Sedation and Monitoring in the Pediatric Patient during Gastrointestinal Endoscopy

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KEYWORDS

• Sedation • Pediatrics • Procedural sedation • General anesthesia • Sedatives
• Endoscopy • Gastrointestinal • Gastrointestinal procedures

KEY POINTS

- To date, there is no single sedative or combined regimen that has been established as ideal for pediatric gastrointestinal (GI) procedures, regardless of whether procedural sedation is administered by endoscopists or anesthesiologists.
- Over the past decade, more pediatric endoscopy is being performed with anesthesiologist-administered sedation, specifically with propofol.
- Broadly speaking, sedation plans that call for general anesthesia with endotracheal intubation are not necessary for routine pediatric endoscopy or colonoscopy and may decrease procedural efficiency and value.
- It is becoming increasingly important for pediatric endoscopists to engage in a dialogue with anesthesiologists, with the goal of determining best sedation practices for children undergoing GI procedures.

INTRODUCTION

The role of endoscopy in the diagnosis and treatment of digestive diseases of childhood has grown steadily over the past 40 years. In turn, the need to identify best practices for sedating children undergoing GI procedures has intensified. Generally speaking, the provision of sedation for endoscopy is considered necessary if children are to remain safe, comfortable, and cooperative. Nevertheless, no single sedative or combined sedation regimen has yet been established as ideal for pediatric GI procedures.

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Over the past 10 years, a considerable change in the landscape of sedation practices has occurred, with more and more pediatric endoscopy performed in the presence of anesthesiology providers. Although a 2005 survey of members of the North American Society of Pediatric Gastroenterology, Hepatology and Nutrition suggested wide practice variation in types of sedation at that time,[1] more recent data suggest that anesthesiologist-administered sedation, specifically with propofol, is becoming the more common experience.[2] In turn, it is becoming imperative that anesthesiologists gain knowledge about various pediatric endoscopic procedures as well as evolving evidence for best sedation practices. At the same time, it remains incumbent on endoscopists who perform procedures in children to be knowledgeable about sedation as well as to maintain familiarity with its various educational curricula and guidelines.[3]

Generally speaking, most procedural sedation for pediatric endoscopy involves intravenous (IV) medications and ideally maintains a child's ability to breathe spontaneously with intact protective airway reflexes. Procedural sedation for pediatric endoscopy may be administered by an anesthesiologist or by an endoscopist in the absence of an anesthesiologist. When an anesthesiologist is involved, it may be acceptable to aim for deep levels of sedation that may verge into general anesthesia.[4] In the absence of an anesthesiologist, it is important that endoscopists are familiar with regimens effective at achieving moderate sedation and know how to rescue patients should the level of sedation become deeper than expected.[3]

Given that many children undergoing stressful and uncomfortable procedures may be agitated,[5] it is becoming more common to plan for deep levels of sedation for pediatric patients undergoing diagnostic endoscopy.[6] Another primary option for endoscopic sedation in children is general anesthesia with inhalational anesthetics, often in combination with IV agents. Broadly speaking, sedation plans that call for general anesthesia with endotracheal intubation are not necessary for routine pediatric endoscopic procedures. Instead, protocols that seek to achieve general anesthetic sedation levels necessitating endotracheal intubation can be reserved for therapeutic cases as well as endoscopy in very young or medically complex patients.

One important factor driving changes in sedation practices for pediatric endoscopy may be the need to identify means of improving efficiency.[7] In addition, there is increasing pressure to reduce costs.[8] To this end, using anesthesiologists, especially in operating room settings, for brief procedures that do not require patients to be fully immobile may involve excessive use of health care resources.[2,8,9] Although only 10% of respondents in 2005 reported using general anesthesia for all procedures, a full third reported mostly performing procedures with general anesthesia in hospital operating rooms.[1] Another third of respondents reported performing more than three-quarters of their procedures with anesthesiologist-administered propofol in a dedicated endoscopy facility, outside of main operating rooms. Today, the performance of pediatric endoscopy outside of the main operating room has become standard practice.[2,6]

Patient safety should and does remain paramount. In this regard, it has become clear that the use of procedural sedation to achieve all levels of consciousness (moderate, deep, and general anesthesia) represents the most common risk factor for endoscopy complications.[2,7,10] Complications due to sedation, regardless of who has administered it, have been consistently documented to occur more commonly during pediatric endoscopy than technical complications related to procedures, such as bleeding or perforation.[11–14] As such, the intersection between performance of GI procedures in children, efficiency, costs, patient safety, and sedation has remained a topic of great interest among pediatric gastroenterologists for the past 4 decades.[9,11,15] It is also gaining interest in the world of anesthesiologists, who are increasingly recognizing that best approaches for sedating children for pediatric