ANESTHESIOLOGY™2014
OCTOBER 11-15 | NEW ORLEANS, LA

Session: L090
Session: L156

It's Just a Quick EGD in the Office… but Can I Safely Anesthetize My Patient Here?

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Disclosures: This presenter has no financial relationships with commercial interests

Stem Case and Key Questions Content

A 42 year-old woman presents to the gastrointestinal(GI) office for an esophagogastroduodenoscopy (EGD) for atypical chest pain. She was "cleared" by her internist for the procedure.

Her past medical history is significant for diabetes, hypertension, asthma and obesity. Medications include metformin, metoprolol, montelukast, advair and albuterol as needed. She has had general anesthetics in the past without complications. Upon review of systems she states she has had this burning sensation in her chest for the last month sometimes associated with exertion, but relieved with calcium carbonate. She denies any prior cardiac disease. Her asthma has been well controlled over the last year, but her trachea has been intubated for a day as a child for an asthma exacerbation. Her diabetes has been under moderate control. She does admit to daytime somnolence and states her partner complains of her snoring, but denies a diagnosis of sleep apnea

1) What do you need to consider before providing office-based anesthesia (OBA)?
2) Are there any rules/regulations regarding suitability of patients for office procedures?
3) Is this patient a candidate for an anesthetic in the office?

On physical she is 5'2" and weighs 170 lbs with a body mass index(BMI) of 33. Her airway exam is a Mallampati class 3, heart and lung exam are unremarkable. Blood pressure is 130/90 with heart rate of 75 and oxygen saturation is 96% on room air. Her EKG shows normal sinus rhythm with left ventricular hypertrophy(LVH) but no ST-T abnormalities. Her fingerstick this morning is 180. You work with this endoscopist routinely and he states he will be quick.

1) Is this patient optimized for the planned procedure?
2) What are your concerns regarding the possibility of sleep apnea ?
3) Does this patient require further cardiac work-up?
4) Are diabetics candidates for office procedures?
5) Is a pregnany test required?
6) How would you anesthetize this patient?

Standard monitors are applied and after establishment of an IV the patient receives 2 mg of midazolam, 25 mcg of fentanyl, and 50 mg of lidocaine. Fifty mg of propofol is administered and she subsequently begins to obstruct with saturation decreasing to 80% on 3L nasal cannula. You are able to relieve the obstruction with a jaw thrust with saturations returning to 97%. The

endoscopy then proceeds uneventfully and the patient is taken to the recovery room. Upon emergence the patient complains of severe nausea and chest burning. This is accompanied shortly thereafter by several episodes of emesis.

How would you monitor this patient? What additional tests would you order?
1) How would you treat nausea and vomiting?
2) What criteria would you use for discharge?
3) If the symptoms do not resolve, what would you do next?

Model Discussion Content
PROBLEM BASED LEARNING DISCUSSION
Office-based anesthesia(OBA) has experienced an exponential growth in the last decade. In 2005, the American Society of Anesthesiologists (ASA) estimated that over 10 million procedures were performed in doctors' offices. This was double from what were performed in 1995[1]. Currently, OBA is one of the fastest growing subspecialties in anesthesia. The trend toward office-based surgery is evident in numerous specialties. Advances in less invasive medical technology, development of shorter, faster acting anesthetics and increased cost-effectiveness enable OBA to be an attractive alternative to the conventional hospital operating room(OR) setting. Procedures performed in an office setting may cost as much as 70% less than similar ones done in a hospital[2]. The benefits of office-based procedures include improved patient and provider convenience, flexible scheduling, increased efficiency, greater privacy, and decreased nosocomial infections.

For anesthesiologists, however, an office setting requires a distinctly different set of clinical and professional skills for safe and effective outcomes. Therefore, OBA is not for every provider, nor is it appropriate for every patient or procedure[3]. In an OBA setting, an anesthesiologist provides care without significant backup resources and support. He or she needs to personally ensure that established policies and procedures regarding issues such as fire, safety, drugs, emergencies, staffing, training, and unanticipated patient transfer are in place[4].

