Introduction to the McGrath Video Laryngoscope

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Introduction

Difficulty with tracheal intubation, particularly in patients with an unanticipated difficult airway, remains a frequent cause of anesthesia-related morbidity and mortality [1]. While it has been emphasized that adherence to a precomplied strategy such as the ASA Difficult Airway Algorithm [2] would likely decrease respiratory-related morbidity and mortality, this fact has also motivated the development of a variety of special laryngoscope designs (Table 1) as well as a number of supraglottic airway devices such as the Laryngeal Mask Airway [3]. Of these techniques, video-assisted airway management using various forms of video laryngoscope design has recently been employed to help deal with this problem.

The purpose of this presentation is to introduce clinicians to one of the most recent video laryngoscope products, the McGrath Video Laryngoscope.

Table 1: Some Popular and Specialty Laryngoscopes

"Conventional" Laryngoscopes

- Macintosh type laryngoscopes (curved blades)
- Miller type laryngoscopes and other straight blade designs
- McCoy laryngoscope and variants (articulating tip)

Rigid Fiberoptic Laryngoscopes

- Bullard laryngoscope
- Upsher laryngoscope
- Wu laryngoscope (WuScope)

Video Laryngoscopes (with microminiature TV camera)

- McGrath Video Laryngoscope
- GlideScope Video Laryngoscope
- Storz Video Laryngoscope (Video Macintosh System)
- Weiss Video Laryngoscope

Flexible Fiberoptic Laryngoscopes (Bronchoscopes)

McGrath Video Laryngoscope

The McGrath Video Laryngoscope is a video-based system for tracheal intubation that utilizes a video camera embedded into a “camera stick”. A disposable transparent blade covers the camera stick, which can be easily adjusted in position using a simple ratchet mechanism. The resulting video image is displayed on a small color Liquid Crystal Display (LCD) attached to the handle of the device. Figure 1 illustrates the device.

Figure 1. The McGrath Video Laryngoscope, featuring a position-adjustable “camera stick” covered by an easily-replaced transparent disposable sterile blade. A small LCD display located at the top of the laryngoscope handle can be adjusted to obtain the best view. The unit is powered with a single easily-replaced AA battery and features a single electronic control: an on/off switch located on the top of the unit.

Use of the McGrath Video Laryngoscope is exceedingly simple. The unit is used in much the same manner as an ordinary laryngoscope with the exception that once it has been introduced into the mouth by a few centimeters, one's attention should be directed to the LCD display. I usually open the mouth using my right hand, then use the left hand to introduce the laryngoscope in the midline or slightly to the left using a gentle curving action until the glottis is identified. There is usually no need for any lifting force.

My experience with the McGrath Video Laryngoscope, based on two dozen oral intubation cases to date, is that the unit is easy to use, even in some patients who are ordinarily difficult to intubate because of an "anterior larynx". This ease of use is based on the fact that direct line of sight need not be established to get a good view of the glottis when the McGrath Video Laryngoscope is employed. In fact, I found that as with other video laryngoscopes the principal limitation in using the unit is not in getting a good view of the glottis, but rather in manipulating the styletted endotracheal tube (ETT) through the vocal cords, as the ETT tip often tends to hit against the anterior tracheal wall. (The trick here is to pull back the stylet by several centimeters to soften the tip. If this does not work, try removing the stylet completely, then vigorously twisting the ETT to rotate the tip by 180 degrees.) Finally, note that as with other video laryngoscopes like the GlideScope, the ETT ***must*** be styletted to allow the ETT to be manipulated through the vocal cords.

Recordings

Because the McGrath Video Laryngoscope has no video output jack, I was unable to electronically record the view obtained with any fidelity. Nevertheless we were able to use a camcorder to illustrate the use of the unit. Video clips of the first two cases done using the unit can be watched online as follows:

Case 1 http://www.youtube.com/watch?v=_WbJJ9XB67I

Case 2 http://www.youtube.com/watch?v=DCnS6mBZKZ8

All the intubations except one were elective cases that took place in the operating room under controlled conditions. The remaining case illustrates why a small portable video laryngoscope can be so very valuable. While down in our neuroradiology department I was summoned emergently to help with a large combative man who needed immediate intubation following a severe MCA stroke. Intubation conditions were far from ideal, as the patient was situated on a CT scanner awaiting a head scan. As with many off-site intubations, I was the only experienced intubator present and a difficult airway cart was not readily available. Unfortunately, after the patient received intravenous etomidate and succinylcholine I was unable to identify the vocal cords using an ordinary size 4 Macintosh laryngoscope. Fortunately, that day I happened to have been carrying the McGrath

Video Laryngoscope around with me in my computer bag, and I was able to use it without delay. This time the view was excellent, and the patient was intubated without difficulty using a styletted ETT.

References

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[3] Brimacombe JR, Brain AIJ, Berry AM. The laryngeal mask airway: a review and practical guide. London: WB Saunders, 1997.