

Impact of fellow training level on adverse events and operative time for common pediatric GI endoscopic procedures

Jacob A. Mark, MD, Robert E. Kramer, MD

Aurora, Colorado, USA

Background and Aims: Previous studies on pediatric endoscopic training have not examined in detail if adverse events (AEs) are affected by the fellow's training level. We aimed to determine whether trainee presence and educational level increase AEs or operative time (OT) for pediatric intestinal endoscopy.

Methods: This was a prospective observational study of AEs for all endoscopic procedures and retrospective analysis of OT (time of endoscope insertion until removal) for a sample of specified procedures at a tertiary children's hospital. AEs were categorized by severity grades: 1, home management; 2, outpatient evaluation; 3, hospitalization and/or repeat endoscopy; 4, surgery and/or intensive care unit admission; and 5, death.

Results: A total of 15,886 procedures (6257 with trainee) including 1627 therapeutic procedures (733 with trainee) were analyzed for AEs. Four hundred thirteen total AEs (2.60%) and 213 AEs grade 2 to 4 (1.34%) were identified. Fellow presence at any training level did not increase AE rates for any procedures. Median OT for 3762 EGDs decreased from 17 to 11 minutes from the first quarter to the fourth quarter of first-year fellowship and then remained stable. EGDs without fellows were shorter (9 minutes, $P < .0001$) compared with any training level. Median times of 1291 colonoscopies with EGD decreased from 55 to 51 to 47 minutes for fellows in the first half, second half of first-year fellowship, and second and third year, respectively. Attendings alone were faster (37 minutes, $P < .0001$).

Conclusions: Current pediatric endoscopic training for is safe regardless of fellow training level. Trainee efficiency improves during and after fellowship. (Gastrointest Endosc 2018; ■:1-8.)

Medical training is vital for the future of medicine to ensure sufficient numbers of general and subspecialist physicians over time. The necessity of medical training can appear at odds with the physician's primary responsibility to first do no harm, with concerns that performance of invasive procedures by trainees may increase risks for patients. Pediatric and internal medicine residency graduates may have little experience in intestinal endoscopy. Current training practices vary between institutions but often rely on direct observation by supervising physicians,^{1,2} requirements for numbers of performed procedures,^{3,4} and simu-

lations.⁵⁻⁸ There are concerns that procedures performed by less-experienced trainees may place patients at higher risk of adverse events (AEs).^{1,9} Trainees may require longer operative time (OT),¹⁰ leading to increased patient exposure to anesthesia, increased costs, and less-efficient procedure scheduling.

Studies on intestinal endoscopy in adults and children have mixed results, with some finding increased risk of AEs for procedures with trainees^{11,12} and others not finding an association.¹³⁻¹⁶ One factor that has not been well assessed in previous studies is the impact of the training level

Abbreviations: AE, adverse event; ASA, American Society of Anesthesiologists; IQR, interquartile range; OT, operative time; Q, quarter of academic year; SD, standard deviation.

DISCLOSURE: All authors disclosed no financial relationships relevant to this publication.

Copyright © 2018 by the American Society for Gastrointestinal Endoscopy 0016-5107/\$36.00

<https://doi.org/10.1016/j.gie.2018.07.010>

Received February 28, 2018. Accepted July 11, 2018.

Current affiliation: Section of Gastroenterology, Hepatology and Nutrition and the Digestive Health Institute, Children's Hospital Colorado, University of Colorado Denver School of Medicine, Aurora, Colorado, USA.

Reprint requests: Jacob A. Mark, MD, Section of Gastroenterology, Hepatology and Nutrition and the Digestive Health Institute, Children's Hospital Colorado, University of Colorado Denver School of Medicine, 13123 East 16th Avenue, B290, Aurora, CO 80045.

If you would like to chat with an author of this article, you may contact Dr Mark at jacob.mark@childrenscolorado.org.

of the fellow on AE rates. This consideration is important, because the skill level of a fellow at the start of training is very different from the skill level of the same fellow at the end of training, which may affect AE rates. In addition, the risks of therapeutic endoscopy (such as polypectomy, foreign body removal, etc) may be influenced to a greater degree by proceduralist expertise than diagnostic endoscopy (endoscopic visualization and biopsy specimen only).

