

CASE REPORT

Soft palate perforation from Glidescope® intubation: A case report

Matthew W. Oh | Alla Yarmosh | David Francis | Tiffany S. Moon 

University of Texas Southwestern
Medical Center, Dallas, Texas, USA

Correspondence

Tiffany S. Moon, Department of
Anesthesiology and Pain Management,
University of Texas Southwestern
Medical Center, 5323 Harry Hines Blvd,
Dallas, TX 75390, USA.
Email: Tiffany.Moon@
UTSouthwestern.edu

Funding information

None

Abstract

We highlight a potential major complication from GlideScope intubation—perforation of the soft palate. With increasing use of video laryngoscopy, precautions must be taken to ensure that its continued use does not increase airway complications.

KEYWORDS

endotracheal intubation, Glidescope, palatal perforation, video laryngoscopy

1 | INTRODUCTION

With video laryngoscopy becoming more frequently used, clinicians must be aware of possible injuries that can occur. We report a case of right soft palate perforation during intubation with the GlideScope® and provide an explanation regarding the mechanism of injury and a recommendation to minimize this risk in the future.

Anesthesiologists are increasingly using video laryngoscopy to perform endotracheal intubation. Video laryngoscopes are intubation devices equipped with a miniature video camera that allows indirect visualization of the glottis. An example is the GlideScope®, a rigid indirect video laryngoscope with a preformed rigid stylet. Although the use of the GlideScope® and other video laryngoscopes have been shown to provide benefits including improved laryngeal views, reduced intubation difficulty, and improved first-attempt intubation success rates, complications can still arise.¹ This case report demonstrates a right soft palate perforation during intubation with a GlideScope®, which required surgical intervention by an otolaryngologist. This case report adheres to the Enhancing the QUALITY

and Transparency Of health Research (EQUATOR) guidelines. A written informed consent was obtained from the patient to publish this case report, and it is in accordance with the requirements of Health Insurance Portability and Accountability Act (HIPAA) privacy regulations. No adverse events were reported to the manufacturer, United States Food and Drug Administration (FDA), or other governmental regulatory agency.

2 | CASE REPORT

A 30-year-old man was brought in by helicopter as a level 1 trauma activation secondary to a highway speed motor vehicle collision. The patient had a positive focused assessment with sonography for trauma (FAST) examination, and vital signs were consistent with hemorrhagic shock. Further workup found right-sided pulmonary edema, a grade 4 liver laceration, and a left femur fracture. The patient underwent immediate mesenteric embolization and was then taken to the intensive care unit. On hospital day 3, he was scheduled for

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2021 The Authors. *Clinical Case Reports* published by John Wiley & Sons Ltd.

intramedullary nail to the femur. During intubation with the GlideScope[®], the right soft palate was perforated. The endotracheal tube (ETT) pierced the right soft palate down the anterior tonsillar pillar and then subsequently entered the trachea (Figure 1). The otolaryngology service was consulted intraoperatively to repair the injury. The ETT was withdrawn from the trachea and soft palate under continuous visualization via the Glidescope[®], and the patient was reintubated. The combined length of all lacerations was 2 cm, which the otolaryngologist closed with 4-0 Monocryl suture. On the next day, the patient returned to the operating room (OR) for the femur surgery and was intubated with a GlideScope[®] without any difficulty. The palatal repair was intact and appeared to be healing well. He tolerated the procedure well and was discharged home on postoperative day 12.

3 | DISCUSSION

A retrospective review of over 70,000 intubations showed that the overall success rate for GlideScope[®] intubation was 97%.² Despite this, intubation with a GlideScope[®] can be associated with complications in 1% of patients. Of these patients, 70% of them had minor injuries involving soft tissue and 30% of these patients had major complications including dental, pharyngeal, tracheal, or laryngeal injury.² This case report showcases a right soft palate perforation down the anterior tonsillar pillar,

which is rare and highlights the potential for major complications with video laryngoscopy.³ Furthermore, this case report also emphasizes successful intubation using the GlideScope[®] following a complication from video laryngoscopy, which to our knowledge, has not been previously documented in the literature. A recent review of almost 15,000 intubations found that video laryngoscopy had a fifteen-fold higher risk of palatal injury compared to direct laryngoscopy. This is due to the inherent design of video laryngoscopy, which involves indirect rather than direct visualization of the glottis.⁴ With increasing use of video laryngoscopes, especially in the setting of difficult airways, it is important to understand why video laryngoscopy may be associated with a higher risk of palatal injury. A commonly proposed mechanism for injury during video laryngoscopy is that the operator's visual attention is diverted from the patient's mouth to the monitor while introducing the laryngoscope and ETT, causing the operator to be unaware of the location of the ETT until it appears on the monitor.⁵ Upward force of the laryngoscope for visualization likely stretches the tonsillar pillars, making them taut and susceptible to perforation by an advancing ETT.⁵ A recommendation to minimize injury is to have the laryngoscopist first look into the patient's mouth while inserting the Glidescope[®] blade, then look at the monitor display of the glottis. They should look again into the mouth to insert the ETT and finally look at the monitor once more before advancing the ETT through the vocal cords.³

