Learning From Others:

A Case Report From the Anesthesia Incident Reporting System

Case 2016-08: Aspirations of Safety

A 42 y.o., obese, ASA Physical Status 3 woman received sedation with propofol for esophagogastroduodenoscopy (EGD), followed by colonoscopy. During resection of a polyp she began to vomit. The patient was already in the left lateral decubitus position; her mouth was immediately suctioned, but some aspiration occurred. Arterial oxygen saturation declined to the upper 70s. Positive pressure ventilation was provided through the anesthesia circuit, along with continued suctioning. Saturation slowly improved to the low 90s. Nebulized albuterol produced minimal improvement. The patient was transferred by ambulance from the GI center to a nearby emergency department.

Discussion:

The anesthesiologist who submitted this AIRS report offered the following recommendation for future cases: Have suction immediately available and be very diligent in observing the patient's head and mouth during colonoscopy. This advice is hard to dispute, but is it sufficient?

The pathophysiology of the described event seems clear: the patient had gastric distension after the EGD; when stimulated, vomiting occurred with immediate aspiration despite prompt suctioning. Arterial oxygen saturation declined to the upper 70s. Positive pressure ventilation was provided through the anesthesia circuit, along with continued suctioning. Saturation slowly improved to the low 90s. Nebulized albuterol produced minimal improvement. The patient was transferred by ambulance from the GI center to a nearby emergency department.

As with many clinical decisions, it is not possible to create a hard and fast rule for which endoscopy patients should be intubated; potential complications from moderate sedation must be balanced against the risks of deeper anesthesia, the need for active airway management and the increased time and cost of general anesthesia. Systematic measurement of outcomes can help inform this decision. In a recent quality management review of aspirations in a large group anesthesia practice over a three year period, risk factors for this complication were identified. Twenty of forty-three cases occurred during EGD – far and away the most common case – all in cases with planned moderate sedation and an unprotected airway. The majority of these patients had potential risk factors, including active GI bleed or known bowel obstruction. Many of the aspirations occurred at the end of the case, with removal of the endoscope. Of note, only one patient was identified who aspirated during a planned rapid sequence induction.

Recent publications in the gastroenterology literature have noted increased complications when propofol sedation is used and when an anesthesia professional is involved. Despite an attempt in both papers to control for patient risk, it is likely that retrospective comparisons are confounded by selected involvement of anesthesia professionals in caring for sicker patients. Indeed, the increasing complexity of endoscopic surgical procedures has been facilitated...
by the availability of anesthesia teams to manage very complicated patients over extended periods of time. How to manage this increasing risk profile is especially critical in remote or off-site locations like the GI suite because the anesthesiologist has only a fraction of the resources available (she may be the only one on the unit), and so recovery from adverse events may be more difficult and less certain. The assistance of the ancillary and support personnel in a remote location may also be less than optimal – even if the knowledge base is present, the practice and experience in dealing with these uncommon emergencies may be deficient. “Anesthesia Stat to OR 6” brings an army of skilled staff in the general OR suite, but is not available at all in the GI suite. Institutional culture/inertia and production pressure is likely to have significant impact on the care we provide, especially in places like the high volume GI unit. The strongest source of institutional inertia is likely the belief that GI cases can all be performed with sedation. While we know this is not true, it unarguably is mostly true. Thus, we tend to practice like it is true as nearly every case is done with sedation. This can lead to “confirmation bias”, in which we try to force the facts into our preset conclusion in order to confirm our desired outcome (“This patient’s BMI is not too high. I can manage the procedure with sedation”). This inertia is made worse if changing the plan leads to significant delays or work. If performing general anesthesia is easy and the recovery area can easily manage the patient, there is little disincentive to changing the plan. But if the anesthesiologist must transfer the patient to the main PACU after general anesthesia, or cancel the case and send them to the main hospital, the inertia to perform the case with sedation becomes powerful.

There are few places where we administer anesthesia at a higher pace than in the GI clinic. Fifteen cases a day in each room is not uncommon. An EGD may take only a few minutes. Adding 15 minutes for induction of and emergence from anesthesia, and another 15 for transport to the PACU can drastically change the flow of the day. Pressure from the gastroenterologists (and even from anesthesia leadership) to get the cases done can lead to bad decisions. We are not suggesting that the decision to perform the cases above under sedation was inherently bad (that would be both hindsight and outcome bias), but it is likely that the decision was influenced by the pressure to keep the day moving.

What recommendations can be made? As stated above, it is difficult to create hard and fast rules to mandate intubation. Worse, intubation is associated with its own set of complications, including aspiration. However, several concrete recommendations can help the general safety of any remote location:

1. Concrete inclusion/exclusion criteria for the unit should be created. These can include a BMI maximum, excluded comorbidities, even airway issues. This can also include a set of broad guidelines for the consideration of general anesthesia. These should not be overly prescriptive, but can be used to break clinicians from the inertia of “sedation for all GI cases”. Other team members (e.g. the GI nurse) might even recommend general anesthesia for those who fit the guideline.

2. Clear processes should be in place for management of emergencies. In a free-standing GI center this might mean stabilizing and calling an ambulance, while calling the code team might be appropriate in the GI center connected to a hospital. The use of cognitive aids and checklists might help with the management of these events, and in situ simulation can help the team be ready for crises they very rarely see (failed intubation, anaphylaxis, etc).

3. A multi-disciplinary team meeting or huddle before the start of the day to review the planned cases can help the team to identify and prepare for potential problems. These planning huddles can be short (10 minutes) and have been demonstrated to improve efficiency throughout the day.

4. Early identification of potential “problem patients” before they are scheduled is a powerful tool to decrease cancellations, but requires planning, collaboration and communication between the anesthesiologists and endoscopists. The institution of a formalized system – perhaps a scaled-down version of a preoperative consultative service, whereby a set of criteria could prompt the gastroenterologist to consult an anesthesiologist about patient suitability – might be developed.

Anesthesiologists should take nothing for granted when dealing with these most common cases, and should not hesitate to insist on general anesthesia with a protected airway when the procedure is going to be complex, the patient is fragile or the risk of aspiration is high. An ounce of prevention just might be worth a pound of cure.

References: