

Citation

Bird M : Acute Pain Management: A New Area of Liability for Anesthesiologist. *ASA Newsletter* 71(8), 2007.

Full Text

A 71-year-old obese female smoker with hypertension and diabetes underwent a total knee replacement under epidural anesthesia with intravenous sedation. Postoperatively an epidural infusion (bupivacaine 0.25 percent and fentanyl 2 mcg/ml) was started at 10 ml/hr. She was discharged to a ward without any continuous monitors and with vital signs to be taken every hour for four hours and every four hours thereafter. Several hours later, she was in severe pain for which the anesthesiologist administered 100 mcg fentanyl and 10 ml of 0.25 percent bupivacaine via the epidural. Three hours later, the patient was still complaining of pain, and the epidural concentration was increased to bupivacaine 0.375 percent with 3 mcg/ml of fentanyl and the infusion rate was increased to 15 ml/hr. Two and one-half hours later, the anesthesiologist ordered hydromorphone (2mg IM) due to continuing pain. About four hours later, she was given another 2 mg of IM hydromorphone. Her level of arousal and vitals were not assessed for four more hours until she was found unresponsive and pulseless. CPR was initiated, but the patient suffered severe brain damage. A lawsuit was settled for \$135,000 against the anesthesiologist and \$15,000 against the hospital.

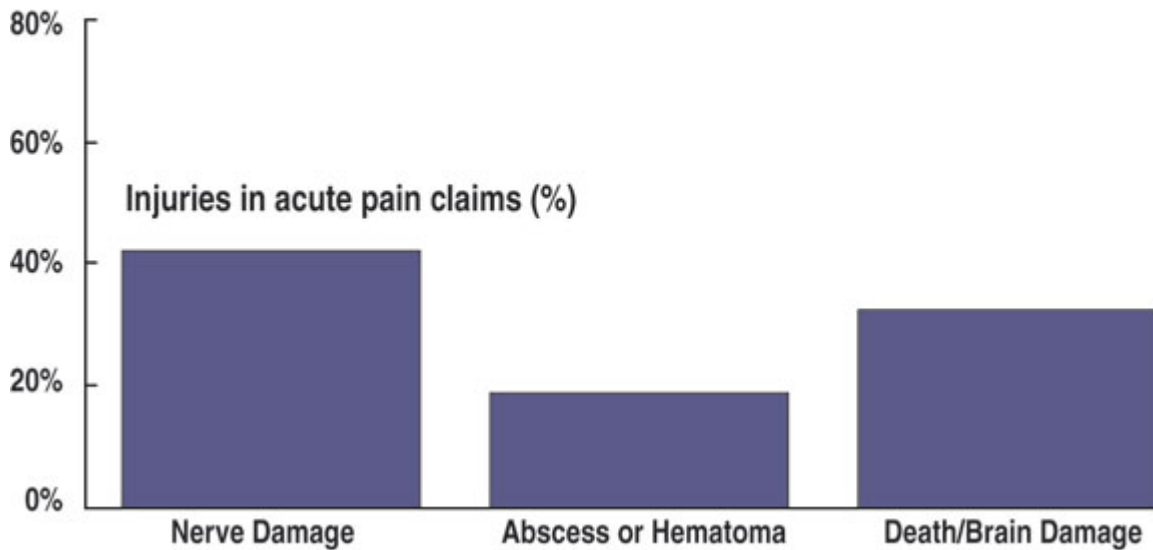
Postoperative opioid-induced respiratory depression, such as occurred in this unfortunate case from the ASA Closed Claims Project database, was recently highlighted as a safety problem by the Anesthesia Patient Safety Foundation (APSF).¹ Fitzgibbon et al.² found an increase in chronic pain management claims over the decades, forming 8 percent of anesthesia malpractice claims in the 1990s. Because acute pain management also is a growing part of anesthesiology practice and may be associated with significant adverse effects, we reviewed liability for anesthesiologists related to acute postoperative pain management.

All claims related to acute pain management (n=150) in the ASA Closed Claims Project database (n=7,328) were included in this study. The database contains standardized information on closed anesthesia malpractice claims from 35 professional liability insurance companies that insure more than one-third of practicing anesthesiologists. Claims were categorized as probable respiratory depression (patient received naloxone and showed no signs of reversal or $PCO_2 > 60$), possible respiratory depression (respiratory rate < 8 , oxygen saturation < 90 percent, qualitative observation of respiratory depression or evidence of excessive opioid administration) or no confirmed respiratory depression.

