Repeat percutaneous tracheostomy in a COVID-19 patient

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Case Report

A 73-year-old man (60 Kg) with history of hypertension and chronic obstructive pulmonary disease was admitted to the emergency department with acute respiratory failure from COVID-19. After 10 days of mechanical ventilation (MV) the patient underwent a successful trial of extubation. However, 3 days later his neurological status deteriorated and required re-intubation. A brain computed tomography (CT) scan showed right cerebellar hemorrhage. Considering extent and location of the hemorrhage we decided to perform a percutaneous tracheostomy on the 18th day. The patient was then successfully weaned from MV (day 47th), and finally decannulated (day 50th). On day 62nd, the patient experienced an episode of septic shock, requiring oro-tracheal re-intubation, for we decided to perform a repeat percutaneous tracheostomy. All the procedure steps were uneventful. The patient was subsequently transferred to another ICU, and then successfully discharged to the Respiratory Ward.

Abstract

A 73-year-old man with history of hypertension and chronic obstructive pulmonary disease was admitted to the emergency department with acute respiratory failure from COVID-19. After 10 days of mechanical ventilation (MV) the patient underwent a successful trial of extubation. However, 3 days later his neurological status deteriorated and required re-intubation. A brain computed tomography (CT) scan showed right cerebellar hemorrhage. Considering extent and location of the hemorrhage we decided to perform a percutaneous tracheostomy on the 18th day (Ciaglia Blue Rhino, size 8.0), and three days later he was successfully weaned from the ventilator.

Keywords: coronavirus; airways; dilational tracheostomy.
experienced a further episode of septic shock, requiring orotracheal re-intubation and high doses of noradrenaline (up to 0.70 mcg/kg/min). The patient slowly improved again, and on the 82nd day after admission noradrenaline was almost weaned (0.06 mcg/kg/min). Although the patient was neurologically appropriate, we decided to perform a repeat percutaneous tracheostomy (over one month after the initial decannulation) considering the need for ventilatory support (pressure support 15 cm H2O) in the context of acquired weakness and the presence of copious secretions.

Though the site of previous tracheostomy seemed healthy, we preventively performed an ultrasound of the tracheal region not only for excluding vessels but also to rule out the presence of fluid collection. We planned to use a Ciaglia Blue Rhino set with a tracheostomy cannula size 9.0 considering that on chest X-ray the trachea seemed dilated (26 mm) as result of the previous tracheostomy. The repeat procedure was performed under general anaesthesia with the adjunct of local anaesthesia (combination of lidocaine with adrenaline), and under fiberoptic-bronchoscope guidance. All the procedure steps were uneventful. Of note, once the Seldinger was passed into the trachea, we did not need to use the scalpel to facilitate the entrance of the dilator.

The patient was subsequently transferred to another ICU (same Trust), and at the time of writing (over two months after the re-do tracheostomy) he is ready for discharge to the Respiratory Ward. Of note, in the last CT imaging, the trachea was measured 32 X 34 mm (Figure 1).

**Figure 1:** Image of the upper chest taken from computed tomography scan. The trachea is dilated and measured as 32 X 34 mm.

**Discussion**

To the best of our knowledge, we present the first case of re-do tracheostomy in a patient with COVID-19. Several centers have preferred a strategy of surgical tracheostomy in patients with COVID-19, possibly as a protective measure for healthcare staff. However, transferring COVID-19 patients for surgical tracheostomy has implications. Indeed, disinfection is needed on the route of the transfer of the patient to the operating room. Moreover, closure of a surgical tracheostomy requires a new surgical intervention, which is not the case for percutaneous tracheostomy. Considering such circumstances, we felt more appropriate to perform a repeat tracheostomy, accepting a possibly higher risk of tracheal damage.

Repeat tracheostomy have been previously described. A part from some case reports, we found a couple of case series describing repeat tracheostomy. The larger one was published by Meyer et al. on 14 ICU elderly patients (median 70 years-old) with a very variable range between the initial decannulation and re-do tracheostomy (10 days-8 years) [1]. The second series included 12 younger neuro-ICU patients (mean 35.4 years-old), again with a variable range between decannulation and re-do tracheostomy of 14 days-2 years [2].

A critical aspect in the presented case was the difficulty in discharging the patient to the most appropriate Ward. Indeed, considering the previous cerebellar hemorrhage and the persisting positivity for COVID-19, its transfer was delayed as our Neurology Ward was not equipped for COVID-19 patients. We believe that difficulties in discharging complex COVID-19 patients to the most appropriate Ward may have been a frequent issue during the pandemic.

**References**
