

## Use of Arndt bronchial blocker through nasal RAE endotracheal tube in a patient with limited mouth opening

One-lung ventilation in patients with limited mouth opening is always a challenge to the anesthesiologist. We are reporting use of Arndt Endobronchial blocker (Cook Medical, Inc., Bloomington, IN, USA) through a nasal Ring-Adair-Elwyn (RAE) endotracheal tube for one-lung ventilation. Use of Arndt blocker through nasotracheal tube sparsely reported.

A 36-year-old male, weighing 56 kg, known case of oral submucous fibrosis due to chronic tobacco chewing presented with a history of road-traffic accident with thoracic vertebral body fracture and paraparesis. Subsequently, he was diagnosed with right chylothorax and was posted for thoracic duct ligation by right thoracotomy requiring one-lung ventilation.

On airway examination, his mouth opening was severely restricted, and it was less than a fingerbreadth [Figure 1], but rest of the parameters, such as neck movement and thyromental distance etc., were within normal limit. Fiberoptic bronchoscope-guided placement of Arndt Endobronchial blocker (Arndt Endobronchial blocker set, Cook Medical LLC) through nasal RAE endotracheal tube was planned for lung isolation. Because of limited mouth opening, double-lumen endobronchial tube (DLT) was not an option and we preferred nasal RAE tube over a flexometallic tube because negotiation of bronchial blocker could have been difficult through a flexometallic tube as it has a smaller internal diameter. In the operating room, pulse oximetry, 3-lead electrocardiogram and noninvasive blood pressure monitoring were instituted. General anesthesia was induced with propofol 120 mg and fentanyl 100 µg; thereafter, a north-polar RAE endotracheal tube of size 7.5-mm internal diameter was inserted over a fiberoptic bronchoscope (Olympus BF-3C40 pediatric bronchoscope, outer diameter 3.3 mm; Olympus Medical Systems) under direct visualization. After securing



**Figure 1:** Limited mouth opening of the patient

endotracheal tube, neuromuscular blockade was achieved by injection rocuronium 40 mg. Then, a 7-French Arndt endobronchial blocker was passed through the RAE tube and was positioned using a pediatric bronchoscope passed via the tube coaxial to the endobronchial blocker and it was placed in the right main bronchus. Thereafter, balloon of the bronchial blocker was inflated with 5 mL of air and position of the balloon was confirmed below the carina. Lung isolation was confirmed by absence of air entry on auscultation after inflating balloon of the bronchial blocker. After placing the patient in left lateral position, location of the endobronchial blocker was then reconfirmed by fiberoptic bronchoscopy. During the surgical procedure, right lung was adequately deflated and one-lung ventilation was maintained with a tidal volume of 4–5 mL/kg, peak airway pressure was below 32 mm Hg, and Positive end-expiratory pressure (PEEP) was at 5–8 mm Hg with acceptable oxygenation and ventilation parameters. General anesthesia was maintained with air-oxygen-isoflurane with intermittent boluses of rocuronium and boluses of fentanyl were used as analgesics. Patient was extubated at the end of surgery uneventfully.

Though DLT is the most commonly used device in lung isolation,<sup>[1]</sup> however, restricted mouth opening in our patient precluded use of DLT or Univent™ endotracheal tube. Placement of a single-lumen endotracheal tube at the beginning is considered to be the safest approach in achieving one-lung ventilation in patients with difficult airway.<sup>[2]</sup> Optimum position of bronchial blocker is considered to be when cuff of the blocker is seen 10 mm below the carina, which needs to be confirmed by fiberoptic bronchoscopy.<sup>[2]</sup> Bronchial blockers are criticized because of high incidence of displacement at the time of patient's positioning; hence, we reconfirmed blocker position in left lateral position also.<sup>[3]</sup> The use of an Arndt

endobronchial blocker is well demonstrated in a standard single-lumen endotracheal tube, but its use in a north pole RAE tube is challenging as the acute angle of an RAE tube makes maneuvering the Arndt blocker difficult.<sup>[4]</sup> The use of a pediatric fiberoptic bronchoscope coaxially along with the Arndt endobronchial blocker within the single-lumen tube helped in guiding the blocker and confirming its proper position especially in an acute angled RAE tube. Current literature is limited regarding one-lung ventilation technique in patients with limited mouth opening; few case reports are available in this area. Arndt GA *et al.* in effectively used wire-guided endobronchial blockade in case of limited mouth opening.<sup>[5]</sup>

Hence, in conclusion, an Arndt endobronchial blocker through a nasal RAE endotracheal tube may be used to achieve one-lung ventilation in a patient with restricted mouth opening. The use of a coaxial fiberoptic bronchoscope helps in guiding the blocker and its placement even while using an acutely angled RAE tube.

### 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.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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### References

1. Campos JH. An update on bronchial blockers during lung separation techniques in adults. *Anesth Analg* 2003;97:1266-74.
2. Campos JH. Lung isolation techniques for patients with difficult airway. *Curr Opin Anaesthesiol* 2010;23:12-7.
3. Hoşten T, Gürkan Y, Sahillioğlu E, Topçu S, Solak M, Toker K. [Our bronchial blocker experiences in one lung ventilation]. *Tüberk*

Toraks 2009;57:155-62.

4. Campos JH, Kernstine KH. Use of the wire-guided endobronchial blocker for one-lung anesthesia in patients with airway abnormalities. *J Cardiothorac Vasc Anesth* 2003;17:352-4.
5. Arndt GA, Buchika S, Kranner PW, DeLessio ST. Wire-guided endobronchial blockade in a patient with a limited mouth opening. *Can J Anaesth* 1999;46:87-9.

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