The proportion of claims associated with acute postoperative pain management increased between the 1980s and the 1990s, with the majority of postoperative pain management claims from the 1990s (86 percent from the 1990s, 8 percent from 2000 or later and 6 percent from the 1980s). Slightly more than half of the patients were female, 48 percent were obese, 20 percent were elderly (age > 70 years) and 38 percent were ASA Physical Status 3-5. A payment was made in 55 percent of claims, and the median payment, when a payment was made, was \$211,650 (range \$627 to \$14,880,000). Forty percent of claims were for nerve damage, and one-third of all

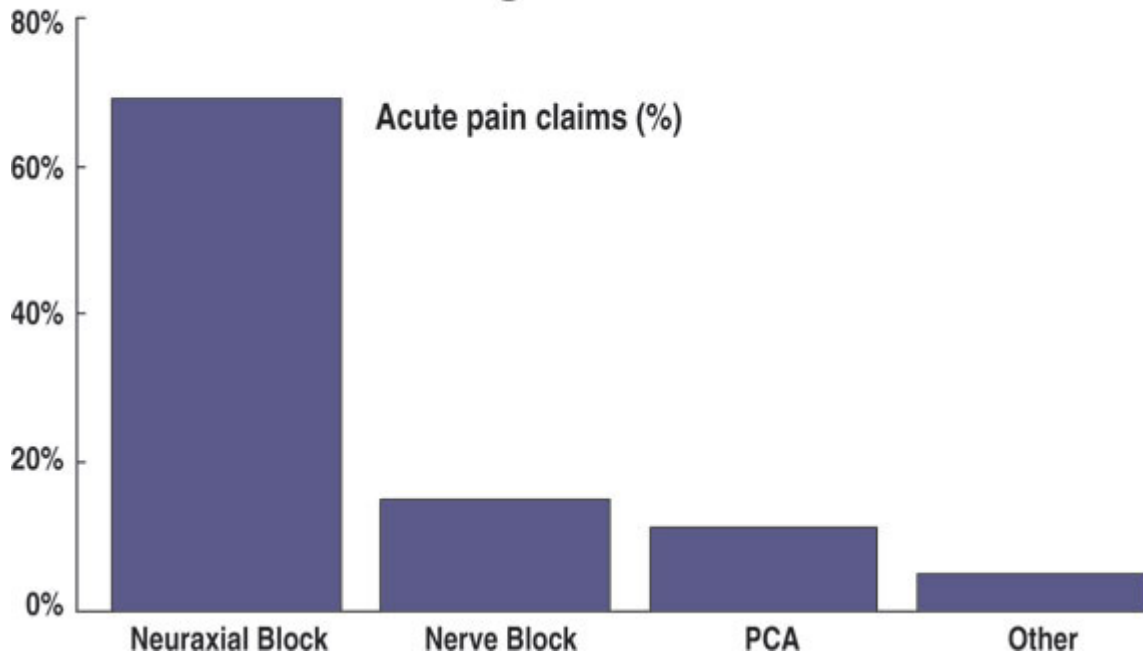
claims were for death and brain damage [Figure 1]. Evidence for probable or possible respiratory depression was present in a quarter of all acute pain management claims.

FIGURE 1: Type of patient injury in acute pain management claims (n=150).



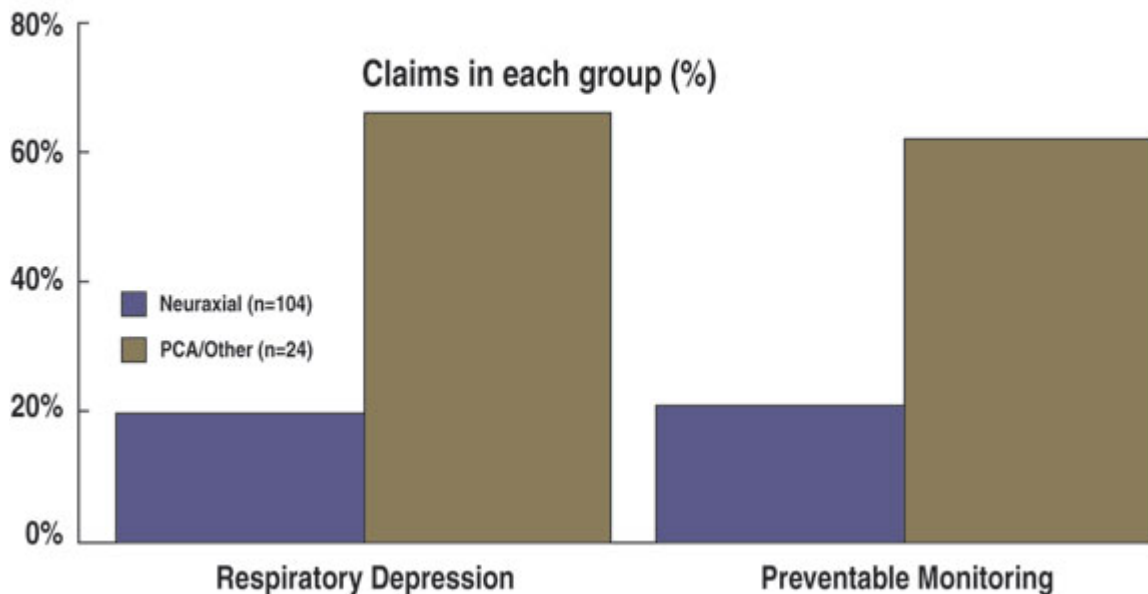
We characterized the predominant mode of pain management into four categories: neuraxial block (n=104), peripheral nerve block (n=22), patient-controlled analgesia (PCA) (n=17) and other (parenteral opioids, n=7, [Figure 2]). Due to small numbers, PCA and other opioids were grouped for analysis. Two-thirds of claims associated with neuraxial and peripheral nerve blocks involved nerve damage, abscess or hematoma, the majority of which were related to the block.

