

Telebation in COVID-19 intensive care unit: A way to save more lives

Dear Editor,

Telebation refers to remote intubations with the help of telemedicine.^[1] This technology was first demonstrated in a chronic obstructive pulmonary disease (COPD) patient at a small community hospital in Arizona, the U.S. Due to worsening hypoxemia, COVID-19 patients require endotracheal intubation, which becomes rather difficult due to their fast desaturation and compromised visibility due to the use of personal protective equipment. Guidelines and experts have recommended video laryngoscopes for the airway management of COVID-19 patients.^[2] Video laryngoscopes are costly and difficult to acquire during the pandemic. We have devised a low-cost (150\$ only), low-maintenance video laryngoscope by modifying the Macintosh laryngoscope that we are routinely using for telebation.

We attached a borescope high definition (HD) camera in the groove of the laryngoscope blade at a point 4 cm proximal to the tip of the laryngoscope as previously improvised by Hamal *et al.*^[3] In addition to this, we have also integrated an oxygen channel along with the borescope camera which allows deep laryngeal oxygen insufflation and apneic oxygenation during laryngoscopy. This borescope camera can be connected to a smartphone/tablet via a type C connector, and the live images of the laryngoscopy can be viewed using CameraFi or inskam, applications that are freely downloadable from the Google Play Store. These images are shared using the zoom application by screen sharing over Wi-Fi network with the control room computer along with the live CCTV camera footage. The laryngoscopy and endotracheal intubation is monitored by the critical care team that supervises and guides the staff performing the procedure [Figure 1].

Almost all practicing physicians carry a smartphone with them. With the advanced cellular 4G/5G technology, images can be viewed over any smartphone via zoom or any other screen-sharing application. In this way, emergency airway guidance can be given to those seeking assistance in remote locations such as field procedures performed by paramedical staff, intubation during ambulance transport, or in remote locations where there is a lack of specialists trained in airway management.

The combination of this modified video laryngoscope with a telemedicine network provides a potentially powerful



Figure 1: Intensivist training and guiding from the control room while the junior resident doctor intubating on manikin inside the COVID-19 ICU

educational as well as patient care tool. The advantages are early detection of misplacements of the endotracheal tube, remote monitoring of the intubation procedures, and real-time teaching and training of the procedure to the junior paramedical and medical staff. Telebation may also prove to be a boon during the present pandemic for the bulk training of medical and paramedical staff in far-flung areas and remote locations where there are deficient training facilities.

We have been routinely performing the telebation in our setup during the current pandemic. This has proved to be of immense benefit not only in supervised airway management but also has given a new dimension to the teaching and training of the junior staff. This advanced technology should essentially find a place in every medical institute involved in imparting medical and health care education.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Access this article online	
Quick Response Code:	Website: https://journals.lww.com/joacp
	DOI: 10.4103/joacp.joacp_319_21

How to cite this article: Mustahsin M, Khan ZA, Choubey S. Telebation in COVID-19 intensive care unit: A way to save more lives. *J Anaesthesiol Clin Pharmacol* 0;0:0.

Submitted: 21-Jun-2021

Revised: 19-Jul-2021

Accepted: 17-Aug-2021

Published: 15-Jun-2022

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