

Aspiration of a Video Capsule Placed Endoscopically Into the Duodenum Under General Anesthesia

Marjorie McCracken, MD, PHD, Sagar Pathak, MD, and Melvin B. Heyman, MD, MPH

Key Words: bronchi, complication, endoscopy, enteroscopy, PillCam, trachea

A 16-year-old male with Crohn's disease treated with infliximab and methotrexate underwent video capsule enteroscopy (VCE) for history of jejunal disease found previously by VCE despite normal magnetic resonance enterography. VCE was done using a video capsule (PillCam; Medtronic) placed under propofol anesthesia for esophagogastroduodenoscopy and colonoscopic surveillance with the patient in the left lateral decubitus position. The patient was asymptomatic with normal laboratories and magnetic resonance enterography. He had no history of gastrointestinal dysmotility. Under direct vision, the capsule was placed within 10 minutes into the second portion of the duodenum without difficulty. The video (<http://links.lww.com/PG9/A66>) shows the capsule regurgitated into the stomach, then into the esophagus, and then aspirated into the trachea (Fig. 1). The capsule was expelled promptly from the trachea but remained in the pharynx (Fig. 2) for over 1 hour before being swallowed and passing through the remainder of the intestinal tract. During recovery period, no one including the anesthesiologists, endoscopists, recovery room nurses, patient's mother, or the patient noticed anything unusual. The patient was discharged home well. Previously, our patient had swallowed 2 video capsules successfully while awake.

We previously experienced regurgitation into the esophagus of a video capsule placed in the duodenum under propofol anesthesia in the supine position. The patient was an asymptomatic adolescent girl post colectomy for juvenile polyposis who had no known gastrointestinal dysmotility and underwent esophagogastroduodenoscopy and ileoscopy for surveillance. The capsule remained in the patient's

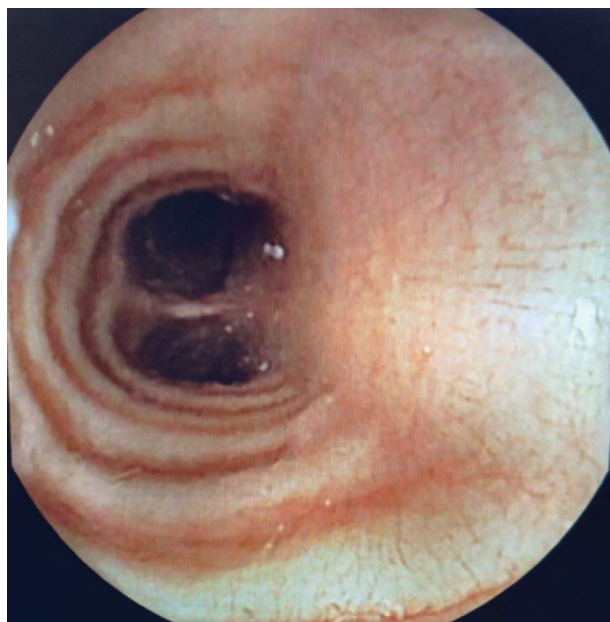


FIGURE 1. Image from video capsule at 4 minutes after placement showing tracheal bifurcation.

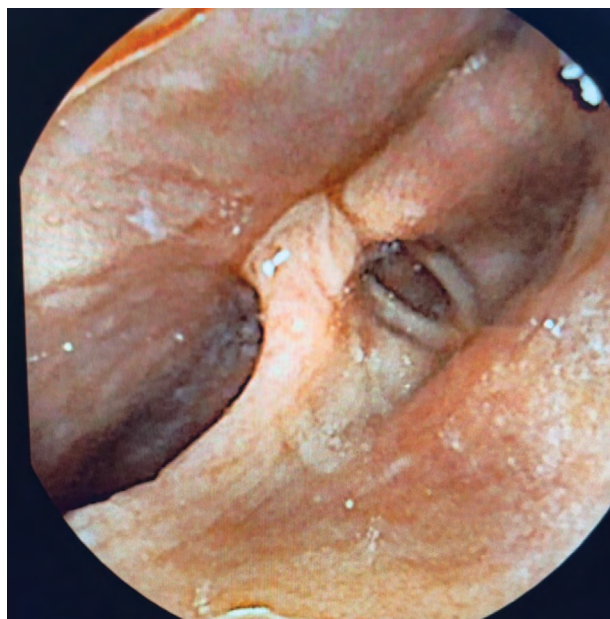


FIGURE 2. Image from video capsule at 46 minutes showing capsule still in hypopharynx above the vocal cords. Patient was asymptomatic at this time.

