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.

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. Her other medical history included chronic degenerative arthritis and hypertension. Examination of her neck 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 1: Venner APA video laryngoscope.


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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, and oxygen flow set at 3 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 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).

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

References