



## Original Article

### BREAST SURGERY UNDER THORACIC EPIDURAL ANALGESIA

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#### Abstract

**Background:** Operations on breast are routinely performed under general anesthesia. A variety of local and regional techniques have been described for breast surgery with the goal of reducing the complications associated with general anaesthesia.

**Objective:** To assess the feasibility of thoracic epidural anaesthesia as sole anesthetic technique for breast surgery.

**Methods:** This study was conducted on 32 cooperative female patients of age group 42-55 year. T5-T6 or T4-T5 space was used for insertion of epidural catheter. Inj Lidocaine 2% 12 ml was injected through the catheter as anaesthetic agent. Inj Tramadol 50- 100 mg used epidurally for postoperative relief till 48 hours postoperatively. Demographic characteristics of the study population, any coexisting disease, type of surgery performed, duration of surgery, degree of intraoperative analgesia, incidence of complications related to TEA, and its efficacy in postoperative pain relief were observed and analysed.

**Results:** Out of 32 patients most of them (11 ) were in between 51-55 years. 10 out of 32 had coexisting disease. 5 patient had hypertension and one had asthma. Modified radical mastectomy (MRM) was most frequently performed operation (24). 21 patient complained no pain during the operation and 5 patient complained mild discomfort towards end of operation. 4 patient developed bradycardia during the operation which was managed by inj. Atropin. Post operative analgesia was satisfactory.

**Conclusion:** Midthoracic epidural anaesthesia technique is a safe alternative acceptable method for various breast surgery with excellent postoperative pain relief and early recovery.

**Keywords:** Thoracic epidural anaesthesia (TEA), breast surgery, post operative pain.

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## Introduction

Pain after breast surgery is very variable and conventional breast surgery is performed under general anaesthesia. Epidemiological studies have shown that the incidence of breast cancer increases with age, with more than 65% of patients diagnosed above the age of 65 years<sup>1</sup>. In this age group, the possibility of coexisting medical problems is high, which makes regional anaesthesia a preferable option. Patients with chronic obstructive pulmonary disease (COPD) and other comorbidities are at high risk of perioperative morbidity and mortality because of pulmonary complications after general anaesthesia<sup>2</sup>.

A variety of local and regional techniques have been described for breast surgery with the goal of reducing the difficulties associated with general anaesthesia. These have included local anaesthetic infiltration, field block, intercostal block, brachial plexus block, thoracic epidural anaesthesia and paravertebral block<sup>3</sup>. Suggested advantages of these techniques include a reduction in postoperative pain and analgesic consumption. In addition, a reduction in opioid analgesic consumption is associated with a reduction in postoperative nausea and vomiting, drowsiness and risk of respiratory depression, and an improvement in patient satisfaction.

Thoracic epidural anaesthesia (TEA) has been established as a cornerstone in the perioperative care after thoracic and major abdominal surgery providing most effective analgesia<sup>4</sup>. Better pain control with TEA is established in a wide range of surgical procedures. The risk of by TEA is lower, and other methods used to control perioperative pain and stress response also carry specific risks<sup>5</sup>.

## Material and Methods

This study was conducted at Comilla Medical College, Comilla between February 2015-March 2017 on 32 cooperative female patients of age group 42-55 year with ASA grade I-III.

On the day of surgery patients were premedicated with Inj Diazepam and Inj Prochlorperazine Maleate (vergon) I.M Intramuscularly before 30 of the procedure. On the table patients pulse rate, BP, respiratory rate and Oxygen saturation were recorded. Peripheral venous line was secured with wide bore iv canula and patients were preloaded with 500 ml to 1000 ml of Hartmann solution.

Procedure was done in sitting position. Thoracic vertebral spaces C7-T7 were marked with skin marker. Under aseptic precautions 18 G epidural needle was introduced between T5-T6 Or T4-T5 space after infiltration of local anaesthetic agent. After confirmation of the space epidural catheter was placed and 2.5 to 3.5 cm of catheter length was kept inside. After Proper Fixation of the catheter patients were made supine. A test dose of 2 ml Lidocaine 2% with adrenaline was injected before giving proper local anaesthetic dosage. Patients pulse rate, blood

pressure and respiration were noted. Inj Lidocaine 2% 12 ml was injected through the catheter and analgesic effects were awaited. After checking adequate blockade surgery was allowed.

Repeated dose of local analgesic was provided with 0.5% Bupivacaine 8cc along with Inj tramadol 50-100 mg(1-2 ml) made up to a volume of 10 cc through the epidural catheter according to the duration of surgery.