FIGURE 2: Predominant mode of acute pain management control.



Twenty percent (n=20) of neuraxial block claims involved probable or possible respiratory depression [Figure 3]. In many of these claims, there was multimodal administration of opioids, as is evident in the case above. Sixty-six percent (n=16) of PCA/other claims involved death or brain damage resulting from possible or probable respiratory depression [Figure 3].

FIGURE 3: Respiratory depression (probable or possible) in acute pain management claims.



We also identified 13 additional acute pain management cases found in respiratory or cardiac arrest, but no preceding signs of respiratory depression were noted. On-site reviewers judged that better use of monitoring devices (particularly pulse oximetry or capnography) may have prevented the complication in 21 percent of neuraxial and 63 percent of PCA/other claims [Figure 3].

It is important to remember that a major limitation of the Closed Claims Project database is the absence of denominator data. Hence the relative safety of each technique cannot be compared.

APSF recently asserted that there is a significant and underappreciated risk of serious injury from PCA in the postoperative period.¹ In addition, ASA recently convened a Task Force on Neuraxial Opioids, which has draft practice guidelines for the prevention, detection and management of respiratory depression associated with neuraxial opioid administration. This draft is available on the ASA Web site for comments.³ Our review found poor outcomes (death and brain damage), particularly in the PCA group. APSF advocated for additional clinician training in the prevention, diagnosis and management of opioid-induced respiratory depression as well as appropriate patient selection for PCA and neuraxial opioids.¹ Interestingly, obesity was a factor noted in a number of our respiratory depression claims, consistent with an increased risk of opioid-induced respiratory depression in the obese patient with obstructive sleep apnea.³ APSF also recommended routine use of continuous postoperative respiratory monitoring (pulse oximetry and monitoring of ventilation) in patients receiving neuraxial opioids, PCA or serial doses of parenteral opioids. Our review found that the majority of claims in the PCA/other group involved possible or probable respiratory depression [Figure 3]. Our results also suggested that better use of monitoring devices may have prevented the complication [Figure 3]. Thus our preliminary results lend weight to APSF's recommendation for improving postoperative respiratory monitoring in patients receiving PCA as well as intravenous opioids. APSF also advocated for the improved design and implementation of safe opioid infusion and PCA pumps containing dose-error reduction technology. It asserted that modern pumps are complex, and lethal overdoses associated with use errors are common. Our data were not able to address this recommendation.

Lastly, nerve injury associated with regional blocks has been a significant source of liability for anesthesiologists.⁴ Our review found that nearly two-thirds of acute pain claims involved nerve damage, abscess or hematoma, which were related to the neuraxial or peripheral nerve block. Thus there is still much room for improvement to prevent nerve injury in acute pain patients and to understand why nerve injury occurs.

In conclusion our review of closed claims findings suggests that improving PCA and neuraxial opioid administration and monitoring for respiratory depression as well as preventing nerve damage are targets for improvement in the management of acute postoperative pain.

References

1. Weinger MB. Dangers of postoperative opioids. APSF workshop and white paper address prevention of postoperative respiratory complications. APSF Newsl. 2007; 21(4):61, 63-67.

2. Fitzgibbon DR, Posner KL, Domino KB, et al. Chronic pain management: ASA Closed Claims Project. *Anesthesiology*. 2004; 100:98-105.
3. Practice guidelines for the prevention, detection and management of respiratory depression associated with neuraxial opioid administration: DRAFT. A report by the ASA Task Force on Neuraxial Opioids. Available at www.ASAhq.org/clinical/NeuraxialOpioidGuidelines061507pw.pdf. Accessed on June 26, 2007.
4. Lee LA, Posner KL, Domino KB, Caplan RA, Cheney FW. Injuries associated with regional anesthesia in the 1980s and 1990s: A closed claims analysis. *Anesthesiology*. 2004; 101:143-152.

Bird M : Acute Pain Management: A New Area of Liability for Anesthesiologist. *ASA Newsletter* 71(8), 2007 is reprinted with permission of the American Society of Anesthesiologists, 520 N. Northwest Highway, Park Ridge, Illinois 60068-2573.