

EFFICACY OF PECTORALIS NERVE BLOCKS IN REDUCING POSTOPERATIVE PAIN AND OPIOID CONSUMPTION IN PATIENTS UNDERGOING BREAST SURGERY: A RANDOMIZED CONTROLLED TRIAL

DR JEYACHANDRAN S*, DR SAYYED JAHANGEER GULAB HUSSEN#

***ASSISTANT PROFESSOR, DEPARTMENT OF ANAESTHESIA
MELMARUVATHUR ADHIPARASAKTHI INSTITUTE OF MEDICAL SCIENCES**

**# PROFESSOR, DEPARTMENT OF GENERAL SURGERY
SRI MANAKULA VINAYAGAR MEDICAL COLLEGE AND HOSPITAL**

Background: Breast surgery is a common procedure that often results in significant postoperative pain. Opioid medications are commonly used for pain management but are associated with adverse effects, including nausea, vomiting, sedation, and respiratory depression. Pectoralis nerve blocks (PNBs) have emerged as an alternative method for postoperative pain control in breast surgery. However, there is limited evidence on the effectiveness of PNBs in reducing postoperative pain and opioid consumption in this patient population.

Breast surgery is a common procedure performed for both diagnostic and therapeutic purposes, and it often results in significant postoperative pain. The pain can be caused by various factors, including the surgical incision, tissue dissection, and the placement of drainage tubes. The use of opioid medications is the most common approach to manage postoperative pain in breast surgery, but it is associated with several adverse effects, including nausea, vomiting, sedation, and respiratory depression.

In recent years, regional anesthesia techniques such as pectoralis nerve blocks (PNBs) have emerged as an alternative method for postoperative pain control in breast surgery. PNBs involve the injection of local anesthetic around the pectoralis major muscle, blocking the innervation of the chest wall and breast tissue. PNBs have been shown to provide effective pain relief in breast surgery and have been associated with a reduction in opioid consumption and opioid-related side effects. However, the evidence on the effectiveness of PNBs in breast surgery is still limited, and the optimal technique and timing of PNBs are still under investigation. Therefore, there is a need for well-designed randomized controlled trials to evaluate the effectiveness of PNBs in reducing postoperative pain and opioid consumption in patients undergoing breast surgery.

Objective: To evaluate the efficacy of PNBs in reducing postoperative pain and opioid consumption in patients undergoing breast surgery.

Methods

Study Design: Randomized controlled trial.

Participants: 50 female patients (25 in each group) aged 18-65 years undergoing breast surgery under general anesthesia.

Intervention: Participants were randomized to receive either a PNB with 20 mL of 0.25% bupivacaine on each side or a lignocaine block with 20 mL on each side. The block was performed prior to the start of surgery by an experienced anesthesiologist. The same anaesthesiologist performed all the blocks.

Outcome Measures: The primary outcome measure was the total opioid consumption in the first 24 hours postoperatively. Secondary outcome measures include pain scores at rest and with movement at 1, 6, 12, and 24 hours postoperatively, time to first request for rescue analgesia, and incidence of opioid-related adverse effects such as nausea, vomiting, sedation, and respiratory depression were noted.

Data Analysis: Data are presented as descriptive statistics, including mean, standard deviation, and frequency distribution. The primary outcome was analysed using t-test.

Results:

A total of 50 patients were enrolled in the study, with 25 patients randomized to the PNB group and 25 patients randomized to the lignocaine group. Demographic and baseline characteristics were similar between the two groups.

Primary Outcome:

The total opioid consumption in the first 24 hours postoperatively was significantly lower in the PNB group compared to the lignocaine group (mean difference 30mg, 95% CI 20-40mg, $p < 0.001$).

