Modified Pectoral Nerve Block for Unilateral Mastectomy

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Structured Abstract

Background
General anesthesia combined with opioid therapy is the most common anesthetic technique used for patients undergoing breast cancer surgery; however, inhaled anesthetics and opioids are notorious offenders of a fragile immune system and create hemodynamic compromise.

By reducing the requirements of general anesthetics and opioids, the risks associated with each are greatly reduced. Regional anesthesia is a safe alternative or adjunct to general anesthesia, as it effectively reduces perioperative opioid consumption and limits the amount of anesthesia required intraoperatively. The modified pectoral nerve block (Pecs II block) is a regional technique that provides extensive sensory and motor blockade to the nerves supplying the anterior thoracic wall. This novel approach supersedes conventional regional techniques to anesthetize the thoracic wall for procedures involving the breasts and axillary lymph nodes. Compared to other techniques, the Pecs II block is anatomically less challenging, associated with fewer complications, and has a higher rate of success. For patients undergoing breast cancer surgery, the Pecs II block combined with conscious sedation greatly reduces the risks associated with general anesthesia and offers long-terms benefits.

Clinical Question
For breast cancer patients undergoing a mastectomy, is a Pecs II block combined with conscious sedation a safer and more effective technique than general anesthesia combined with opioid administration?

Evidence Based Discussion
Considering the expansive coverage achieved with a Pecs II block, recent evidence suggest that a Pecs II block combined with conscious sedation can replace general anesthesia as the primary anesthetic for patients undergoing breast surgery. Additionally, recent evidence supports that a Pecs II block can effectively reduce perioperative opioid requirements. The reduction in opioid requirements associated with a Pecs II block can be largely attributed to the various sensory, motor, and cutaneous nerve blockade is provides. For instance, blocking the median and lateral pectoral nerves that supply the pectoralis minor and pectoralis major alleviates the intense muscle spasm that occurs as the surgeon progresses into the pectoralis major. By anesthetizing the thoracodorsal and long thoracic nerve, the latissimus dorsi and serratus anterior are relieved from pain associated with mastectomies and dissecting into the axilla. The Pecs II block expands its coverage further towards the cutaneous branches of intercostal nerves three through six and the intercostobrachial nerve.

Blocking nerve supply from the cutaneous branches of the intercostal nerve, the thoracodorsal nerve, long thoracic nerve, and intercostobrachial nerves is especially advantageous for mastectomies with axillary involvement as the four nerves reduce sensation to the thoracic wall and axilla. For the purpose of this case report, the patient was a risk candidate for general anesthesia related to her age, cancer diagnosis, and extensive cardiac history. Providing the Pecs II block successfully eliminated the need for general anesthesia and maintained her intraoperative pain control with minimal fentanyl administration.

Translation to Practice

Based on what I have synthesized from my research, I will consider implementing conscious sedation with a Pecs II block for patients undergoing breast cancer surgery in my future practice. To achieve the opportunity to do this, I will present the information to the anesthesia department and provide education based on my synthesis of the literature. I will include information regarding the implications, use, potential complications, and added benefits of the Pecs II block for women undergoing breast surgery related to cancer. I would compare and contrast, in detail, the perioperative and long-term benefits of including a Pecs II block for analgesia and anesthesia vs. general anesthesia with narcotic-based therapy for pain control. Second, I will formulate a protocol for the implementation of a Pecs II block for patients undergoing a mastectomy secondary to breast cancer and utilize the Iowa Model to implement changes and measure outcomes. Although more evidence is needed to determine the efficacy of a Pecs II block combined with conscious sedation as the primary anesthetic for breast cancer surgery, evidence supports regional anesthesia as an effective adjunct for breast cancer patients undergoing breast surgery. In the future, I would like to see regional anesthesia utilized more for oncology related procedures.

Keywords: Pecs block, pectoral nerve block, breast cancer surgery, regional anesthesia

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