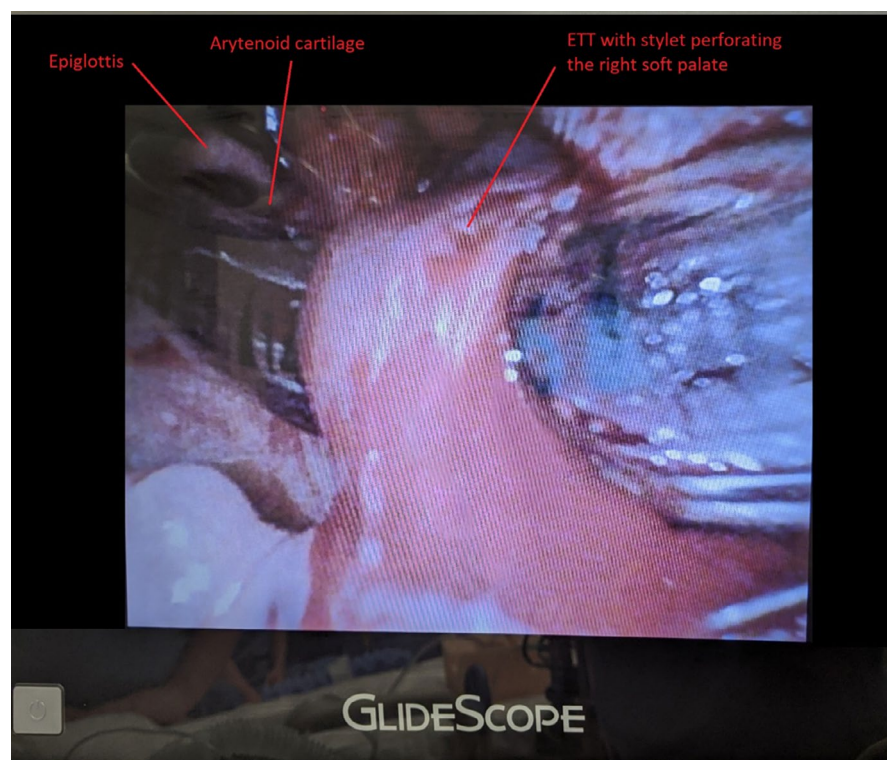


FIGURE 1 This figure demonstrates right soft palate perforation from Glidescope[®] intubation that required surgical intervention by an otolaryngologist. ETT, Endotracheal Tube

4 | CONCLUSION

Cases of injury to the palate during intubation are relatively uncommon. However, with the increasing use of video laryngoscopy, it is important to be cognizant of this potential complication and to take the necessary precautions when performing Glidescope® intubation. A subsequent Glidescope® intubation can be safely performed following a complication. Through the review of this case, previous case reports, and published literature, it is recommended that during intubation with a Glidescope®, one should first look into the patient's mouth while inserting the Glidescope®, then at the monitor display of the glottis, then back into the mouth to insert the ETT, and finally at the monitor prior to advancing the ETT through the vocal cords.³ Following these steps should reduce the likelihood of palatal injury during GlideScope® intubation.

ACKNOWLEDGEMENTS

None.

CONFLICTS OF INTEREST

None.

AUTHOR CONTRIBUTIONS

Matthew W. Oh, B.S., Alla Yarmosh, M.D., David Francis, M.D., Ph.D., and Tiffany S. Moon, M.D. drafted and revised the manuscript.

ETHICAL APPROVAL

Consent for publication of this manuscript was obtained from the patient. The IRB has determined that case reports are exempt from oversight. The authors have complied with HIPAA regulations.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

ORCID

Tiffany S. Moon  <https://orcid.org/0000-0001-7052-5169>

REFERENCES

1. Lewis SR, Butler AR, Parker J, Cook TM, Schofield-Robinson OJ, Smith AF. Videolaryngoscopy versus direct laryngoscopy for adult patients requiring tracheal intubation: a cochrane systematic review. *Br J Anaesth*. 2017;119(3):369-383.
2. Aziz MF, Healy D, Kheterpal S, Fu RF, Dillman D, Brambrink AM. Routine clinical practice effectiveness of the Glidescope in difficult airway management: an analysis of 2,004 Glidescope intubations, complications, and failures from two institutions. *Anesthesiology*. 2011;114(1):34-41.
3. Malik AM, Frogel JK. Anterior tonsillar pillar perforation during Glidescope video laryngoscopy. *Anesth Analg*. 2007;104(6):1610-1611; discussion 1611.
4. Greer D, Marshall KE, Bevans S, Standlee A, McAdams P, Harsha W. Review of videolaryngoscopy pharyngeal wall injuries. *Laryngoscope*. 2017;127(2):349-353.
5. Cooper RM. Complications associated with the use of the Glidescope videolaryngoscope. *Can J Anaesth*. 2007;54(1):54-57.

How to cite this article: Oh MW, Yarmosh A, Francis D, Moon TS. Soft palate perforation from Glidescope® intubation: A case report. *Clin Case Rep*. 2021;9:e04864. <https://doi.org/10.1002/ccr3.4864>