Tracheotomy Recommendations During the COVID-19 Pandemic

Created and Supported by the Airway and Swallowing Committee of the American Academy of Otolaryngology-Head and Neck Surgery

Contributors:

Noah P. Parker, MD, Indiana University

Bradley A. Schiff, MD, Montefiore Medical Center

Mark A. Fritz, MD, University of Kentucky

Sarah K. Rapoport, MD, Georgetown University

Sam Schild, MD, State University of New York-Downstate

Kenneth W. Altman, MD, Geisinger Health System

Albert L. Merati, MD, University of Washington

Maggie A. Kuhn, MD, University of California-Davis

GOAL

To establish tracheotomy recommendations that focus on patient and health care team well-being during the COVID-19 pandemic with minimization of risk, viral exposure, and personal protective equipment (PPE) depletion. This document is meant to provide background, considerations and recommendations based on an evolving body of literature and front-line information from this early stage in the pandemic. These recommendations may require individualization based on region, facility, resources, and patient-specific factors.

BACKGROUND

- Studies from colleagues in China have shown that most of those who become critically ill with COVID-19 do so because of rapid progression of pneumonia to acute respiratory distress syndrome, which can lead to respiratory failure and death.1-5
- The benefits of performing early tracheotomy in critically ill COVID-19 patients are unclear from available data. Based on the SARS-1 outbreak with a similar coronavirus, the need for mechanical ventilation was associated with a 46% mortality.6
- As an aerosol generating procedure (AGP), tracheotomy increases potential viral exposure to the health care team,7 who require adequate PPE8,9 which is already a scarce resource.
- Reducing the risk of nosocomial outbreak amplification through transmission of COVID-19 to other patients and health care workers is of critical importance.5

CONSIDERATIONS

Tracheotomy rationale

- The ability to wean sedation can reduce sedation-related delirium, improve patient comfort, and progress toward spontaneous ventilation trials that may impact ventilator shortages.
- Post-intubation laryngotracheal stenosis is well known risk of prolonged intubation, but has not been shown to be significantly reduced in patients treated with *early* tracheotomy in systematic reviews (typically less than 10 days).10,11
- In general, duration of mechanical ventilation has the potential to be significantly shortened with early tracheotomy and result in significantly shorter intensive care unit stays.12
- Incidence of ventilator-associated pneumonia, and overall mortality are not clearly improved with early tracheotomy.13-17

Risks of tracheotomy in COVID-19 positive patients

- As will all AGP, there is increased infectious risk to the surgical team due to aerosolized viral particles which can transmit for up to 3 hours, perhaps more.18
- There is also increased potential for virus exposure to the team who perform evaluations, suctioning, dressing changes and other post-tracheotomy care.

Timing of tracheotomy in COVID-19 positive ventilated patients

- There is no identified time-point when afflicted patients either improve, remain stable, or progress toward death due to pulmonary complications. In the SARS-1 epidemic, the mean time from onset to death was 23.7 days,19 suggesting low potential benefit of tracheotomy prior to this time.
- Patients who show no clinical or radiological remission within 10 days may be more likely to require ongoing ventilation and have a more severe course of disease, including death.5
- There is no anticipated timing for viral clearance, and critically ill patients may have significantly longer positive testing, lasting at least 2-3 weeks.4

COVID-19 testing

- With increasing ability to test patients more quickly, patients with urgent and even emergent surgical needs may be able to be assessed for COVID-19 positivity.
- Sensitivity in viral testing is a concern, as suspected COVID-19 patients can have initial negative testing.20
- As outlined in the AAO-HNS statement of March 23, 2020, "Unless emergent, surgical procedures should only be undertaken after ascertaining the COVID-19 status".

Resource allocation and personal protective equipment

- Multiple Otolaryngology-Head and Neck Surgery societies, including the AAO-HNS, have advised limiting care to time-sensitive and emergent problems with the routine use of appropriate PPE.21
- Use of PPE was shown to significantly reduce infection in healthcare providers during the SARS-1 epidemic.22
- Based on experiences with SARS-1 in 2003, 8,9 the University of Toronto, the Zhejian University School of Medicine, and Australian Society of Otolaryngology-Head and Neck Surgery have specified that N95 masks are necessary for COVID-19 positive or suspected patients undergoing airway surgery.
- Despite suggestions by the CDC that PPE can be reused, this practice is concerning and requires better data.

RECOMMENDATIONS

- Decision-making in tracheotomy should take into consideration the surgical and ICU team's discretion as well as institutional policy.
- Avoid tracheotomy in COVID-19 positive or suspected patients during periods of respiratory instability or heightened ventilator dependence.
- Tracheotomy can be considered in patients with stable pulmonary status but should not take place sooner than 2-3 weeks from intubation and, preferably, with negative COVID-19 testing.
- Adhere to strict donning and doffing procedures based on institutional protocol.
- Limit the number of providers participating in tracheotomy procedure and post-procedure management.
- Maintain cuff appropriately inflated post-operatively and attempt to avoid cuff leaks.
- Avoid circuit disconnections and suction via closed circuit.
- Place a heat moister exchanger (HME) with viral filter or a ventilator filter once the tracheotomy tube is disconnected from mechanical ventilation.
- Delay routine post-operative tracheotomy tube changes until COVID-19 testing is negative.

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