

Should a fiberoptic bronchoscope be used to confirm double lumen tube placement?

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PROCEDURE

The authors commonly use PVC BronchoCath double lumen tubes (DLTs) (Mallinckrodt Medical Inc., St. Louis, MO, USA). The DLT is introduced through the vocal cords after appropriate sizing, the stylet removed, the DLT rotated anti-clockwise and advanced down the airway. The airway is secured by inflating the tracheal cuff. The patient is ventilated with a volume of 8 ml/kg, the chest auscultated and peak airway pressure recorded. To isolate a lung the bronchial cuff is inflated with <3 ml of air until there is no audible leak. The connector on the redundant side is clamped, the limb is opened to air and ventilation occurs via the appropriate lumen.

Before lung isolation is clinically confirmed the ability to ventilate with the same tidal volume but <50% increase in airway pressure, no leak from the system and obvious auscultatory differences in breath sounds throughout the lung fields is noted. If any of these are inconclusive a fiberoptic bronchoscope (FOB) is used to check the DLT's position. The FOB is passed down the tracheal lumen to check there is a clear view of the carina and that the bronchial cuff (often coloured blue) is visible but not herniating over the carina. The FOB is then passed down the endobronchial limb, ensuring that the upper lobe is not obstructed, the tube is not in too far, the bronchial lumen is not obstructed by overinflation of the bronchial cuff and

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the tube is not abutting the wall of the bronchus (Gothard and Kelleher, 1999).

THOSE IN FAVOUR

Pennefather and Russell (2000) argued for the routine use of FOBs. They cited the criticisms from the National Confidential Enquiry into Perioperative Deaths Report for 1996/7 highlighting the high mortality from oesophagectomies. It commented that 30% of deaths reported in oesophagectomies had problems with the DLT. No anaesthetist reported using a FOB during DLT placement. The majority of these deaths were caused by postoperative pneumonia and had been complicated by intraoperative hypoxia.

Pennefather and Russell quote papers showing that between 39 and 83% of blindly placed DLTs need repositioning after FOB. They also argue that FOB is exceptionally useful when anatomical variations and pathological distortions require swift, precise placement. The authors concluded that 'a fiberoptic bronchoscope should be used to place accurately a DLT in all patients'.

THOSE AGAINST

Not all practitioners share this point of view. Brodsky and Lemmens (2003) commented on their experience with 1170 consecutive patients. They contest the high number of DLTs that need repositioning, arguing that 'these studies consider a tube to be malpositioned if it is not in the ideal position (i.e. if the proximal edge of the bronchial cuff is not immediately below the carina).' They argue that what is needed is a satisfactory, not an ideal, position.

They report a 6.2% rate of unsatisfactory positioning using a method similar to our own. They also maintain

that: 'when an FOB was used, the incidence of [overall] problems was actually slightly higher' – 13 against 21% of cases reported some complication either minor (e.g. oral trauma) or major (e.g. hypoxaemia). In their series Brodsky and Lemmens report a 1% rate of arterial desaturation below 90%. None of these cases resulted in serious complications and were managed by simple manoeuvres of increasing tidal volume and suctioning. Brodsky and Lemmens do not contest the need for FOB when absolute lung isolation is needed and when breath sounds are too distant.

FOB is not without complications and limitations. The position of a DLT can change at any time and introduction of infection may occur. The FOB is not practical with pulmonary haemorrhage or in a thoracic emergency.

CONCLUSIONS

FOB is a useful confirmatory adjunct but, as summed up by Brodsky and Lemmens (2003), 'on a busy thoracic surgical service, for the majority of their cases [one may] use auscultation and clinical signs alone. For the many anaesthesiologists who occasionally use a DLT...FOB should be used.' **HM**

Brodsky JB, Lemmens JM (2003) Left double-lumen tubes: clinical experience with 1,170 patients. *J Cardiothorac Vasc Anaesth* **17**: 289–98

Gothard J, Kelleher A (1999) *Essentials of Cardiac and Thoracic Anaesthesia*. Butterworth-Heinemann, London: 124

Pennefather SH, Russell GN (2000) Placement of double lumen tubes – time to shed light on an old problem. *Br J Anaesth* **84**(3): 308–10

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