Journal of Clinical Anesthesia (2015) **27**, 646–651

Journal of Clinical Anesthesia

Original Contribution

Does the incidence of sore throat postoperatively increase with the use of a traditional intubation blade or the GlideScope?☆,☆☆,★,★★,☆☆☆,☆☆☆☆

Dennis J. Cirilla II DO (Assistant Professor of Anesthesiology)[a,*], Jason Ngo BS (Medical Student, 4th year)[b], Vadim Vaisman DO (Assistant Professor of Anesthesiology)[a], Caroline Daly MD (Resident in Anesthesiology)[a], Ashar Ata MBBS, MPH (Staff Statistician)[c], Michael Sandison MD (Professor of Anesthesiology)[a], Kevin Roberts MD (Chair)[a]

[a]*Department of Anesthesiology, Albany Medical Center, Albany, NY, USA*
[b]*Albany Medical College, Albany, NY, USA*
[c]*Department of Surgery, Albany Medical Center, Albany, NY, USA*

Received 11 May 2014; revised 5 February 2015; accepted 9 June 2015

Keywords:
GlideScope;
Macmiller;
Macintosh;
Intubation;
Sore throat;
Pharyngitis;
Postoperative;
Endotracheal tube

Abstract

Study Objective: The GlideScope video-guided laryngoscope is an alternative standard of care for rescue laryngoscopies when direct laryngoscopy is unsuccessful. During postoperative checks by an anesthesiologist, it was noticed that patients who reported sore throat often required GlideScope laryngoscopy. Consequently, it is difficult to determine whether postoperative sore throats are caused by irritation inflicted by multiple laryngoscopic attempts or the actual utilization of the GlideScope itself. The goal of this study was to determine whether the use of the GlideScope leads to a greater or lesser incidence of sore throat when compared with traditional laryngoscope blades used for intubation.

Design: Eligible patients scheduled for elective inpatient surgeries requiring endotracheal tube intubation were enrolled into this single-blinded prospective cohort study. χ^2 Test, Fisher exact test, and *t* tests were used to compare differences across the primary end point and other demographic categories.

☆ Contribution: Dennis J. Cirilla II and Vadim Vaisman helped design the study, conduct the study, collect data, and prepare the manuscript. Jason Ngo and Caroline Daly helped conduct the study, collect data, analyze data, and prepare the manuscript. He is the archival author. Ashar Ata helped analyze data and perform statistical support. Michael Sandison helped provide manpower and resources. Kevin Roberts helped conduct the study.

☆☆ Attestation: Dennis J. Cirilla II and Vadim Vaisman approved the final manuscript. In addition, they attest to the integrity of the original data and the analysis reported in this manuscript.

★ Conflicts of interest: None for all authors.

★★ Funding: Internally funded by the Department of Anesthesiology, Albany Medical Center, Albany, NY.

☆☆☆ Did a Section Editor solicit this submission? No.

☆☆☆☆ IRB: Margo Fairbairn-Newton, IRB Administrator, Institutional Review Board, Albany Medical Center, 43 New Scotland Avenue, R-102, Albany, NY 12208. Tel.: 518-262-5997. fairbam1@mail.amc.edu

* Corresponding author at: Department of Anesthesiology, Albany Medical Center, 43 New Scotland Ave, MC-131, Albany, NY 12208, USA. Tel.: +1 518 262 4302.
E-mail addresses: CirillD@mail.amc.edu (D.J. Cirilla), NgoJ@mail.amc.edu (J. Ngo), VaismaV@mail.amc.edu (V. Vaisman), DalyC@mail.amc.edu (C. Daly), AtaA@mail.amc.edu (A. Ata), SandisM@mail.amc.edu (M. Sandison), RobertK@mail.amc.edu (K. Roberts).

