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CLINICAL INFORMATION

King Vision video laryngoscope for severe post burn contracture neck: an encouraging experience[☆]



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KEYWORDS

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Abstract

Background and objectives: Managing the airway of post burn contracture of the neck has always been challenging to anesthesiologists as it limits the alignment of oro-pharyngo-laryngeal axes because of functional and anatomical deformities that occur as a result of long standing contractures. Here the role of the King Vision video laryngoscope which is the latest in the series of video laryngoscope has been evaluated for such patients.

Case report: A 35 year old male patient with post burn contracture of neck was scheduled for release of the contracture. As the patient had had fixed flexion deformity of the neck we did not attempt the conventional laryngoscopy. Instead we opted for King Vision video laryngoscope.

Conclusion: We therefore conclude that King Vision videolaryngoscope can be used for difficult airway situations like post burn contracture of neck.

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PALAVRAS-CHAVE

King Vision;
Contratura do
pescoço;
Intubação

Videolaringoscópio King Vision para contratura grave do pescoço após queimadura: uma experiência encorajadora

Resumo

Justificativa e objetivos: O manejo de vias aéreas em contratura de pescoço após queimadura sempre foi um desafio para os anestesiológicos, pois a contratura limita o alinhamento do eixo orofaringolaríngeo devido às deformidades funcionais e anatômicas que ocorrem como resultado de contraturas de longa duração.

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Relato de caso: Paciente do sexo masculino, 35 anos de idade, com contratura do pescoço após queimadura foi programado para liberação da contratura. Como o paciente estava com deformidade fixa em flexão no pescoço, não tentamos a laringoscopia convencional e optamos por usar o vídeo laringoscópio King Vision.

Conclusão: O videolaringoscópio King Vision pode ser usado em situações de via aérea difícil como a contratura de pescoço após queimadura.

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Introduction

Post burn contracture of the face and neck one of the most common sequelae following acute burn of the face and neck. These patients present for release of contractures. Managing the airway of these patients has always been challenging to anesthesiologists because of functional and anatomical deformities that occur as a result of long standing contractures. These deformities especially limited mouth opening and fixed flexion deformity causing severe restriction of neck movements are of concern particularly.

Awake fibreoptic is considered the gold standard for managing the airway of such patients.¹ However, the technique is time consuming and requires expertise. Numerous airway gadgets and equipments are added up every year in the difficult airway armamentarium. Video laryngoscopes are one such advancement in the management of difficult airway.

We report a case of severe post burn contracture of face and neck with restricted neck movements in which endotracheal intubation was achieved by King Vision™ video laryngoscope (King Systems, Noblesville, IN, USA).

Case report

A 35 year old male patient, weighing 45 kg American Society of Anesthesiologists (ASA) Class I, presented with history of burns three months back leading contractures of neck, sub mandibular space, chest and upper extremity.

On examination, his vital signs were stable. The contractures involved the neck, sub mandibular space, chest wall and upper extremity bilaterally. Mouth opening was limited with interincisor distance less than 3 cm. There was a fixed flexion deformity of the neck. Thyromental distance and sternomental distance could not be assessed because of contractures on the anterior aspect of neck. The anterior aspect of the neck was not visible. Flexion and extension of the neck were restricted.

On the day of surgery, he was given premedication with glycopyrrolate (0.01 mg.kg⁻¹), inj. midazolam 0.025 mg.kg⁻¹, ondansetron 0.15 mg.kg⁻¹. A difficult airway cart was kept ready. All drugs were administered intravenously 15 min prior to transfer of the patient to the operation theatre. A standard anesthetic technique was used, comprising preoxygenation with 100% O₂ for 3 min,

