The video laryngoscopes, blind spots and retromolar trigonum injury by the GlideRite® rigid stylet

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Abstract

We report the first case of retromolar trigonum tissue injury in an 80-year-old female, caused by the Rigid GlideScope® Stylet. This complication was discovered during oral surgery.

Key words: GlideRite® rigid stylet, retromolar trigonum injury, video laryngoscopes, blind spots

INTRODUCTION

The GlideScope® video laryngoscope is a relatively new intubating device designed to provide better view of the glottis, without alignment of the oral, pharyngeal and tracheal axes. The aim of this case presentation is to increase awareness for possible serious complications that may arise with increased popularity and usage of video laryngoscopes, and their rigid stylet.

CASE REPORT

A morbidly obese 80-year-old female [weight 102.1 kg, height 157.5 cm, body mass index (BMI) of 41] presented with mouth pain, and multiple carious teeth were scheduled for teeth extraction with an alveoplasty. She had a past medical history of Cerebrovascular accident (CVA), transient ischemic attack (TIA), congestive heart failure (CHF), hypertension, and myocardial infarction (MI). Electrocardiogram (ECG) showed first-degree heart block, prolonged QT interval with anterolateral infarct. Echocardiograph (ECHO) showed an ejection fraction of 45–50%, left atrial enlargement, mild pulmonary hypertension, and trace mitral regurgitation.

Preoperative airway assessment revealed a Mallampati score of IV, three finger breadth mouth opening, slight limitation of neck movement, and loose carious teeth. With this assessment, the patient was predicted to be difficult to intubate. The anesthetic plan included management of the predicted difficult intubation with the GlideScope® with other usual backup planes for difficult intubation.

Anesthesia was induced with fentanyl 150 μg, lidocaine 100 mg, propofol 150 mg and succinylcholine 100 mg. The GlideScope® blade tip was placed in the vallecula and the vocal cords and epiglottis were seen. A size 7 endotracheal tube (ETT) was mounted in the GlideRite® rigid stylet and then passed into the oral cavity for intubation. The endotracheal tube (ETT) appeared to slide into the oropharynx with relative ease and the endotracheal tube was placed into the trachea. The stylet was removed, and positive EtCO₂ and equal bilateral breath sounds was confirmed. A successful GlideScope® intubation was assumed.
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Magboul and Joel: Trigonum injury by GlideRite® stylet

As the surgeon began the procedure, he noticed that ETT had pierced and entered the tissue of the retromolar trigonum (the same space which holds the lingual nerve), and then proceeded to pass through the oropharyngeal space and re-enter the vocal cords [Figure 1a and b].

We decided to remove ETT rather than cutting the tissues to free it, to avoid trauma to lingual nerve. We re-inserted another size 7 ETT with the aid of the GlideScope® camera. Positive EtCO₂ and equal bilateral breath sounds was confirmed. Surgery was completed uneventfully; however, the surgeon stated multiple times that the patient's oral mucosa was very fragile and easily torn. The patient was easily extubated and transported to post anesthesia care unit (PACU). Both intubations were performed by the student registered nurse anesthetist (SRNA).

PACU staff was instructed to look for signs of lingual nerve injury (numbness in the tongue, loss of ability to taste, tingling sensation in the tongue, pain, burning, or electric shock sensations in the tongue, speech impairment and drooling).

The PACU stay was uneventful, the patient denied any of the above mentioned symptoms, and was discharged.

**DISCUSSION**

The GlideScope® and other video laryngoscopes have improved tracheal intubation, especially in patients with difficult airways.¹

The GlideRite® rigid stylet [Figure 2a and b] was introduced to overcome the difficulties found with intubation with GlideScope® and other similar video laryngoscopes and help reduce patient trauma.²,³

A study by Tukstra et al. showed that the dedicated GlideScope® rigid stylet and the standard malleable ETT stylet are equally effective in facilitating endotracheal intubation.²,⁴ The Flex-It® stylet was no more effective in facilitating endotracheal intubation than the standard malleable ETT stylet.²,⁵

In our case, the rigid stylet converted the endotracheal tube tip into a sharp knife-like weapon that cut through the patient’s oral tissues.