Anesthesiologists must confirm the surgeon's credentials, and that he has privileges to perform the same procedures in a local hospital. All nurses involved should be licensed and have basic life support(BLS) training. The office exits and elevators should be able to accommodate patients on a stretcher in the event of an emergent transfer and the surgeon should have admitting privileges at a local hospital. Facilities must be in compliance with local building and fire codes and there must be an alternate backup electrical source for at least 1.5 hours in case of power failure[2]. Adequate compressed oxygen must be available and storage of tanks must be in compliance with local laws. Functioning resuscitation equipment, defibrillator, and emergency drugs must be readily available. All offices, in addition, should have suction, self-inflating hand-resuscitator bags, airway devices, laryngoscope blades, and endotracheal tubes. These should be present even in offices where general anesthesia is not administered. If triggering agents are used, or if succinylcholine is accessible, even if only for emergency use, dantrolene must be readily available.

The establishment of the OBA facility, its construction, accreditation, equipment, and operation should be in accordance with the local, state, and federal regulations. At present, only 25 states have issued regulations to meet with patient safety in OBA[5]. Anesthesiologists need to be

familiar with state regulations, because violations can have serious legal consequences. The need for accreditation is a way to increase patient safety in the office. Although this is not mandatory in most states, 3rd party payers require it for reimbursement of facility fees. There are 3 accrediting bodies that inspect the facilities. These organizations are American Association for Accreditation of Ambulatory Surgical Facilities (AAAASF), the Accreditation Association for Ambulatory Health Care, and the Joint Commission[2]. These organizations have standard guidelines for the healthcare providers, the facility, and patient are that must be fulfilled in order for the facility to be accredited.

Even in an office-based practice there should be a basic plan to assess, document, and improve outcome of anesthesia care. This is the responsibility of the anesthesiologist. The QI program should include peer review, risk management, and benchmarking with at least an annual review. The office-based practice should strive to achieve a standard of care similar to that of a hospital. Patients with significant co-morbidities are not ideal candidates and should be excluded from this setting. Since initial screening is performed by the surgeon/proceduralist, it is necessary to establish clear guidelines regarding acceptable types of patients. Ideally, only ASA physical status 1 and 2 patients should receive OBA, although occasionally an ASA 3 patient may be acceptable. There are several factors to consider in selecting patients for OBA[6]:
Nature of the procedure and resources of the office for total periop care.

Abnormalities of major organ systems and stability and optimization of any medical illnesses.
Previous adverse response to previous anesthesia and surgery
Personal or family history of malignant hyperthermia
Drug allergies, including allergy to latex
NPO status
History of substance use/abuse and patient's psychological status
Availability of responsible adult to accompany/drive patient home from office and remain available as necessary

There is a debate among clinicians about the suitability of a patient with obstructive sleep apnea (OSA) for an ambulatory procedure. This is because of concerns of increased perioperative complications including post-discharge death. The disastrous outcomes are due to failure to secure the airway during induction, respiratory obstruction soon after extubation, and respiratory arrest after post-operative administration of opioids or sedatives[7]. An estimated 12-18 million Americans have sleep apnea and 80-90% are undiagnosed[8]. Therefore, the anesthesiologist must identify the patient with OSA in the pre-operative setting. There are certain conditions associated with OSA that would prompt a further investigation into the diagnosis. These include obesity, thick neck, micro/retrognathia, large tongue, enlarged tonsils, and nasal obstruction. There are established screening assessments such as the ASA checklist, STOP questionnaire and its STOP-BANG modification[7]. Recent evidence suggests that the higher the cumulative score of risk factors on the STOP-BANG tool, the greater the probability of severe OSA[9]. The gold standard for OSA diagnosis is polysomnography, but due to a tremendous backlog, it makes timely pre-operative testing difficult[7,8]. OSA patients are more susceptible to the respiratory depressant and airway effects of sedatives, opioids, and inhaled anesthetics. This should be taken into consideration when planning an anesthetic for a patient with OSA. The use of short acting agents may be useful, but it is prudent to remember that the termination of the clinical action of many of these drugs is based on redistribution rather than metabolism of the drugs. High doses may result in concentrations that are only slowly cleared from the body,

resulting in prolonged sedation. The use of remifentanil may be preferred since it is rapidly metabolized by esterases, but its high cost limits its availability. Patients who receive remifentanil during gastroscopy require less propofol and recover faster than those who receive fentanyl[2,10]. Dexmedetomidine has a narcotic sparing effect and may be used as an adjunct. The ASA practice guidelines support the use of general anesthesia with a secured airway over deep sedation for superficial procedures. They recommend CO2 monitoring should be used during moderate to deep sedation to help detect airway obstruction[11]. These guidelines are for patients in the surgical setting and can only be extrapolated to the endoscopy suite.

