

ORIGINAL ARTICLE

Comparison of Pectoral nerve versus erector spinae block for breast surgeries

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ABSTRACT:

Background: Achieving adequate perioperative analgesia can be challenging in patients undergoing breast surgeries. The present study compared Pectoral nerve versus erector spinae block for breast surgeries. **Materials & Methods:** The present study was conducted on 48 patients of American Society of Anesthesiologists' status I and II female patients between the age group 18 to 60 years scheduled for unilateral modified radical mastectomy. Patients were divided into 2 groups. Group I patients received Erector spinae block and group II received Pectoral nerve block. The outcome of both blocks was assessed. **Results:** The mean duration of analgesia in group I was 5.88 hours and in group II was 7.21 hours. Requirement of morphine was 6.62 mg in group I and 4.25 mg in group II. The difference was significant ($P < 0.05$). There was significantly difference in NS score in both groups ($P < 0.05$). **Conclusion:** PECS II block is a more effective block as compared to ESP block in terms of postoperative analgesia and opioid consumption.

Key words: Perioperative analgesia, breast surgeries, Erector spinae.

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INTRODUCTION

Achieving adequate perioperative analgesia can be challenging in patients undergoing breast surgeries. These patients experience significant postoperative pain. Regional anaesthetic techniques like thoracic epidural and paravertebral blocks were considered gold standard analgesic techniques till date. These techniques may be associated with problems like pneumothorax, vascular puncture, nerve damage etc.¹

In breast surgery, acute postoperative pain from injured muscles and nerves is a consistent risk factor for chronic pain in association with its severity. Management of acute postoperative pain is required for better outcome and patients' satisfaction. Regional techniques are regarded as the best choice to reduce acute postoperative pain and incidence of chronic pain after breast surgery.²

Regional anesthesia techniques, such as thoracic epidural block, thoracic paravertebral block (TPVB), and intercostal nerve block, have been used in anesthesia and/or analgesia in breast surgery. However, these invasive regional techniques lead to some complications during the perioperative period; therefore, they are not appropriate on a day-stay basis. Also, many anesthesiologists are reluctant to use invasive techniques in breast surgery.³

Erector spinae block (ESP) in which local anaesthetic drug is injected deep to erector spinae muscle. This

block has been used in various surgeries including radical mastectomy. There has been only a single study comparing both of these blocks in these surgeries, but none in the Indian subpopulation.⁴ The present study compared Pectoral nerve versus erector spinae block for breast surgeries.

MATERIALS & METHODS

The present study was conducted in the department of Anesthesiology. It comprised of 48 patients of American Society of Anesthesiologists' status I and II female patients between the age group 18 to 60 years scheduled for unilateral modified radical mastectomy under general anaesthesia of both genders. They were informed regarding the study and written consent was obtained. Ethical clearance was taken prior to the study. General information such as name, age, gender etc. was recorded. They were divided into 2 groups. Group I patients received Erector spinae block and group II received Pectoral nerve block. Erector spinae block was given with the patient in the sitting position. Pectoral nerve block was performed on the side of surgery with the patient in the supine position and the arm abducted. The outcome of both blocks was assessed. Results thus obtained were subjected to statistical analysis using chi-square test. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

| Total- 48 | | |
|-----------|--------------------------------|---------------------------------|
| Groups | Group I (Erector spinae block) | Group II (Pectoral nerve block) |
| Number | 24 | 24 |

Table I shows that group I patients received Erector spinae block and group II received Pectoral nerve block. Each group had 24 patients.

Table II Comparison of parameters

| Parameters (mean) | Group I | Group II | P value |
|-----------------------|---------|----------|---------|
| Duration of analgesia | 5.88 | 7.21 | 0.02 |
| Morphine requirement | 6.62 | 4.25 | 0.01 |

Table II, graph I shows that mean duration of analgesia in group I was 5.88 hours and in group II was 7.21 hours. Requirement of morphine was 6.62 mg in group I and 4.25 mg in group II. The difference was significant ($P < 0.05$).

