Management of accidental extubation during oral surgery by nasotracheal intubation using the King vision video laryngoscope and a gum elastic bougie – a case report

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Abstract

Accidental extubation during intra operative period especially during oral surgery is challenging for any anaesthesiologist. Securing the definitive airway during this period is not only crucial and life saving but also challenging to the anaesthesia provider. Here we report a case which got extubated during hemimandibulectomy and was successfully reintubated using King Vision video laryngoscope. This videolaryngoscope proved to be a good rescue device in managing an accidental extubation during oral surgery and could represent a useful tool for the management of such unfamiliar situations.

Keywords: videolaryngoscope, accidental extubation, oral surgery

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Introduction

Accidental extubation is one of the complications of airway management during general anaesthesia and in intensive care unit patient. It may happen due to various reasons. An example of a situation that requires urgent intervention to secure the airway is unintended extubation during oral surgery. Under such circumstances, securing the airway with standard direct laryngoscopy may be difficult or even impossible.

The King Vision video laryngoscope is a novel device that uses the video technology and may provide a “complete glottic view” for tracheal intubation. It is a two piece device (Fig. 1), equipped with a reusable monitor and disposable blades connected by sliding them into each other.

The display is on an OLED (organic light emitting diode) design which provides good clarity and high resolution. It is available with two types of blades: channeled blade which has a guiding channel for introduction of the endotracheal tube and standard blade which is without guiding channel. Both channeled and standard blade can be used for endotracheal intubation. Here we reported a patient being operated for hemimandibulectomy who got extubated during surgery.
where this new video laryngoscope was used as a rescue device for successfully securing the airway.

Case

A 50 year old male patient was scheduled for hemimandibulectomy. He presented to the surgery outpatient department with complaint of swelling in left side of oral cavity which gradually increased to present size during the previous 3 months. He was diagnosed as a case of Squamous Cell Carcinoma of left side of alveolus. In the pre-anesthetic check up patient had all the routine investigation within normal limit. His mouth opening was less than 2 finger breaths and Mallampatti grading was IV, so we anticipated a difficult intubation.

Patient was shifted to operation theatre and was planned for awake fiberoptic nasotracheal intubation. After an uneventful intubation the endotracheal tube's placement was confirmed with auscultation of the chest and end tidal carbon dioxide. The tube was then fixed with cloth-tape after application of benzoin peri-nasally and along the nasal bridge. Thereafter, a loading dose of 4 mg vecuronium was given for muscle relaxation. Surgery was started and continued smoothly for one hour but thereafter the endotracheal tube (ETT) got displaced and the patient was extubated probably due to surgical manipulation of the head. The saturation started declining and reached 85% within 1 min. After immediate tilting the head end of the table downwards and suctioning the oral cavity, a laryngeal mask airway (LMA) was inserted and saturation increased to 90%. Since the supraglottic airway device does not provide definitive airway, it was mandatory to reintubate the patient. As fiberoptic intubation is time consuming and there was blood in the oral cavity which further limited its utility, we decided to use King Vision video laryngoscope. After proper suctioning, King Vision with the non-channeled blade of the videolaryngoscope was inserted through the inter-incisor gap of mouth and clear view of larynx was obtained after advancing the blade in the oropharynx, while performing a jaw thrust maneuver to improve the view of the glottis as much as possible. A lubricated boogie was then inserted through nose and visualized on the monitor of the device and guided into the trachea. An endotracheal tube of size 7.0 mm internal diameter was then railroaded over the boogie and advanced into the trachea under video guidance. The correct placement of the tube was checked through capnography and auscultation and the tracheal tube's cuff inflated thereafter, securing the airway. The tube was then fixed with adhesive tape and thereafter surgery continued and lasted for another 50 min. The whole reintubation lasted for 75 seconds. The course of surgery was uneventful and the patient was extubated and transported to post anaesthesia care unit.

