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Commentary: COVID-19 makes innovative but “repetita juvant”

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Since the emergence of the coronavirus disease (COVID-19) in fall of 2019, healthcare systems worldwide have been facing several challenges, among them optimizing available resources, limiting or completely eliminating physical consultations whenever possible, and protecting all professionals against disease transmission. Telemedicine was a welcomed technology for such tasks because it can considerably confine the spread of COVID-19; however, in a majority of situations, contacts between doctors, nurses, and patients cannot be avoided, and it such situations strict hygiene measures are required.¹

Medical subspecialties working in the field of infectious diseases have received major attention with regard to global epidemiologic, therapeutic, and preventive aspects (eg, analyze and contain the spread of the disease, powerful vaccination), whereas other specialties have been involved in particular clinical situations only.

The severe respiratory syndrome observed in COVID-19 produces a large number of patients with longstanding respiratory failure and ventilator dependence. For those who survive, tracheotomy or tracheostomy may be indicated in cases of prolonged ventilatory needs.²⁻⁴ However, COVID-19 provides unique challenges, such as optimal timing of tracheostomy, safety for the healthcare teams that perform it, and subsequent management of patients.

Interestingly, although head and neck otolaryngology is not a frontline specialty in dealing with this disease,⁵ high rates of nosocomial spread have been seen among otolaryngologists, especially because of high viral load in the upper respiratory tract.⁶

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CENTRAL MESSAGE

Refinement of tracheostomy to minimize the potential for infection spread was described years ago, but repeating the most important points is useful in the era of the current pandemic.

Conflicting recommendations exist about case selection, the timing and performance of tracheostomy, and the subsequent management of patients.²⁻¹⁰ The article by Weiss and colleagues¹¹ in this issue of the *Journal* is one example among others that introduces additional optimization in a routine bedside procedure that should be safe for both the patient and the operating team.

A review of the current literature does not completely clarify whether open tracheotomy or percutaneous tracheostomy produces less aerosolized viral particles.¹² Usually, tracheotomy is recognized as a highly aerosol-generating procedure that exposes the entire medical and nursing team to the tracheobronchial aerosols and secretions. Because of the strong contagious pattern of the COVID-19 disease, simple interventions to increase the safety of this procedure are welcome for intensive care departments and operating theaters. The authors of this article should be congratulated for bringing us closer to the impact of an institutional task force, a simple but interesting and innovative teamwork solution.

The process of introducing tracheostomy with particular attention on minimizing the potential for infection of nursing and medical personal was well described years ago, and the most important points have been repeated recently, including some minor improvements related to the current pandemic.^{13,14} However, since the present study is merely observational and includes a very small number of patients, it is nearly impossible to provide valuable results on the impact of the applied protocol on disease

transmission. Some of the patients in this small series received tracheostomy 3 weeks or longer after the onset of disease; some of them were perhaps suffering from the complications of the disease but were no longer contagious at the time that tracheostomy was performed. All patients had successful percutaneous tracheostomy without significant procedural complications. This confirms that tracheostomy is usually a simple procedure; however, sometimes the situation may become tough for different reasons, for example, anatomic difficulty because of obesity or a very short neck, bleeding due to ongoing anticoagulation. In these situations, it may be helpful to define an emergency protocol on how the procedure can be salvaged with minimal aerosolization.

The recommendations provided in this educational article are for the majority of the recommendations made in this educational article are not new.¹³ Already under normal health care conditions, key recommendations for open tracheotomy and percutaneous tracheostomy include minimizing opportunities for aerosolization, providing complete paralysis to prevent coughing, preoxygenation followed by a period of apnea before entering the airways and deflating the endotracheal cuff, avoiding suction once the trachea is incised, and minimizing the use of cautery, among others.³ Maximization of personal protection equipment and the procedure performed by the most experienced staffs should receive special attention under the conditions of the pandemic. In addition, the surgical and nursing staff, as well as the anesthesia and/or intensive care staff, should be kept to the lowest number possible to safely carry out the procedure and any transportation required. Early in 2020, the Canadian Society of Otolaryngology-Head & Neck Surgery task force was convened with multispecialty involvement from general surgery, critical care, and anesthesiology to develop a set of recommendations for the performance of tracheotomy during the COVID-19 pandemic.⁷ The most important message of these recommendations, also supported by Skoog and coauthors,² is that tracheotomy should be avoided in patients who are COVID-19–positive if at all possible, regardless of the duration of endotracheal intubation, and be postponed until the patient has been determined to be cleared of the COVID virus and isolation has been discontinued. Tracheotomy was recommended only in those patients in whom the endotracheal tube was proven insufficient to provide an adequate airway.

This is in contradiction to the statement by Weiss and coauthors claiming that it may be beneficial to perform tracheostomy earlier in the course of disease to expedite patient recovery and ventilator liberation and optimize intensive care unit resource utilization.¹¹

Finally, among additional innovative ideas for such a vital procedure, the development of new instrumentation that

may allow endoscopic tracheotomy with simultaneous aspiration of aerosol particles or specific tents with negative pressure over the operative field merits further investigation.

Filho and colleagues¹⁵ published the design of a “negative-pressure airflow isolation chamber” aimed at reducing the risk of severe acute respiratory syndrome coronavirus transmission during airway management, and Yong and Chen¹⁶ reported the use of flexible plastic screens and tents for the same purpose. A number of similar reports have been published in recent literature describing the use of various “intubation boxes” and drapes, all of which aim to provide a physical barrier to aerosols and droplets. Although these innovations are doubtless well-intentioned, some authors are concerned that any additional protection by such devices may add a supplementary physical barrier that increases the difficulty of tracheal intubation.¹⁷

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