Graph II Comparison of parameters

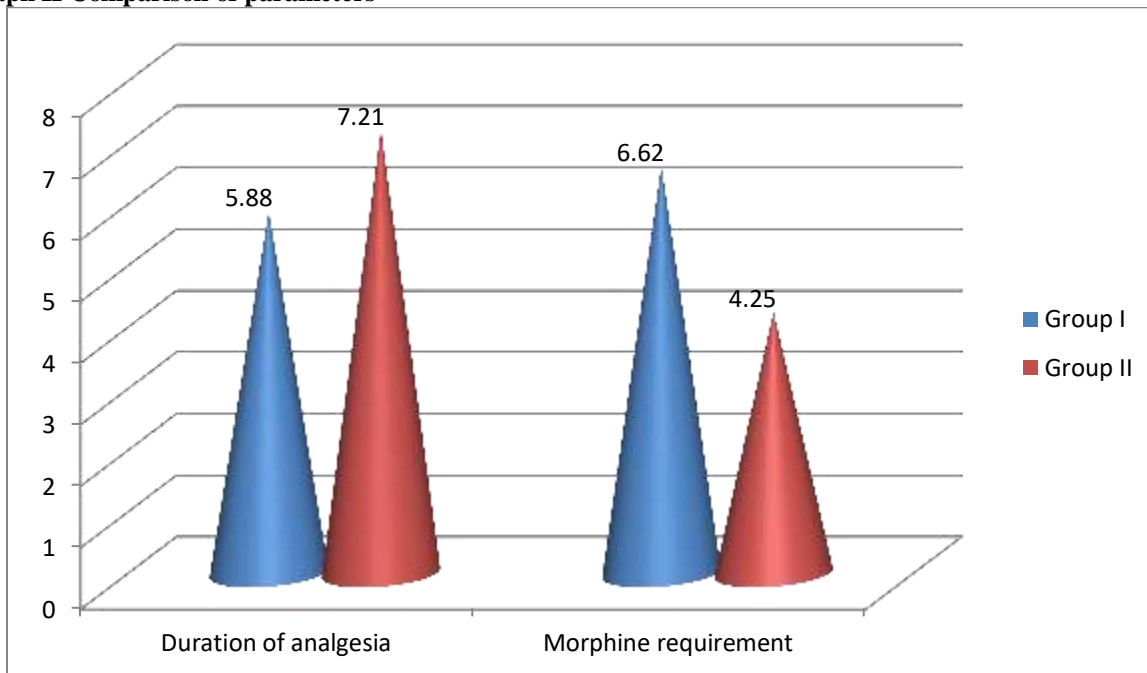
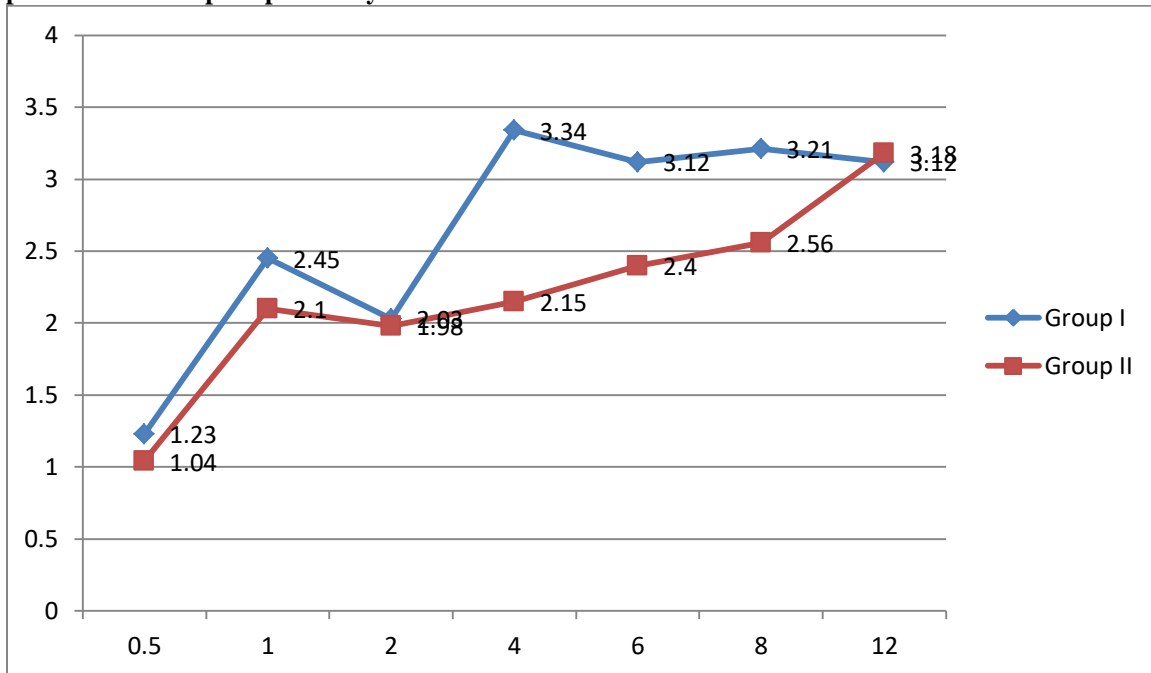


