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## **A forceps-assisted fiberoptic bronchoscopic intubation**

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*Dear Editor,*

In 1967 Peter Murphy firstly introduced Fiberoptic Bronchoscope (FOB) intubation and this airway management technique has a quoted success rate of 88%~100%. Till now, FOB intubation has been considered as the golden standard in difficult airway management, whatever anticipated or unanticipated.[1] Although there are many new modern airway equipment available, the role of FOB is imperative in a clinical context as part of decision-making and management of airway strategy. However flexible FOB intubation has been performed less frequently, anesthetists must apply theoretical knowledge and practical airway techniques via workshops, simulation, and regular hand-on practice. The more FOB-experienced the anesthetist is, the fewer complications occur. Its success and outcomes depend on the operators' experience, which requires complex psychomotor skills and regular practice.[2] In other words, FOB intubation is a difficult airway management technique.

Shikani Optical Stylet (SOS) is a malleable, J-shaped, stainless-steel endoscope. Recently, this rigid optical stylet has demonstrated promise in assisting difficult

intubation. Reusable and portable scope with a shapeable stainless-steel stylet is the most obvious advantage of SOS. Some studies found it was more effective in patients with cervical spine instability and it might be an alternative to videolaryngoscope and FOB in difficult airway.[3,4] The external video display of SOS is more reliable and convenient for observation and exposure of pharynx, larynx, and glottis. Therefore, SOS is simpler and easier to operate, meanwhile its learning curve is short. After seven attempts of tracheal intubation, new operators might master the skills of SOS.[5] But SOS is only suitable for partial difficult airway.

In some cases, specific devices have been used to assist anesthetists during FOB intubation for a clear view. I designed a forceps for a convenient and easy usage on FOB. The forceps is rigid and J-shape device with a profile looking like SOS (Figs. 1 and 2). FOB can be inserted into the forceps because it is hollow with opening-closing design. Thus, the forceps and FOB can function as a solid unit. By the external monitor of FOB, the unit is developed into another kind of SOS. By this procedure, flexible FOB is changed to rigid endoscope that has a number of distinct advantages for orotracheal intubation.[1] The endotracheal tube is preloaded and fixed at the root of FOB. The detailed manipulation method is the same as SOS. After obtaining optimal glottis view, FOB is advanced to bypass glottis. Thus, the forceps is opened and withdrawn from mouth to release FOB. Keeping FOB in trachea as a guide, endotracheal tube is inserted forward into trachea.

The purpose of designing this forceps is to combine respective merits of FOB and SOS. For example, SOS is convenient to manipulate, with the forceps's assistance, it is quickly and easily to explore glottis. FOB is flexible with functions of suction and oxygen insufflations, and these functions might keep clear vision and patients' oxygenation. In addition, the clips of forceps are made from transparent plastic material and of single use, which connected with the body of forceps via special slot structure. Single-used disposable clips might reduce infection opportunity. The tip of forceps is rubbed and polished as same as tip of bullet to reduce tissue damage in patients' oropharynx. Meanwhile the tip of forceps slightly overhangs the tip of FOB to protect it from obstructed view and avoid shearing soft tissue.

There is another advantage of this forceps because it reduces the cost for purchase and maintain of SOS. Besides, it increases the distance between patient and anesthesiologists, reducing aerosol infection and protect manipulator.

The idea of this forceps is very simple; however, it might promote the development of airway management.

### **Conflicts of interest**

The authors declare no conflicts of interest.

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**Figure 1** The profile of the forceps.



**Figure 2** The profile of FOB and the forceps in patient's mouth.