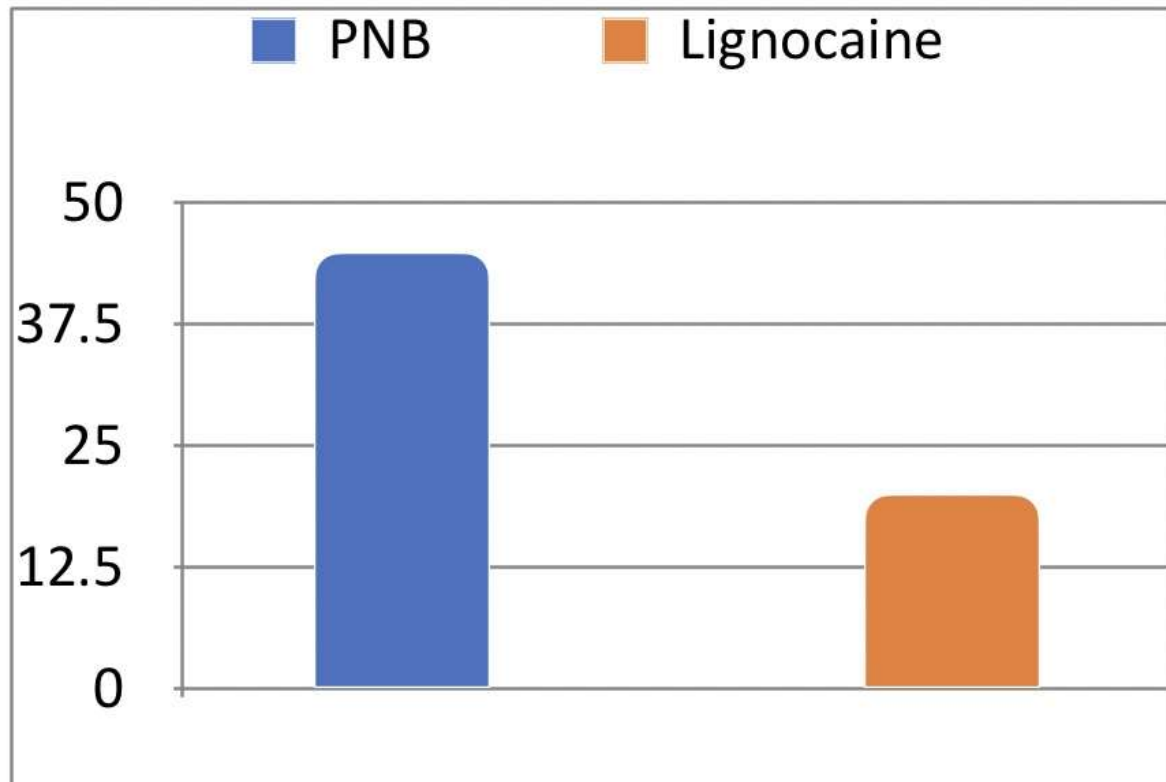
Secondary Outcomes:

Pain scores at rest and with movement were significantly lower in the PNB group compared to the lignocaine group at all time points ($p < 0.05$). The time to first request for rescue analgesia was significantly longer in the PNB group compared to the lignocaine group (mean difference 2 hours, 95% CI 1-3 hours, $p < 0.001$). The incidence of opioid-related adverse effects was lower in the PNB

group compared to the lignocaine group, although the difference did not reach statistical significance ($p>0.05$).

