Awake fiberoptic intubation with double lumen tube for severe predicted difficult airways: Could it be feasible with a rigid fiberoptic stylet?

Sir,

In the clinical context of a difficult airway and the need for lung isolation, securing the airway first with a single lumen tube (SLT) is the primary goal, managing the lung isolation subsequently with bronchial blockers.[1,2] When an awake fiberoptic intubation is indicated, such as in the presence of a difficult ventilation suspected, the insertion of a double lumen tube (DLT), has been described,[3] but may be very problematic due to its large size and to the possibility of laryngeal blunting and carinal stimulation.

We present a case report describing the use of Bonfils fiberoptic stylet® (Karl Storz Endoskope, Tuttlingen, Germany), a rigid fiberoptic metallic stylet, with an external diameter of 5.0 mm and a fixed 40° tip curvature, for a placement of a double lumen tube in a spontaneously ventilating patient with severe predicted difficult airway. To the best of our knowledge, this is the first such case in literature. The publication of all information and images presented in this report was discussed with the patient and family, and written informed consent was obtained.

We performed an awake retromolar fiberoptic intubation with a left-sided double lumen tube (Robertshaw, 35 Fr.) in a 50-year-old obese female scheduled for elective thoracic surgery. She had a history of failed intubation and also of difficult face mask ventilation that had occurred after induction of anaesthesia in a previous intervention for breast surgery. Patient's BMI was 37.5 kg/m^2 and the airway examination revealed a Mallampati class 4 with an interincisor distance of 3 cm. She was affected also by obstructive sleep apnoea

syndrome [Figure 1a]. Conscious sedation, with a Ramsay score at least 3, while maintaining the spontaneous breathing, was performed by administration of i.v. midazolam 0.03 mg/kg and fentanyl 2 mcg/kg. Topical anaesthesia was provided by administration of 10% lidocaine sprayed in the oral cavity, in particular in the right vestibule. A left 35 Fr DLT was mounted on the Bonfils fiberscope; the DLT's length was reduced by cutting 2 cm of its proximal ending with a scalpel so to fit the length of the Bonfils scope, which was inserted in the bronchial lumen [Figure 1b].

After slightly opening the mouth, the device was introduced into the right side of the oral cavity's vestibule and, sliding behind the molars, it was advanced along the pharyngeal wall. At the pharyngeal posterior wall (tonsil pillar), the device's distal extremity was rotated in an anterior and caudal direction up to visualise the epiglottis. It was then advanced toward the vocal cords lifting the epiglottis. Further topicalisation of the hypopharynx was performed with 2% lidocaine through a dedicated atomiser (Madgic®, Teleflex Medical, Athlone, Ireland) under endoscopic vision.

The Bonfils scope was left in position in front of vocal cords and the DLT was advanced and railroaded over the scope with a gentle rotation to pass into the trachea. Once the DLT's tip passed the glottis (as confirmed by sight of the blue bronchial cuff by the operator in the Bonfils fiberscope), the Bonfils scope was removed to avoid excessive tracheal stimulation. Anaesthesia was then induced with iv propofol 1.5 mg/kg, the DLT's tip was positioned in the left main bronchus with an appropriate counterclockwise rotation and finally rocuronium was administered after verifying the correct DLT placement with 2.8 mm bronchoscope.

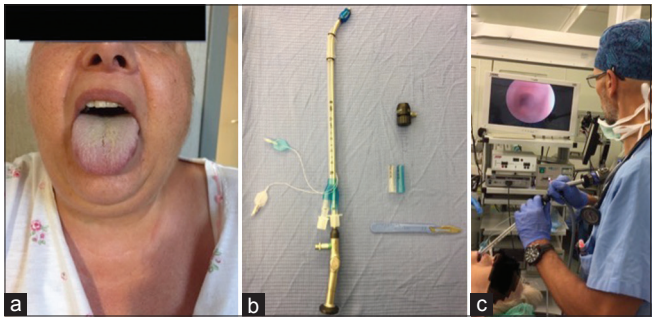

Figure 1: (a) Female patient with a Mallampati class 4 and a BMI of 37.5 $kg*m^{-2}$. (b) A left DLT 35 Fr mounted on the Bonfils fiberscope that was inserted in the bronchial channel. Notice removal of the Bonfils oxygen connector on the tube holder. (c) Awake retromolar intubation with Bonfils fiberscope and left double lumen tube 35 Fr

We considered the retromolar approach [Figure 1c] as the method of choice, since the device is introduced laterally in the vestibule, reducing gag reflex and making it well tolerated by the patient.

Extubation procedure was carried out in postoperative care unit where the patient was transferred after the intervention, providing the ramped position to improve oxygenation and securing the airways with a tube exchange catheter. No complications were described.

The day after surgery the patient did not complain particular complain or recall postprocedural symptoms or bad memories.

We choose to maintain patient's spontaneous breathing due to the predicted high risk of a difficult ventilation. We could have performed an awake fiberoptic intubation using a single lumen tube both mounted on a flexible fiberscope or combined with a videolaryngoscope as well described in literature.[1,2] Subsequently, lung isolation could be performed with a bronchial blocker.

When considering a double lumen tube tracheal intubation with the maintenance of patient's spontaneous breathing as first-line treatment in a patient with severe predicted difficult airways, the large tube diameter could be very challenging, the passage between vocal cords being critical, especially if a flexible bronchoscope is used to railroad the tube.

Videolaryngoscopy should also be considered. Mittal *et al*.[4] described two cases using a C-MAC D-Blade (C-MAC®D-blade, Karl Storz, Tuttlingen, Germany) for performing an awake intubation with double lumen tube in anticipated difficult airways. One advantage of using both videolaryngoscopes or Bonfils fiberscope for the insertion of a DLT, as opposed to fiberoptic bronchoscope (FOB)-guided DLT intubation, is that they allow us to see the passage of the tip of the bronchial lumen through the vocal cords, and to detect possible problems when advancing it into the trachea.

A proficient and safe use of the Bonfils fiberscope requires appropriate training, as demonstrated by its steeper learning curve;[5] as a consequence, adequate skill should be obtained before using it in difficult airways, and especially when a patient's spontaneous breathing has to be maintained.

Nevertheless, further prospective studies have to be done to better understand if it could be considered a safe, effective, and reproducible procedure.

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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Conflicts of interest

There are no conflicts of interest.

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