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EDITORIAL

Video-laryngoscopy: the eye of the beholder?

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In this issue of the *Netherlands Journal of Critical Care*, Biermann et al. report on a trial in which they compared the use of direct laryngoscopy using the classical Macintosh laryngoscope (DL) with video-laryngoscopy using the GlideScope (GS) in the hands of inexperienced registrars. The registrars all had to intubate a manikin with both tools, after which the intubation success and time needed for successful intubation were compared. Results showed that intubation using the GS technique had a higher success rate (92% vs 69%, P<0.05). However, it took the registrars more time to successfully intubate the manikin with the GS (75 seconds versus 39 seconds).

The GS has been commercially available since 2001. The first major clinical study using the new video-laryngoscope was performed in 2005. In 133 patients in whom both direct laryngoscopy and video-laryngoscopy using the GS were performed, the use of GS resulted in superior or comparable view of the vocal cords. In 35 patients classified as Cormack-Lehane (C/L) 3/4 by DL, the use of GS reclassified them as C/L 1 in 24 and C/L 2 in three patients. Intubation with the GS was successful in 96.3% of patients.[1] Later that year the first randomized clinical trial comparing DL and GS in 200 elective surgical patients was performed. The results showed that GS improved the C/L grade in the majority of patients by G/L > 1. The time needed for intubation was longer in the GS group than in the DL group, but not for patients with G/L 3.[2]

The intubations in these first studies were performed by experienced anesthetists. Because of the better laryngeal view obtained by using GS, the technique has since been investigated in numerous situations with expected difficult intubation: in patients with reduced mouth opening,[3], in patients with immobilized spine,[4] out-of-hospital intubations,[5] and in simulated difficult airway-intubation in a manikin.[6] In all these situations the GS technique proved to be better than DL in terms of intubation success. In obese patients, better glottis views were achieved with the GS but the intubation time was longer. No difference was found in intubation success rate or complications.[7]

The fact that it takes longer to intubate a patient with GS, especially when the C/L grade is low, has been reported frequently. This seems to be due to the more difficult advancement of the tube through the mouth.[8]

However, the most difficult skill to learn when intubating patients is obtaining a good view of the glottis. Since the GS has proven to give these better views, it is reasonable to examine the functionality of its use in the hands of relatively inexperienced doctors. Nouruzi-Sedeh et al. performed a study in which inexperienced volunteers, who had only had a tracheal intubation training on a manikin, intubated elective surgical patients either with GS or DL. The success rate of GS was 93% versus 51% for DL. The intubation time for GS was shorter than for DL (63 seconds versus 89 seconds).[9] The same result was found by Ayoub et al.: inexperienced medical students were briefly trained using GS or DL, and subsequently intubated patients with normal airways. The students being trained with, and using the GS achieved higher success rates in less time.[10]

A recently published study by Kory et al. is closer to every day hospital reality. A cohort of critical care fellows using a GS in urgent endotracheal intubations in critical ill patients was compared with a historical cohort of critical care fellows using direct laryngoscopy. The rate of first-attempt success was higher in the group using GS (91% vs 68%). Also, the rate of unintended oesophageal intubation and the average number of attempts required for successful intubation were lower in the GS group.[11]

Randomized studies on the use of the GlideScope in emergency situations are scarce. The studies that have been performed on urgent intubation in the Emergency Department or in critically ill patients are mostly observational, and they do not show uniform results. Some find intubation with the GS leading to fewer attempts before successful intubation and less time needed for intubation [5], or fewer oesophageal intubations.[12].

Others find similar success rates for both methods of intubation, and suggest the use of GS for difficult airways.[13] The study by Platts-Mills et al. shows no difference between success rate and longer time needed for intubation in the GS group.[14] That the prolonged time needed for intubation is not always harmless in an emergency situation is suggested by the only randomized controlled study by Yeatts et al. performed in trauma patients: they retrospectively found longer intubation times and higher mortality among patients with severe neurotrauma who were intubated with GS.[15]

The most important limitation of the study by Biermann et al. is, as the authors mention themselves, that it has not been performed in a real life situation. Given the fact that outside office hours the vast number of intubations are required in emergency situations, there are many difficulties including hemodynamic and respiratory deterioration, aspiration and other complications that may be encountered by an inexperienced doctor trying to intubate a patient. Most of these problems will not be less when GS is used. Therefore, all doctors responsible for emergency stabilization of patients need to be thoroughly trained in the management of the acute patient. Emphasis should be placed on the ability to use the balloon, and other noninvasive methods of maintaining airway and breathing in an emergency situation. Once these prerequisites have been met and if the patient is still in urgent need of intubation, or the (thus probably not so inexperienced) doctor feels comfortable with the technique, the GS can be used as an initial means of intubation. This is particularly reasonable if the patient is expected to have a difficult airway. It is too early to say that the GS is superior in these situations; more randomized studies to prove this in a real life emergency situation are needed.

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