

Pectoralis Nerve Block Compared to Thoracic Paravertebral Nerve Block in the Mastectomy patient: Evidence-based Practice Recommendations

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Abstract

- Patients undergoing a mastectomy are at increased risk of becoming opioid dependent.
- Opioids are known to aid in cancer metastasizing due to the suppression of the body's natural killer cells.
- Regional anesthesia, has long provided a reduction in sensation by blocking the nerve pathway, thus numbing the feeling of pain.
- The PECS and the TPV blocks are used in patients undergoing a mastectomy to reduce the severity of pain that the body perceives.
- The project's primary purpose is the development of evidence-based clinical recommendations.
- The recommendations will be determined by selecting which nerve block provides the most significant reduction in the visual acuity scale (VAS) score.
- Along with the longest time from when the surgery is completed to when the patient first asks for supplemental analgesia by analyzing multiple randomized control trial articles comparing the two nerve blocks.
- The project includes a plan for implementing these evidence-based practice recommendations.

Objectives

- Perform a literature search and review to obtain current evidence based best practice comparing the PECS vs TPV blocks.
- Compare which block provides the lower mean postoperative pain scores as perceived by the patients.
- Develop evidence based recommendations for patients undergoing a mastectomy.
- Provide the recommendations to the nursing, surgical and anesthesia staff within the perioperative area.

Introduction

- Breast cancer affects roughly 12% of females in the United States (American Cancer Society [ACS], 2019).
- Mastectomy is a treatment for breast cancer but causes significant perioperative pain, requiring opioids during and after surgery (Lucia et al., 2021).
- The most used treatment for postoperative pain after a mastectomy is an opioid-containing medication that involves inherent risk (Lucia et al., 2021).
- Regional anesthesia is used to help reduce the amount of pain perceived by the patient during the perioperative period (Tripathy et al., 2019).
- Pectoralis nerve block being compared to Thoracic para vertebral nerve block to see which block provides the most effective pain relief.

PICOT Question

- (P) In patients undergoing a mastectomy
- (I) is a pectoralis nerve block II
- (C) compared to a thoracic paravertebral nerve block
- (O) more effective at pain reduction
- (T) postoperatively

Literature Search

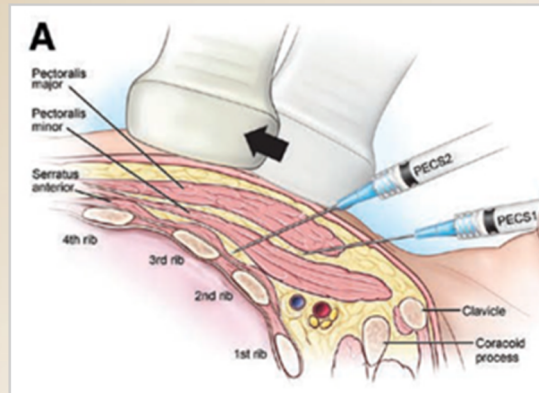
The literature search utilized the PICO question for search terms and resulted in 31 articles that was then narrowed down to 6 articles that appropriately answered the PICO question. These articles have been chosen and explored for supporting evidence in this project. These articles focus on:

- Mastectomy
- PECS block
- TPV block
- VAS score
- Opioid use

Project Description and Design

This project used the Johns Hopkins Evidence-Based Practice Model. This model is comprised of 3 major components.

- Inquiry
- Practice
- Learning

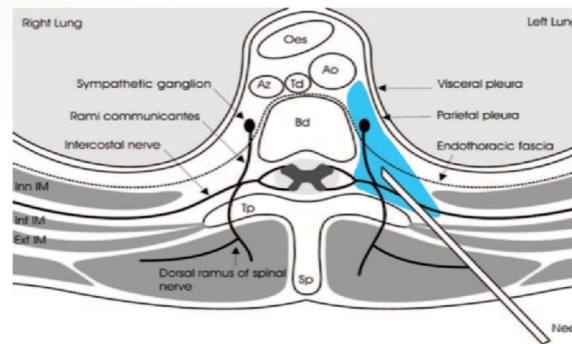


Problem and Significance

The significance of the problem to the Nurse Anesthesia community is that although opioids can be considered necessary, they do not come without side effects and a risk for addiction.

- Opioids cause a release of endorphins.
- Breast cancer affects 12% of females in the U.S.
- Surgical treatment for breast cancer a mastectomy can be perceived as very painful.

- Painful procedures can cause an increase in opioid consumption.
- Opioids cause a reduction of Natural Killer Cells
- Blocking a nerve impulse with Local Anesthetics can provide a reduction of pain.
- A reduced feeling of pain will result in lower amounts of opioids used.
- The PECS block when compared to the TPV has been proven to be more effective in pain reduction..



Outcomes & Evaluation

This project provides anesthesia providers as well as surgical staff with evidence based recommendations in providing regional anesthesia PECS block to patients undergoing a mastectomy.

Evaluations will be performed at multiple intervals including:

- VAS score
 - Opioid use
 - First requested opioid post operatively
 - Regional block providers experience
- Using the Johns Hopkins Model continued monitoring of outcomes and evaluations will be performed.

Conclusions

Mastectomies can be very stimulating procedures causing significant discomfort and pain for patients.

- Evidence supports the use of the PECS block when compared to the TPV block.
- PECS blocks provides a reduction in opioid use.
- PECS blocks provides lower postoperative VAS scores as reported by the patients.
- Lower opioid use provides a lower chance of suppression of natural killer cells providing a reduced chance of metastasis.

Recommendations

Recommendation 1:

- Patients undergoing any type of mastectomy shall be evaluated and administered a nerve block in an effort to reduce VAS scores.

Recommendation 2:

- Any patient undergoing any type of mastectomy shall receive a Pectoralis Nerve Block prior to surgery as long as no contraindications such as patient refusal or local anesthetic allergy

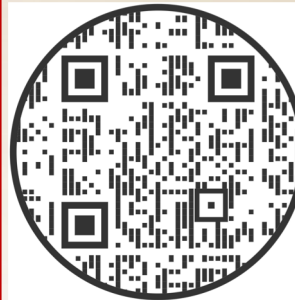
Recommendation 3

- Patients VAS score shall be recorded in the EMR q30min for the first 1 post operatively and then every 2 hours until discharge

Recommendation 4

- All mastectomy patients should have the time when they first request supplemental analgesia documented in the EMR

References



Link to Full Report

