



Successful tracheal intubation with the McGrath[®] MAC video laryngoscope after failure with the Pentax-AWS[™] in a patient with cervical spine immobilization

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To the Editor,

It is generally difficult to visualize or locate the glottis with a Macintosh laryngoscope or a fiberoptic bronchoscope in patients with spine injury after application of a halo-vest.¹ Video laryngoscopes have been shown to be useful for tracheal intubation in these patients.^{1,2} The McGrath MAC (Aircraft Medical Lt., Edinburgh, UK) has recently been developed as a new video laryngoscope modified from the McGrath Series 5. We report a case of successful tracheal intubation using the McGrath MAC in a patient with a halo-vest after failure to intubate this patient's trachea using a Pentax Airway Scope (Pentax-AWS) (Hoya Co., Tokyo, Japan). Written consent was obtained from the patient for publication of this report together with the photographs.

A 43-yr-old male (height, 172 cm; weight, 64 kg) with cervical fractures of C3 and C4 from a traffic accident nine days earlier was scheduled to undergo cervical laminoplasty. The patient's spinal cord was not judged to be injured, but since there was a high risk of subsequent spinal cord injury due to the unstable cervical spine, his head and neck were stabilized with a halo-vest. Computed tomography showed no abnormal findings in the pharynx or larynx, and the Mallampati scoring indicated a class 3 view with a thyromental distance of 85 mm and an interincisor distance of 30 mm. Since we considered the airway to be patent in this patient under mask ventilation, we planned to intubate the patient's trachea using a Pentax-AWS video laryngoscope after induction of general anesthesia. After setting up

alternative devices to secure the airway, including equipment for percutaneous tracheostomy and a transtracheal jet ventilator, general anesthesia was induced with propofol 100 mg *iv* and remifentanyl infused at 0.3 $\mu\text{g}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$. Since mask ventilation was successfully achieved, neuromuscular block was induced with rocuronium 50 mg *iv*. Despite several attempts to insert the Pentax-AWS Intlock blade into the larynx, the Intlock blade tip could not be advanced over the pharynx (Figure A), and bleeding was observed from the patient's mouth and pharynx. An attempt was then made to intubate the patient's trachea using a McGrath MAC video laryngoscope. The McGrath MAC (blade 3) was easily inserted and exposed the epiglottis and the vocal cords (Figure B). The patient's trachea was then intubated successfully with an 8.5-mm internal diameter reinforced (spiral) tracheal tube (Fuji Systems, Tokyo, Japan). The time taken from insertion of the McGrath MAC to tracheal intubation was < 20 sec, and the oxygen saturation did not decrease to < 99%. Surgery was completed uneventfully, and the patient's trachea was extubated after surgery without any complications.

In patients with an unstable cervical spine, stabilization of the head and neck is required to prevent subsequent spinal cord injury; however, stabilization of the neck makes it difficult to perform tracheal intubation using a Macintosh laryngoscope or fiberoptic bronchoscope.² Of the various video laryngoscopes available, the Pentax-AWS and the Glidescope[®] (Verathon Inc., Bothell, WA, USA) have been reported to be useful for tracheal intubation in patients with a halo-vest.^{1,2} When compared with the Glidescope, the Pentax-AWS has been shown to improve the success rate of tracheal intubations in patients with a simulated difficult intubation due to manual in-line stabilization.³ This finding suggests that the Pentax-AWS is a better tool than the Glidescope for tracheal intubation in patients with

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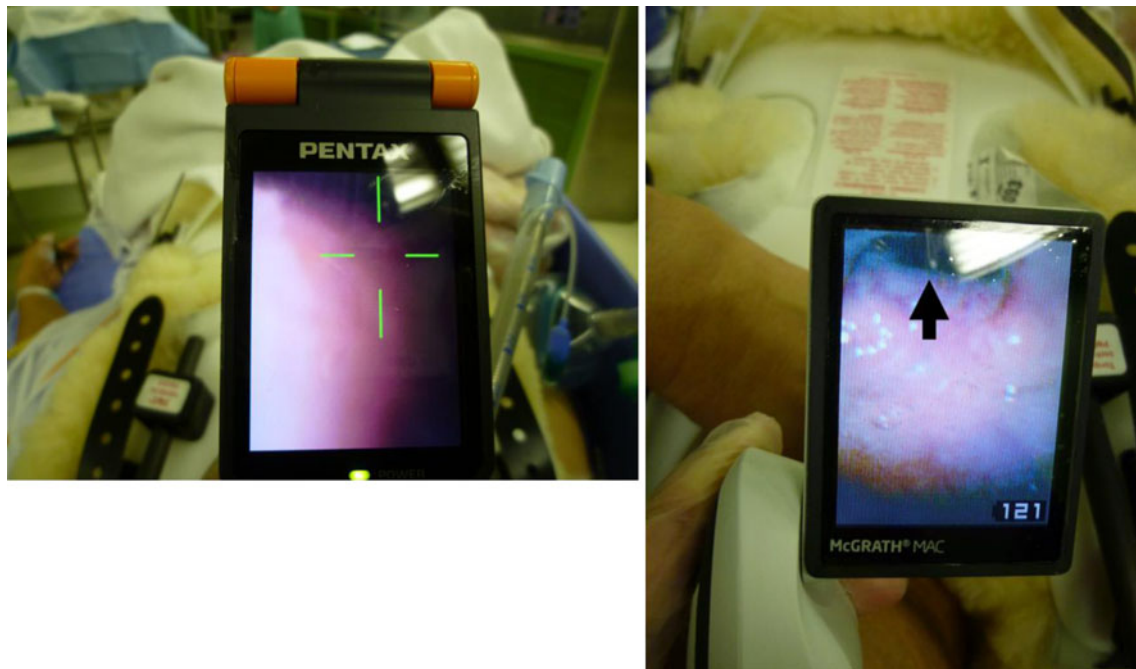


Figure A) A view of the pharynx using the Pentax-AWS™ (grade IV) video laryngoscope, indicating that the Pentax-AWS could not be advanced over the pharynx into the larynx. B) A view of the larynx

using the McGrath® MAC (grade I) video laryngoscope. The black arrow shows the glottis

stabilization of the head and neck. Then again, the Pentax-AWS may also have some limitations for intubation because failed tracheal intubations using the Pentax-AWS have been reported in patients with a long distance from the mouth to the larynx and with a smaller mouth opening.^{4,5} We also failed to intubate this patient's trachea using the Pentax-AWS, probably because of the relatively short interincisor distance (30 mm) and the long thyromental distance (85 mm). Finally, we could easily intubate the trachea using the McGrath MAC. The different feature of the McGrath MAC compared with the McGrath Series 5 is the curvature of the blade. The McGrath Series 5 has a more pronounced blade curvature, and the McGrath MAC uses a flatter blade. Nevertheless, both devices could reduce the limitations of the Pentax-AWS in patients with a difficult airway. Accordingly, the McGrath MAC may be an effective tool for visualizing the glottis and for tracheal intubation in patients with neck stabilization devices.

Conflicts of interest None declared.

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