Reviewer’s report

Title: GlideScope Use Improves Intubation Success Rates: An Observational Study using Propensity Score Matching.

Version: 2  Date: 17 June 2014

Reviewer: Richard Cooper

Reviewer’s report:

GlideScope Use Improves Intubation Success Rates: An Observational Study using Propensity Score Matching

Minor Essential Revisions

- Important unacknowledged limitation of the study is the categorical description of risk factors such as Mallampati, cervical range of motion, mouth opening, dentition and past intubation history. In reality, these are not categorical but continuous. The decision to make them categorical may have been necessitated by propensity scoring but it differs from reality and is a limitation of the study that should be acknowledged.

- Please state if the protocol limited the number of permissible laryngoscopic attempts (with either device) before declaring failure. Was the number of attempts documented? If they were, they should be stated (i.e. number requiring 2 or > 3 attempts rather than the total number of attempts)

- After the 4th National Audit Project (16), “major airway complications” are thought of as brain injury, brain death, emergent surgical airway or airway-related ICU admission. Although Aziz et al. (5) referred to “more serious [airway] complications” (0.3%) in truth, these consisted of “one vocal cord trauma, one tracheal injury, one trauma to the hypopharynx, one tonsillar perforation and two dental injuries”. It would be more appropriate to describe these more completely or refer to them as relatively minor injuries.

- This reviewer is not convinced of the value of including simulation studies (6, 7) performed by untrained individuals (6, 8). If the authors elect to retain these references, the limitations of such studies should be mentioned. There is much more useful reference material to draw from.

- Reference 9 involves the use of the GlideScope in a manner that disregards the manufacturers recommendations.

- The overall experience of the operator may be less important than his/her prior experience using the GlideScope.

- “At least two GlideScope devices were available every day” provides insufficient information regarding availability. How many operating rooms are there in the facility? Are these single-use or reusable devices (sterilization may remove them from service for several hours)?

- Please provide a citation for Samsoon and Young (Methods/Outcome
Measures).

• Were any guidelines provided regarding the classification of CROM, mouth opening, what constitutes the presence or absence of teeth, normal or abnormal TMD or a history of difficult intubation?

• Please justify the rationale behind not requiring a stylet when using the GlideScope when the manufacturer recommends this. Have you recorded how often intubation was easily accomplished on a subsequent attempt if a stylet was used? Might this have further increased your first-pass success rate with the GlideScope?

• RESULTS: Please clarify whether 3,384 represent the total number of patients undergoing anesthesia and 3,139 the number intubated by either DL or GS?

• Please explain the apparent discrepancy between the statement in METHODS that 313 patients were in the GlideScope first-pass group and the second sentence in RESULTS that the GlideScope was used as the first-pass device in 643 [patients].

• Please clarify whether a history of difficult airway excluded patients with prior difficulty using a video laryngoscope.

• Please confirm that TABLE 3 is properly represented. Is it possible some or all of the GS and DL values are displayed in the wrong columns? More complications were noted with DL than GS laryngoscopy though, the p values do not reflect statistical significance with the exception of mucosal injury. Dental injury, esophageal intubation, hypoxemia and “others” are substantially higher in the DL group yet the p value is insignificant. Please confirm these calculations or the accuracy of the Table.

• DISCUSSION: “Laryngoscopist with varying levels of expertise are included in the study’s outcomes…” It would be helpful to know that the operators in the DL and GlideScope limbs were similar with respect to their “levels of expertise”. We have been provided with no information about who attempted the intubations in either group.

• Paragraph 2: “…the initial hypothesis was confirmed: the first pass success rate utilizing video laryngoscopy was higher”. I recommend that you restrict your observations to the specific device that was used rather than video laryngoscopy in general. No other device was evaluated, so it remains to be determined whether this statement applies to other video laryngoscopes.

• Paragraph 3: “Recently Aziz et al reported similar improvement in first pass success with a video laryngoscope…” Here the authors are introducing another video laryngoscope into the discussion. It would be more appropriate to comment on the GlideScope publication by Aziz (5) describing its use in 2,004 patients as a primary or rescue device. This paper does not describe video laryngoscopy in general but rather the GlideScope in particular. It is important for them to carefully consider what new information this study provides beyond that of Aziz et al. (5). If they wish to broaden the discussion by speculating on the role of video laryngoscopy in general, this should be done only after they have adequately discussed the GlideScope in particular. The same applies to the Jungbauer
publication (14).

- The value of including medical and nurse anesthesia students, respiratory therapists and others is limited by the absence of information pertaining to their representation and whether this was evenly reflected in the two groups.
- The study had a very substantial male imbalance (93 and 94%; is this what is meant by a veteran population?). This requires clarification.
- It may be true that a consensus does not exist regarding the predictors of a difficult GlideScope visualization however they should refer to Aziz (5) and Tremblay M-H et al. (Poor Visualization During Direct Laryngoscopy and High Upper Lip Bite Test Score Are Predictors of Difficult Intubation with the GlideScope® Video laryngoscope. Anesth & Analg 2008; 106: 1495-500).

Minor Discretionary Revision

- INTRODUCTION: second paragraph—I suggest that “over 71,000” and “more than 2000 GlideScope uses” be replaced by 71,570 and 2,004 respectively.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I have received reimbursement for travel expenses to conferences from Verathon, manufacturers of the GlideScope. I have no financial interest in Verathon or any competing interests.