Sedation for endoscopy in 2016 – Is endoscopist-guided sedation with propofol safe in complex situations?

The controversy regarding whether sedation for digestive endoscopy in an average-risk patient should be guided by an anesthesiologist or the endoscopist has a clear answer: no safety, efficacy or cost concerns warrants the presence of an anesthetist for endoscopic sedation.

Safety has been assessed in multiple studies including a large number of patients. They have shown that in average-risk patients endoscopist-guided sedation is safe and effective, and does not require that an anesthesiologist be present. The most recent study, a prospective registry review in the USA including 1,38 million subjects sedated with benzodiazepines, opiates and/or propofol, shows that in ASA I to III patients endoscopist-administered sedation is as safe or safer than anesthetic sedation, and is associated with fewer adverse effects. It specifically shows no differences in adverse effect numbers between anesthesiologists and endoscopists during colonoscopy (OR, 0.93; 95% CI, 0.82-1.06), as opposed to gastroscopy, where more undesired events occur when the procedure is guided by an anesthesiologist (OR, 1.33; 95% CI: 1.18-1.50) (1). Other studies show similar data: a retrospective analysis 118,004 colonoscopies observed a 2.5% increase in perforations when propofol is used by anesthesiologist (2). A study of 165,527 colonoscopies in 100,359 patients found a higher risk of aspiration when sedation was guided by anesthesiologists (3,4). Finally, an analysis of medical claims including 3 million colonoscopies found a 13% increase in adverse effects within 30 days after the procedure when anesthesia is used for sedation (5).

The higher number of adverse events reported with anesthetist-delivered sedation are likely due to the fact that anesthesio professionals induce deeper sedation as compared to sedation delivered by endoscopists. The former are trained to induce general anesthesia in their daily practice, where protectiv reflexes are more commonly depressed and the risk for undesired cardiopulmonary events is higher. Endoscopists, more proficient in endoscopic procedures and more aware of the sedation levels needed for such explorations, use sedatives more sparingly and cautiously, tailoring their administration to the various needs emerging during the procedure. This adjustment of sedative administration to different explorations and procedures is performed without compromising tolerability and efficacy, and may explain the lower number of unwanted effects arising from sedation itself. Few endoscopic procedures currently require intubation and mechanical ventilation support, which would be the scenario where anesthesiologists have a role to play. Outside these situations their contribution may entail a higher risk, as suggested by the above-mentioned studies. Studies comparing sedation by an anesthesiologist, by robotic systems (6), or by the patients themselves (7) also show a lower number of cardiopulmonary events when robots are used or sedatives are self-administered. No scientific evidence shows a lower number of adverse events for endoscopic sedation when delivered by an anesthetist as compared to an endoscopist or other sedative administration systems.

Since sedation was implemented in most endoscopy units their efficiency has increased. Currently, sedation allows more detailed and careful explorations, has increased cecal intubation and adenoma identification rates, and allows to perform therapies that were previously challenging in a nonsurgical setting. Regardless of sedative type and delivering specialist, current endoscopic sedation provides good to very good tolerability rates in over 90% of procedures, approaching 100% when propofol is used. Recently reported studies suggest that unit stay, taken as a measure of efficiency, is higher for patients sedated by anesthesia specialists with propofol than for patients receiving sedation with benzodiazepines and opioids from endoscopists (8). This is true despite the well known fact that recovery is faster after propofol (9). Again, such discrepancy may be explained by a tendency to induce deeper sedation or even general anesthesia among anesthesiologists. Based on these results, in countries where only anesthesiologists may administer propofol such norm has been disputed by suggesting that deep sedation with propofol might be more effective if performed by endoscopists (10,11). When explorations depend not only of endoscopists but also other specialists (anesthesiologists) controversy may emerge regarding indications, procedure techniques, and patient circuit throughout the endoscopic process. Explorations are often cancelled because risks are not assumed in challenging settings. Furthermore, potentially inconsistent indication assessments by another specialist, and changes in exploration circuits give most endoscopists a feeling that endoscopy unit functioning is less efficient.

