Successful placement of double lumen endotracheal tube using fluoroscopy

Sir,

Fluoroscopy is increasingly available in operating rooms. There are reports of fluoroscopy use for intubating the trachea in patients with difficult airway,[1] positioning an endobronchial blocker,[2] anterograde intubation[3] and endobronchial placement of a single-lumen endotracheal tube in a children.[4] We used fluoroscopy to successfully position a double-lumen tube (DLT) in the left main stem bronchus after failed attempts with standard technique using direct laryngoscopy and flexible bronchoscopy.

A 65-year-old man with carcinoma lung presented with a two-week history of hemoptysis and was scheduled for embolization of the culprit vessel, by interventional radiology, under general anesthesia. A preoperative computerized tomography scan showed that the endobronchial stent traversing the distal bronchus-intermedius and right lower lobe bronchus had debris and was plugged causing partial collapse of the right middle and lower lobes. Extensive radiation fibrosis in the right hilum and medial upper lung zone was also noted with right-sided tracheal deviation.

Standard monitoring was initiated. A radial arterial catheter was placed and general anesthesia was induced. A left-sided 37 Fr Mallinckrodt double lumen endotracheal tube using standard technique with direct laryngoscopy was placed.[5] Fiberoptic bronchoscopy showed right mainstem intubation and so repositioning the tube was attempted using flexible bronchoscopy. Visualization was poor due to bloody secretions, although frank bleeding was not seen. On visualization of the carina, the fiberoptic scope was passed into the left mainstem bronchus, which appeared to be stenotic. We were unable to slide the tip of the DLT into the left main bronchus despite using various rotational maneuvers.

Fluoroscopy was used to visualize the location of the DLT, which was in the right main stem bronchus [Figure 1]. Under fluoroscopic guidance, we were able to perform the rotational maneuvres and slide the DLT gently into the left mainstem bronchus. These maneuvers would have been difficult or impossible without real-time visual guidance.

Fluoroscopy may prove to be an invaluable tool, when insertion is difficult through a flexible bronchoscope because of hemoptysis, bronchial deviation and scarring. The use of fluoroscopy was simple and efficient in this situation. Cohen *et al.*[4] found that after a limited amount of instruction, trainees were able to master

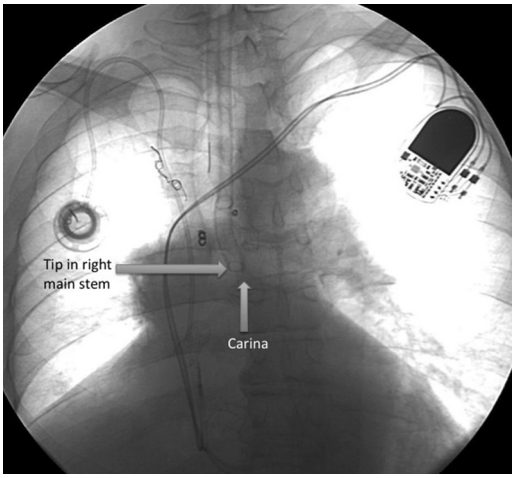

Figure 1: Fluoroscopic frontal image of the chest shows marked right hilar fibrosis, right sided tracheal deviation and the double lumen tube in the right main stem bronchus (arrow)

the fluoroscopic technique for endobronchial intubation with a single lumen endotracheal tube quickly in infants. Fluoroscopic guidance allows manipulation of the DLT tip under direct visual control and observation of the DLT tip from various angles. Gentle handling should be used, while advancing the DLT, to prevent injury to the bronchial tree. Studies are recommended to determine the efficacy of the technique and evaluate the risks such as injury to the bronchus.

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References

1. Innocente F, Ori C, Giron GP. Tracheal intubation under fluoroscopic control. X ray-guided orotracheal intubation in three cases of impossible direct laryngoscopy. Anaesthesia 1990;45:675-7.
2. Marciniak B, Fayoux P, Hebrard A, Engelhardt T, Weinachter C, Horber RK. Fluoroscopic guidance of arndt endobronchial blocker placement for single-lung ventilation in small children. Acta Anaesthesiol Scand 2008;52:1003-5.
3. Ivashkova Y, Zylak CM. Anterograde endotracheal intubation with fluoroscopic guidance. Anesth Analg 2006;103:489-90.
4. Cohen DE, McCloskey JJ, Motas D, Archer J, Flake AW. Fluoroscopic-assisted endobronchial intubation for single-lung ventilation in infants. Paediatr Anaesth 2011;21:681-4.
5. Neustein SM, Eisenkraft JB, Cohen E, Rocco G, Internullo E, Cassivi SD, *et al*. Anesthesia for thoracic surgery. In: Barash PG, editor. Clinical Anesthesia. Philadelphia: Lippincott Williams and Wilkins; 2009. p. 1032-72.

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Quick Response Code:	Website: www.joacp.org
	DOI: 10.4103/0970-9185.105828