

POPINVITED: ID# 101115

Title:

Enhanced Recovery With Multi-Modal Analgesia in Spine Surgery

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ACCEPTED

Session Title:

Rising Stars of Research and Scholarship Invited Student Posters

Slot:

RS PST1: Sunday, 17 November 2019: 11:45 AM-12:15 PM

Applicable Category:

Clinical, Academic, Students, Leaders

Keywords:

Enhanced Recovery after Surgery (ERAS), Multi-modal analgesia and Pain

References:

Beverly, A., Kaye, A. D., Ljungqvist, O., & Urman, R. D. (2017). Essential elements of multimodal analgesia in enhanced recovery after surgery (ERAS) pathways. *Anesthesiology Clinics*, 35(2), e115-e143. doi:10.1016/j.anclin.2017.01.018

Gan, T. J. (2017). Poorly controlled postoperative pain: prevalence, consequences, and prevention. *Journal of Pain Research, Volume 10*, 2287-2298. doi:10.2147/jpr.s144066

Ljungqvist, O. (2014). ERAS—enhanced recovery after surgery. *Journal of Parenteral and Enteral Nutrition*, 38(5), 559-566. doi:10.1177/0148607114523451

Lohsiriwat, V. (2016). Opioid-sparing effect of selective cyclooxygenase-2 inhibitors on surgical outcomes after open colorectal surgery within an enhanced recovery after surgery protocol. *World Journal of Gastrointestinal Oncology*, 8(7), 543-549. <http://doi.org.proxy.library.vanderbilt.edu/10.4251/wjgo.v8.i7.543>

Nelson, G., Kiyang, L. N., Chuck, A., Thanh, N. X., & Gramlich, L. M. (2016). Cost impact analysis of Enhanced Recovery After Surgery program implementation in Alberta colon cancer patients. *Current Oncology*, 23(3), e221–e227. <http://doi.org/10.3747/co.23.2980>

Scott, M. J., McEvoy, M. D., Gordon, D. B., Grant, S. A., Thacker, J. K., & Miller, T. E. (2017). American Society for Enhanced Recovery (ASER) and Perioperative Quality Initiative (POQI) joint consensus statement on optimal analgesia within an enhanced recovery pathway for colorectal surgery: Part 2— from PACU to the transition home. *Perioperative Medicine*, 6(1), 7. doi:10.1186/s13741-017-0063-6

Wick, E., Grant, M., & Wu, C. (2017). Postoperative multimodal analgesia pain management with non-opioid analgesics and techniques: A review. *JAMA Surgery*, 152(7), 691-697. doi:10.1001/jamasurg.2017.0898

Abstract Summary:

This scholarly improvement project demonstrates the value of multi-modal anesthesia within an ERAS clinical pathway in decreasing post-operative pain scores and the need for opioids.

Content Outline:

- Describe methods for optimizing post-operative pain with the use of multi-modal analgesia in Spine Surgery
- Describe the appropriate surgical patient populations for ERAS Clinical Pathways
- Describe how multi-modal analgesia in practice settings create standardization according to evidence- based literature

Topic Selection:

Rising Stars of Research and Scholarship Invited Student Posters (25201)

Abstract Text:

Purpose: Spine surgery is a particularly painful surgery that leaves patients at an increased risk of developing chronic pain. Due to a growing concern of opioid misuse, health care providers are tasked with employing alternative pain-relieving strategies, such as multimodal analgesia to treat perioperative pain. The newest evidence-based practice pathways emphasize the use of multimodal analgesia to treat pain as part of a relatively new clinical pathway known as the Enhanced Recovery After Surgery (ERAS). The purpose of this quality improvement project was to implement multi-modal analgesic techniques for patients having elective spine surgery and evaluate postoperative pain scores, postoperative nausea and vomiting, Post-anesthesia care unit (PACU) length of stay, and postoperative opioid administration compared to the same measures prior to implementation.

Methods: An existing ERAS Clinical Pathway was adapted for use in accordance to latest literature and ERAS guidelines. Retrospective data was collected for patients undergoing elective spine surgery from August 30 – September 30, 2018 and compared to adults who underwent similar surgeries from August 30 – September 30, 2017. Data gathered from the electronic health record included the following variables: postoperative pain scores and postoperative nausea and vomiting, PACU length of stay, and postoperative opioid administration using opioid equivalents. Statistical analysis was performed using descriptive statistics.

Results: During the pre-intervention period, the project sample comprised 12 patients. Post-intervention, the project sample comprised 13 patients. There was a statistically significant difference in preoperative vs. postoperative pain scores for the post-intervention group (6.1 vs. 2.6, $p = 0.003$). The median value of morphine equivalents decreased by more than 50% post-intervention. There was no difference in post-operative nausea and vomiting (PONV). Median PACU minutes pre-intervention was 125 minutes. This decreased to a median of 120 minutes.

Conclusion: Despite the small number of patients and limited time to implement this project, it is feasible to implement an ERAS clinical pathway in elective spine surgery. Utilization of multimodal analgesia techniques in spine surgery significantly reduces pain scores and total opioid required post-operatively. By standardizing treatment, patients experience less variability in care and an enhanced recovery with less pain and decreased need for opioid analgesia in the post-operative setting. Additional QI projects are needed to expand use of ERAS in elective spine surgery.