

## An Unusual Cause of Double-Lumen Tube Obstruction in Mechanically Ventilated Patient

To the Editor,

Intraoperative airway obstruction is not an uncommon life-threatening emergency. Literature reveals a handful of case reports pointing out crucial respiratory catastrophic events in patients ventilated by double-lumen tube (DLT).<sup>[1]</sup> Most cases of blockage are detected due to vigilant monitoring; however, inadvertent blockage of the DLT during controlled ventilation may even go unnoticed. We encountered an unexpected incident of soft tissue obstructing the bronchial lumen of DLT intraoperatively during one lung ventilation (OLV) in right lateral decubitus position.

A 19-year-old girl weighing 56 kg with unknown comorbidities presented as a case of left lung primary/spontaneous pneumothorax refractory to intercostal drainage. Fiberoptic bronchoscopy a day prior to surgery revealed collapse of lingular segment of the left upper lobe, multiple unruptured bullae bilateral lung and an incidental finding of cul-de-sac of right upper lobe. In view of the refractory left pneumothorax patient was posted for left lingulectomy. After the induction of anesthesia with propofol 120 mg, fentanyl 100 µg and rocuronium 40 mg, a 37F Right DLT was introduced into the trachea. No unusual resistance was encountered during placement of the DLT. The patient was maintained on oxygen, nitrous oxide and sevoflurane in appropriate concentrations. She was put on volume controlled ventilation with tidal volume (TV) of 400 ml maintaining peak airway pressures of 12-15 cm H<sub>2</sub>O. OLV was confirmed by first blocking the tracheal lumen and then blocking the bronchial lumen. Subsequently right subclavian vein and right radial artery were cannulated. The surgery went on without any adverse events until the removal of the lingula after which a leak test was performed by giving high positive pressure ventilation by a rebreathing bag. A leak test came out to be negative but patient's TV reduced to 150-180 ml with peak airway pressures going up till 50 cm H<sub>2</sub>O. Patient oxygen saturation comes down to 87%-90%. The position of DLT was confirmed and it was noticed that the patient's right lung is not getting ventilated when bronchial lumen of the DLT was occluded. Inability to pass a suction catheter beyond the tip of the bronchial lumen of DLT suggested tube obstruction. The DLT was withdrawn and the trachea was immediately intubated with the endotracheal tube with

internal diameter of 7.5 mm, fixed at 22 cm, after which TV again improved to around 450-460 ml with peak airway pressures returning to 15-16 cm H<sub>2</sub>O. On examining the removed DLT, it was noticed that the tip along with the Murphy's eye of the bronchial lumen was entirely blocked by red-coloured soft tissue [Figure 1].

The placement and use of DLT for mechanical ventilation can cause array of acute or late complications. Acute complications include kinking, tube migration, haemorrhage, tube obstruction and accidental extubation. The recommended maneuver of suspected obstruction includes passing a suction catheter through the tube and performing fiberoptic bronchoscopic examination.<sup>[2]</sup> But in our case, in view of emergency life-threatening situation the only available option was to replace the DLT. However, the most common cause of compromise of ventilation by DLT is its malposition. Fiberoptic bronchoscopy to confirm tube placement after positioning is essential.<sup>[2]</sup> The probable explanation to the complication we encountered is that because of the presence of a cul-de-sac right upper lobe, which was an incidental finding of fiberoptic bronchoscopy, the high positive pressure ventilation given to perform a leak test made the soft tissue from the cul-de-sac to be sucked into the bronchial lumen of the DLT blocking the tip and the Murphy's eye. We conclude that soft tissue obstruction can be the cause of obstruction and if there is such a situation then the DLT should be replaced rapidly for oxygenation and ventilation and ensuring that all the necessary equipment



**Figure 1:** DLT showing a soft tissue mass

for difficult intubation should be kept ready to mitigate any unanticipated difficulty in an apparently normal airway.

**Submitted:** 08-Feb-2019 **Revised:** 20-May-2019  
**Accepted:** 23-May-2019 **Published:** 19-Apr-2021

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

Ankur Gupta, Shalendra Singh,  
Ankur Khandelwal<sup>1</sup>, Saurabh Sud<sup>2</sup>

Department of Anaesthesiology and Critical Care, Armed Forces Medical College, <sup>2</sup>Department of Anaesthesia and Critical Care, Command Hospital (Southern Command), Pune, Maharashtra, <sup>1</sup>Department of Neuroanaesthesia, AIIMS, Delhi, India

**Address for correspondence:** Dr. Shalendra Singh,  
Department of Anaesthesiology and Critical Care, Armed Forces Medical College, Pune - 411 040, Maharashtra, India.  
E-mail: drsinghafmc@gmail.com

### REFERENCES

1. Taguchi H, Yamada K, Matsumoto H, Kato A, Imanishi T, Shingu K. Airway troubles related to the double-lumen endobronchial tube in thoracic surgery. *J Anesth* 1997;11:173-8.
2. Hilal S, Ugur G, Ali A, Cilsem SD, Ozlem G, Eser S. Comparison of two different right-sided double-lumen tubes with different designs. *Turk J Med Sci* 2012;42:1063-9.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

| Access this article online   |                                      |
|--|--------------------------------------|
| <b>Quick Response Code:</b>  | <b>Website:</b><br>www.annals.in     |
|  | <b>DOI:</b><br>10.4103/aca.ACA_22_19 |

**How to cite this article:** Gupta A, Singh S, Khandelwal A, Sud S. An unusual cause of double-lumen tube obstruction in mechanically ventilated patient. *Ann Card Anaesth* 2021;24:275-6.

© 2021 Annals of Cardiac Anaesthesia | Published by Wolters Kluwer - Medknow