Letters to Editor

Use of bronchial blocker to facilitate left double-lumen tube placement

Sir,

A 46-year-old, 166 cm tall female with coronary artery disease was posted for coronary artery bypass grafting (CABG) through left thoracotomy. After anesthesia induction, 37F left double-lumen tube (DLT) (BronchoCath, Mallinckrodt, USA) was placed under direct laryngoscopy. On auscultation, there was absence of air entry on the right side when bronchial lumen was clamped and with audible breath sounds on left side suggesting the placement of bronchial lumen
Letters to Editor

of left DLT in the right bronchus which was confirmed with bronchoscope. An attempt to place the DLT under bronchoscopic guidance was not successful as the left bronchial tip slid into right bronchus when rail-roading the DLT. The DLT was withdrawn completely and a bronchial blocker (BB) was passed into the tracheal lumen of the DLT until its tip was just seen protruding through the tracheal lumen. This combination of left DLT and BB was inserted under direct laryngoscopy. After the bronchial cuff passed through the glottis, the DLT was rotated 90° counterclockwise and advanced. At the point when tracheal cuff crossed the vocal cords, the BB was advanced by 1 cm and inflated with 3 ml of air. Then the DLT with BB inflated was inserted to a depth of 29 cm [Figure 1]. Finally, the BB was deflated and removed. The tracheal and bronchial cuff of the DLT were inflated and connected to the ventilator circuit. Chest auscultation revealed correct placement of left DLT and was further confirmed with bronchoscope. Lung isolation was adequate and the patient underwent uneventful CABG. At the conclusion of surgery, DLT was exchanged with standard endotracheal tube and the patient was shifted to intensive care unit for further management. A backup plan for the above described technique is to replace the DLT with single-lumen endotracheal tube and to place the BB under bronchoscopic guidance into the left bronchus.

Left-sided DLTs have greater margin of safety for correct positioning because the left main bronchus is longer than right main bronchus.\(^1\) The placement of left DLT usually consists of rotation of the DLT by 90° to the left once the bronchial cuff passes the glottis and is then advanced blindly into the left bronchus.\(^2\) With blind technique, the DLT may be misdirected into the right bronchus because the right bronchus is wider and has less angulation with trachea compared to left bronchus.\(^3\) Misplacement into right bronchus inhibits ventilation/deflation of right upper lobe and can worsen oxygenation during one-lung ventilation.\(^4\) Also, the repeated action of re-positioning the misplaced tube can inflict tracheo-bronchial injuries. Several techniques have been described to facilitate first pass successful placement of left DLT. Seo et al.\(^5\) suggested augmentation of curved tip of left DLT to reduce right bronchial misplacement. However, it is generally not preferred to modify an airway device in a way different from the original manufacturer’s version and there may be difficulty in removal of stylet with the left bronchial lumen excessively angulated. Fibreoptic (FOB) guided placement of left DLT to reduce misplacement has been described.\(^6\) However, the disadvantages are that it requires considerable technical expertise and small calibre FOBs are too fragile to guide DLTs with risk of damage to FOB during manipulation.

In our technique, the inflated cuff of the BB facilitated placement of the bronchial lumen of left DLT in the left bronchus by acting as a scaffold. There are certain limitations to our technique. There may be resistance during passage of DLT after bronchial cuff inflation which can be resolved by reducing the volume of air in the BB cuff. Secondly, there is risk of BB cuff rupture and mucosal/carinal injury. Finally, FOB is required to confirm the optimal placement of DLT. Before embarking on this technique, the cost-benefit analysis needs to be considered. To conclude, the combined use of BB and DLT as a rescue technique to prevent misdirection of bronchial lumen of left DLT into the right bronchus may be an option in certain cases.

**Ethical approval**

Written informed consent was obtained from the patient for publication.

**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.
Letters to Editor

Conflicts of interest
There are no conflicts of interest.

GN Chennakeshavallu, S Sruthi
Division of Cardiothoracic and Vascular Anaesthesia, Meenakshi Multi Speciality Hospital, Tanjore, Tamil Nadu, India

Address for correspondence:
Dr. G N Chennakeshavallu,
Division of Cardiothoracic and Vascular Anaesthesia, Meenakshi Multi Speciality Hospital, Tanjore, Tamil Nadu - 613 005, India.
E-mail: chenna.31187@gmail.com

Submitted: 16-Aug-2020
Revised: 21-Sep-2020
Accepted: 06-Oct-2020
Published: 13-Mar-2021

REFERENCES

1. Benumof JL, Partridge BL, Salvatierra C, Keating J. Margin of safety in positioning modern double-lumen endotracheal tubes. Anesthesiology 1987;67:729-38.
2. Purohit A, Bhargava S, Mangal V, Parashar VK. Lung isolation, one-lung ventilation and hypoxaemia during lung isolation. Indian J Anaesth 2015;59:606-17.
3. Hampton T, Armstrong S, Russell WJ. Estimating the diameter of the left bronchus. Anaesth Intensive Care 2000;28:540-2.
4. Brodsky JB, Lemmens HJ. Left double-lumen tubes: Clinical experience with 1,170 patients. J Cardiothorac Vasc Anesth 2003;17:289-98.
5. Seo JH, Yoon S, Min SH, Row HS, Bahk JH. Augmentation of curved tip of left-sided double-lumen tubes to reduce right bronchial misplacement: A randomized controlled trial. PLoS One 2019;14:e0210711.
6. Ryu T, Kim E, Kim JH, Woo SJ, Roh WS, Byun SH. Comparing the placement of a left-sided double-lumen tube via fiberoptic bronchoscopy guidance versus conventional intubation using a Macintosh laryngoscope, to reduce the incidence of malpositioning: study protocol for a randomized controlled pilot trial. Trials 2019;20:51.

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.

How to cite this article: Chennakeshavallu GN, Sruthi S. Use of bronchial blocker to facilitate left double-lumen tube placement. Indian J Anaesth 2021;65:263-5.

© 2021 Indian Journal of Anaesthesia | Published by Wolters Kluwer - Medknow