http://dx.doi.org/10.1016/j.jclinane.2015.06.005

Setting: Operating rooms and postanesthesia recovery unit, Albany Medical Center, Albany, NY.
Patients: There were a total of 151 patients with American Society of Anesthesiologists grades 1 to 3 included in the study.
Interventions: Eighty-one patients were randomized to a control group that received traditional laryngoscopy via Macintosh/Miller blades and 70 patients received video-guided intubation via the GlideScope.
Measurements: The incidence of postoperative sore throat was recorded via a yes/no questionnaire within 24 hours after extubation. Secondary parameters such as provider type, sex, and perceived difficulty were also recorded.
Main results: There was no significant difference in the proportion of patients reporting sore throat by type of blade used (Mac/Miller 36.3% vs GlideScope 32.4%, $P = .619$). For secondary outcomes, women were significantly more likely to report sore throat as compared with men (men 24.3% vs women 43.2%, $P = .015$), and the provider type was significantly associated with the occurrence of postoperative sore throat (attendings 26.8% vs certified registered nurse anesthetists 52.3% vs third-year clinical anesthesia residents 30%, $P = .012$).
Conclusions: Use of the GlideScope videolaryngoscopy was not significantly associated with increased occurrence of postoperative sore throat when compared with traditional intubation techniques. Our results may enable more trainees to acquire intubation skills with the GlideScope during an initial intubation attempt in patients with American Society of Anesthesiologist grades 1 to 3, with optimization of patient satisfaction in respect to postoperative sore throats. In addition, a provider's choice of intubation technique based on either Macintosh/Miller blades or the GlideScope does not significantly impact a patient's risk of postoperative sore throat.

1. Introduction

Use of the Macintosh/Miller (Moore Medical, Farmington, CT) blade is current standard of care for first-line intubations of patients with no predicted difficult airways. Use of the GlideScope (Verathon, Bothell, WA) has been validated through numerous studies that have shown a comparable or superior glottic view with use of the GlideScope when compared with Macintosh/Miller direct laryngoscopy methods [1]. GlideScope videolaryngoscopy has evolved into standard of care for patients who require a rescue intubation after a primary attempt with direct Macintosh/Miller blade laryngoscopy has failed [2].

During postoperative checks, it was noticed that patients who reported sore throat often required intubation with the GlideScope. The initial attempt with direct laryngoscopy on a difficult airway may require use of McGill forceps, which increases the chance of upper airway injury prior to the rescue attempt with the GlideScope. Consequently, it is difficult to determine whether patients' reports of postoperative sore throat are caused by the irritation of the multiple laryngoscopic attempts required in patients where the GlideScope was needed as a rescue method, or whether it is due to the actual use of the GlideScope itself.

Previous studies suggest that use of a GlideScope in both manikins and humans decreases the likelihood of upper airway injury by decreasing the mean force and homogenizing the force distribution during laryngoscopy when compared with the Macintosh laryngoscope [3,4]. Another study found that the incidence of postoperative moderate or severe sore throat was significantly reduced with use of the GlideScope when compared with direct laryngoscopy in nasotracheal intubation [5]. However, other studies have shown increased incidence of postoperative sore throat with GlideScope usage when compared with other videolaryngoscopes and conventional Macintosh laryngoscope as a primary laryngoscopy method [6]. In light of these studies, none have attempted a direct comparison of a GlideScope with conventional Macintosh/Miller laryngoscope blades with incidence of sore throat as a primary outcome of interest.

The purpose in this study is to determine whether there is a difference in the incidence of postoperative sore throat when using the GlideScope vs a traditional intubation blade involving patients who are not anticipated to have a difficult airway. Exclusion of patients with difficult airways allows us to perform direct comparisons with the GlideScope and conventional direct laryngoscopy without compromising standard of care or increasing patient risk.

2. Methods

This study was approved by the institutional review board of the Albany Medical College. Study enrollment commenced in June 2012. Written and informed consent was obtained from all subjects by study personnel and witnessed by another staff member if the patient gave verbal consent.

This single-blinded prospective cohort study evaluated the incidence of sore throat for patient groups separately exposed to either conventional Macintosh/Miller blade laryngoscopy or to GlideScope videolaryngoscopy. The null hypothesis is that there is no difference in incidence of sore throat when using the GlideScope vs a standard intubation blade. The primary study end point was 24 hours postoperatively after evaluation of sore throat was completed. Using a sample size of 75 subjects per group will allow us to detect a 6% difference between samples,