

Anesthesia for Colonoscopy and Lower Endoscopic Procedures



John Michael Trummel, MD, MPH^{a,*}, Vinay Chandrasekhara, MD^b,
Michael L. Kochman, MD^b

KEYWORDS

- Anesthesia • Colonoscopy • Deep sedation • Lower endoscopic procedures
- Moderate sedation • Outcomes • Propofol

KEY POINTS

- Demand for anesthesiologist-assisted sedation is expanding for gastrointestinal lower endoscopic procedures and may add to the cost of these procedures.
- The vast majority of lower endoscopy can be accomplished with either no, moderate, or deep sedation; general anesthesia and active airway management are rarely needed.
- Propofol-based sedation has advantages in terms of satisfaction and recovery over other modalities, but moderate sedation using benzodiazepines and opiates work well for low-risk patients and procedures.
- No sedation for routine colonoscopy works well for selected patients and eliminates sedation related risks.
- There is no difference in outcome measures based on sedation received.

INTRODUCTION

In developed countries, most lower endoscopic procedures receive some type of sedation/anesthesia. Sedation is typically utilized for several congruent reasons: patients want a favorable experience; endoscopists want reasonable technical conditions, and both want optimal patient safety and procedural outcomes. Sedation can be administered by the endoscopy team or by an anesthesia specialist. However, adding anesthesia services may add significantly to the cost of these procedures; this concern needs to be considered when planning an optimal sedation strategy. The purpose of this article is to review relevant recent literature surrounding sedation practice for colonoscopy and lower endoscopic procedures. Specific considerations

^a Anesthesiology, Dartmouth Hitchcock Medical Center, 1 Medical Center Drive, Lebanon, NH 03756, USA; ^b Gastroenterology Division, Perelman School of Medicine at the University of Pennsylvania, 3400 Civic Center Boulevard, Philadelphia, PA 19104, USA

* Corresponding author.

E-mail address: John.M.Trummel@hitchcock.org

include a review of best sedation practice, safety, quality, and outcomes related to sedation, and the cost profile of differing regimens.

SEDATION PRACTICE FOR LOWER ENDOSCOPY

Anesthesiologists define sedation on a continuum from mild sedation to general anesthesia (**Table 1**).¹ Lower endoscopy can be performed anywhere on this spectrum. Traditionally, most routine lower endoscopy has been performed in the United States with endoscopist-supervised moderate sedation using a benzodiazepine and opiate combination. More recently, deep sedation with propofol administered by an anesthesia provider has increased in utilization. Occasional patients, usually because of personal preference, may choose not to have any sedation for colonoscopy. Although most standard lower endoscopic procedures can be performed with minimal or moderate sedation, complex interventional lower endoscopic procedures or those that are longer in duration may require deeper levels of sedation (**Box 1**). Rarely, specific patients may require general anesthesia with active airway management.

Although most patients now receive sedation or anesthesia for lower endoscopy, several studies have evaluated the no sedation option to determine procedural effectiveness and/or quality. A 1999 study randomized 70 self-selected patients to either moderate sedation or sedation as needed. In the sedation as needed group, 94% had the procedure completed without any sedation. Most (91%) were very satisfied, and the remainder were somewhat satisfied with the overall experience. All of the patients in the moderate sedation arm were very satisfied with their care. In the sedation as needed group, there were fewer episodes of hypotension and hypoxemia and lower overall charges. The authors concluded that a sedation as needed approach is viable for selected patients.² More recently, a community-based endoscopy center trialed a patient-selected option for sedation as needed for outpatient colonoscopy and reported that over a 6-month period 27.6% of patients selected this option. Over 80% of the patients completed the examination without sedation, and of these, 97.4% were satisfied with their comfort during the procedure. The authors concluded that offering unsedated colonoscopy with sedation as needed is effective and feasible in a typical US population.³ The advantage to no sedation is avoidance of sedation-related complications and minimal post-procedural recovery as well as potentially decreased cost and increased efficiency.

Historically, most patients have received endoscopist-directed moderate sedation. However, a recent study using a combination of Medicare and commercial billing data to assess utilization of anesthesia services in gastrointestinal (GI) endoscopy found a steadily increasing trend in the use of such services. The use of anesthesia increased from around one-third of all patients in 2009 to about one-half of all patients in 2013, and most were considered low-risk patients (defined by American Society of Anesthesiologists [ASA] patient classification 1 and 2).⁴ The authors characterized anesthesia care for ASA class 1 and 2 patients as discretionary care, but did note for this analysis that the ASA class was unavailable and had to be modeled. They were also unable to differentiate between simple and complex procedures. Even so, it appears most anesthesia services are used in discretionary cases, and the authors estimate this may cost upwards of \$1.5 billion annually in the United States.

The main driver of this shift in sedation care is due to the use of propofol deep sedation. Although other agents have been used for sedation for colonoscopy, none have proven to be equal or superior to propofol in various domains. These advantages include rapid-onset and recovery with minimal postprocedural adverse effects, profound procedural amnesia, good procedural operating conditions, and excellent patient and provider satisfaction.⁵ The main alternative to propofol is moderate sedation with a combination

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