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.

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Conflicts of interest
There are no conflicts of interest.

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Dear Editor,

Ehlers-Danlos syndrome (EDS) is an inherited connective tissue disorder of six subtypes characterized by joint hypermobility, skin hyperextensibility, vascular fragility, musculoskeletal pain, easy bleeding, severe scoliosis, joint dislocations, atrophic scars, and vessel/viscera rupture. [1]

In our index case, the patient was classified into EDS-hypomobility type (EDS HT), the most common subtype, which presents challenges in the anesthetic front. EDS in association with multiple comorbidities is rarely reported. Therefore, in the present study, we report a case of a patient with EDS-HT with Takayasu arteritis (TA) and schizophrenia who underwent capsulorrhaphy of bilateral temporomandibular joint (TMJ).

A 39-year-old male (174 cm, 60 kg) with features of EDS-HT, including hypermobility of fingers and cervical spine, hyper-extensible skin, hyper-mobile TMJ (with a mouth opening of 7cm), and positive Gorlin’s sign was scheduled for capsulorrhaphy of bilateral TMJ [Figure 1].

He presented with recurrent locking of the jaw for 2 years. Significant medical history included schizophrenia for 3 years (presently not on any medications) and TA for 4 years with bilateral renal artery stenosis. Patient blood urea nitrogen was 15mg/dL and creatinine was 0.6 mg/dL. The patient was premedicated with injection glycopyrrolate 0.2 mg intravenous (IV), inj. midazolam 1 mg IV, and xylometazine nasal drops to avoid bleeding during nasal intubation. The patient was administered injection fentanyl 100 mcg IV and anesthesia was induced with inj. propofol 120 mg IV. Care was taken to avoid hyperextension of the neck during mask ventilation with minimal pressure for chin lift and head tilt during manual ventilation. After confirmation of adequate mask ventilation, muscle relaxation was achieved with inj. atracurium 30 mg IV and airway was secured with gentle laryngoscopy along with manual in-line stabilization avoiding excessive opening of the mouth, using 7.0 mm ID nasal flexometallic cuffed endotracheal tube (ETT). Careful positioning of the patient was done with adequate padding of pressure points and avoiding hyperextension of joints including shoulder, hip and cervical spine under muscle relaxation. Hemodynamics including invasive blood pressure were targeted within a range of 10% of baseline due to bilateral renal artery stenosis to avoid hypotension, along with meticulous monitoring of the urine output of the patient. Neuromuscular blockade was antagonized and the patient was extubated after he was fully awake. No adverse events were reported in the postoperative period and the patient had no fresh complaints in the follow-up period.

References

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