Diabetic patients can present a major challenge for care in an office setting. Pre-operative evaluation must include assessment for end-organ damage since cardiovascular disease, autonomic and renal insufficiency, and gastroparesis may lead to potential problems in the postoperative period necessitating transfer to a hospital[12]. Insulin dependent diabetics should be scheduled as the first case of the day in order to minimize complications resulting from extremes of plasma glucose. Delays in insulin administration may lead to ketoacidosis despite the fasting state. Thus it is recommended that these patients receive a dextrose infusion along with insulin upon arrival at the facility. Non-insulin dependent diabetics must also be routinely monitored with fingersticks during the perioperative period. Surgery itself can lead to hyperglycemia despite the fasting state secondary to the stress response. These patients are at risk for hyperosmolar coma if significant dehydration and hyperglycemia occur. It is critical that diabetics are free of nausea and capable of eating prior to discharge.

Preoperative pregnancy testing has been a controversial subject in anesthesiology for many years. Up to 15% of known pregnancies miscarry before 20 weeks and up to 50% of unrecognized pregnancies miscarry during the first trimester[13]. There appears to be an increased incidence of spontaneous abortion in women undergoing surgery during the first trimester of pregnancy[14]. There may also be an increased risk of congenital defects in the offspring of women exposed to anesthesia and surgery during this period[15]. Although there is no absolute contraindication to surgery or anesthesia in the pregnant patient, the general consensus is that elective surgery should be avoided. However, the ASA Task Force on Preanesthesia Evaluation does not require a preoperative pregnancy test[16]. According to the task force, pregnancy testing should be offered to women of childbearing age and not required. A study by Manley et al[17] found that the incidence of previously unrecognized pregnancy in menstruating women presenting for ambulatory, nonobstetric surgery was 0.3%. The knowledge of a positive test resulted in cancellation of the procedure, with patient desire for cancellation as the major determining factor. Screening may decrease litigation, although potential cost savings are difficult to quantify. The ASA effectively gives individual physicians and hospitals the opportunity to set their own policies relating to preoperative pregnancy testing.

Recovery in an office may present challenges since there often is no separate recovery room. However, the same standards pertaining to postanesthesia care unit(PACU) monitoring in a hospital setting apply. There should be continuous pulse oximetry monitoring as well as blood pressure monitoring at set intervals. Staffing should be appropriate and must include nurses who are at least BLS certified[2]. Almost all the potentially preventable office-based injuries result from adverse respiratory events in the postoperative period [18]. Patients with OSA are at even more risk for respiratory events in the PACU and should, perhaps, have CO2 monitoring during recovery as well. The ASA guidelines on OSA recommend observation for 3-7 hours after an anesthetic [11]. It is necessary to educate surgeons, patients and their families

regarding the need for increased vigilance after discharge home. Patients with a known diagnosis of OSA and optimized comorbid medical conditions can be considered for ambulatory surgery, if they are able to use a CPAP device in the postoperative period[19]. Patients who experience episodes of desaturation in the recovery period should be transferred to a monitored hospital unit to help identify the need for intervention, including CPAP.