Table III NRS scores postoperatively

| Duration (Hours) | Group I | Group II | P value |
|------------------|---------|----------|---------|
| 0.5 | 1.23 | 1.04 | 0.01 |
| 1 | 2.45 | 2.10 | 0.02 |
| 2 | 2.03 | 1.98 | 0.05 |
| 4 | 3.34 | 2.15 | 0.05 |
| 6 | 3.12 | 2.40 | 0.01 |
| 8 | 3.21 | 2.56 | 0.05 |
| 12 | 3.12 | 3.18 | 0.92 |

Table III, graph II shows that there was significantly difference in NS score in both groups ($P < 0.05$).

Graph II NRS scores postoperatively



DISCUSSION

Perioperative analgesia for surgery in carcinoma breast utilizes significant quantities of opioids as compared to cosmetic breast surgeries. Ultrasound-guided modified pectoral nerve block (Pec) initially described for cosmetic breast surgeries provides excellent analgesia, but is resource-intensive in terms of trained manpower and equipment. Opioids might alter oncological outcomes by changes in the tumor microenvironment. Regional anesthesia reduces the need for perioperative opioids and thus may improve the outcome.⁵ The pectoral nerves block (Pecs block) is less invasive and has less complications, as compared to the other procedures. It is a novel superficial nerve block, alternative to neuraxial and paravertebral blocks, which provides good analgesia during and after ambulatory breast surgery. Pecs block has been performed as postoperative pain management and not as a primary anesthesia in breast surgeries under general anesthesia (GA).⁶ The present study compared Pectoral nerve versus erector spinae block for breast surgeries.

In this study, group I patients received Erector spinae block and group II received Pectoral nerve block. Each group had 24 patients. Bashandy et al⁷ found that the total morphine consumption in 24 hours was less in group II (4.40 ± 0.94 mg), compared to group I (6.59 ± 1.35 mg; P = 0.000). The mean duration of analgesia in patients of group II was 7.26 ± 0.69 hours while that in the group I was 5.87 ± 1.47 hours (P value = 0.001). 26 patients in group II (PECS) had blockade of T2 as compared to only 10 patients in group I. (P value =

0.00). There was no incidence of adverse effects in either group.

We found that mean duration of analgesia in group I was 5.88 hours and in group II was 7.21 hours. Requirement of morphine was 6.62 mg in group I and 4.25 mg in group II. There was significantly difference in NS score in both groups (P< 0.05).

Khemka et al⁸ published a study where they compared PECS block with ESP in 40 patients undergoing MRM surgery. They concluded PECS block is better than ESP block with lower tramadol intake and lower pain scores in the postoperative period. They speculated that the better analgesic profile was due to the blockade of medial, lateral pectoral and long thoracic and thoracodorsal nerves. Unlike their study, we administered the block when the patients were awake, assessing the extent of sensory blockade in the thoracic wall. Sensory blockade was better in patients who were administered PECS block, matching our analgesic intake.

Pecs block is a peripheral nerve block that has been described recently. Considered a safe and efficient procedure, anesthesiologists increasingly prefer Pecs block to TPVB and thoracic epidural analgesia. Pecs block has some advantages, including no risk of sympathectomy that is usually associated with TPVB and epidural blockade. Additionally, the Pecs block has less restrictions on the use of anticoagulants, as compared to TPVB or neuraxial blocks.⁹ TPVB is unable to block medial and lateral pectoral nerves as well as long thoracic and thoracodorsal nerves. Therefore, in performing breast surgeries involving

axillary dissection, there is potential for lack of adequate analgesia. A recent study showed reduced postoperative morphine consumption in the first 24 hours and lower pain scores in the first 12 hours in the Pecs block group, as compared to TPVB group for postoperative analgesia in modified radical mastectomy.¹⁰

CONCLUSION

Authors found that PECS II block is a more effective block as compared to ESP block in terms of postoperative analgesia and opioid consumption.

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