

LETTER TO THE EDITOR

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Bending the endotracheal tube into a U-shape for tracheal intubation

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To the Editor,

In recent years, with the increasing use of video laryngoscopes, we have experienced some cases in which an endotracheal tube (ETT) cannot be successfully guided or advanced into the trachea, even though the glottis can be seen. To the best of our knowledge, an appropriate stylet angle has not yet been determined for video laryngoscopes. We here introduce a strategy for tracheal intubation that we sometimes perform when we encounter difficult airways that are not easy to intubate in the usual manner.

Our method for difficult airway is simple; the ETT is bent with a stylet strongly into a U-shape before tracheal intubation (Fig. 1a). After carefully raising the epiglottis directly, insert the ETT with the image of raising up the tongue. We use a McGrath MAC laryngoscope (Aircraft Medical, Edinburgh, UK) for tracheal intubation; therefore, cases in which tracheal visualization is difficult are rare. However, tracheal

insertion can be sometimes difficult, especially with video laryngoscopes. In such cases, our U-shaped ETT technique is useful.

To date, there have been some reports that discussed how to bend the ETT (Emsley and Hung 2016; Colla *et al.*, 2007); however, the methods mentioned differ from our own, in terms of how to insert the ETT. Additionally, as the stylet was gently removed, the tip of the U-shaped ETT was automatically guided upwards (ventral) and advanced, as Emsley *et al.* reported (Emsley and Hung 2016). Moreover, the U-shaped ETT is similar to the Ring-Adair-Elwin (RAE) tube; however, it differs from the RAE tube in that we can also use it as a normal ETT after removing the stylet. In addition, when we unexpectedly encounter such cases after inserting the laryngoscope, our method can be done using one hand without the need to remove the laryngoscope, and without the need for an assistant. The main disadvantage of the U-shaped ETT is that the stylet is a little difficult to remove, so it is important to use a lubricant. Careful

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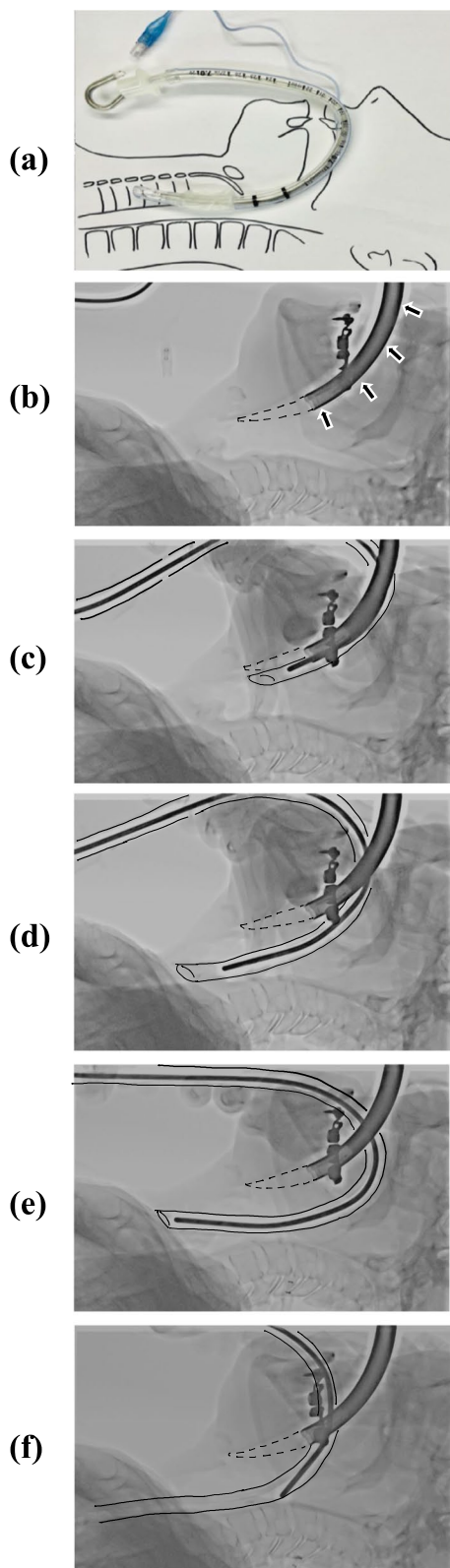


Fig. 1 The schema and fluoroscopic X-ray image of the U-shape ETT with the sagittal section of the airway. The ETT is bent in a U-shape (a). After carefully raising the epiglottis directly by the blade of the laryngoscope (b), insert the U-shaped ETT with the image of raising up the tongue (c–e). The four small black arrows in b indicate the body of the laryngoscope, the dotted lines indicate its blade, and the solid lines indicate the ETT. As the stylet was gently removed, the tip of the ETT was automatically advanced (e, f). ETT, endotracheal tube

operation is essential when pulling out the stylet so as not to damage the inside of the trachea. The method presented here does not require additional tools or personnel; therefore, we hope that our simple method of using a U-shaped ETT will become a standard option for airway management.

Abbreviations

ETT Endotracheal tube
RAE Ring-Adair-Elwin

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Authors’ contributions

KK developed the U-shape bending method and educated the other authors about the method. KY prepared the manuscript. TH and TY improved the original method and helped to draft the manuscript. SI helped to draft the manuscript. All authors have read and approved the manuscript.

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Declarations

Ethics approval and consent to participate

In our institution, Institutional Review Board approval is not required for a case report. The IRB determined that there were no problems with obtaining fluoroscopic images for this presentation if written informed consent was obtained from the patient.

Consent for publication

Written informed consent for publication of this manuscript was obtained from the patient.

Competing interests

The authors declare that they have no competing interests.

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