EFFICACY OF ERECTOR SPINAE PLANE BLOCK FOR POSTOPERATIVE ANALGESIA IN TOTAL MASTECTOMY AND AXILLARY CLEARANCE : A RANDOMIZED CONTROLLED TRIAL

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INTRODUCTION

- Radical mastectomy with axillary clearance is being increasingly performed worldwide in females diagnosed with breast cancer.
- The surgery results in significant pain affecting patient's outcome not only in the immediate postoperative period but also lead to long-term squeals like persistent pain and other physical disabilities.
- Traditionally, opioids and NSAIDS are used to control postoperative pain.
- Regional anaesthesia techniques like thoracic epidural, thoracic paravertebral plane block, pectoral nerve blocks and serratus plane blocks are frequently used to provide analgesia in these patients. All these techniques have their own merits and demerits.
- Erector spinae plane block (ESP) is a newer simple regional anaesthesia technique where local anaesthetic is deposited between transverse process and erector spinae muscle which results in blocking of ventral & dorsal rami of multiple spinal nerves resulting in analgesia and anaesthesia to hemithorax.

AIMS AND OBJECTIVES

- The aim of the study was to assess the efficacy of ESP block for postoperative analgesia in patients undergoing total mastectomy and axillary clearance under general anaesthesia.
- The primary outcome of the study was to compare postoperative 24 hour morphine consumption
- The secondary outcomes were to compare the pain scores, characteristics & complications associated with the block procedure.

MATERIALS & METHODS

- Study Design :** Prospective randomized controlled trial
- Institutional ethics committee approval and informed consent obtained
- Study population :** 60 ASA I and II females | Age- 18-60 years
- Exclusion criteria:**
- Local infection at the block site, Coagulopathy, Morbid obesity (BMI>40), Pregnancy etc.
- Randomization and blinding:**
- The patients were randomly allocated into two groups using computer generated random numbers which were kept in opaque envelopes numbered sequentially and opened just before administration of the block.
- Group B (N=30)- Patients received USG-guided unilateral erector spinae plane block at T5 level with ropivacaine (0.5%, 0.4 ml/kg) 30 minutes before general anaesthesia in preoperative room.
- Group C (N=30)- Patients received no intervention before GA.
- Twenty minute following the administration of block, patients were assessed for dermatomal segments showing decreased sensation to pin prick from T2 to T8.
- All patients received general anaesthesia with fentanyl (1µg/kg), propofol (2-2.5 mg/kg) & atracurium (0.5mg/kg). Intraoperative hemodynamic parameters and any additional fentanyl requirement were recorded.

- Towards the end of surgery all patients received injection diclofenac 1.5mg/kg and injection ondansetron 0.1mg/kg.
- Patients were assessed for pain using NRS score at fixed time intervals for 24 hours
- A patient-controlled analgesia pump, programmed to deliver morphine 1.5 mg boluses with a lockout interval of 20 min, was attached to the patient for rescue analgesia.
- Total morphine consumption in first 24 hours were noted. Any other parameters like PONV, or any other complications were also noted.

RESULTS

- The 24-hour morphine consumption was 42 % lower in block group vs control.

Variable	Group B (n=30)	Group C (n=30)	Mean difference, 95% CI	p-value
24- hour morphine consumption [mg; mean(SD)]	2.9 (2.5)	5.0 (2.1)	2.1 (2.0-2.2)	0.01

- The pain scores on NRS were lower in block group compared to control group at all-time intervals for 24 hours after surgery.

ADVERSE EVENTS

- Four patients in block group against eight in the control group experienced nausea and vomiting in the postoperative period and were treated with injection metoclopramide but this difference was not significant (p>0.05).
- No block-related complications like hypotension, vascular puncture and Horner's syndrome were recorded.

DISCUSSION

- The finding of our study is supported by Gurkan et al, they found 65% reduction in 24-hour morphine consumption in ESP group compared to control group in breast cancer surgery patients (5.6 ± 3.8 mg VS 16.6 ± 6.9mg p<0.001).

CONCLUSION

- Ultrasound guided ESP block exhibits a significant analgesic effect in patients undergoing breast cancer surgery.
- Further studies comparing this technique with other regional techniques are required to identify the most appropriate technique in this group of patients.

SONOANATOMY OF ESP

PATIENT CHARACTERISTICS

Variable	Group B (n=30)	Group C (n=30)	p- value
Age (yr)	46.4 (25-60)	52.6 (24-60)	0.01
Weight (kg)	62.8 (39-88)	67.7 (44-95)	0.16
Height (cm)	158.3 (149-170)	158.1 (144-167)	0.89
ASA (I:II)*	24:6	18:12	0.09
Duration of surgery (min)	78.3 (45-120)	80.0 (45-120)	0.74
Intraoperative fentanyl dose (µg)	69.3 (40-100)	73.3 (50-120)	0.30

SENSORY BLOCK CHARACTERISTICS

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