Can J Anesth/J Can Anesth (2019) 66:993–994
https://doi.org/10.1007/s12630-019-01384-x

CORRESPONDENCE

Evaluation of the Dams TuLip-i™: a new airway device for flexible bronchoscopic intubation

Takanobu Uesugi, MD

Received: 19 December 2018 / Revised: 22 April 2019 / Accepted: 23 April 2019 / Published online: 6 May 2019
© Canadian Anesthesiologists' Society 2019

To the Editor,

The Dams TuLip-i™ (DTL; Senko Medical Instrument Mfg. Co., Ltd., Tokyo, Japan) is an airway device to assist bag-mask ventilation (BMV) and flexible bronchoscopic intubation. Figure A–D shows the body of the DTL, its position in the airway, and a view of the glottis from a flexible bronchoscope positioned at the end of the DTL. This report evaluates the efficacy of the DTL for BMV and flexible bronchoscopic intubation in patients under general anesthesia with flexed head position.

Following approval by the Institutional Review Board of Kawanishi City Hospital (approval number 25006), this study was registered in a clinical trial database (UMIN000024857). All patients provided informed consent. The protocol we registered was to compare DTL with Proseal™ laryngeal mask airway (Teleflex Medical Europe Ltd, Westmeath, Ireland) in patients with their heads fixed in a flexed posture. Complete upper airway obstruction occurred in two of 13 cases using the Proseal. With institutional review board approval, we modified the protocol to a single arm trial evaluating the DTL and expanded the sample size to 20.

Twenty adult patients (men: 12, women: eight, median [interquartile range [IQR)] body mass index 23.5 [20.7–31.3]) were enrolled in the study. Patients with oral diseases, symptomatic cervical spondylotic myelopathy, or loose teeth were excluded. On the operating table, each patient was manually fixed in the flexed head position. Because of the posture, the mouth opening of all patients became limited to less than two finger widths and the Mallampati score worsened to class IV. After induction of general anesthesia with propofol, fentanyl, and rocuronium, BMV was attempted, without and with the DTL. The bronchoscope was inserted through the bronchoscopic channel into the trachea.

The success rate of BMV with and without the DTL, device insertion time, and flexible bronchoscope insertion time from the mouth to the trachea were measured. The fibreoptic scoring system[1] and percent of glottis opening score were assessed from the recorded pictures of the flexible bronchoscope.

Bag mask ventilation without the DTL failed in 17 of 20 patients despite assistive techniques (e.g., jaw lift). Bag mask ventilation with the DTL was successful in all cases. DTL insertion was successful on the first attempt; the median [IQR] time to device insertion was 7 [6–7] sec. The median [IQR] fibreoptic scoring system score was 4 [3–4], and the median [IQR] percent glottis opening visible was 100 [90–100]. The median [IQR] FOB insertion time was 9 [7–9] sec.

Prior to insertion of the endotracheal tube, the DTL was removed according to the instruction manual. No complications, such as oxygen desaturation (SpO_2 < 95%), hoarseness, or visible blood staining of the device upon removal occurred with DTL.

Flexible bronchoscopic intubation using supraglottic airway devices or video laryngoscope are preferred in some cases of difficult airway management. Nevertheless, some reports have described difficulties associated with those methods due to the acute angle between the oral and the pharyngeal axes at the base of the tongue.[2,3] The DTL facilitated oral flexible bronchoscopic intubation under general anesthesia in this study where the angle between oral and pharyngeal axes was acute. It remains to be seen if

T. Uesugi, MD (✉)
Department of Anesthesia, Kawanishi City Hospital, Kawanishi, Japan
e-mail: uesugi5082@yahoo.co.jp

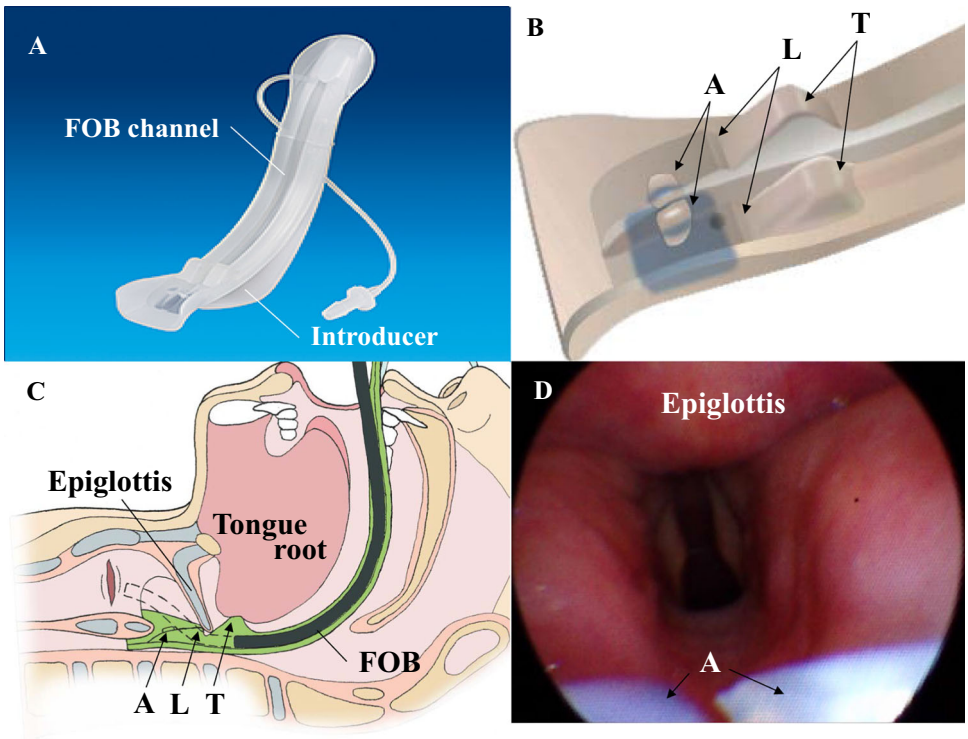

Figure A) Image of the complete Dams TuLip-i™ device. The introducer and fibreoptic bronchoscope (FOB) channel can be seen. B) Three-dimensional drawings of the tip of the Dams TuLip-i™ device. Each part of the device, the flap (F), two lifters (A and L), and tongue root stopper (T) are shown. C) Sagittal view of the distal end of the Dams TuLip-i™ device placed in the correct position. D) Glottic view using a fibreoptic bronchoscope through the Dams TuLip-i™ device

the DTL may also prove useful in cases of restricted mouth opening such as trismus and narrow hypopharynx.

Conflicts of interest None declared.

Editorial responsibility This submission was handled by Dr. Gregory L. Bryson, Deputy Editor-in-Chief, *Canadian Journal of Anesthesia.*

Financial disclosure None.

Trial registration UMIN-CTR clinical trial (UMIN000024857); registered 16 November, 2016.

References

1. *Keller C*, *Brimacombe J*, *Pühringer F*. A fibreoptic scoring system to assess the position of laryngeal mask airway devices. Interobserver variability and a comparison between the standard, flexible and intubating laryngeal mask airways. Anasthesiol Intensivmed Notfallmed Schmerzther 2000; 35: 692-4.
2. *Ishimura H*, *Minami K*, *Sata T*, *Shigematsu A*, *Kadoya T*. Impossible insertion of the laryngeal mask airway and oropharyngeal axes. Anesthesiology 1995; 83: 867-9.
3. *Sasano N*, *Yamauchi H*, *Fujita Y*. Failure of the Airway Scope to reach the larynx. Can J Anesth 2007; 54: 774-5.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.