Discussion

Most of the published data about accidental extubation are reports of intensive care unit patients [1]. During general anesthesia accidental extubation was mainly linked with surgeries in prone position [2]. Some of the cases such as the one presenting an accidental extubation in a child in prone position during decompressive craniectomy and cervical laminectomy [3] were managed with LMA. Similarly, Goldik et al. described an accidental intraoperative extubation in a 70 year old patient which was managed by LMA insertion [4]. Thiel et al. reported a case of accidental tracheal extubation of a patient in the prone position undergoing emergency C6-C7 corpectomy and anterior and posterior fusion. His airway was secured with the help of Glidoscope [5].

Some factors contributing to accidental extubation might be inappropriate relaxation together with light plane of anaesthesia, loose cloth tape fixation, movement of patient’s head during surgical exploration (i.e during application of hammer for resection of mandible), accidental traction of ETT by the surgeon’s hand and application of mouth gag by the surgeon during maxillofacial surgery and inappropriate tube fixation. There is a study in which displacement of ETT was caused by postural change and was solved with the fiberoptic bronchoscope [6].

An appropriate fixation of the tube by other methods such as those described in paediatric prone patient by using small piece of ETT [7], in adult patient using nasogastric tube [8] and with suture and rubber tube [9] might have prevented this hazardous happening in our patient.

Classic LMA was used in most of the literature as a rescue device. Oral LMA was not a good choice for restarting this surgery as it does not prevent aspiration of blood and secretions. Therefore, a definitive airway was needed which could be placed through an intubating LMA and other devices including video laryngoscopes. Intubating LMA may act as a conduit for orotracheal intubation rather than nasotracheal intubation. Hung et al. [10] used the fiberoptic bronchoscope for emergency intubation in the prone-positioned patient. But in our case we did not use fiberoptic bronchoscopy since the view would be obscured by blood and secretions and it was time consuming too.

Restriction in the opening of the mouth can prevent the view of glottic structures and even of the epiglottis. Furthermore, direct laryngoscopy in such a situation may lead to trauma to tongue, teeth, pharynx and other
structures which will further contribute to bleeding, so conventional laryngoscopy was an unacceptable option.

In this case, since the rescuer was well trained with the use of the King Vision videolaryngoscope, it was decided to use this device. The blade of King Vision videolaryngoscope corresponds to size 3 of Macintosh laryngoscope with additional anatomical curvature. This video device also uses anti-fogging lens and gives high clarity of the glottis on the monitor.

An important aspect of this video laryngoscope is that all the glottic structures are visible on the monitor, so successful intubation is confirmed by all the viewers and not by one person performing laryngoscopy and intubation.

Additionally, the simultaneous use of a nasally inserted gum elastic bougie with its endotracheal placement between the vocal cords confirmed by the video display, allowed for nasotracheal reintubation.

Conclusion

We presented a case of life-threatening accidental extubation during oral surgery. The patient’s trachea was easily reintubated with a nasotracheal tube by the combined use of the King Vision videolaryngoscope and a gum elastic bougie.

Conflict of interest

Nothing to declare

References


Rezolvarea extubaţiei accidentale din cursul chirurgiei orale prin intubaţie nazotraheală utilizând videolaringoscopul King Vision şi un bujiu elastic – o prezentare de caz

Rezumat

Detubarea accidentală în cursul intervenției chirurgicale reprezintă pentru fiecare anestezist o provocare, în special în chirurgia orală. Asigurarea definitivă a căii aeriene pentru această perioadă nu este doar crucială şi salvatoare de viaţă, dar şi provocatoare pentru medicul curant. Prezentăm un caz care s-a detubat în cursul unei hemimandibulectomii şi a fost reintubat cu succes cu utilizarea videolaringoscopului King Vision. Acest videolaringoscop s-a dovedit un bun dispozitiv de rezolvare a situațiilor de detubare accidentală în cursul intervențiilor chirurgicale oro-faciale şi ar putea reprezenta un mijloc util de rezolvare a acestor situații de excepție.

Cuvinte cheie: videolaringoscop, detubare accidentală, chirurgie orală

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