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CORRESPONDENCE

Use of a modified ProSeal™ laryngeal mask airway to facilitate diagnostic fiberoptic bronchoscopy in anesthetized patients

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To the Editor,

The ProSeal™ laryngeal mask airway is a modified laryngeal mask airway device that includes not only an airway tube for ventilation but also a tube for draining gastric contents. The ProSeal™ laryngeal mask airway has been used extensively for airway control and for ventilation management in patients with normal or difficult airways.[1] Also, the ProSeal™ laryngeal mask airway has been employed to assist fiberoptic intubation through its airway tube,[2,3] to guide insertion of the esophageal Doppler probe,[4] and to perform the esophogastric instrumentation[5] via its drainage tube. Recently, we have modified the ProSeal™ laryngeal mask airway to facilitate diagnostic fiberoptic bronchoscopy (FOB) in anesthetized patients via the drainage tube.

To make this possible, the drainage tube within the cuff was cut at the site closest to the distal end of the cuff. The distal cut end was tightly ligated with thick sutures, and the remaining piece of drainage tube inside the cuff was then removed (Fig. 1a). A suitable connector was inserted into the proximal end of the drainage tube. Furthermore, the breathing circuit opening of the swivel adapter with a seal-around cap was occluded with a special blocker (Fig. 1b). When an adequate level of anesthesia had been achieved with either inhalational or intravenous anesthetics and with either spontaneous or controlled breathing, the modified ProSeal™ laryngeal mask airway was inserted using an introducer tool. Then the ProSeal™ laryngeal mask airway cuff was inflated, the swivel adapter was connected to the drainage tube, and the breathing circuit was connected to the airway tube. After confirming adequate ventilation with the ProSeal™ laryngeal mask airway, a well-lubricated Olympus® fiberoptic bronchoscope (Olympus Corporation, Tokyo, Japan) was inserted into the drainage tube and advanced into the ProSeal™ laryngeal mask airway cuff via the swivel adapter, which formed an air-tight seal around the Olympus® fiberoptic bronchoscope. By fine rotation of the body and manipulations of the tip control lever of the Olympus® fiberoptic bronchoscope, the tip was initially positioned immediately in front of the vocal cords, and 3 mL of 2% lidocaine was injected onto the vocal cords via an epidural catheter passed through the suction channel. After waiting 1–2 min, the Olympus® fiberoptic bronchoscope was inserted into the trachea, and an additional 3 mL of 2% lidocaine was sprayed into the trachea. During fiberoptic bronchoscopy, oxygen and volatile anesthetics were administered, and assisted or positive pressure ventilation was performed by the airway tube (Fig. 1c). After fiberoptic bronchoscopy, the swivel adapter was removed and the drainage tube was occluded with a forceps instrument. When protective reflexes recovered and adequate spontaneous breathing was re-established, the ProSeal™ laryngeal mask airway was removed.

After local ethics committee approval and written informed consent, we used this technique in 79 adult patients undergoing the diagnostic fiberoptic bronchoscopy under general anesthesia for tumor diagnosis-staging, interstitial lung diseases, unknown causative hemoptysis, and lower respiratory tract infection. The patients' ages ranged from 42 to 81 years. A size-5 ProSeal™ laryngeal

All authors state that the ProSeal™ laryngeal mask airways used in this study were purchased retail from manufacturers.

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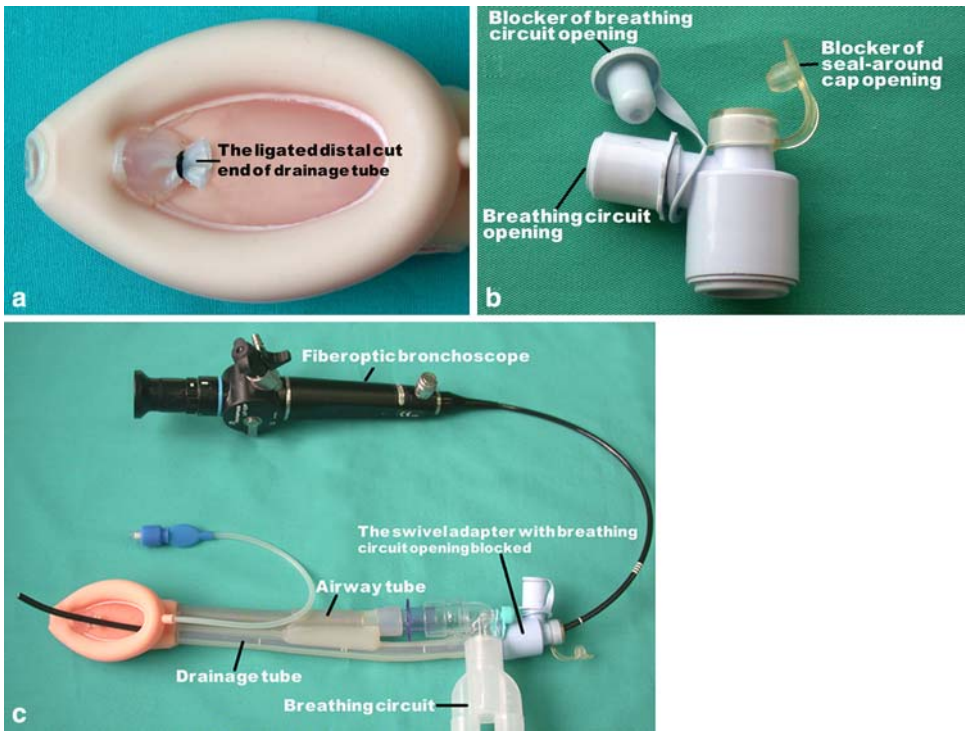

Fig. 1 **a** The cuff of modified ProSeal™ laryngeal mask airway shows that the drainage tube inside the cuff is removed, and its remaining distal end is tightly ligated with thick sutures. **b** The fiberoptic bronchoscope's standard swivel adapter with a seal-around cap. **c** An Olympus® fiberoptic bronchoscope is inserted into the drainage tube and advanced into the airway via the swivel adapter. The breathing circuit is connected to the airway tube for ventilation management

mask airway was inserted in men, and a size-4 was inserted in women, unless the patient's height was <155 cm, in which case a size-3 ProSeal™ laryngeal mask airway was used irrespective of gender. In all cases, the Olympus® fiberoptic bronchoscope was inserted successfully into the tracheobronchial tree via the drainage tube on the first attempt. The duration of diagnostic fiberoptic bronchoscopy varied from 7 to 18 min. No patient developed laryngospasm, tracheobronchial spasm, oxygen desaturation, or hypercarbia during the bronchoscopy. Our initial experience suggests that this modified ProSeal™ laryngeal mask airway is a reliable and effective adjunct to diagnostic fiberoptic bronchoscopy under general anesthesia. The sizes 3, 4, and 5 ProSeal™ laryngeal mask airway drainage tubes allow for smooth passage of the Olympus® fiberoptic bronchoscopes with maximal external diameters of 3.1, 3.8, and 4.1 mm, respectively. The fiberscopy operators consistently observed that the airway endoscopic procedure via the drainage tube was easy and convenient. Compared with fiberoptic bronchoscopy performed via the airway tube of the ProSeal™ laryngeal mask airway, this modification of the ProSeal™ laryngeal mask airway may improve ventilation, as it avoids any compromise in the cross-section diameter of the supraglottic airway.

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Conflicts of interest None declared.

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