

See Article page 734.



Commentary: Role of pre-emptive analgesia in reversing the opioid epidemic

Mohamed K. Kamel, MD

Although the term “pre-emptive analgesia” is relatively new, the rationale behind its use dates back to the beginning of the past century, when Crile¹ first described the concept of “anoci-association” and its role in preventing systemic response to surgery by reducing afferent stimuli from the injured tissue. In the late 1980s and early 1990s, Woolf and his colleagues introduced “pre-emptive analgesia” with the aim to reduce central neural hypersensitization that was believed to be the main driver of pathologic pain responses (ie, allodynia and hyperalgesia) following tissue injury.^{2,3} As nociceptor activation was found to continue throughout the early postoperative period due to the local inflammatory changes associated with wound healing, a “preventive” pain management strategy has been recently proposed, where analgesics are given before the anticipated onset of pain throughout the entire perioperative course.⁴ Nowadays, many surgeons use the terms “pre-emptive” and “preventive” interchangeably.

In 2017, the Department of Health and Human Services declared a national health emergency secondary to the recent significant increase in mortality associated with opioids misuse and abuse.⁵ One of the 5 points’ strategy to combat the opioid crisis was to advance better practices in pain management.⁶ Several studies have recently shown that applying pre-emptive and preventive pain-management strategies was successful in decreasing opioid use across a wide spectrum of surgical procedures.^{7,8} So far, a paucity of data exists regarding the role of using such perioperative pain-control protocols in decreasing opioid use following thoracic and foregut surgeries.

From the Department of General Surgery, Central Michigan University College of Medicine, Saginaw, Mich.

Disclosures: Author has nothing to disclose with regard to commercial support.

Received for publication Oct 28, 2019; revisions received Oct 28, 2019; accepted for publication Oct 29, 2019; available ahead of print Dec 11, 2019.

Address for reprints: Mohamed K. Kamel, MD, Department of General Surgery, Central Michigan University College of Medicine, 912 S Washington Ave, STE 1, Saginaw, MI 48601 (E-mail: Husse1m@cmich.edu).

J Thorac Cardiovasc Surg 2020;159:745-6
0022-5223/\$36.00

Copyright © 2019 by The American Association for Thoracic Surgery

<https://doi.org/10.1016/j.jtcvs.2019.10.181>



Mohamed K. Kamel, MD

CENTRAL MESSAGE

The use of pre-emptive analgesia following minimally invasive foregut surgery can significantly decrease opioid prescriptions at discharge, yet with no compromise in the adequacy of pain control.

In the current issue of the *Journal*, Kim and colleagues⁹ reported that adding a pre-emptive pain management strategy to an established enhanced recovery (Enhanced Recovery after Surgery [ERAS]) protocol significantly decreased opioid prescriptions at discharge following minimally invasive benign foregut surgeries. The authors divided the 414 patients who were retrospectively reviewed in this study into 3 groups (ERAS + pre-emptive pain control, ERAS alone, and a historic control group). Only 10% of the patients in the pre-emptive group had opioid prescriptions at discharge, compared with 85% and 87% in ERAS alone and historic groups, respectively. In addition, the authors found that on multivariable analysis the only factor that was associated with fewer opioid prescriptions at discharge was the implementation of pre-emptive pain protocol. Patients in the pre-emptive group reported that their pain at 30-days postoperatively was very well tolerated (median 0.9 in a scale of 0-10). Interestingly, none of the patients included in the pre-emptive pain control group called the outpatients clinic to ask for new or additional opioid prescriptions.

Despite the inherent biases associated with retrospective reviews, this paper published by Kim and colleagues sheds light on the feasibility of discharging patients undergoing minimally invasive foregut surgery on opioid-free pain regimens. Whether the same results can be replicated in more

advanced thoracic surgeries should be the focus of future studies.

References

1. Crile GW. The kinetic theory of shock and its prevention through anoci-association (shockless operation). *Lancet*. 1913;182:7-16.
2. Woolf CJ, Wall PD. Morphine-sensitive and morphine-insensitive actions of C-fibre input on the rat spinal cord. *Neurosci Lett*. 1986;64:221-5.
3. Woolf CJ, Chong M-S. Preemptive analgesia—treating postoperative pain by preventing the establishment of central sensitization. *Anesth Analg*. 1993;77:362-79.
4. Pogatzki-Zahn EM, Zahn PK. From preemptive to preventive analgesia. *Curr Opin Anesthesiol*. 2006;19:551-5.
5. Gostin LO, Hodge JG, Noe SA. Reframing the opioid epidemic as a national emergency. *JAMA*. 2017;318:1539-40.
6. Johnson K, Jones C, Compton W, Baldwin G, Fan J, Mermin J, et al. Federal response to the opioid crisis. *Curr HIV/AIDS Rep*. 2018;15:293-301.
7. Trabulsi EJ, Patel J, Viscusi ER, Gomella LG, Lallas CD. Preemptive multimodal pain regimen reduces opioid analgesia for patients undergoing robotic-assisted laparoscopic radical prostatectomy. *Urology*. 2010;76:1122-4.
8. Al-Mujadi H, A-Refai AR, Katzarov MG, Dehrab NA, Batra YK, Al-Qattan AR. Preemptive gabapentin reduces postoperative pain and opioid demand following thyroid surgery. *Can J Anesth*. 2006;53:268-73.
9. Kim MP, Godoy C, Nguyen DT, Meisenbach LM, Chihara R, Chan EY, et al. Preemptive pain-management program is associated with reduction of opioid prescriptions after benign minimally invasive foregut surgery. *J Thorac Cardiovasc Surg*. 2020;159:734-44.e4.