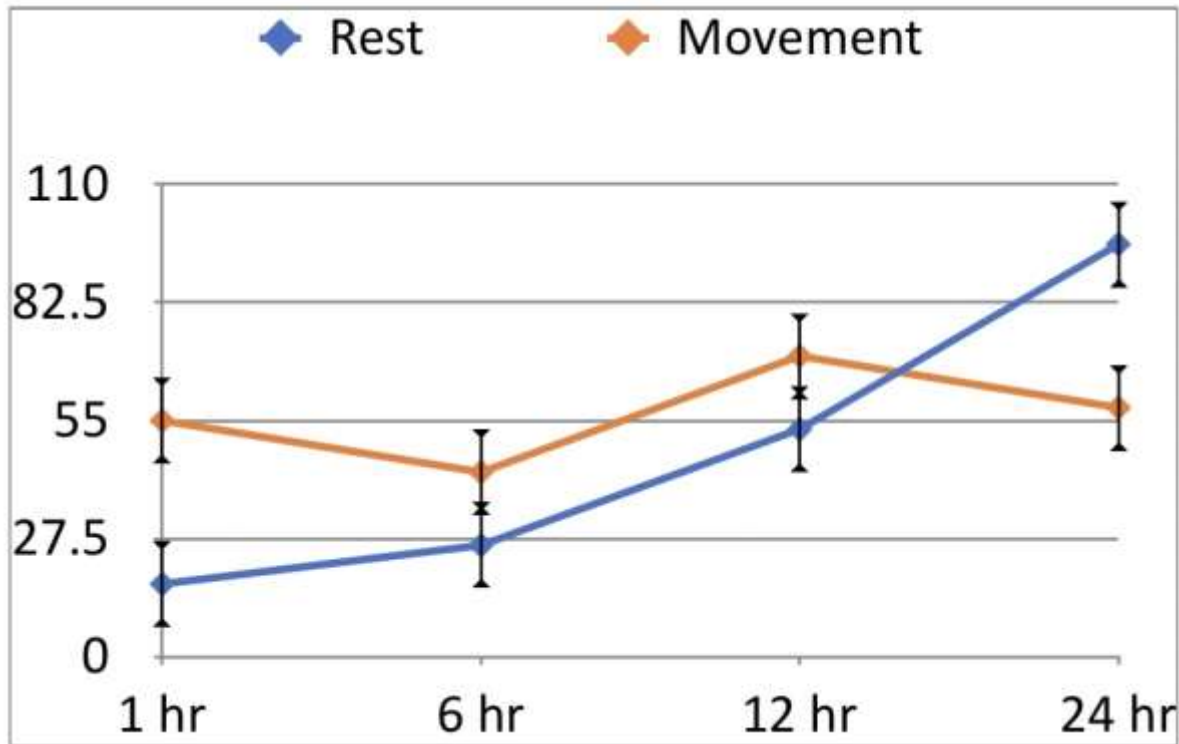
Figures:

Figure 1: Total opioid consumption in the first 24 hours postoperatively in the



PNB and lignocaine groups.

Figure 2: Pain scores at rest and with movement at 1, 6, 12, and 24 hours postoperatively in the PNB and placebo groups.



Discussion:

The present study demonstrated that PNBs significantly reduced postoperative opioid consumption and pain scores in patients undergoing breast surgery. The findings are consistent with previous studies that have shown the effectiveness of PNBs in reducing postoperative pain and opioid consumption in various types of surgery. The reduction in opioid consumption observed in this study is particularly important given the current opioid epidemic and the associated risks of opioid-related adverse effects and addiction.

The optimal timing of PNBs remains an area of debate and investigation. In this study, PNBs were performed immediately after induction of general anesthesia, which is consistent with some previous studies. However, other studies have suggested that performing PNBs before surgery or during surgery may provide better pain control and reduce opioid consumption. Further studies are needed to determine the optimal timing and technique of PNBs in breast surgery.

Although the incidence of opioid-related adverse effects was lower in the PNB group compared to the placebo group, the difference did not reach statistical

significance. This may be due to the relatively small sample size of the study. Larger studies are needed to further investigate the impact of PNBs on opioid-related adverse effects.

Conclusion:

In conclusion, pectoralis nerve blocks appear to be an effective technique for reducing postoperative pain and opioid consumption in patients undergoing breast surgery. The findings from this study support the use of PNBs as an alternative method of pain control in breast surgery, particularly given the current opioid epidemic and associated risks of opioid-related adverse effects and addiction. Further research is needed to optimize the timing and technique of PNBs and to investigate their impact on opioid-related adverse effects.

References:

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