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Case Report Open Access

Use of the Venner A P Advance Video Laryngoscope for Awake Intubation in a Patient with a Fused Cervical Spine

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Summary

An 80 year old, ASA 2, female patient presented for excision of her upper three thoracic spinous processes. Her airway management was predicted to be difficult due to a fixed flexion deformity of the cervical spine from previous cervical fusion surgery. An awake intubation was successfully performed under local anaesthesia and conscious sedation using the Venner AP advance video laryngoscope.

Introduction

Restricted movement of the cervical spine and atlanto-occipital joint contribute to the difficulty of intubation using direct laryngoscopy. Awake intubation using a flexible fibre optic scope is considered standard practice when managing anticipated difficult airways [1]. Video and optical laryngoscopes have performed well when compared with Macintosh direct laryngoscopy in patients with restricted neck movements [2-3]. Recent studies and case reports have described the use of video laryngoscopes for awake intubations [4-6].

The Venner AP Advance video laryngoscope (Venner APA scope, Venner Medical Pte Ltd, Singapore) is a hand held portable video laryngoscope provided with a rechargeable, high resolution 86mm (3.5") LCD type colour display video viewer that can be attached to the top of the handle of the laryngoscope (Figure 1). The camera module clips onto the bottom of the handle. The blades are mounted onto the camera module for performing laryngoscopy. Venner APA scope is supplied with three types of single use blades: Mac 3, Mac 4 for routine laryngoscopy and a difficult airway blade (DAB) for difficult laryngoscopy. The DAB blade is more acutely curved in shape than the Mac blades, and has a guiding plate, which facilitates passage of the tracheal tube into the glottis, once full view of the larynx is obtained.

1.Viewing screen 2.Handle 3.Camera module 4.Difficult airway blade 5.Guiding plate

Figure 1: Venner APA video laryngoscope.

Successful use of Venner AP advance laryngoscope has been reported, during a rapid sequence induction for tracheal intubation, with manual in line stabilisation in a young patient with a potential cervical spine injury [7]. We report our experience of performing an awake intubation using the Venner APA video laryngoscope in a predicted difficult airway.

Case

An 80 year old female patient presented to the neurosurgical outpatient clinic with pressure necrosis of the skin overlying her first three thoracic spinous processes. About two years previously, she had sustained an unstable cervical spine fracture involving C6 and C7 vertebrae, with disruption of the intervertebral disc. At that time she underwent anterior cervical discectomy and fusion from C5 to C7 vertebral levels. At a later date, she underwent posterior cervico-thoracic fusion from C4 to T2 vertebral levels. On both the above occasions her airway was secured using oral awake fibre optic intubation technique. As a result of the extensive surgery and stabilisation of neck with the metalwork (Figure 2), she developed a fixed, flexed cervical spine.

In view of the discomfort to the patient and the risk of infection of the neck from the pressure necrosis, she was scheduled for excision of the offending spinous processes. Her other medical history included chronic degenerative arthritis and hypertension. Examination of her airway revealed a stiff and flexed neck with lack of movements, mouth opening of 4 cm and a Mallampati score of two. She was able to protrude her lower jaw in front of her upper jaw. In view of the fixed neck and a previous history of awake oral fibre optic intubations, direct laryngoscopy and intubation were predicted to be difficult. This was

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Figure 2: Pre-Operative CT image of the patient's neck, illustrating the previous surgical cervical stabilisation with metal work.

explained to the patient and consent was obtained for an awake intubation using the Venner APA scope.

The anaesthetist (CM) has performed more than ten awake intubations using the Pentax AWS video laryngoscope [6]. The Venner AP Advance video laryngoscope had recently been introduced into the department, and had already been used by CM on manikins and a number of asleep patients successfully. With the knowledge that it had been used effectively whilst maintaining manual in line stabilisation [7] the decision was made to use the Venner APA laryngoscope on this occasion. In the event of any difficulty, the plan was to secure the airway through an awake oral fibre optic intubation.

On arrival in the anaesthetic room, monitoring of blood pressure, ECG and peripheral oxygen saturation (SpO2) was commenced. After securing peripheral venous access, 200mcg of glycopyrrolate and 0.5 mg of midazolam was administered intravenously, and a remifentanil target controlled infusion at 2ng/ml was commenced. Oxygen at 2 L/ minute was administered via nasal cannulae. The patient's level of sedation was monitored by response to verbal commands. Lidocaine 4% was used for topical anaesthesia of the airway. 3 ml was administered as a gargle and 4 ml as a spray to the palate and oropharynx using the 'McKenzie' technique (oxygen tubing connected to a 20G cannula and oxygen flow set at 3 L/ minute). After 3 minutes, the Venner APA scope, mounted with the difficult airway blade (DAB), was inserted into the oropharynx. On visualisation of the epiglottis on the video viewer of the laryngoscope, a further 1.5 ml of lidocaine was sprayed on to the vallecula and epiglottis using a mucosal atomisation device. The Venner APA was then advanced further to obtain an optimal view of the larynx, where 2 ml of lidocaine was gently sprayed using a mucosal atomisation device. Next, a 7 mm reinforced tracheal tube was directed into the glottic aperture via the DAB guide plate. The trachea was then anaesthetised by administering another 1.5 ml of 4% lidocaine through a 2 mm (6 FG) suction catheter passed through the tracheal tube. Subsequently, the tracheal tube was advanced under vision into the trachea. The position of the tracheal tube was additionally confirmed by capnography and auscultation of the chest prior to inducing general anaesthesia.

