should be permitted to assist the surgeon as needed i.e. retraction, cutting suture, holding camera etc. provided that they have relevant experience and consent to do so without censure or responsibility for the operation itself.

4.2.6 Student/trainee training should be prohibited in order to minimise exposure to staff and reduce overall operating time.

4.3 Surgical preparation

4.3.1 Surgeons should ensure that they have facial PPE (FFP3 or higher mask and visor) on prior to entering the OT.

4.3.2 An apron (underneath regular gown) or ideally a waterproof gown should be worn.

4.3.3 It is recommended that surgeons should double glove for all procedures on patients with suspected or confirmed COVID-19 disease

4.3.4 A 'buddy system' should be adopted to ensure that all surgeons have appropriate PPE prior to and after completing scrub.

4.4 Other pre-operative considerations

4.4.1 Patient linen should be disposed of in relevant fashion i.e. in relevant colour coded and labelled bags to prevent cross contamination.

4.4.2 The patient bed should be wiped down and be kept in the corridor outside the OT (or other identified area) and not in the ante room.

4.4.3 Signage should be placed on external and internal aspects of doors to ensure that protocols are adhered to for donning/doffing and entry/exit.

4.4.4 Where a procedure is being undertaken by a registrar, the consultant on duty should be informed specifically that the patient is suspected or positive for COVID-19.

4.4.5 If there is an intra-operative emergency requiring other team members then these PPE should be worn prior to entry into the operating theatre.

5) Operative protocol

5.1 Operative considerations

5.1.1 Where available, ensure that laminar flow is switched on

5.1.2 Surgeon re-confirms PPE of all staff and that doors are marked prior to commencing procedure.

5.1.3 Where available diathermy with suction should be used. If not available, use standard suction in close proximity to the diathermy.

5.1.4 Avoid use of energised instruments in open procedures including advanced bipolar and ultrasonic (Harmonic scalpel devices) to reduce aeroionisation of tissue.

5.1.5 Where performing rectal examination prior to main procedure, ensure that a gown is worn during this stage of the operation as there is some evidence of persistence of Covid-19 virus in stool.

5.1.6 Perform open procedure where possible e.g. appendicectomy.

5.2 Doffing of PPE

5.2.1 Doff as per established protocol

5.2.2 Specifically consider washing gloved or undergloved hands and/or applying alcogel prior to removing glove, gown, visor and mask.

5.2.3 Where possible exit operating room completely prior to extubation of patient

5.2.4 Complete relevant paperwork (specimen form and operation notes) and debriefing outside the theatre. Specimens should be double-bagged by theatre staff.

5.3 Transfer of patient out of OT/operating complex

5.3.1 Operating department staff should be pre-advised when the operation has finished.

5.3.2 Patient should be recovered in theatre or transferred by relevant team members to pre-designated recovery area in PPE, ensuring that receiving staff are also in relevant PPE beforehand.

5.4 Equipment/Linen disposal

5.4.1 Equipment and consumables being disposed of should be marked as having come from a suspected/proven COVID-19 case.

5.4.2 The operating theatre should subsequently undergo a deep clean as per MRSA/HIV protocols.

6) Post-operative review/management

6.1 Where possible, patients should be nursed and reviewed in a side room away from the general patient population.

6.2 Appropriate PPE should be worn by all personnel reviewing the patient.

6.3 Only healthcare providers who are pertinent to patient care should review the patient rather than the entirety of the surgical team.

6.4 Documentation should be undertaken outside of the patient area. The post-operative plan should be clear indicating likely interventions, timing of assessment, tests and if appropriate a treatment escalation plan as patient care might be pooled amongst colleagues

7) Miscellaneous

7.1 This is a suggested protocol for management of suspected or confirmed COVID-19 patients requiring emergency surgical care.

7.2 The protocol may be subject to change dependent on local considerations and in the presumed eventuality of increased COVID-19 disease burden.

7.3 If infection reaches a point of prevalence in the hospital, then all patients requiring any type of surgery may need to be considered as COVID-19 positive until proven otherwise.

7.4 Hospitals should consider setting up COVID-19 +ve/suspected surgical wards for recovery of patients if space allocations will permit this. This step will help prevent cross contamination and the ward should be manned by designated staff.

7.5 At the time of writing, Covid-19 is increasing in prevalence in both the community and hospital population. It is important to utilise the time available at present to embed a system of practice as rapidly as possible for surgical teams. The author proposes that all major emergency cases such as laparotomies are presumed to be COVID-19 positive to allow the operating team an opportunity to practice the above protocol.

7.6 The suggested protocol is proposed for a general surgical theatre but would be applicable with modification to other surgical sub-specialties.

7.7 The primary aim should be timely intervention of patients to provide suitable emergency care whilst ensuring adequate safety of staff during the period of COVID-19 outbreak.

SURGERY FOR SUSPECTED/CONFIRMED COVID-19 PATIENTS
THEATRE PREPARATION/PREOPERATIVE CARE

1) ALL SUSPECTED/CONFIRMED CASES TREATED AS HIGH RISK – PRECAUTIONS AS PER PHE AND LOCAL POLICY FOR MRSA/HIV
2) INFORM CONSULTANT ANAESTHETIST/SURGEON OF CASE BEING UNDERTAKEN
3) TEAM BRIEF IDENTIFYING TEAM MEMBERS TO BE PRESENT, RISK OF PROCEDURE, PRECAUTIONS AND POTENTIAL PERSONNEL CHANGES
4) APPROPRIATE REMOVAL AND STORAGE OF NON ESSENTIAL ITEMS, COVERAGE OF FIXED ITEMS INCLUDING REMOVAL OF ALL PERSONAL BELONGINGS

NURSE IN CHARGE

Send for patient following team briefing

- Patient transferred by porter with escort i.e. nurse/medical escort wearing relevant PPE*
- Clear route should be ensured to minimise exposure to staff/visitors (use security if needed)
- Transfer direct to operating theatre; received by ODA/Anaesthetist
- Transfer time should not exceed 30 minutes

Activate scrub team

- Inform anaesthetic / surgical team of estimated arrival time
- Ensure that all relevant PPE available for team members and replacements
- Co-ordinate removal and storage or covering of non-essential equipment/PC
- Identify staff member to meet patient at card entry point to ensure swift access to operating room
- Identify external runner to bring equipment intra-op

SCRUB NURSE

Prepare OR; remove and store non-essential equipment

Prepare required equipment with circulating nurse

Don PPE and complete scrub in usual fashion including extra PPE**

Prepare scrub trolley and cover until needed. To remain scrubbed in place. If there is a need to unscrub then follow doffing procedures and rescrub with PPE. Inform relevant staff within theatre if unscrubbing

CIRCULATING NURSE/ THEATRE RUNNER

- Place COVID19 infection control signs on doors, lock additional doors to prevent non –essential staff entry
- Ensure equipment needed present including PPE for all staff
- Don PPE. Assist scrub nurse in preparing scrub trolley
- Help to transfer/position patient in OT
- Remove linen/disposables into marked bags
- Clean/store bed

ANAESTHETIST/ODA

- Prepare all medication for induction and maintenance in clean room. Ensure adequate supply available for intra-operative purposes.
- Ensure airway adjuncts present
- Single use pen for intra-operative charts

- Don PPE
- Receive patient in operating theatre
- Intubate patient in operating theatre with <u>ESSENTIAL STAFF ONLY</u>
- Manage airway during positioning
- Administer Abx as per protocol per case

SURGEON/ASSISTANT(S)

- Confirm availability of required equipment
- Identify additional equipment that MAY be required and store outside theatre
- Avoid bipolar/harmonic devices
- Ensure suction and diathermy available

Exit prior to patient arrival and intubation

Don PPE to position patient on table

Full scrub with PPE

Patient intubated with essential staff present

1st/2nd WHO check (including additional COVID-19 checks) by circulating nurse on paper form with disposable pen

*PPE = Personal protective equipment = mask, visor, gown, gloves, shoe covers. In theatre the mask must be an FFP3 grade
**Extra PPE = double glove, apron and water resistant gown in addition to PPE for aerosol generating procedures as above

SURGERY FOR SUSPECTED/CONFIRMED COVID-19 PATIENTS INTRAOPERATIVE AND POST OPERATIVE CARE

	NURSE IN CHARGE	SCRUB NURSE	CIRCULATING NURSE/ THEATRE RUNNER	ANAESTHETIST/ODA	SURGEON/ASSISTANT(S)
INTRA – OPERATIVE	• Monitor operating theatre • Ensure equipment requests are passed into designated theatre area without causing undue exposure to staff			• Dispose of unused medication i.e. single use only • Use same anaesthetic machine for all suspected and proven Covid-19 cases	
	REQUEST ADDITIONAL EQUIPMENT THROUGH INTERCOM TO NURSE IN CHARGE/CO-ORDINATOR IF LEAVING THE OPERATING ROOM THEN INFORM TEAM AND FOLLOW DOFFING PROCEDURES				
POST – OPERATIVE	• Contact ward/HDU/ITU to inform of patient's transfer back • Contact portering team and ensure PPE worn effectively • If needed contact security to ensure clear return path from theatre • Coordinate cleaning	Assist in moving the patient to the bed maintaining PPE	Complete WHO signout – dispose of pen	• Extubate and recover in theatre • Ensure non-essential staff exit prior to extubation	
		Complete doffing in line with local procedures; FFP3 mask to be removed external to OT			
		Team debrief; all staff to shower, change scrubs, mob cap and clean shoes			

- Dispose of consumables in marked bags
- Coordinate with cleaning staff to complete full deep clean of theatre as per MRSA/HIV protocols

Adapted from: Ti, L.K., Ang, L.S., Foong, T.W. *et al.* What we do when a COVID-19 patient needs an operation: operating room preparation and guidance. *Can J Anesth/J Can Anesth* (2020). https://doi.org/10.1007/s12630-020-01617-4