

Failure of hinged tip laryngoscope due to design variation

Dear Editor,

The hinged tip laryngoscope has been shown to improve the visualisation of the glottis in difficult airway. McCoy in 1993 patented the first design of levering laryngoscope. The tip bends upon pressing the lever to further lift the epiglottis. The mechanism of levering the tip is crucial for the defined and consistent performance of the blade. Failure of this mechanism during a difficult laryngoscopy can not only cause distraction during a crucial manoeuvre but also mucosal injury and/or foreign body in the airway.^[1,2] Sheeran *et al.* have reported this failure due to breakage of soldered part due to wear and tear.^[3] Mechanical failure of hinged tip mechanism due to slipping of loaded spring has not been reported before. We report two cases of failure of hinged tip mechanism, which may be due to a design variation and compare it with another available design.

During an anticipated difficult laryngoscopy, upon pressing the lever, the lifting mechanism of Flexion blade (Scope Medical Devices Pvt Ltd, Ambala city, India) failed with a 'click'. The laryngoscope was immediately taken out and inspected for broken or missing components. The airway was inspected with a video laryngoscope to rule out injury and facilitate intubation. There was no injury or foreign body in the airway. Figure 1 depicts the failure of hinged mechanism due to displaced loaded spring. The securement of loaded spring is of prime importance, which in this laryngoscope is poorly designed. Figure 2 compares the variation in design of securing the spring in Flexion and Trupti blade (Anaesthetics India Pvt Ltd, Mumbai, India). The loaded spring in Trupti blade is curved around a rivetted screw along with two screws on either side providing more stability. Whereas, the open-ended spring rests on the blades in Flexion blade, which can slip and release the tension generated while the lifting mechanism is used. This design flaw predisposes it to failure. We had a similar malfunction with another blade of the same company. The blades were purchased one-year back and were autoclaved daily after cleaning with soap and water. There were no overt signs of wear and tear on the blades, as noted by the biomedical team.

Anesthesiologists are trained to examine the equipment for integrity and function before use. We also need to be aware of design flaws, as noted in our case. Through this communication, we intended to create awareness amongst anesthesiologists regarding the design variations of hinged tip laryngoscopes and their implications in safety.



Figure 1: Failure of hinged tip mechanism due to slipping of loaded spring. Spring labelled with pointer. A - Normal laryngoscope; B - Failed laryngoscope

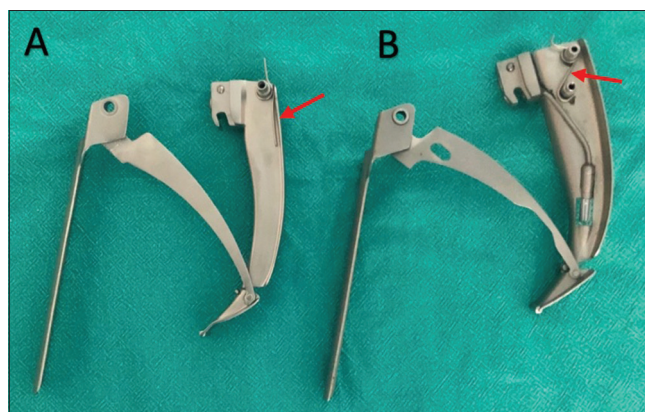


Figure 2: Dismantled laryngoscope blades to show design variation of securing the loaded spring. A - Flexion blade, Scope Medical Devices; B - Trupti blade, Anaesthetics India

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Conflicts of interest

There are no conflicts of interest.

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