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A Dedicated Path to Emergent Thoracic Surgery in COVID-19 Patients: An Italian Institution Protocol



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The outbreak of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic pointed out that the need to ensure emergent surgery in patients positive for infection is no longer hypothetical. Among emergency procedures, thoracic surgical operations are frequent. A standardized surgical pathway is mandatory to achieve

effective and safe management of this subset of patients. We briefly present the protocol adopted by our thoracic surgery division.

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The current severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic¹ is stressing the need to design alternative care pathways for patients who test positive for coronavirus disease 2019 (COVID-19) and who are eligible for urgent or emergent surgical intervention. Because of the recent huge spread of the SARS-CoV-2 in Italy, the occurrence of active infection in patients who present to the emergency department with conditions requiring surgery, with particular reference to thoracic surgery, is progressively increasing.

Up to now, no clear guidelines for the management of this peculiar subgroup of patients have been produced. Thanks to the protocol developed together with the local task force consensus, and in agreement with regional and ministerial orders,^{2,3} we started a dedicated route to surgery for SARS-CoV-2 patients who require unavoidable thoracic surgical operations, including rigid bronchoscopy to manage the airway during emergency procedures, and open and video-assisted thoracic operations for posttraumatic/iatrogenic conditions. We present here the complete text of our protocol.

Technique

Logistics

An independent 24/7 surgical facility has been appointed and dedicated to emergent and urgent surgical patients who test positive for COVID-19. The facility has 5 distinct operating rooms (ORs) equipped to perform different

surgical procedures, including a single pressure-negative OR that has been designated for rigid bronchoscopy.

Dressing rooms have been adjusted to the high safety standards required for donning single-use personal protective equipment. Dressing rooms are equipped with showers, towels, and other facilities. Lockers are also available to store personal belongings and clothes.

Signs and advertising boards have been installed to identify free-access areas, limited-access areas, and filter zones.

Access Control and Paths to the OR

- Access to the OR is strictly limited to authorized health professionals. Trainees and students are not allowed to enter.
- The number of personnel involved in each case must be curtailed.
- Inbound and outbound OR personnel travel must be limited to essential activities.
- The outer envelope of equipment and supplies must be removed in the free-access area.
- Reserved and separate paths are used to process contaminated or unclean surgical equipment and supplies. Instruments are processed in the usual manner but must be transported to the wash and sterilization area in a sealed and properly marked container. Times of preparing and ridding clean and contaminated equipment, respectively, need to be diversified whenever the structure of the OR environment does not allow separate paths.
- Pathology specimens (including frozen section analysis, when necessary) must be transported in a sealed and marked container, and the pathology team must be alerted in advance to allow them safe handling sample management.

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- Transportation in and out of the surgical unit of the patient who has tested positive for COVID-19 must be performed through specific elevators that have been designated for the COVID-19 dedicated wards and the intensive care unit floor, respectively.
- The transport team must be coordinated by the OR manager and the surgical staff.
- Patients must be provided with personal protective equipment (surgical mask, isolation gown), hair kept up with a cap, and be covered with clean blankets during transportation.

Behavioral Norms for OR Staff

Attendance at limited-access areas must be restricted to health personnel actively involved in the surgical procedure.

- Removal of personal scrubs and donning disposable scrubs and protective equipment must be performed in dedicated men's and women's dressing rooms. Personal belongings must be stored in the lockers.
- Wear clothing appropriate for the surgical area you are in. Protective equipment specialty kits are available for each surgical team and cleaning personnel. Every kit includes filtering facepiece 2 NR D masks, disposable scrubs, isolation gowns or suits, face shield or goggles, and overshoes. The shift manager nurse is responsible for resupplying the equipment.
- Involved personnel should limit inbound and outbound travels to activities essential for the surgical procedure to reduce the dissemination on surfaces of airborne contamination, which could be responsible for infecting other health professionals.
- The number of staff present during airway manipulation must be limited to the strict minimum. Surgeons are not involved whenever possible.
- OR door opening should be limited to the necessary during the operation.
- Surgery and postoperative monitoring must be performed in the assigned operating theater.
- Removing dirty protective equipment must be performed in the dedicated area.

Emergency Protocol Activation

The surgeon:

- is responsible for alerting the anesthesiologist manager or the shift manager, who in turn is responsible for informing the surgical unit manager nurse, the surgical team, and auxiliary personnel, the transport team, and the transfusion center. The dedicated 24/7 duty team consists of 1 anesthesiologist and 2 OR nurses per room.

- is also responsible for notifying the case to the anesthesiologist on duty for surgical emergencies, who will provide the preoperative risk assessment, depending on the severity of the emergent situation.

Comment

The present protocol is currently in use at our General University Hospital. These guidelines must apply to patients with confirmed COVID-19, both those admitted to hospital or presenting to the emergency department. Planning and timing for the procedure is the responsibility of the operating surgeon and the anesthesiologist involved. In the case of unconfirmed COVID-19 diagnosis, surgery should be delayed until the buffer result is obtained, where possible, whereas the path to be used for unavoidable emergency must be discussed by a multidisciplinary team on the basis of clinical, radiologic, and laboratory findings. The need for intubation shall be assessed case-by-case in relation to the procedure to be performed and its duration and invasiveness. When lung isolation is required, a double-lumen tube or bronchial blocker can both be used.

The adoption of such a model may be helpful to better face emergent events in COVID-19 patients, thus allowing far safer management of even emergent thoracic surgery. The essential objective of these rules is to improve the use of the emergency department resources with a consistent eye on the protection of the health professionals. Since the existing emergency began, staff regulations did not impose any age limit; however, the occupational health service actually excluded from exposure to infected patients those health professionals considered to be at risk due to their clinical history. Moreover, no infection has been diagnosed in the personnel adhering to this protocol for emergent surgery in COVID-19 patients.

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