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A case of Covid-19 associated laryngeal synechia as a cause for failed tracheostomy decannulation

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ABSTRACT

Post intubation laryngeal injuries are seen relatively commonly in the Intensive Care Unit (ICU) setting.

The most common intubation associated laryngeal injuries are characterised by vocal cord oedema, mucosal ulceration, laryngeal granulomas and vocal cord paralysis. Laryngeal stenosis is seen much less commonly and generally presents with posterior adhesions from prolonged intubation or anterior webbing from instrumentation.

The finding of adhesions between the vocal cords at the middle third of the glottis without anterior or posterior adhesions and in the absence of previous laryngeal surgery is rare. The authors present a case of a patient with Covid-19 (SARS-CoV-2) who was discovered to have this finding following admission to the Intensive Care Unit for ventilation, tracheostomy for weaning and subsequent failure to decannulate.

The patient underwent a microlaryngoscopy and frank adhesions between the middle third of the vocal cords were noted. The authors feel that the mucosal inflammatory component associated with Covid-19 was a significant contributing factor in this clinical finding.

Following successful divisions of the adhesions, the patient made a full recovery.

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1. Introduction

Post intubation laryngeal injuries are seen relatively commonly in the Intensive Care Unit (ICU) setting. One prospective study of 100 patients identified laryngeal injury following extubation in 57% [1].

The most common intubation associated laryngeal injuries are characterised by vocal cord oedema, mucosal ulceration, laryngeal granulomas and vocal cord paralysis [2].

Laryngeal stenosis is seen much less commonly following intubation. A prospective study of 200 patients found the rate to be 6% following long term intubation [3]. The risk is recognised to increase with the length of time that the patient is intubated [4]. The process is thought to be due to endotracheal tube pressure on the posterior larynx leading to mucosal ulceration and scarring. This explains why post intubation laryngeal stenosis is commonly seen at the posterior commissure.

Conversely, anterior vocal cord adhesions (anterior glottic webs) are most commonly found as a result of surgical trauma to the

larynx during microlaryngoscopy for biopsies, debridement of papillomata phonosurgery [5] or laser surgery [6].

The finding of adhesions between the vocal cords at the middle third of the glottis without anterior or posterior adhesions and in the absence of previous laryngeal surgery has not, to the authors' knowledge, been previously described. The authors present a case of a patient with Covid-19 (SARS-CoV-2) who was discovered to have this finding following admission to Intensive Care for ventilation, tracheostomy for weaning and subsequent failure to decannulate.

2. Case report

A 62 year old lady with Trisomy 21 was admitted to a South Wales District General Hospital in April 2020 with symptoms of Covid-19. She was managed on a ward-based setting for three days but after clinical deterioration, was admitted to ICU for intubation and ventilation. At the time of intubation, she was found to have an unremarkable larynx and was considered to have a grade 1 laryngoscopy view.

The patient was intubated for 14 days and after failing extubation due to respiratory failure, was re-intubated, with no abnormal

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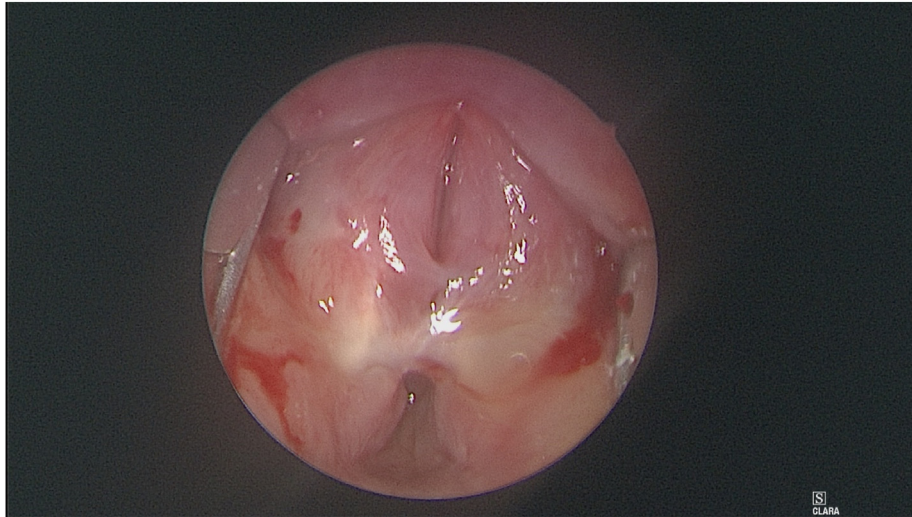


Fig. 1. Intraoperative laryngoscopy view prior to division of adhesions.