After the completion of surgery patients were shifted to postoperative room. Pulse, BP, Respiratory rate were noted every 15 min and patients shifted to ward with stable vital data. Verbal assessment of pain was done in the ward and patients were provided with Inj Tramadol 50- 100 mg epidurally for postoperative relief till 48 hours postoperatively and observed for any side effects.

## Results

**Table 1:** Age wise distribution of participants

Age group (years)	No of patients
41-45	8
46-50	9
51-55	11
56-60	4
Total	32

**Table 2:** Presence of coexisting diseases

Diseases	No of patients
IHD	1
Hypertension	5
Diabetes melitus	3
Asthma	1

All patients were advised to continue their respective medication for the above disease but no patient developed any problems related to them either intra or postoperatively. Aspirin was stopped seven days before surgery.

**Table 3:** Types of surgery

Name of surgery	No of patients
Modified radical mastectomy(MRM)	24
Fibroadenoma	2
Excision & Biopsy	6

**Table 4:** Duration of surgery

Time in hours	No of patients
0.5 - 1	8
1 - 2	11
2 - 3	13



**Table 5 :** Degree of intraoperative analgesia

Degree of pain	No of patients
No pain	21
Discomfort	5
Mild pain	6
Unbearable pain	0

21 patients out of 32 had complete analgesia. 6 patients complained of mild pain initially at the time skin incision and 5 patients showed discomfort towards the end of operation. All these 8 patients received small and additional doses of diazepam or midazolam.

**Table 6 :** Incidence of complication

Complication	No of patients
Bradycardia	4
Hypotension	-
Nausea	3
Respiratory Depression	3

Bradycardia was treated with Inj Atropin 0.5-1 mg I.V. 3 patients who complained nausea did not require any treatment other than reassurance. 3 patients who showed fall in Oxygen saturation below 90% were treated with oxygenation by mask and intermittent awakening. There was no other intraoperative or postoperative major complication which needed active intervention.

**Table 7:** Postoperative pain score at 6, 12, 24 & 48 hours

No of patients	6 hr	12hr	24hr	48 hr
30	0	0	0	0
1	0	1	1	0
1	0	0	0	1

## Discussion

Thoracic epidural anesthesia has been established as a cornerstone in the perioperative management for thoracic, abdominal and lower limb surgeries with maximum clinical benefits of speedy recovery, effective analgesia and improved outcome<sup>6</sup>. However, it is practiced less frequently. We initiated the use of thoracic epidural anesthesia for breast surgery in our institution in February 2015 to evaluate the feasibility and outcome.

The COPD has been considered as an independent risk factor for postoperative morbidity and mortality because of cardiopulmonary complications. From anesthesiologist point of view, general anesthetic agents, opioids, muscle relaxants and mechanical

ventilation interfere with respiratory function. This combined effect of general anesthesia in supine position leads to instant fall in lung volumes with atelectasis in dependent part of lung<sup>7</sup>. TEA provided safe and excellent analgesia and well tolerated by the patients without cardiopulmonary complications which lead to prompt recovery with additional effect of prolonged postoperative analgesia.

Breast surgery does not require muscle relaxation and thoracic medication provides very good analgesia. We have tried to evaluate the efficacy of TEA as sole anaesthetic measure for breast surgery cases.

In our study 32 patients of ASA I-III underwent breast surgery and midthoracic epidural anaesthesia was provided to all of them. Adequate level of sedation made the patients cooperative during anaesthetic procedure as well as during surgery and postoperative period. Midthoracic epidural catheterization is comparatively easier and safe procedure for providing anaesthesia for breast surgery.

Thoracic epidural anesthesia, one of the regional anesthesia techniques, with use of low dose of local anesthetic helps to preserve respiratory function. O'Connor et al. reported successful anesthetic management for bilateral mammoplasty with TEA in a Klippel-Feil syndrome with difficult airway<sup>8</sup>. In a study among Thai women researchers observed TEA combined with brachial plexus block an alternative safe anesthetic technique for MRM provided effective anesthesia and postoperative analgesia than general anesthesia<sup>9</sup>. Ashok Jadon highlighted utility of cervical epidural analgesia in managing a complex case of carcinoma of breast with chronic regional pain syndrome<sup>10</sup>. A recent meta-analysis about pulmonary effects of TEA showed decline in postoperative pulmonary complication like pneumonia due to earlier ambulation, reduced opioids consumption and improved compliance of patient for chest physiotherapy<sup>11</sup>. Some retrospective studies reported improved survival with reduced prevalence of tumor recurrence after TEA or paravertebral block in cancer patients<sup>12</sup>.

