Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Letter to the Editor

**Novel technique for safe fibreoptic tracheal intubation in COVID-19 patients**

**ARTICLE INFO**

Keywords:
Aerosol generating procedure
Airway management
COVID-19
Fibreoptic intubation
SARS-CoV-2
Tracheal intubation

To the editor,

The 2019 novel coronavirus disease (COVID-19) pandemic, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), presents significant challenges to anaesthesiologists. COVID-19 can be transmitted to clinicians involved in patient care, particularly during aerosol-generating procedures [1,2], such as fibreoptic intubation. The fibreoptic intubation, therefore, needs to be adapted in order to prevent the spread of SARS-CoV-2. In this article, we present a novel technique designed to improve safety during fibreoptic intubation; the technique uses disposable clear drapes that are generally accessible in any operating theatre or institution.

In this step-by-step demonstration of the adapted fibreoptic intubation technique (see supplementary video), we use a manikin to represent the patient. The patient is placed in the supine position on the operating table and draped with a surgical microscope drape (Zeiss® MD® Microscope Drape, 65 mm lens cover). The microscope drape is a clear plastic material that includes an annular housing, which is normally designed to fit around the objective lens portion of the microscope. In this adapted technique, the annular housing is positioned around the mouth and nose of the patient.

An ultrasound (US) probe cover (Vygon, Ecouen, France) is adjusted to the annular housing by its open end and securely fastened using tape. The other extremity of the US probe cover is opened by making a 4 to 5-cm incision through which the fibrescope is introduced with an ensheathed endotracheal tube (ETT). A second piece of tape is provided to securely fasten the cover to the cabling in order to ensure easier and safe handling during the procedure.

The microscope drape further includes several sleeve cuffs, which normally serve as eyepiece covers for the surgical microscope. Forearms of an assistant can be inserted through two small cuts in the sleeve cuffs to keep a tight fit. The assistant will proceed with hands underneath the drape, allowing him to stabilise the scope with the hand over the nose or mouth if needed, advance the ETT into the trachea over the scope shaft, inflate the ETT cuff, and secure the ETT with a clamp just after fibreoptic shaft withdrawal. The fibrescope with its cover are then securely removed in one-step; the tracheal tube is connected to the breathing circuit and the clamp is subsequently removed.

To ensure procedural fluency of the technique, we conducted a test run with a presumed COVID-19 patient. The drapes were prepared in advance in order to avoid wasting time. A skilled anaesthetist performed a successful nasal fibreoptic intubation under deep general anaesthesia using a neuromuscular blocking agent. A surgical mask was placed over the mouth of the patient for additional security. The procedure was smooth and the operators reported a high degree of satisfaction with the technique.

In summary, this technique, which uses accessible operating theatre supplies, can be a useful adjunct in minimising viral contamination by respiratory secretions during outbreaks of highly infectious diseases, such as COVID-19.

**Research support**

Support was provided solely from institutional and/or departmental sources.

**Disclosure of interest**

The authors declare that they have no competing interest.

**Acknowledgment**

We would like to thank Becky Johnstons for her careful review of the manuscript and her excellent suggestions for improving our initial work.

**Appendix A. Supplementary data**

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.plantsci.2004.08.011.

**References**

[1] World Health Organization. Modes of transmission of virus causing COVID-19: implications for IPC precaution recommendations: scientific brief; 29 March 2020. Accessed April 21, 2020. https://www.who.int/publications-detail/modes-of-transmission-of-virus-causing-covid-19-implications-for-ipc-precaution-recommendations.

[2] Tran K, Cimon K, Severn M, Pessoa-Silva CL, Conly J. Aerosol generating procedures and risk of transmission of acute respiratory infections to healthcare workers: a systematic review. PLoS One 2012;7(4):e35797. http://dx.doi.org/10.1371/journal.pone.0035797.

https://doi.org/10.1016/j.accpm.2020.06.003
2352-5568/© 2020 Société française d’anesthésie et de réanimation (Sfar). Published by Elsevier Masson SAS. All rights reserved.
