



ARTICLE OF THE MONTH

The Opioid-sparing Effect of Intraoperative Dexmedetomidine Infusion after Craniotomy

Song J, Ji Q, Sun Q, Gao T, Liu K, Li L.
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This month's SNACC Article of the Month deals with a clinical quandary that all of us who care for craniotomy patients face: how do we ensure comfort postoperatively without "snowing" our patient? Clearly, we want our patients to be comfortable after craniotomy, and opioid-sparing techniques are at a premium. Local anesthesia (scalp blocks) may be a solution, acetaminophen may be a solution, and dexmedetomidine, the focus of this month's study, may be a solution. The sedation associated with a low-dose dexmedetomidine infusion is generally one in which patients can respond to commands, facilitating a neurological exam. This month's content experts are Alexander Zaslavsky and Alex Bekker, from Rutgers New Jersey Medical School. Dr. Zaslavsky is Assistant Professor of Anesthesiology, and Dr. Alex Bekker is Professor and Chair of Anesthesiology. Their take on this month's article helps put this issue in better perspective, highlighting the advantages (and limitations) of dexmedetomidine as a postoperative analgesic. Check in with us on the [SNACC LinkedIn Feed](#) to share your thoughts. See you in San Diego!

~John F. Bebawy, MD

Commentary

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The management of post-craniotomy pain remains a significant challenge for physicians. Although craniotomy is often thought to be less painful than other surgeries, more than half of craniotomy patients experience moderate to severe pain in the first 24 hours postoperatively. This is complicated by the fact that aggressive pain management is avoided due to concerns with the side effects of opioids (e.g. respiratory depression, sedation,

etc.). These side effects can mask an accurate neurological assessment. Moreover, inadequate postoperative pain control may increase the incidence of postoperative complications. For example, postoperative pain that results in an increase in arterial blood pressure may also result in an intracranial hemorrhage. Therefore, it is important to consider alternative analgesic options, especially given the fact that the conservative management of post-craniotomy pain with opioids is often inadequate.

Intraoperative dexmedetomidine infusion has previously been shown to decrease postoperative opioid requirements in pediatric and adult surgeries. Song and colleagues conducted a randomized trial to evaluate the opioid-sparing effect of an intraoperative dexmedetomidine infusion after craniotomy. In addition to propofol and remifentanyl infusion, the treatment group received dexmedetomidine infusion at 0.2 to 0.5 mcg/kg/h beginning 10 minutes prior to induction, while the placebo group received a normal saline infusion. Infusion was stopped at the end of the surgery.

The present study demonstrated an opioid sparing effect of the intraoperative infusion of dexmedetomidine as evidenced by (1) a reduced verbal numerical pain rating scale, (2) a prolonged time before an analgesic request, (3) a reduced opioid requirement to control postoperative pain, and (4) fewer opioid related side effects. Dexmedetomidine is a distinctive sedative because it offers a cooperative sedation (i.e. patient can respond to simple command while sedated) and it does not cause respiratory depression, although it may cause hypotension and bradycardia. The subjects of the study did not exhibit any perioperative bradycardia; presumably, due to the relatively low dose of continuous infusion without a bolus dose. In conclusion, the study confirms that dexmedetomidine may be added to the anesthetic regiment to reduce postoperative pain and opioid requirements. It should be noted that this therapy should be exercised with caution, especially in patients with known cardiac disease.