In our study we observed the effects of TEA on high risk group patients with ischaemic heart disease, hypertension, asthma. There was no significant change in vital data after 6 hours during and after the surgery. There are certain studies which show that myocardial blood flow to areas at risk improves after sympathetic stimulation is suppressed by TEA and it has antiischaemic effects. In our study we did not find any procedure related complication like misplacement of catheter, accidental spinal tap, spinal haematoma etc

Successful use of high TEA avoids tracheal intubation hence also minimizes postoperative pulmonary complications. With TEA using high concentrations of local anesthetics (lidocaine 2%, bupivacaine 0.5%) paralysis of the intercostal and abdominal wall muscles are responsible for 10-20% decrease in inspiratory and expiratory capacity without affecting



the hypoxic pulmonary vasoconstriction<sup>13</sup>. Diaphragmatic function remains unimpeded as far as the neuraxial blockade remains below the cervical emergence of phrenic nerves (C3–C5). So, it is extremely important to watch level of epidural block because if level reaches above C6, Horner's syndrome may develop. If level goes up to C4, patient's voluntary efforts of respiration stop and might require ventilatory support. Site of puncture decides the cephalad extension of block. But the higher the placement site, the lesser is cephalad spread and more caudal spread<sup>14</sup>.

In our study, patients were satisfied for postoperative pain relief. Regional anesthetic technique have their own advantages and thus general anaesthesia can be avoided without facing major problems with TEA as a sole anaesthetic technique for breast surgery.

### Conclusion

From Our study we conclude that midthoracic epidural anesthetic technique is a safe alternative acceptable method for various breast surgery with excellent postoperative pain relief and early recovery.

### References

1. Sweeney C, Blair CK, Anderson KE, Lazovich D, Folsom AR. Risk factors for breast cancer in elderly women. *Am J Epidemiol* 2004; 160: 868–875.
2. Licker M, Schweizer A, Ellenberger C, Tschopp JM, Diaper J, Clergue F. Perioperative medical management of patients with COPD. *Int J Chron Obstruct Pulmon Dis* 2007;2(4):493–515.
3. Lynch E, Welch K, Carabuena J, Eberlein T. Thoracic epidural anaesthesia improves the outcome after breast surgery. *Annals of Surgery* 1995; 222: 663–9.
4. Schultz AM, Werba A, Ulbing S, Gollmann G, Lehofer F; Peri-operative thoracic epidural analgesia for thoracotomy. *European journal of anaesthesiology*, 1997; 14(06): 600-603.
5. Visser WA, Liem TH, van Egmond J, Gielen MJ; Extension of sensory blockade after thoracic epidural administration of a test dose of lidocaine at three different levels. *Anesthesia & Analgesia*,1998; 86(2): 332-335.
6. Freise H, Van Aken HK. Risks and benefits of thoracic epidural anaesthesia. *Br J Anaesth* 2011;107(6):859–68.
7. Licker M, Schweizer A, Ellenberger C, Tschopp JM, Diaper J, Clergue F. Perioperative medical management of patients with COPD. *Int J Chron Obstruct Pulmon Dis* 2007;2(4):493–515.
8. O'Connor PJ, Moysa GL, Finucane BT. Thoracic epidural anesthesia for bilateral reduction mammoplasty in a patient with Klippel-Feil syndrome. *Anesth Analg* 2001;92(2):514–6.
9. Sundarathiti P, Pasutharnchat K, Kongdan Y, Suranutkarin PE. Thoracic Epidural Anesthesia (TEA) with 0.2% Ropivacaine in Combination with Ipsilateral Brachial Plexus Block (BPB) for Modified Radical Mastectomy (MRM). *J Med Assoc Thai* 2005;88(4):513–20.
10. Ashok Jadon, Prashant S Agarwal. Cervical epidural anesthesia for radical mastectomy and chronic regional pain syndrome of upper limb- A case report. *Indian J of anesthesia* 2009;53(6) :696–9.
11. Popping DM, Elia N, Marret E, Remy C, Tramer MR. Protective effects of epidural analgesia on pulmonary complications after abdominal and thoracic surgery: a meta-analysis. *Arch Surg* 2008 Oct;143(10):990–9.
12. Snyder GL, Greenberg S. Effect of anaesthetic technique and other perioperative factors on cancer recurrence. *Br J Anaesth* 2010;105(2): 106–15.
13. Clemente A, Carli F. The physiological effects of thoracic epidural anesthesia and analgesia on the cardiovascular, respiratory and gastrointestinal systems. *Minerva Anesthesiologica* 2008;74(10):549–63.
14. Holman SJ, Bosco RR, Kao TC, et al. What constitutes an effective but safe initial dose of lidocaine to test a thoracic epidural catheter? *Anesth Analg* 2001;93(3):749–54.