

## Tracheal intubation using a Macintosh laryngoscope or a GlideScope® in 15 patients with cervical spine immobilization

Editor—The use of rigid fibrescopes that incorporate tracheal tubes does not allow for independent movement of the fibrescope to allow visualization of the glottis while inserting the tube.<sup>1–3</sup> This produces particular problems in patients with cervical rigidity.<sup>4</sup> In addition, these devices all suffer from fogging and obstruction of the lens.<sup>5</sup>

The GlideScope® (Saturn Biomedical Systems Inc, Burnaby, British Columbia, Canada; retail price US\$6500–7000 including monitor) is a new video laryngoscope that may be a useful alternative in difficult airway management. The GlideScope® incorporates a high resolution digital camera located in the middle of the blade tip. The glottis is visualized through a video cable, using a high resolution LCD monitor. The blade design of the GlideScope® has several advantages; an embedded anti-fogging mechanism, a reduced overall thickness of 18 mm, and a 60° curvature to match the anatomical alignment (Fig. 1).

The object of the study was to compare the Cormack grade<sup>6</sup> obtained initially with a Macintosh laryngoscope and then with the GlideScope®, in 15 patients presenting for general anaesthesia who were wearing cervical collars. Informed written consent was required for inclusion in the study.

The camera portion of the GlideScope® is inserted along the middle of the tongue and the tip is positioned in the vallecula. The epiglottis is elevated by lifting the blade into the vallecula. A view of the epiglottis and glottis is available on the monitor as soon as the camera section of the GlideScope® enters the mouth. The tube stylet is an important part of intubation with the GlideScope®. It is curved to follow the 60° angulation of the GlideScope® blade. The Cormack grade (I–IV) and ease of tracheal insertion were evaluated in each patient.

The Cormack grading in 14 of the 15 patients (93%) was reduced by one when using the GlideScope®. One Grade IV patient and eight out of nine Grade III patients on direct laryngoscopy became Grades III and II respectively on using the GlideScope®. One patient classified as Grade III using direct laryngoscopy remained a Grade III with the GlideScope®. This patient was intubated using a gum elastic bougie under continuous vision provided by the GlideScope®. In addition, five Grade II patients became Grade I using the GlideScope®. The average time of intubation with the GlideScope® was 38 s. No complications,



**Fig 1** The GlideScope® blade design: a reduced thickness of 18 mm and a 60° curvature. The tracheal tube stylet is curved to follow the 60° angulation.

including no trauma to the teeth, were observed. In order to carry out tracheal intubation using the GlideScope<sup>®</sup>, the stylet inside the tracheal tube and the GlideScope<sup>®</sup> were withdrawn approx 4 cm and 1 cm, respectively.

These results demonstrate that the GlideScope<sup>®</sup> provides adequate vision of the glottis even when the oral, pharyngeal and laryngeal axes are not aligned.

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