Cinching the loop on the Arndt endobronchial blocker during placement for descending aortic aneurysm surgery

Mohammad Hamid, MD · Dileep Kumar, MD

Received: 20 September 2014 / Accepted: 29 October 2014 / Published online: 13 November 2014
© Canadian Anesthesiologists' Society 2014

To the Editor,

Left mainstem bronchial compression and distortion are common in the setting of large descending thoracic aneurysms¹ and may result in difficult airway management and lung isolation. In particular, a left-sided double-lumen endotracheal tube (DL-ETT) may be difficult to insert due to extrinsic compression by the aneurysm. This may result in narrowing the bronchial lumen and increasing the risk of a ruptured aneurysm due to direct trauma from the DL-ETT to the thinned out bronchial wall.² Although a right-sided DL-ETT is an alternative, it has its own difficulties with correct placement.³ Another disadvantage of a DL-ETT is that it needs to be replaced by a single-lumen ETT at the end of generally very prolonged surgery. As a result, use of a single-lumen ETT with a bronchial blocker is a commonly used technique for lung isolation during aneurysm surgery. Nevertheless, it too has unique difficulties with placement due to the narrowed bronchus.

We routinely use the Arndt endobronchial blocker system (Cook Medical, Bloomington, IN, USA), which has a guide loop assembly at the distal end through which the fiberoptic bronchoscope (FOB) can be passed. This guide loop is usually kept loose and well above the tip of the FOB, and once the FOB is correctly positioned, the

bronchial blocker is then advanced (Figure A). Although the FOB can be maneuvered beyond the bronchial obstruction caused by the aneurysm, when attempting to advance the bronchial blocker blindly over the FOB in cases of severe obstruction and distortion, the bronchial blocker tip can get caught in either the membranous portion of the carina or in the compressed bronchial tissues (Figure B). This again raises the possibility of perforating the aneurysm or impeding placement of the bronchial blocker beyond the obstruction.

In these conditions, we now cinch the guide loop about 2–3 cm above the tip of the FOB (Figure C) and advance the bronchial blocker and FOB simultaneously into the left main stem bronchus. This cinching does not impair the maneuverability of the FOB. As the FOB is advanced, an assistant can gently push the bronchial blocker. Once the FOB tip has advanced well beyond the obstruction, the guide loop can be relaxed and the FOB can be pulled back above the carina to confirm the position of the bronchial blocker.

We have found this cinched Arndt bronchial blocker technique with parallel advancement under FOB guidance to be effective, safe, and possibly superior to the DL-ETT and other bronchial blocker techniques in thoracic aneurysm surgery. This technique can also be applied in

M. Hamid, MD · D. Kumar, MD (✉)
Department of Anaesthesiology, Aga Khan University Hospital,
Karachi, Pakistan
e-mail: dileep.kumar@aku.edu

Figure Conventional use of the Arndt endobronchial blocker involves using the loose guide loop to advance (as indicated by the arrows) the blocker over the fibreoptic bronchoscope (FOB) that has been positioned in the intended bronchus (A). However, in the case of an extrinsically compressed left main stem bronchus by a thoracic

aortic aneurysm, these tissues can obstruct the advancing blocker (B). However, by cinching the guide loop 2-3 cm proximal to the FOB tip and advancing both the FOB and blocker in parallel, the FOB can effectively pull the blocker beyond the obstruction without it getting caught (C)

patients with other causes for distorted tracheobronchial anatomy who require single-lung ventilation.⁴

Conflicts of interest None declared.

References

1. Charrette EJ, Winton TL, Salerno TA. Acute respiratory insufficiency from an aneurysm of the descending thoracic aorta. *J Thorac Cardiovasc Surg* 1983; 85: 467-70.
2. Goodwin MR, Blasius KR, Brand J, Silvay G. One-lung ventilation for surgical repair of thoracic aortic aneurysm. *Semin Cardiothorac Vasc Anesth* 2013; 17: 146-51.
3. Kim JH, Park SH, Han SH, Nahm FS, Jung CK, Kim KM. The distance between the carina and the distal margin of the right upper lobe orifice measured by computerised tomography as a guide to right-sided double-lumen endobronchial tube use. *Anaesthesia* 2013; 68: 700-5.
4. Kumar P, Breach NM, Goldstraw P. Esophageal leiomyomatosis involving trachea: surgical resection and repair. *Ann Thorac Surg* 1997; 63: 531-3.