Citation

Metzner JI: Risks of anesthesia at remote locations. ASA Newsletter 74(2): 17-18, 2010.

Full Text

> *A morbidly obese 36 year old ASA 3 woman with gallstone pancreatitis underwent endoscopic retrograde cholangiopancreatography (ERCP) under MAC. The patient received midazolam 2 mg IV and fentanyl 100 mcg IV and was positioned in the prone position with supplemental oxygen administered via nasal prongs. O_2 saturation was measured, but not end-tidal capnography. Propofol 30 mg followed by an infusion of 20-50 mcg/kg/min was titrated intravenously, with O_2 saturation of 90-95%. After 20 minutes, the patient developed nodal bradycardia to a rate of 40. Atropine 0.6 mg IV, followed by 1.0 mg IV, was administered with no effect. Five minutes later the patient became asystolic. The patient was turned to the supine position, which took several minutes due to her size, and CPR begun. Although the patient was resuscitated, she never regained consciousness and support was withdrawn after discussion with the family.*

This case scenario represents an uncommon, yet real and severe, adverse outcome during routine anesthesia for a minor procedure conducted in the gastrointestinal (GI) suite. Procedures conducted in such remote locations (outside of the operating room) are increasing. While these procedures are relatively simple and are often non-invasive, catastrophes as described in this case do occur. The anesthesiologist may become involved in these procedures, particularly with use of propofol for sedation. As noted in the ASA Statement on the Safe Use of Propofol, sedation is a continuum and the individual patient's response is not always predictable: "Even if moderate sedation is intended, patients receiving propofol should receive care consistent with that required for deep sedation."[1]

Remote locations such as the GI suite can represent a challenge to the anesthesiologist, as they often lack the routine set-up, staffing and resources available in the operating room. We examined the ASA Closed Claims Project Database to explore the patterns of injury and liability associated with anesthesia provided in remote locations compared to procedures conducted in the operating room. For a more complete analysis, see Metzner et al: The risk and safety of anesthesia at remote locations: the US closed claims analysis.[2]

ASA Closed Claims Review

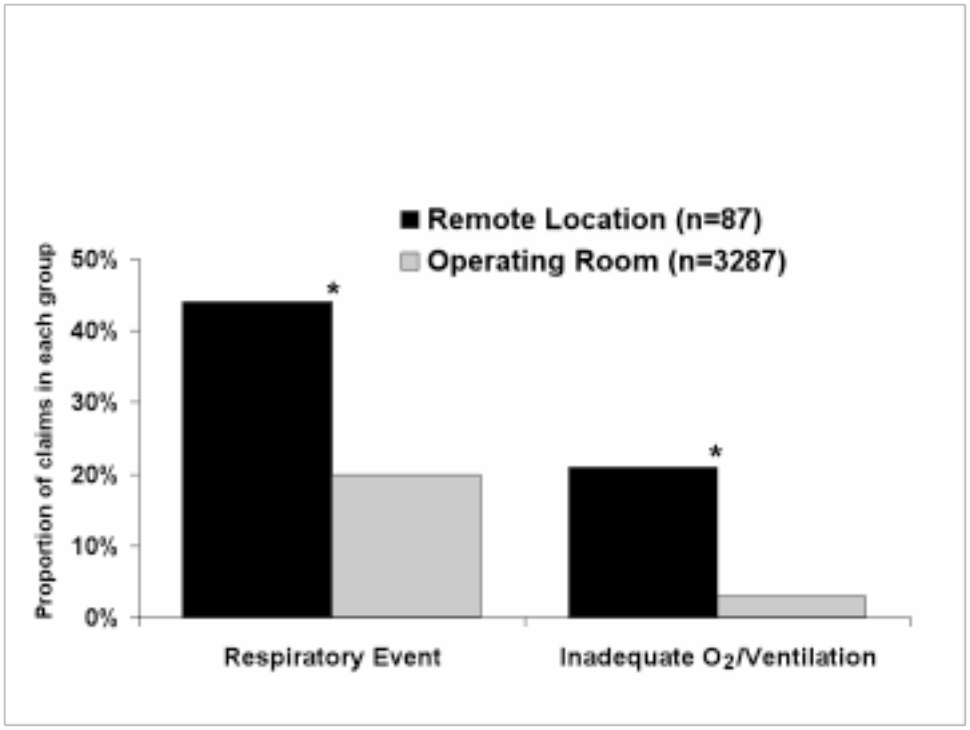
Data were taken from the ASA Closed Claims database of 8,496 cases. We limited our analysis to cases where the event occurred in 1990 or later and excluded all obstetric, acute pain, and chronic pain cases. All payments were adjusted to 2007 dollars using the Consumer Price Index. We identified 87 remote location claims and 3,287 operating room claims. Patients treated in remote locations tended to be older and sicker and more likely in need of emergent care than patients receiving care in operating room settings. Not surprisingly, procedures in remote

locations were more likely to involve MAC (50% vs. 6%) or no anesthesia (21% vs. 2%) than were procedures in operating rooms. The most common remote locations were the GI suite (32%) and the cardiology catheterization/electrophysiology suite (25%). The rest of the claims occurred in the emergency room, radiology, or lithotripsy suite.

More than half (54%) of patients receiving care in remote locations died compared to 29% of patients receiving care in operating rooms (P < 0.001). In contrast, patients treated in operating rooms were more likely to have temporary nondisabling injuries than patients treated in remote locations.

