Anaesth Crit Care Pain Med xxx (2018) xxx–xxx

Guidelines

Tracheotomy in the intensive care unit: Guidelines from a French expert panel☆

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☆ This article is being published jointly in *Anaesthesia Critical Care & Pain Medicine* and *Annals of Intensive Care*. The manuscript validated by the board of the SRLF (12/13/2016) and the SFAR (12/15/2016).

Abbreviations: ALS, amyotrophic lateral sclerosis; GRADE, grading of recommendations assessment, development, and evaluation; PICO, patient intervention comparison outcome; SFAR, Société francaise d'anesthésie réanimation; SFMU, Société française de médecine d'urgence; SFORL, Société française d'otorhinolaryngologie; SRLF, Société de réanimation de langue française.

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https://doi.org/10.1016/j.accpm.2018.02.012

Please cite this article in press as: Trouillet J-L, et al. Tracheotomy in the intensive care unit: Guidelines from a French expert panel. Anaesth Crit Care Pain Med (2018), https://doi.org/10.1016/j.accpm.2018.02.012

ARTICLE INFO

Article history:
Available online xxx

ABSTRACT

Tracheotomy is widely used in intensive care units, albeit with great disparities between medical teams in terms of frequency and modality. Indications and techniques are, however, associated with variable levels of evidence based on inhomogeneous or even contradictory literature. Our aim was to conduct a systematic analysis of the published data in order to provide guidelines. We present herein recommendations for the use of tracheotomy in adult critically ill patients developed using the grading of recommendations assessment, development and evaluation (GRADE) method. These guidelines were conducted by a group of experts from the French Intensive Care Society (Société de réanimation de langue française) and the French Society of Anesthesia and Intensive Care Medicine (Société francaise d'anesthésie réanimation) with the participation of the French Emergency Medicine Association (Société française de médecine d'urgence), the French Society of Otorhinolaryngology. Sixteen experts and two coordinators agreed to consider questions concerning tracheotomy and its practical implementation. Five topics were defined: indications and contraindications for tracheotomy in intensive care, tracheotomy techniques in intensive care, modalities of tracheotomy in intensive care, management of patients undergoing tracheotomy in intensive care, and decannulation in intensive care. The summary made by the experts and the application of GRADE methodology led to the drawing up of 8 formal guidelines, 10 recommendations, and 3 treatment protocols. Among the 8 formal guidelines, 2 have a high level of proof (Grade 1 ±) and 6 a low level of proof (Grade 2 ±). For the 10 recommendations, GRADE methodology was not applicable and instead 10 expert opinions were produced.

For the Société de réanimation de langue française (SRLF) and the Société française d'anesthésie et de réanmation (SFAR) in collaboration with the Société française de médecine d'urgence (SFMU) and the Société française d'oto-rhino-laryngologie (SFORL).

1. Background

Tracheotomy is a procedure commonly used in intensive care, albeit with great disparities between medical teams in terms of frequency (5–54%) and modality (surgical or percutaneous) [1,2]. Although tracheotomy has a long history, its utility, indications, duration, and techniques are the subject of debate [3,4]. Also, the real or potential advantages of tracheotomy need to be weighed against its risks, which are rare but sometimes serious. The advantages are a reduction in pharyngolaryngeal lesions, lower risk of sinusitis, reduced sedation requirements, easier buccopharyngeal hygiene, improved patient comfort with easier communication, facilitated care by nursing personnel, maintenance of swallowing, possible glottic closure, simpler reinsertion in cases of accidental decannulation, and easier weaning from mechanical ventilation [5]. In some studies, early use of tracheotomy was associated with decreased incidence of ventilator-acquired pneumonia, reduced duration of mechanical ventilation and of intensive care, and so of costs, and decreased hospital mortality [6,7]. However, several recent randomized trials found no evidence of these benefits [8–11]. The most frequent complications can be qualified as minor (for example, minor stomal bleeding). Rare and life-threatening complications, such as lesions of the brachiocephalic artery trunk, have been reported.

Among the controversies surrounding tracheotomy in intensive care, the greatest is probably that of its indication. Tracheotomy is most often considered in cases of failed extubation and of prolonged mechanical ventilation. Three remarks are relevant here. First, there is currently no consensus regarding the contribution of failed extubation (one, two, three attempts? In what conditions?) and of prolonged mechanical ventilation. Second, it may be worthwhile preventing failure of extubation and not adding the deleterious effects of prolonged intubation to those of tracheotomy. The intensivist should predict the failure of extubation and the duration of ventilation so as to perform tracheotomy without delay [5], but prediction of the duration of ventilation is an inexact "science" [12,13]. Third, the duration of mechanical ventilation and the success of extubation depend on intensive care management as a whole (notably the appropriate treatment of an infection, the water–sodium balance and acid–base balance, nutrition, and sedation). In particular, a sedation protocol is essential.

The most recent SRLF guidelines concerning the surgical approach to the trachea of ventilated patients in intensive care date back to 1998 [14]. There are no recent international guidelines and national guidelines are rare [15,16]. In the absence of clearly defined and unquestionable criteria, tracheotomy is most often decided solely by the medical team in charge of the patient. In the last ten or so years, the medical literature has been enriched by new clinical data, often compiled in the form of meta-analyses [17–19]. It was against this backdrop that the Société de réanimation de langue française (SRLF) and the Société française d'anesthésie et de réanimation (SFAR) decided to draw up the present guidelines entitled "Tracheotomy in the Intensive Care Unit". The aim of these guidelines is to define the indications, contraindications, modalities, and monitoring of tracheotomy in light of the current literature data.

2. Methods

These guidelines were prepared by a working group of experts from the SRLF and the SFAR. The organizing committee, together with the coordinators, first defined the questions to be addressed and then designated the experts in charge of each question. The questions were formulated according to the patient intervention comparison outcome (PICO) format. Grade of recommendation assessment, development and evaluation (GRADE) methodology was used to analyze the literature and formulate guidelines. A level of proof was defined for each bibliographical reference cited, as a function of the type of study. This level of proof could be reviewed in light of the methodological quality of the study. An overall level

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