

Multimedia

Tracheostomy obstruction refractory to conventional management strategies

D. Stangoe,¹ K. Nikolaou² and J. Townsend³

1 Registrar, 3 Consultant, Department of Anaesthesia, Kings College Hospital, London, UK

2 Physiotherapist, Department of Physiotherapy, Walsall Manor Hospital, Walsall, UK

Correspondence to: D. Stangoe

Email: douglas.stangoe@nhs.net

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A 64-year-old woman recovering from COVID-19 pneumonitis was undergoing weaning of respiratory support on the intensive care unit with a tracheostomy, tracheostomy mask and with the tracheostomy tube cuff down. She developed acute respiratory distress and her oxygen requirements escalated quickly to an F_{iO_2} of 1.0. The inner tube was withdrawn, oxygen applied, and a suction catheter repeatedly passed with ease through the tracheostomy in accordance with established tracheostomy emergency management guidance [1]. Manual ventilatory support via both tracheostomy and the upper airway was ineffective



Figure 1 Obstructing secretory mass adherent to the distal end of the tracheostomy tube following decannulation.

on account of minimal compliance, and her peripheral oxygenation saturations steadily worsened to 60%. Ora-tracheal intubation was expeditiously undertaken whereupon oxygenation saturations immediately recovered. The tracheostomy tube had a secretory mass adherent to it which underwent dynamic 'ball-valve' obstruction upon continued passage of a catheter (Fig 1, Video 1).

Ball-valve obstruction tends to result in partial obstruction with pulmonary haemorrhage leading to hyperinflation and tension effects [2–4]. Its occurrence has been reported previously, albeit rarely [2, 3], and ours is not the only case of failure to resolve with passage of a catheter as advocated in established multidisciplinary guidance [1]. However, to our knowledge, this is the only report of a catheter causing displacement and replacement of the obstruction directly, rather than resolution of airflow.

This case demonstrates that algorithms may not account for every possible scenario. Had tracheostomy obstruction been excluded on account of successful catheter passage as the aforementioned guideline suggests, the patient may have gone into cardiac arrest. Trans-tracheostomy bronchoscopy would have revealed the diagnosis and we would thus advocate this, rather than sole reliance on catheter passage to exclude obstruction.

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Video S1. Ongoing Ball Valve obstruction after decannulation demonstrating the nature of the inability to dislodge the secretory mass with the passage of a catheter as advocated by the emergency management algorithm.