

# Algorithms for successful repositioning of misplaced left-sided double-lumen tube inserted during lung/thoracic surgery

Sir,

Insertion of double-lumen tubes (DLTs) (Mallinckrodt) is challenging and is carried out in lung, chest wall, mediastinal, and spine surgeries. DLTs are generally inserted for lung isolation and one lung ventilation in thoracic surgery.<sup>[1]</sup> It is particularly employed for lung cancer surgeries (pneumonectomies). The indications for insertion of left- and right-sided DLTs are distinct and defined. There have been several instances of misplacement<sup>[2]</sup> of DLT during various stages of thoracic anesthesia. An experienced thoracic anesthesiologist is recommended for successful repositioning of a misplaced DLT. Left-sided DLTs are more commonly placed due to their greater safety margin<sup>[3]</sup> as compared to right-sided DLTs. Left-sided DLT can sometimes wrongly enter the right bronchus during placement. Confirmation of its position and tube readjustment is a risky procedure, which must be done under the guidance of a fiber-optic bronchoscope.<sup>[4]</sup> We hereby present a set of four algorithms for repositioning of a left-sided DLT accidentally misplaced into the right main bronchus. The supplemental use of a direct laryngoscope in addition to fiber-optic bronchoscope during tube readjustment is also highlighted. An experienced thoracic anesthesiologist supported by a second anesthesiologist is recommended for a successful outcome.<sup>[5]</sup> Care should be taken to ensure adequate patient oxygenation and hemodynamic stability during the repositioning. There is risk of loss of airway, hypoxia, bronchospasm, rupture of DLT cuff, airway trauma, and even dislodgement of fragile cancerous tissue during repositioning.<sup>[6]</sup> These algorithms may prove helpful in the training of anesthesia residents in thoracic anesthesia. Step-wise following of these four algorithms can ensure a safe and successful tube repositioning, with improved outcomes in all thoracic surgeries, including lung resections [Figures 1-4].

### Financial support and sponsorship

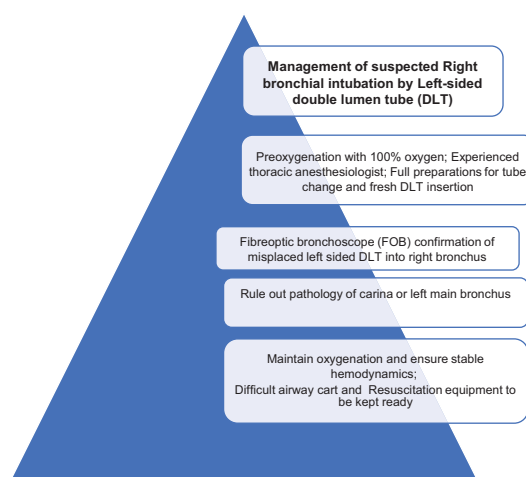
Nil.

### Conflicts of interest

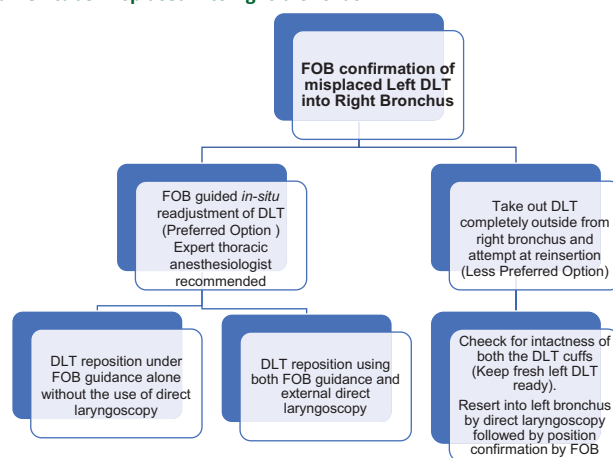
There are no conflicts of interest.

**UMA HARIHARAN, SHAGUN B. SHAH<sup>1</sup>,  
AJAY KUMAR BHARGAVA<sup>1</sup>**

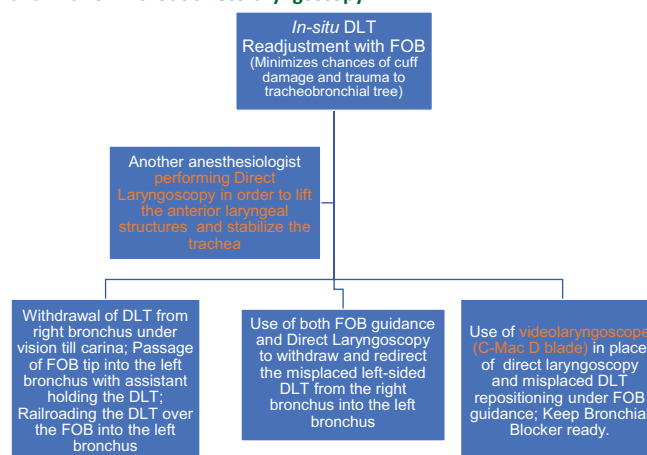
Department of Anesthesiology and Intensive Care, Dr. Ram



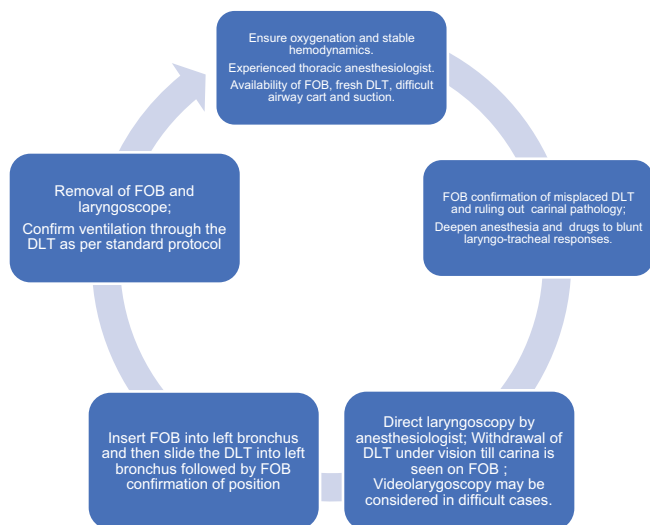
**Figure 1: Pyramidal algorithm for preparations to manage left-sided double-lumen tube misplaced into right bronchus**



**Figure 2: Flow chart algorithm citing options for readjustment or reinsertion of misplaced double-lumen tube using fiber-optic bronchoscope guidance and with or without direct laryngoscopy**



**Figure 3: Flow chart algorithm highlighting double-lumen tube railroading technique over fiber-optic bronchoscope and use of direct or video-laryngoscopy for misplaced double-lumen tube repositioning**



**Figure 4: Flowchart algorithm suggesting use of both direct laryngoscope and fiber-optic bronchoscope guidance in misplaced double-lumen tube readjustment and position confirmation**

Manohar Lohia Hospital and Post Graduate Institute of Medical Education and Research, Central Health Services, <sup>1</sup>Rajiv Gandhi Cancer Institute and Research Center, New Delhi, India

**Address for correspondence:**

Dr. Uma Hariharan,  
Fellowship Oncoanesthesia & Advanced Regional Anesthesia,  
Dr. Ram Manohar Lohia Hospital and Post Graduate Institute of Medical Education and Research, Central Health Services, BH 41, East Shalimar Bagh, New Delhi - 110 088, India.  
E-mail: uma1708@gmail.com

**References**

1. Campos JH. Current techniques for perioperative lung isolation in adults. *Anesthesiology* 2002;97:1295-301.
2. Seo JH, Bae JY, Kim HJ, Hong DM, Jeon Y, Bahk JH, *et al.* Misplacement of left-sided double-lumen tubes into the right mainstem

bronchus: Incidence, risk factors and blind repositioning techniques. *BMC Anesthesiol* 2015;15:157.

3. Brodsky JB, Lemmens HJ. Left double-lumen tubes: Clinical experience with 1,170 patients. *J Cardiothorac Vasc Anesth* 2003;17:289-98.
4. Klein U, Karzai W, Bloos F, Wohlfarth M, Gottschall R, Fritz H, *et al.* Role of fiberoptic bronchoscopy in conjunction with the use of double-lumen tubes for thoracic anesthesia: A prospective study. *Anesthesiology* 1998;88:346-50.
5. Campos JH, Hallam EA, Van Natta T, Kernstine KH. Devices for lung isolation used by anesthesiologists with limited thoracic experience: Comparison of double-lumen endotracheal tube, univent torque control blocker, and arndt wire-guided endobronchial blocker. *Anesthesiology* 2006;104:261-6.
6. Knoll H, Ziegeler S, Schreiber JU, Buchinger H, Bialas P, Semyonov K, *et al.* Airway injuries after one-lung ventilation: A comparison between double-lumen tube and endobronchial blocker: A randomized, prospective, controlled trial. *Anesthesiology* 2006;105:471-7.

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

Access this article online	
<b>Website:</b> www.saudija.org	<b>Quick Response Code</b> 
<b>DOI:</b> 10.4103/sja.SJA_629_17	

**How to cite this article:** Hariharan U, Shah SB, Bhargava AK. Algorithms for successful repositioning of misplaced left-sided double-lumen tube inserted during lung/thoracic surgery. *Saudi J Anaesth* 2018;12:359-60.

© 2018 Saudi Journal of Anesthesia | Published by Wolters Kluwer - Medknow