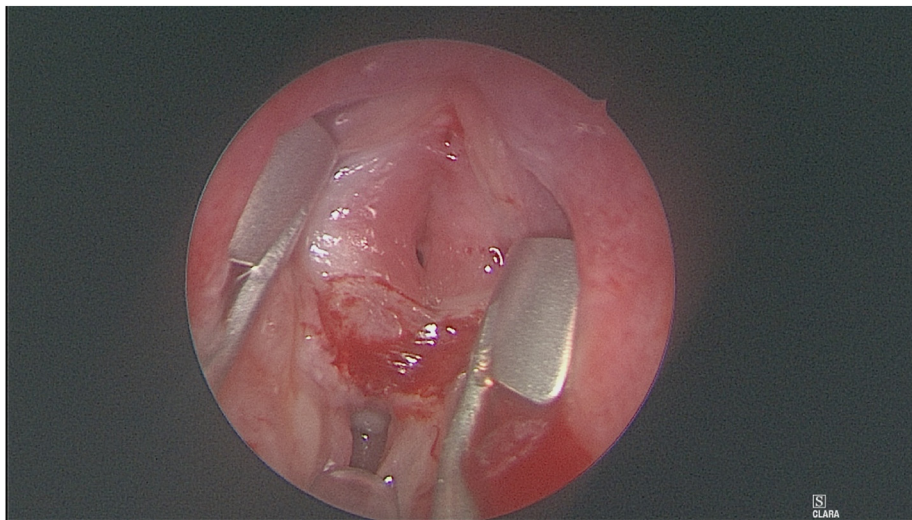


Fig. 2. Intraoperative laryngoscopy view with vocal cord spreader forceps placed into laryngeal ventricle.

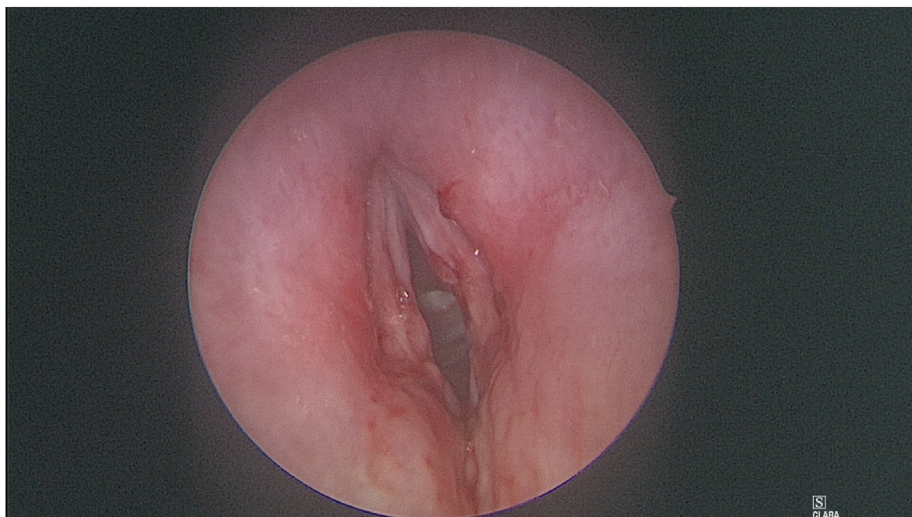


Fig. 3. Intraoperative laryngoscopy view following division of adhesions.