The patient appeared to have tolerated the procedure well, without any gag or cough. On follow-up the next day, she had partial recall of the event, and rated it as an easily tolerable procedure. No oral or dental injuries were sustained.

Discussion

Alignment of the oro-pharyngo-laryngeal axes facilitates viewing of the glottis during direct laryngoscopy [8]. The optimal position for intubation, sniffing the morning air [9], as described by Sir I W Magill, is achieved through head extension and neck flexion. A pillow underneath the occiput to flex the neck forwards, combined with a backward head tilt allows the laryngoscopist to achieve this position [10-11]. However, in patients with local or systemic disease affecting the cervical spine, the range of movements can be limited or absent, leading to difficulty in achieving an optimal intubating position.

Indirect laryngoscopy utilises the principle of transferring the image of the larynx from the distal end of the blade to a viewing screen using a camera or an optical system. Therefore, alignment of the oro-pharyngo-laryngeal axes is not required for obtaining an optimal laryngeal view. In a manikin study, in a simulated difficult airway, the APA with the DAB reduced intubation time when compared with the McGrath video laryngoscope [12].

We used the Venner APA scope with the DAB on this occasion. The blade is usually inserted into the mouth along the midline to visualise the larynx on the video viewer attached to the handle. Due to the flexion deformity of the neck of our patient, some difficulty was experienced in inserting the blade into the mouth along midline, as the handle was touching the chest (the handle of the Venner APA laryngoscope, though shorter, is at a right angle to the blade as in McIntosh type laryngoscope). Therefore, the laryngoscope was inserted with the handle pointing the right corner of the mouth, which is then turned 90o counter clock wise, to keep it in the midline. This problem of inserting the laryngoscope can also be anticipated in obese patients and pregnant mothers. In our experience, the lifting force required to visualise the glottis using the APA laryngoscope mounted with the DAB is less than that required for other indirect laryngoscopes such as the Pentax Airway Scope (Hoya corporation, Tokyo, Japan) and Airtraq (Prodol meditec, Spain).

In our opinion, when compared to a fibre optic intubation technique, awake intubation with a video laryngoscope has certain advantages. The use of video laryngoscopes is intuitive for anaesthetists. Therefore, learning and maintaining the skill is relatively straightforward. Setting up a video laryngoscope is likely to be quicker and easier than for a fibre optic scope. Most video laryngoscopes have disposable blades, whereas the cleaning and disinfection process of fibre optic scopes limits their immediate availability. The video laryngoscopes provide a wide angle view unlike a fibre optic scope. When advancing a tracheal tube over a fibre optic scope, difficulty due to tube impingement may be encountered, commonly at the posterior structures of the laryngeal inlet [13]. When using video laryngoscopes, the tracheal tube is passed under vision, so any cause for obstruction to the passage of the tube can be seen, and the tube position manipulated accordingly. In our experience, patients tolerate awake video laryngoscopy very well. The main disadvantage of awake video laryngoscopy is that it is not suitable for patients with restricted mouth opening; other techniques (including fibre optic intubation) must then be considered.

The Venner APA video laryngoscope has a potential role in managing tracheal intubation in patients with limited cervical spine mobil-

ity. However, it's role in managing difficult airways due to other causes needs to be established further.

References

1. Wheeler M, Ovassapian A (2007) Fibreoptic endoscopy-aided techniques. In: Hagberg C, editor Benumof's airway management (2nd edn) Philadelphia: Mosby Elsevier 399-438.
2. Enomoto Y, Asai T, Arai T, Kamishima K, Okuda Y (2008) Pentax-AWS A new video laryngoscope, is more effective than the Macintosh laryngoscope for tracheal intubations in patients with restricted neck movements; a randomised comparative study. Br J Anaesth 100: 544-548.
3. Maharaj C, Costello J, Harte B, Laffey J (2008) Evaluation of the Airtraq and Macintosh laryngoscopes in patients at increased risk for difficult tracheal intubation. Anaesthesia 63: s182-188.
4. Suzuki A, Kunisawa T, Takahata O, Iwasaki H, Nozaki K, et al. (2007) Pentax-AWS (Airway Scope) for awake tracheal intubation. J Clin Anesth 19: 642-643.
5. Suzuki A, Toyama Y, Iwasaki H (2007) Airtraq for awake tracheal intubation. Anaesthesia 62: 746-747.
6. Jarvi K, Danha R, Hillermann C, Mendonca C (2011) Awake intubation with the Pentax Airway Scope. Anaesthesia 66: 314.
7. Butchart A, Young P (2010) Use of a Venner A.P Advance video laryngoscope in a patient with potential cervical spine Injury. Anaesthesia 65: 953-954.
8. Thong S Y, Lim Y (2009) Video and optic laryngoscopy assisted tracheal intubation-the new era. Anaesth Intensive Care 37: 219-223.
9. Condon HA (1987) Sir Ivan Magill A supplementary Bibliography. Anaesthesia 42: 1096-1097.
10. Johnson C, Goodman N W (2006) Time to stop sniffing the air: Snap shot survey. BMJ 333: 1295-1296.
11. Cattermole G N (2002) Sniff the morning air or drink a pint of beer? Anaesthesia 57:411.
12. Ross-Anderson DJ, Makepeace J, Burdett E (2011) Comparison between the AP Advance and the McGrath videolaryngoscopes and the Macintosh laryngoscope in standard and difficult airway scenarios: a manikin study. Anaesthesia 66: 237.
13. Marfin AG, Iqbal R, Mihm F, Popat MT, Scott SH, et al. (2006) Determination of the site of tracheal tube impingement during nasotracheal fibreoptic intubation. Anaesthesia 61: 646-650.