When intubating with video laryngoscope, the operator usually concentrates on the perfect image of the cords. The path of the tube from the mouth opening to the vocal cords is a “blind spot” to the intubating person.

Although lingual nerve injury was reported with other intubation and airway devices, this is the first reported case of near lingual nerve injury by the Rigid GlideScope® Stylet. The incident was accidently discovered during oral surgery and prevented by not cutting and preserving the retromolar tissues.

Injuries to lingual nerve are now frequently reported with upper airway intubation and instrumentation. Lingual nerve injury was even reported with the use of Larangyal Mask Airway (LMA) cuffed oropharyngeal airway, oropharyngeal airway, proseal LMA, and conventional endotracheal intubation. Both unilateral and bilateral injuries have been reported. Potential predisposing factors include the use of nitrous oxide⁶-¹³ using an LMA that was too small⁶,⁹,¹³-¹⁶ and excessive pressure.

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Figure 1: (a and b) ETT had pierced into retromolar trigonum tissues and then entered the vocal cords

Figure 2: (a and b) The GlideRite® rigid stylet is specifically designed to work with GlideScope® video laryngoscopes
We recommend and conclude that injuries from video laryngoscope intubation aids could be avoided by careful attention to the following steps.

The ETT must be passed close to the scope and away from the corners of the mouth. Close attention to the path of ETT, in the screen of the scope picture, from the time of entering the mouth to the time of entering the vocal cord. ETT course must be re-inspected by the video scopes on the way out after intubation.

When using rigid stylet, ETT with softer tips must be used. The Parker ETT has a soft malleable tip and may be helpful in these situations. The tip of the conventional ETT, if dipped into warm saline, will turn softer and less traumatic.

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Mohamed Ishaq Al Khawashki

Dr. Mohamed Ishaq Al Khawashki was a Saudi national who was born in 1931 originally in Jerusalem, Palestine.

He is considered to be the first qualified Saudi anesthetist in the Kingdom. He graduated in 1958 from Cairo Medical College. He worked for a few years in a hospital in Riyadh.

In 1960, the first two Saudi graduate doctors, Abdullah Al-Enazy and Ishaq Al-Khawashki were sent to Denmark on scholarship to obtain their diploma degrees in anesthesia. Both graduated successfully in 1962.

Only Dr. Ishaq Al Khawashki returned and worked in Riyadh Central Hospital, Ministry of Health. At that time, there were very few expatriate anesthetists who were working, covering several operating theatres and nights on call. Sometimes they even covered more than one hospital within the city. Dr. Ishaq Al Khawashki started to build the Department of Anesthesia and actively participated in supervising and updating the curriculum for the diploma of anesthesia for technicians, which had started earlier. The programme was made of a 3-year training programme. This period was called the technician’s era. The main objective was to produce anesthesia technicians to overcome the shortage of specialist manpower and provide a reasonable service at that time.

He was highly respected as a commander with dedication and leadership in his field. He was loved by everyone. His leadership was extended to manage the main hospital in Riyadh. During his successful practice as a consultant anesthetist and general director of Riyadh Central Hospital, he managed to obtain his medical doctorate in anesthesia from Cairo medical college in 1977. He continued as the general director of the anesthesia department and the director of the hospital until 1982.

He served as a Consultant to the WHO from 1982 until he died in 2004. He has several publications on safety and road-traffic accident, spinal cord injury and body cooling unit.

One of the most important developing points in his life was being the principle inventor of the “Body Cooling Unit” which became the standard of care for heat-stroke management since the 80s and until now in numerous hospitals during Hajj seasons. He was selected to be the Member of the Editorial Board of Saudi Medical Journal, Middle East Journal of Anesthesia and the Medical Journal issued by the Ministry of Health.