Received August 26, 2021; accepted November 4, 2021.

From the Department of Pediatrics, UCSF Benioff Children's Hospital, San Francisco, CA.

Dr Pathak is supported in part by the Cystic Fibrosis Foundation Clinical Fellowship Award and by National Institutes of Health grant T32 DK007762. Dr Heyman is Editor in Chief of Journal of Pediatric Gastroenterology and Nutrition Reports. Dr McCracken reports no conflicts of interest.

The patient is a minor and his mother provided consent for publication of the details of this report. The patient provided assent for publication of the video. Institutional Review Board approval is not required for case reports at our institution (University of California, San Francisco).

Guarantor: Marjorie McCracken, MD, PhD.

Supplemental digital content is available for this article.

Correspondence: Marjorie McCracken, MD, PhD, Department of Pediatric Gastroenterology and Nutrition, UCSF Benioff Children's Hospital, 7 Cotton Place, Menlo Park, CA 94025. E-mail: margemccr@gmail.com or marjorie.mccracken@ucsf.edu

Copyright © 2021 The Author(s). Published by Wolters Kluwer Health, Inc. on behalf of the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition and the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition. This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

JPGN Reports (2021) 3:1(e157)

ISSN: 2691-171X

DOI: 10.1097/PG9.0000000000000157

esophagus for several hours before being swallowed and passing through the intestinal tract. Upon questioning after review of the video, she was totally unaware that the capsule was in her esophagus. She also had previously swallowed video capsules successfully while awake.

This is one of the first reports of a video capsule placed endoscopically that was regurgitated and aspirated. Multiple reports and case series report patients aspirating video capsules swallowed while awake. Most of these patients were elderly or had neurological problems. No child aspirating a video capsule has been reported (1,2). Both of our patients were asymptomatic, which is common with aspirated video capsules (40% in Yung et al [3]). Our experience shows that placing a video capsule endoscopically is not necessarily safer than having it swallowed by an awake patient (4).

Since both patients had previously successfully swallowed video capsules while awake, we suggest that being under anesthesia caused the regurgitation. To prevent such problems, we recommend that video capsules not be placed endoscopically with anesthesia merely for convenience, as was done with our patients. Additionally, before discharge, all patients should have confirmation by video capsule that the capsule has passed through the lower esophageal

sphincter. If the patient can swallow a pill, video capsule should be swallowed awake. Whether patient intubation, promotility agents, CO₂ insufflation, or positioning would be helpful for prevention is unknown and deserves study.

ACKNOWLEDGMENTS

M.M. read the capsule video. S.P. and M.B.H. placed the video capsule endoscopically into the duodenum. All authors assisted in drafting the report and have approved final version of the article.

REFERENCES

1. Oliva S, Cohen SA, Di Nardo G, et al. Capsule endoscopy in pediatrics: a 10-years journey. *World J Gastroenterol*. 2014;20:16603–16608.
2. Bandorski D, Kurniawan N, Baltes P, et al. Contraindications for video capsule endoscopy. *World J Gastroenterol*. 2016;22:9898–9908.
3. Yung DE, Plevris JN, Koulaouzidis A. Short article: aspiration of capsule endoscopes: a comprehensive review of the existing literature. *Eur J Gastroenterol Hepatol*. 2017;29:428–434.
4. Friedlander JA, Liu QY, Sahn B, et al; Endoscopy Committee. NASPGHAN capsule endoscopy clinical report. *J Pediatr Gastroenterol Nutr*. 2017;64:485–494.