Postoperative nausea and vomiting(PONV) remain a significant problem in the recovery room. PONV frequently delays discharge from PACUs and is the leading cause of unexpected hospital admission after planned ambulatory surgery. The annual cost of PONV in the United States is thought to be several hundred million dollars[20]. The cause is multifactorial and includes obesity, sudden changes in patient position, history of motion sickness/PONV, female gender, non-smoker, pain, opioid administration, diabetes, the type of surgery, as well as the anesthetic administered[12]. To help prevent symptoms adequate hydration, gastric suctioning, decreased use of opioid based general anesthesia and avoidance of induction agents such as etomidate and ketamine can be utilized. Prophylactic administration of dexamethasone and metoclopramide has been advocated in high risk patients. Ondansetron is a serotonin receptor antagonist that has been used successfully with few side effects. It has been demonstrated that a combination of agents, perhaps in conjunction with propofol, is the most efficacious in the prophylaxis of nausea and vomiting[21]. For the patient with unremitting symptoms, overnight admission for observation and treatment with intravenous fluids and anti-emetics may be required.

Post-anesthesia discharge scoring systems have been developed for assessing when home readiness is achieved. The Aldrete scoring system (Table 1) or the Postanesthesia Discharge Scoring System (PADSS) are two that are widely used[12]. Strong emphasis is placed on early discharge in the office because of the limited availability of space. Criteria include parameters such as stable vital signs, ability to ambulate, control of surgical bleeding, pain control, and minimal nausea and vomiting. Patients should receive written post-operative and follow up care. They must meet standard PACU discharge criteria and be accompanied by a responsible adult. Personnel trained in BLS/ACLS should be present until the last patient leaves the facility[2]. The key legal concerns with OBA include failure to monitor and respond to recovering patients as well as failure to prevent patients from driving too soon after the procedure[1]. Additionally, providers may be discharging patients too early. When emergencies do arise a poorly resourced facility may be unable to competently transfer patients to a hospital. In states where office-based surgery centers are not regulated, negligence claims often focus on consideration of the healthcare practitioner's experience, expertise, and certification, as well as facility equipment and available emergency supplies[22]. Office facilities need to adopt best practices in order to prevent medical liability claims. Patients and procedures should be prudently selected for the office setting. Procedure and recovery rooms should be adequately staffed with properly trained personnel and appropriate monitoring and emergency equipment. The ASA guidelines underscore the importance of having a single standard of care irrespective of the site of care. There is a need to create a culture of safety in the office setting. In order to augment safety in OBA, a checklist such as that in Table 2 should be implemented. Checklists remind clinicians and staff to consistently perform tasks that are likely to improve patient outcomes.

As the field of office-based anesthesia grows, more cases will ultimately be done in an office. Increasing regulation will ensure that patient safety remains the primary focus. We as a society must maintain a standard of care that is both safe and efficient in order for this venue to flourish.

Table 1. Aldrete Scoring System
Category Score
Activity
Able to move all 4 extremities on command 2
Able to move 2 extremities on command 1
Unable to move 0
Respiratory
Able to cough and breath deeply 2
Dyspnea or limited breathing 1
Apnea 0
Cardiovascular
BP and HR + 20% of pre-anesthetic level 2
BP and HR + 50% of pre-anesthetic level 1
BP and HR -4% to -50% of pre-anesthetic level 0
Consciousness
Fully awake and able to answer questions 2
Arousable only to calling 1
Unresponsiveness 0
Oxygenation
Able to maintain O2 saturation >92% on room air 2
Needs O2 inhalation to maintain saturation >90% 1
O2 saturation <90% even with O2 supplement 0
A score of 9 or greater indicates home readiness

Table 2. Safety checklist for OBA providers
Office
Accreditation Status
Design and layout
Adequate space for procedure
Adequate space for recovery
Safe emergency egress for an anesthetized patient
Policies and Procedures manual
Office governance
Infection control
Emergency preparedness
Narcotic storage and maintenance
Gas transport and storage
Peri-operative monitoring capabilities and defibrillator
Maintenance and servicing
Oxygen, Suction, PPV
Emergency anesthetic drugs and supplies
Staffing
Proceduralist/Surgeon/Anesthesia Provider
Active license and registration
Current DEA
Malpractice
Evidence of proficiency/Board Certification
Admitting privileges

Current CV
CME
Peer Review/Performance Improvement
BLS/ACLS/PALS
Patient Selection
ASA status
Co-existing disease
Difficult Airway
DVT prophylaxis
Procedure Selection
Duration
Risk of hypothermia
Risk of blood loss
Post operative pain
PONV
Fluid shifts

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