

Discussion

I congratulate the authors for successfully performing endoluminal repair of a 5 cm membranous wall tear of the trachea due to tracheostomy procedure. It is certainly not an easy task!

Dr. Hon Chi Suen (Hong Kong, China): Was there much tension when you pulled the two edges together?

Answer: Thank you very much Dr. Suen for your valuable comments and important questions.

Indeed, there is some tension on the suture especially the edges are retracted and the tissue is already shrinking. Because we apply a running suture, I think the tension is equally distributed to 7 or 8 stiches.

Dr. Suen: Could you show pictures of the final product immediately after repair and some time later?

Answer: The end result was controlled at POD 1 and is depicted in *Figure 2*. Unfortunately, I have no better photographs as all other flexible bronchoscopies were performed on the ICU without taking photos. Taking all written assessments into account, no dehiscence was noted at follow-up.

Dr. Suen: Would you consider putting the patient on ECMO during the period for the repair only because that can avoid jet ventilation and the risk of spreading the virus?

Answer: Putting the patient on ECMO would be a possible way to avoid virus spread. But I would not because endoluminal repair is indicated to offer the least invasiveness and avoid additional operative access. ECMO is always associated with a certain bleeding tendency which would impair clarity of the operative field and would distribute more blood into distal airways. Furthermore COVID-19 patients on ECMO, as far as I know, do survive in less than 50%. It is unclear, if weaning from ECMO in this patient would be possible immediately after the procedure.

Dr. Suen: Finally and maybe the most important question is: what advice would you give to prevent tracheal membranous wall tear during tracheostomy or intubation?

Answer: This question is most important. At first, I want to point out, that tracheostomy in COVID-19 patients are demanding procedures that should be performed from experienced specialists only. Secondly the selection of the cannula should be individualized to anatomical circumstances and its introduction into the tracheal lumen should be under direct vision and not be covered from fat or blood clots. No extra force should be used to move the cannula forward in case of local resistance. This are all simple basics, but they are important to mention when the patients SaO₂ goes down quickly in apnoe and the surgeon is pressed for time.