Respiratory events were more likely to occur in remote locations (44%) than in operating rooms (20%; P < 0.001; Fig 1). Inadequate oxygenation/ventilation was the most common respiratory event, occurring in only 3% of claims where care was provided in the operating room, but in 21% claims where care was provided in a remote location (P < 0.001; Fig 1). Other types of respiratory events included esophageal intubation, difficult intubation, and aspiration of gastric contents.

Fig. 1: Remote Location Claims: Mechanism of Injury

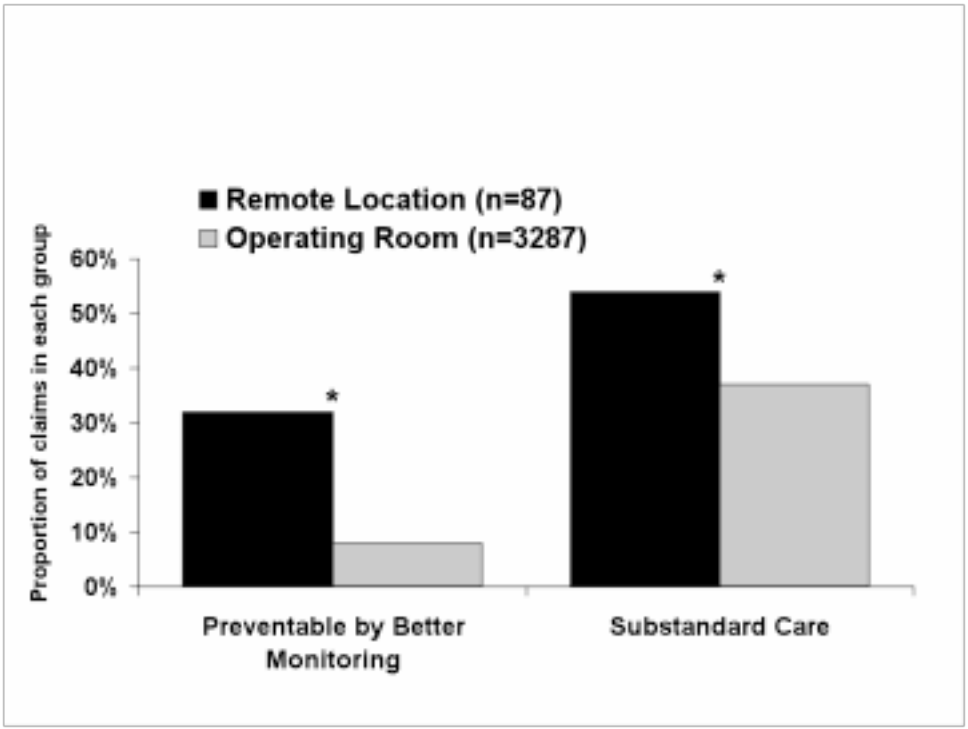


*p<0.001 remote location vs. operating room

In 54% of remote location claims, the care provided was judged as substandard compared to 37% of operating room claims (P < 0.001; Fig 2). In 32% of the remote location claims, care was judged preventable by better monitoring compared to only 8% of operating room claims (P < 0.001, Fig 2). There was no statistically significant difference in the proportion of payments made

or the median payment between claims where care was provided in the operating room ($210,000) compared to claims where care was provided at a remote location ($330,000).

Fig. 2: Remote Location Claims: Liability



*p<0.001 remove location vs. operating room

Oversedation leading to respiratory depression

In 30% of the remote location claims, an absolute or relative overdose of sedative, hypnotic, and or analgesic drugs led to respiratory depression. More than half of the cases that occurred in the GI suite and 70% of the cases that occurred in radiology involved oversedation. A capnograph was in use in only 15% of claims involving oversedation. In addition, 15% of claims involving oversedation had no monitoring devices in use during the procedure. Almost all (92%) of the cases involving oversedation in remote locations resulted in death or severe brain damage. Three-fourths of the claims involving oversedation in remote locations resulted in payment to the plaintiff, with a median payment of $460,000.

Commentary

Apnea lasting 20 or more seconds is common in patients receiving MAC sedation. Without the use of capnography or other monitoring equipment, apnea lasting 20 or more seconds is often not detected.

According to the ASA Standards for Basic Anesthetic Monitoring,[3] during MAC the adequacy of ventilation should be determined through continuous observation of qualitative clinical signs of patient respiration and/or monitoring for the presence of exhaled carbon dioxide. Recently, the ASA has formulated specific guidelines for monitoring patients who receive care in during endoscopy procedures. The 2009 ASA Statement on Respiratory Monitoring During Endoscopic Procedures[4] notes that monitoring for $ETCO_2$ should be considered during these procedures when sedation is used and that careful attention to airway management must be provided during ERCP in the prone position.

Almost one-third of all remote location claims occurred in the GI suite, with oversedation occurring in more than one-half of these claims. The GI suite may be a particularly important area for potential improvement in anesthesia patient safety and liability.

References

1. Statement on Safe Use of Propofol (amended by ASA House of Delegates on Oct 21, 2009). Available at: http://www.asahq.org/publicationsAndServices/standards/37.pdf Accessed Nov 30, 2009
2. Metzner J, Posner KL, Domino KB: The risk and safety of anesthesia at remote locations: the US closed claims analysis. Curr Opin Anaesthesiol 2009; 22:502-8
3. Standards for Basic Anesthetic Monitoring (amended by ASA House of Delegates Oct 25, 2005). Available at: http://www.asahq.org/publicationsAndServices/standards/02.pdf Accessed Nov 30, 2009
4. Statement on Respiratory Monitoring During Endoscopic Procedures (approved by ASA House of Delegates on Oct 21, 2009). Available at: http://www.asahq.org/publicationsAndServices/standards/52.pdf Accessed Nov 30, 2009.

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