RESEARCH LETTER

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Three-step checklist for tracheostomy in critically ill COVID-19 patients



Maria Vargas* and Giuseppe Servillo

Tracheostomy is a common procedure in critically ill patients requiring prolonged mechanical ventilation [1]. The use of tracheostomy can facilitate weaning from ventilation and potentially increase the availability of intensive care unit (ICU) beds [2]. When the COVID-19 pandemic spread all around the world, ICUs had a massive influx of critically ill patients, many of whom became candidates for tracheostomy [2]. Tracheostomy is an aerosol-generating procedure that exposes physicians at high risk to contract infections [3]. In COVID-19 patients, healthcare workers who do tracheostomies must take into account additional considerations associated with the infectivity of SARS-CoV-2 [4]. Recent reports suggested to perform surgical and percutaneous tracheostomies with modified techniques to minimize the aerosol and then to keep the personnel safe [5, 6]. Although performing tracheostomy in COVID-19 patients is a high-acuity setting [6]. With such broad recognition of the importance of safety, we propose a three-step checklist to optimize the process of performing tracheostomy in critically ill COVID-19 patients (Fig. 1). The threestep checklist for tracheostomy in COVID-19 patients involves a preparation phase, a procedural phase, and an evaluation phase at the end of the procedure (Fig. 1). The preparation phase is intended to optimize all the action to prepare the patient and the staff for the procedure. The procedural phase includes the operative steps to perform the procedure with additional safety while the evaluation phase is intended to check the patient at the end of tracheostomy. Key points of this three-step checklist are proper wearing of personal protective equipment and actions to reduce the risk of viral aerosolization like pushed down the endotracheal tube and keep it cuffed during the procedure. We used the three-step checklist for tracheostomy in 3 percutaneous technique and 2 surgical techniques performed in critically ill COVID-19 patients, and we found that it is beneficial in preventing errors and harms. The threestep checklist for tracheostomy in critically ill COVID-19 patients is tailor-made to improve the safety and efficiency of a high-risk procedure for healthcare works.

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PREPARATION		PROCEDURE				
Confirm patient's consent or next of	Yes No	Full Monitoring of vital parameters?	Yes No	Surgical tracheostomy technique	Yes	No
kin's assent		Report vital parameters at the beginning of the		In case of surgical tracheostomy:		
Perform neck ultrasound to evaluate	Report:	procedure		Keep the endotracheal tube cuffed below the chosen site for tracheostomy	Yes	No
the presence of at-rick structure	Platelet count:	Doctor in charge for the airway management is?	Dr Dr	Insert the tracheal tube while the endotracheal	Voc	N
Check coagulation	INR	Doctor performing tracheostomy is?	Dr	is still in place	163	
	APTT	Perform general and local anesthesia	Which	- Switch the ventilator off before to remove the	Yes	N
Anticoagulant and antiplatelet	Which?	renorm general and local allestriesia	drugs?	endotracheal tube		
withheld?	Withheld when?		Which	- Cuff the tracheal tube in place, connect the	Yes	N
Gastric feeding suspended?	Yes No		dose?	ventilator and resume the ventilation		
Airway rescue equipment?		Optimize mechanical ventilation (report the		Percutaneous tracheostomy technique	Yes	N
Videolaryngoscope	Yes No	parameters):		Which percutaneous technique is chosen?		
Endotracheal tubes	Yes No	- Volume control ventilation		In case of percutaneous technique:		
Supraglottic airway devices	Yes No	- Respiratory rate		 Put the bronchoscope outside the 	Yes	N
Introducer/bougie	Yes No	- FiO2		endotracheal tube and between the vocal		
Airway exchange catheters	Yes No	- Tidal volume		cords	Yes	N
Bag Valve Mask Ventilation	Yes No	- PEEP		- Puncture of the anterior tracheal wall,		
Scalpel	Yes No	Perform 5 minutes of preoxygenation with FiO2	Yes No	seldinger insertion, dilatation, and cannula	ļ.,	
Complete cricothyrotomy kit	Yes No	100%		positioning are all performed with the smaller	Yes	N
Wear third level PPE:	Yes No	Change the endotracheal tube in place with a	Yes No	ETT cuffed and positioned at the carina		
Helmet in place of FFP3	Yes No	smaller tube with an internal diameter of 5 or 6 mm		 Insert the tracheal tube while the endotracheal is still in place 	Yes	N
Facial shield	Yes No	Cuff the endotracheal tube at the level of the carina	Yes No	- Switch the ventilator off before to remove the	Yes	N
Long sleeve fluid-resistant scrubs	Yes No	and connect the mechanical ventilator		endotracheal tube	ies	IV
Double gloves	Yes No Yes No	(check it with the airway pressure and the end-tida CO2)	1	Remove the bronchoscope after the removal of		
Overshoes	ies ivo	CO2)		the endotracheal tube		
Oversitoes		EVALUATION		- Cuff the tracheal tube in place, connect the		
		All the PPE have been correctly disposed?	s No	ventilator and resume the ventilation		
		Report vital parameters at the end of the	J IVO			
		procedure				
		Report procedural complications				
		Review sedation and mechanical ventilation Ye	s No			
		Report any changes in sedation and/or				
		ventilation				
		Perform and report a blood gas analysis				
		Perform and report a chest X- ray				

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