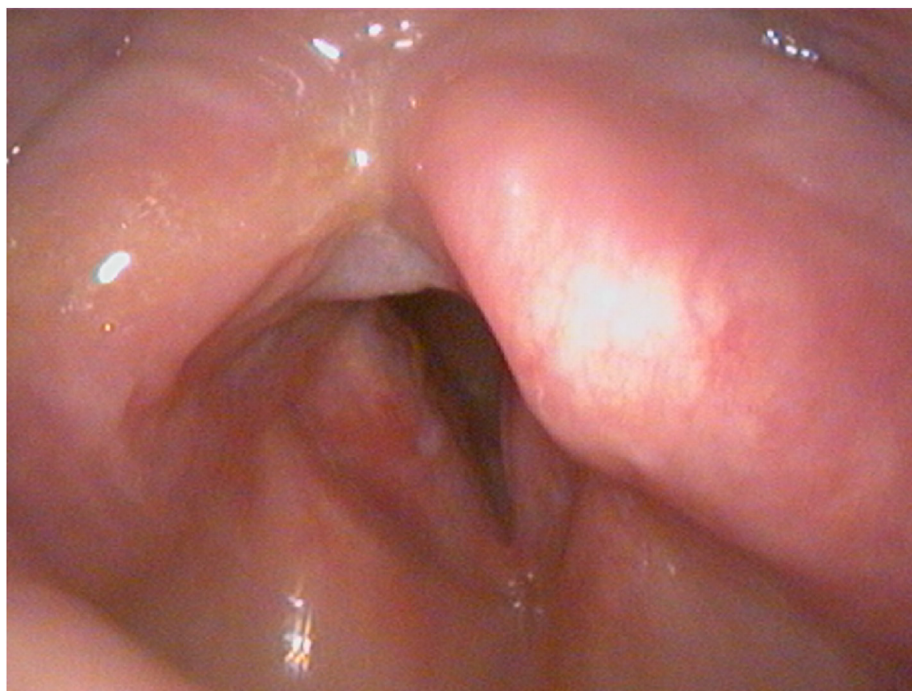


Fig. 4. Flexible nasendoscopy view one week postoperatively.

findings noted and subsequently underwent surgical tracheostomy for weaning. A Size 8, cuffed, adjustable flange tube was inserted.

The patient was successfully weaned off mechanical ventilation and after one week, the tracheostomy decannulation process was attempted. The patient's tube was changed to a size 7 non-cuffed, fenestrated tube. Following this, the patient was unable to vocalise.

Flexible nasendoscopy was performed in the clinic setting, which identified bilateral, immobile vocal cords with the unusual finding of synechia between the middle thirds of both vocal cords (Fig. 1).

The patient proceeded to undergo microlaryngoscopy under general anaesthetic. It was noted intraoperatively that there was space to pass a probe anterior and posterior to the web.

The web was successfully divided with microscissors under tension supplied by a vocal cord spreader forceps (Figs. 2 and 3).

One week following the procedure, repeat flexible nasendoscopy revealed no evidence of recurrent adhesions and normal vocal cord movement and voice (Fig. 4). The patient was successfully decannulated.

3. Discussion

Whilst the authors recognise that vocal cord adhesions/webs are not an uncommon finding following airway instrumentation, the synechia are commonly found either posteriorly (in cases of prolonged intubation) or anteriorly (following surgery or trauma). This case of middle third glottic adhesions without anterior or posterior glottic involvement which developed over a short time frame (under two weeks) in association with Covid-19 infection is a highly unusual one. The authors suggest that the significant respiratory mucosal inflammation associated with Covid-19 [7] is likely to be a strong contributing factor towards this clinical picture.

4. Conclusion

At the time of writing, there is still much to be understood about

the medium and long-term complications of Covid-19 infection. Whilst this may be a relatively unique case, the authors suggest that the possibility of laryngeal synechia should be considered in patients with Covid-19 who have either failed extubation or tracheostomy decannulation. In this case, early direct laryngeal visualisation and intervention has led to a positive outcome.

Declarations of competing interest

None to declare. No financial interests to declare. No funding to declare.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.tacc.2020.07.008>.

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