Finally a word on economic issues. In Western countries, Spain amongst them, anesthetists have been increasingly incorporated to provide sedation during routine endoscopic procedures for ASA I-III patients, with increase rates reaching 50% in some countries (12-14). This has resulted in increased health care expenses, as demonstrated by multiple studies in the US and the EU. This incorporation of anesthesiologists involves an added cost that could not be justified by increases in safety, tolerability, or efficiency rates (15,16). Such higher cost is hard to account for, particularly so in the financial straits health systems are pres-
ently facing. The model should be redrawn in centers where anesthesiologists provide sedation services, and anesthesia needs should be adjusted considering that most procedures involve low-risk patients, with only a few requiring specialized sedation. This unnecessary increase in health care expense has possibly contributed to the precariousness of health systems in the current financial crisis, where increasingly limited financial resources should be optimized. Today, the incorporation of anesthesiologists unto routine explorations for average-risk patients should be considered a managerial mistake because of inappropriate, unnecessary use of financial resources. All this, however, does not imply that units should not be stocked with the staff, instruments, and means necessary to provide safe, effective sedation. Various studies have suggested that training endoscopists and nurses in sedation techniques allows to provide the needed sedation services with a cost-effectiveness at least similar to that provided by anesthesiologists (17-19).

Some guidelines suggest that for some complex or prolonged explorations (ERCP, EUS, enteroscopy, mucosal resection or submucosal dissection) sedation might be more appropriately delivered by an anesthesia specialist. However, this should also be considered on an individual basis, and in this issue of The Spanish Journal of Gastroenterology (Revista Española de Enfermedades Digestivas) the study by Enrique Pérez-Cuadrado Robles et al. (20) shows that endoscopists are capable of guiding propofol sedation in complex settings. The group of patients they reviewed, who required ERCP, usually includes patients with significant comorbidities (ASA III and IV) and advanced age undergoing a prolonged, complex, invasive procedure (21). This is a typical scenario where sedation delivered by non-anesthesiologists may be deemed as entailing unacceptable risks. Their results suggest otherwise. Sedation in this high-risk group, as administered under the supervision of expert endoscopists by trained personnel using appropriate instruments, may be performed not only safely but also highly effectively. Results do not differ from those reported in similar settings – patients undergoing ERCP (22) or other types of complex interventionist endoscopy (23,24) ASA IV patients with severe sleep apnea or significant comorbidities (25-27). These studies reveal that, in such situations, sedation delivered by trained endoscopy unit staff (endoscopists, endoscopy nurses) exclusively devoted to sedative administration during procedures may be safe and effective. In such settings, the rates of sedation-associated adverse events are higher than for basic diagnostic endoscopy and, while no studies have compared sedation safety and efficacy when delivered by anesthesiologists versus endoscopists during an ERCP, adverse event rates do not seem to differ. However, some differences have been pointed out for endoscopist-guided versus anesthetist-delivered sedation during ERCP. Regarding patient position, anesthesiologists usually want patients to lie on their side or to be intubated in the supine decubitus position, whereas endoscopists usually prefer that the patient be lying in the semiprone or prone position. Patients position has well known implications during procedures. The lateral position results in higher endoscope instability upon reaching the duodenum, which may compromise technical success. In the supine position, because of bronchial aspiration risks, anesthesiologists prefer to intubate and to administer muscle paralysis drugs and mechanical ventilation. This turns deep sedation into general anesthesia, and adds the risks entailed by general anesthesia. From a diagnostic perspective, the lateral position renders radiographic images—particularly images depicting intrahepatic bile ducts—more difficult to interpret because of overlapping left and right ducts. Furthermore, images are less sharp, particularly in obese individuals, as the X-rays beam must traverse a higher tissue thickness, which is not so often the case in the prone or supine position. Finally, ERCP in the supine position requires that the endoscope be turned 180° away of the usual position, a maneuver that may result in added difficulties for occasional or inexperienced ERCP performers. There is a general view that sedation by anesthesiologists during ERCP limits the number of procedures per day, and easily duplicates costs (28).

In summary, the current evidence shows that endoscopic sedation, as delivered by trained endoscopists, is a safe, effective, and cost-effective procedure. Even in complex settings such as ERCP, sedation may be performed with acceptable risks not greater than those reported for anesthetist-delivered sedation.

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REFERENCES