induction with inj. Propofol 2 mg.kg⁻¹ i.v. and fentanyl 2 mg.kg⁻¹. After confirmation of bag and mask ventilation patient was relaxed with Inj. Succinylcholine 1.5 mg.kg⁻¹ i.v. Now we detached the video monitor of King Vision™ video laryngoscope (Fig. 1) and introduced the channelled blade of the king vision from left side of angle of mouth of patient with help of jaw thrust by an assistant and passed the blade over the centre of the tongue. The video monitor was then attached with the blade of laryngoscope. The device was advanced further down to reach the vallecula and then passed beyond the epiglottis. The tip was positioned just beyond the epiglottis and an upward force was applied to get a proper view of glottic opening. The bougie was then advanced down the channel while maintaining the upward lifting force that kept exposing the vocal cord and the bougie could be observed passing through the vocal cords. An endotracheal tube (ETT) size 7.5 mm was now loaded over the bougie and advanced over the ETT cuff could be observed passing through the vocal cords. Once the cuff had passed the vocal cords, the bougie was pulled out, circuit was connected and position was confirmed with capnography and auscultation. The king vision was then removed while holding the ETT in place. Anesthesia was maintained subsequently with nitrous oxygen-oxygen, isoflurane and incremental doses of injection vecuronium bromide. The lungs were mechanically ventilated to achieve normocarbica. The intraoperative period was uneventful and patient's trachea was extubated with patient awake and breathing spontaneously.



Figure 1 King vision video laryngoscope with bougie.

Discussion

Failure to intubate in difficult airway situation is a leading cause of anesthesia related morbidity and mortality.^{2,3} Patients with postburn contracture face and neck constitute a unique group and usually present with difficult airway.

Chronic facial and neck contractures lead to anatomical distortions causing reduced mouth opening. The presence of fixed flexion deformity leads to severe restriction of neck movements which causes improper positioning leading to non alignment of the oral, pharyngeal and laryngeal axes. Moreover there is limited availability of the space in the oral cavity and the submandibular space also becomes non compliant.⁴

As a result of these the options for airway management in patients of postburn contracture are limited. Awake fiberoptic intubation has always been considered the most prudent approach and the gold standard in such cases who present with anticipated difficult airway.¹ However awake intubation is a very painful and stimulating procedure and requires patient co operation. Achieving local anesthesia in these patients is a difficult task because of anatomic abnormalities.⁵ Moreover the use of fiberoptic in unfavourable conditions requires technical expertise and a longer learning curve.

Videolaryngoscopes are a new class of airway gadgets recently introduced and are amongst the most innovative advancement in current day practice. These devices offer many advantages like impaired laryngeal visualization, less cervical spine movement, shorter learning curve, improved portability and cost.⁶

The King Vision™ video laryngoscope is the latest device available in this category and provides a perfect view using video and digital technology. The device is inexpensive and portable. It has a two piece design. The reusable monitor is attached to a disposable blade with a specially incorporated channel for the endotracheal tube.

The use of video laryngoscopes in difficult airway situations has been described in literature. Tahan et al. described the combined use of King Vision™ video laryngoscopy and fibrescopy in patients with critical tracheal stenosis.⁷ Park CD et al. described the use of Glidescope™ in patients of severe mentosternal contracture.⁸ We have also reported the use of Airtraq in severe post burn contracture of neck.⁹ Suzuki et al. also reported the use of Pentax AWS™ in morbidly obese patients after failed fiberoptic intubation.¹⁰ Gaszynska and Gaszynski reported two cases in which King Vision™ videolaryngoscope was used for awake intubation in patients with pharyngeal and laryngeal tumours.¹¹

Although there have been various case reports reporting the use of video laryngoscopes in difficult airway situations, the use of King Vision™ laryngoscope is infrequently reported. Moreover to the best of our knowledge this device

has not been used in patients of post burn contracture very commonly. The device offers some unique advantages in such patients. A 25 mm mouth opening is sufficient enough to introduce the blade in the oral cavity. Non alignment of the three axes i.e. oral, pharyngeal and laryngeal as a result of restricted neck movements is of little concern as the device does not require optimal sniffing position for laryngoscopy. We used King Vision™ laryngoscope successfully in our patient. However we did not allow for awake intubation as the patient was very apprehensive and was not willing to cooperate.

In conclusion the King Vision™ video laryngoscope can be a good option for intubation in patients of postburn contracture that present with limited mouth opening and restricted neck movements.

Conflicts of interest

The authors declare no conflicts of interest.

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