The extra time required to train fellows to perform endoscopy can increase time of anesthesia exposure, leading to concerns of negatively impacting neurodevelopment in children.^{17,18} Colonoscopy times with trainees have been found to be associated with 50% increase in an adult study, which may affect procedure scheduling¹⁰ and potentially patient satisfaction if it results in longer wait times from running behind schedule. Presently, no studies have examined procedure times for common endoscopic procedures in children and the efficiency of fellows at different levels of training.

This study aimed to determine if the AE rates for common diagnostic and therapeutic endoscopic procedures were increased when performed by a fellow and if these rates were influenced by the training level of the fellow. We also aimed to quantify the effects of trainees on OT for common pediatric endoscopic procedures.

METHODS

This study was approved by the Colorado Multiple Institutional Review Board protocol no. 15-1930.

Study population and identification of AEs

We examined all intestinal endoscopies performed at a free-standing tertiary children's hospital over a 7-year period (2010-2016). During the period of study, 19 attending pediatric gastroenterologists directly supervised procedural training of fellows and 2 attendings practiced at a satellite location and did not directly supervise fellows during procedures. Attending experience varied from <1 year to >20 years of practice after fellowship graduation. A total of 21 pediatric gastroenterology fellows performed procedures during this period.

All endoscopic procedures were performed with a pediatric anesthesia team at 1 of 3 sites within our institution. American Society of Anesthesiologists (ASA) class was assigned by the anesthesiology team before the procedure. Air insufflation was used for all procedures from April 2010 to 2012, after which carbon dioxide insufflation was used routinely for most procedures. Water insufflation was not used routinely for colonoscopies.

A prospective AE monitoring system was used for all endoscopies. This consisted of several approaches to maximize capture of AEs. Any AEs identified in the procedure or in the recovery area were recorded into a secure central database. If the patient had a planned admission after the

procedure, they were monitored for AEs during the hospitalization and up to 72 hours after the procedure or discharge. If no AEs were identified in the perioperative time and the patient was discharged, a phone call to the patient's family was made within 72 hours of endoscopy with assessment of any concerning symptoms that may have signified an AE. A standardized query of the electronic medical record was also used to identify patients who were seen in the emergency department or admitted in our hospital system within 72 hours of their endoscopic procedure. Any patients with an AE identified in these ways or who called the gastroenterology office with postprocedural complaints were reviewed by 1 of the study authors (R.K.) to determine whether their symptoms were related to the endoscopy. Symptoms were classified as an AE if the complaints could be reasonably attributed to endoscopy (such as fever) without an alternate cause unrelated to endoscopy (such as new influenza infection).

AE grading and categorization

AEs were categorized and the severity graded according to a 5-point system that has been previously reported.¹⁵ Grade 1 designated cases in which telephone management, reassurance, or supportive measures at home were all that were required. Grade 2 classified cases in which the patient either self-referred or was instructed to come to the emergency department or clinic because of a postprocedure complaint and was then managed as an outpatient. Grade 3 designated cases in which the patient was admitted to the hospital and/or required significant intervention, such as a repeat endoscopy or blood transfusion. Grade 4 was used to describe cases in which there was a need for surgery or an intensive care unit admission. Grade 5 was used to describe cases in which there was a death related to endoscopy. AEs \geq grade 2 were considered clinically significant because of medical cost and intervention incurred by subsequent evaluation, regardless of whether this evaluation resulted in positive findings.

Fellow participation and training level

Total numbers of procedures and fellow participation in each endoscopic procedure were assessed by review of the endoscopic software (EndoWorks; Olympus America, Center Valley, Pa). Procedures were categorized as either having a fellow present or not. Training level of the fellow was determined by the date of the procedure in relation to the start of his or her gastroenterology training (beginning each year July 1). For analysis, fellow training level was grouped by quarter (Q) of the academic year (Q1, July-September; Q2, October-December; Q3, January-March; Q4, April-June).

Selection of procedures for detailed AE analysis

AE rates were evaluated for all procedures in aggregate and for selected types of procedures. EGD and colonoscopy were selected for detailed AE rate analysis because they are the most commonly performed endoscopic

Download English Version:

<https://daneshyari.com/en/article/11008483>

Download Persian Version:

<https://daneshyari.com/article/11008483>

[Daneshyari.com](https://daneshyari.com)