



Response to comments to “Open versus percutaneous tracheostomy in COVID-19: a multicentre comparison and recommendation for future resource utilisation”

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We would like to thank for reading our article, “Open versus percutaneous tracheostomy in COVID-19: a multicentre comparison and recommendation for future resource utilisation” [1].

As we explained in our article, the aim of this work was to compare outcomes between surgical (ST) and percutaneous dilatational techniques (PDT) during the unprecedented surge in demand for critical care services that we experienced as a result of the COVID-19 pandemic. This was to be able to respond to any future crises in the best possible way taking into account the idiosyncrasies of each hospital in tackling the COVID-19 crisis and hence the heterogeneity

of techniques utilised. One of the groups involved in this study previously published recommendations for safe tracheostomy during COVID-19 pandemic [2]. The type of PDT technique was performed differently in each hospital, however, the single-stage ‘Rhino’ dilator technique is the most common percutaneous technique in the UK [3].

You mention that one particular PDT technique has been associated with intraprocedural bleeding. Of note, this occurred in 0.008% of the cases in the PDT group making any further analysis not possible. Furthermore, there is no strong evidence that one technique is better than the others as there is no randomised trial comparing these techniques. Accordingly, many other confounders that increase the risk of intraprocedural bleeding can affect the results of any study showing the one technique is better than another, including the one you mention [4].

Regarding the intraoperative hypoxia and the different airway management techniques, many have been described over recent months, but we chose the one with which we have most experience, and one that we feel results in minimal aerosolization and minimal disconnection. Changing to a smaller diameter endotracheal tube as you suggest in our view risks further destabilisation and increased airway pressures in already poorly compliant lungs. As you mention in the referred article published in May 2020 [5]: “Takhar et al. proposed a modified PT technique in COVID-19: this technique differed from the standard one for (a) the clamping of the ETT and pausing the ventilator while positioning the cuff at the level of the vocal cords, (b) pausing the ventilator again while removing the dilator from the trachea, and 3) for covering the tracheal puncture site with gauze. In our opinion, changing catheter mount for bronchoscopy, repositioning ETT cuff to the level of the vocal cords, and removal of large rhino dilator were three steps associated with an increased risk of aerosol generation. In the modified

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procedure proposed by our team, only the exchanging of the ETT with a smaller one might increase the risk of aerosol generation”. However, there is once again no evidence of one technique being better than the other from any point of view as per your sentence “in our opinion”. Indeed, two of the major contributors to our series performed the each of the above described techniques. Since no randomisation was applied when deciding what technique was being performed, we did not consider that comparing them was contributing the current body of evidence.

No data about duration of hypoxia (present in 5.2% of ST) were available; however, this was more frequent among the ST group. In addition, as mentioned by yourself and our manuscript, “the ST group showed a decrease in peri-operative PaO₂/FiO₂ ratio, whereas the PDT group showed an increase, with trend towards significance, warranting further investigation. PaO₂/FiO₂ ratio is commonly used as a marker of oxygenation, and there are a number of reasons why oxygenation might deteriorate during ST. The vast majority of patients undergoing ST were transferred from the ICU to the operating theatre on a portable ventilator, which in itself can destabilise patients with difficult oxygenation. Multiple ventilator-patient disconnections are usually required when patients are transferred from the ICU to the operating room, and although this was avoided where possible in COVID-19 patients to minimise to the risk of aerosolization, this may have led to alveolar de-recruitment. ST usually takes longer than PDT and prolonged supine positioning on the operating table may de-recruit vulnerable alveoli in COVID-19 pneumonitis. Numbers are too small to make any definitive conclusions, and the clinical significance of these findings is questionable”. From the COVIDtrach letter published in the British Journal of Surgery [6] and its preprint available on-line [7], hypoxia was also the most common intraoperative complication in a cohort of 1605 tracheostomies performed on COVID patient from 126 hospitals in the UK. For further explanation of some of the cases included in our cohort, the article published by Yeung et al. [8], provides a further detailed explanation.

We do not doubt that performing bedside ST is safe in normal circumstances and accordingly, this was performed when possible. However, due to the changes implemented to be able to manage the surge, normal wards were converted into ICU and less space was available in normal ICU units. Finally, we do not believe that the statement “COVID-19

patients underwent ST showed slightly higher mortality compared with PDT” is scientifically sound (13.7% vs 15.6% p:0.84) and do not believe that any comment is necessary in that respect.

We are very clear in our article when describing the type of work and the objectives and conclusions from it: this is a large retrospective multicentre analysis that helps to plan future resource utilization by showing no obvious differences between the two techniques in COVID-19 patients.

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