

Is Timing of Tracheotomy a Factor Influencing the Clinical Course in COVID-19 Patients?

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**Massimo Mesolella, MD¹**

Abstract

The timing of tracheotomy is a complex decision that requires understanding of the relative risks and benefits as compared with prolonging intubation. The role of tracheotomy during the COVID-19 pandemic remains to be determined. There is no evidence that early tracheostomy improves patient's clinical course and it is not impact on the natural history of these patients. In our opinion, the tracheotomy should be proposed in stable COVID-19 patients after 18th days after orotracheal intubation when the viral load is finished. Only in the case of patients with difficult of intubation do we perform earlier tracheotomies.

Keywords

tracheostomy, COVID-19, early tracheotomy, late tracheotomy

The novel coronavirus (COVID-19) pandemic is characterized by rapid respiratory decompensation and subsequent need for endotracheal intubation and mechanical ventilation (MV) in severe cases.^{1,2} Otolaryngologists will be called to assess and manage airways during this time.

In COVID-19 patient, approximately 3% to 17% of hospitalized patients require invasive MV with a higher mortality in these patients. In this critically ill patient, the duration of invasive ventilation can be as long as 21 days.

Italy, in the first phase of the pandemic, when hospitalizations were very numerous, especially in intensive care, tracheotomies were carried out, especially in hospitals in northern Italy, systematically after 7 to 8 days of admission to the hospital. However, early tracheotomy not increase the life expectancy of the patients also because the tracheotomy was performed on critically ill patients often with numerous comorbidities and poor patient outcomes and resource scarcity may well have a dramatic influence on the total number of tracheotomies performed.³ Shiba reported that, in consideration to the rapid evolution of the disease in critically ill patients, tracheostomy does not provide any benefit on the outcome: therefore, authors did not believe that prolonged intubation (PI) should be considered an indication.¹ In relation to this, there was a mortality risk higher than 25% compared to patients with the same comorbidities not affected by COVID-19.⁴

So, this recent date relating to the pandemic and in particular the experience acquired in the management of patients with

COVID-19 have led to a necessary review of the strategies relating to the timing of the execution of the tracheotomy in patients who require prolonged respiratory assistance. The decision to proceed with tracheostomy should involve a multi-disciplinary board.³

Generally, tracheotomy is a common procedure performed to replace the translaryngeal intubation in the intensive care units (ICUs), when the patients need PI with MV and fail to wean from the ventilation in the near future. Tracheostomy is performed in about 24% of patients in medical ICUs.⁵⁻⁷

The optimal timing of tracheostomy in patients who require MV remains controversial. In the 1989, American College of Chest Physicians Consensus conference on Artificial Airways in patients receiving MV, it was concluded that the appropriate duration of translaryngeal intubation could not be defined. However, it was suggested that if the MV is longer than 21 days the tracheostomy is preferable. Recent American College of Chest

¹ Department of Neuroscience, Reproductive Sciences and Dentistry, Unit of Otorhinolaryngology, Federico II University Naples, Italy

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Corresponding Author:

Massimo Mesolella, MD, Department of Neuroscience, Reproductive Sciences and Dentistry, Unit of Otorhinolaryngology, Federico II University Naples, Via Gaetano Filangieri, 36, 80121 Naples, Italy.

Email: massimo.mesolella@tin.it



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Physicians (ACCP) guidelines suggest that early tracheostomy should be considered after an initial period of stabilization on the ventilator, when it becomes apparent that the patient will require prolonged ventilator assistance. Hsu et al reported that when tracheostomy is performed more than 3 weeks after intubation, rates of ICU mortality and failure to wean increase.⁸

Although the definition of prolonged ventilation can include periods as short as 24 hours, only patients who are foreseen to be on artificial ventilation for approximately 10 days or longer are generally subjected to elective tracheostomy. Compared with the prolonged translaryngeal intubation, tracheostomy may offer several advantages such as avoiding injury to larynx and trachea, improving patient comfort, lower airway resistance, smaller dead space, less movement of the tube within the trachea, more efficient suction, ability to oral feeding and communication and facilitating nursing care, and decreasing the incidence of ventilator-associated pneumonia.

There was a randomized control trial comparing early (less than 48 hours) versus late (14-16 days) tracheostomy in patients with respiratory failure. The early group had a significantly decreased mortality, pneumonia, and time of MV.⁹

Because there are no definitive guidelines available, the timing of tracheostomy depends on clinical conditions, physician judgment, and authorization by families.

However also tracheostomy have several complications such as bleeding, stomal infection, pneumothorax, and tracheal stenosis.

In COVID-19 patient, the poor condition on admission to the medical ICU and the survival extremely poor might influenced the decision to perform a tracheostomy late.^{4,10} Considering an unstable general condition and rapid decline of those affected with widespread inflammation in the lung, early tracheostomy (less than 10 days) should be avoided in these novel coronavirus patients.¹⁰ When the determination is made to perform tracheostomy a delay in timing from 14 days to 21 postintubation should be considered to allow for enough decline in viral load.³ So, we recommended that tracheostomy should be performed in patients with COVID-19 only when is necessary (difficult intubation). Shiba et al reported that a laryngeal mask airway should be considered as a preferred method to secure the airway in such patients rather than as an emergent surgical airway procedure.¹ An intubating laryngeal mask airway can be later converted to an endotracheal tube under bronchoscopic guidance. We believe that all these maneuvers can favor a viral spread and therefore as said in patients with difficult intubation we are of the opinion that tracheostomy is better. In our opinion and in agreement with Ferri, the tracheostomy should be proposed in stable COVID-19 patients 21th days after orotracheal intubation, when viral shedding will have diminished.⁴ Only in the case of patients with difficult of intubation do we perform earlier tracheotomies.

Conclusion

The timing of tracheostomy is a complex decision that requires understanding of the relative risks and benefits as compared with prolonging intubation.

The role of tracheostomy during the COVID-19 pandemic remains to be determined. There is no evidence that early tracheostomy improves patient's clinical course and it is not impact on the natural history of these patients.^{3,4,10}

In our opinion, the tracheostomy should be proposed in stable COVID-19 patients after 21th days after orotracheal intubation when the viral load will have diminished. Only in the case of patients with difficult of intubation do we perform earlier tracheotomies. Obviously special care must be taken to protect health care providers who are at increased risk of infection.

Declaration of Conflicting Interests

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ORCID iD

Massimo Mesolella  <https://orcid.org/0000-0001-5278-6998>

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