

## Continuous Thoracic Epidural Anesthesia for Mammoplasty Reduction

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### Abstract

Female 45 years old patient with bilateral breast hyperplasia. A functional reduction mammoplasty is done under continuous high thoracic epidural regional anesthesia (0.5% bupivacaine) through an epidural catheter inserted in T3-T4 for 7 hours. The patient presented a permanent hemodynamic stability without deterioration in ventilatory parameters. She did not have neurological injuries. Excellent continuous epidural analgesia (0.125% Bupivacaine) in immediate post-operative reaction and within the next 24 hours. The continuous high thoracic epidural anesthesia is an alternative anesthetic technique in breast surgery.

**Keywords:** Thoracic epidural anesthesia; Epidural analgesia; Breast surgery

### Introduction

The thoracic epidural block is an anesthesia and analgesia metameric technique of enormous clinical utility [1]. Although, general anesthesia is the anesthetic technique for breast surgery, there is a growing interest in performing this type of surgery under different regional anesthesia techniques such as high thoracic epidural anesthesia (AETA), cervical epidural anesthesia, spinal anesthesia, blockade of the brachial, intercostal or direct infiltration of the surgical plexus area [2]. Among the advantages of epidural anesthesia in the patient, we can also find a decreasing or even a neutralization of the neuroendocrine response to surgical stress, lower intraoperative blood loss and a better post-surgery anesthesia [3]. These factors help physicians to decrease post-surgery morbidity and mortality and patients have better results. This article aims to introduce a case of mammoplasty reduction using continuous thoracic epidural anesthesia successfully.

### Case Report

A 45-year old female patient with bilateral mammary hyperplasia scheduled for functional reduction mammoplasty. Medical record: segmental cesarean section under spinal regional anesthesia. Dyslipidemia. Physical exam: overweight BMI of 28. Anesthetic risk classification of the American Society of Anesthesiologists ASA II. It was proposed in the pre-anesthetic consultation AETA. Anesthetic technique: while coming into the surgery room, the patient was told about the anesthetic proposed technique, benefits, risks and possible complications were anticipated.

The patient agreed and signed informed consent. Intervention: it is done as follows: Non-invasive monitoring: Pulse-oximetry, continuous electrocardiogram, noninvasive blood pressure. Peripheral vein with # 18G catheter. Prehydration: 1000 cc Ringer's Lactate. Oxygen by nasal

cannula at 2 Lt/min. Sedoanalgesia: Fentanyl 100 mcg IV stat. AETA: Position: left lateral position in the fetal position. Surgical hand washing. Aseptic and antiseptic with Povidone. Puncture site: T3-T4. Infiltration of interspinous area: Lidocaine 1% 4 cc. # 18G Touhy needle. Epidural space located for loss of air resistance 1 cc glass syringe 10 cc for testing Pitkin, medium approximation. 20G epidural catheter (400 Perifix filter set, B-Braun Medical). 3 cm Epidural catheter is put into the epidural space. 0.5% bupivacaine is given via an 8 ml epidural catheter. Sensory level is checked by means of the "pin prick" technique or blunt needle prick. Anesthetic level obtained T1-T7. Continuous Sedoanalgesia: Midazolam 2 mg IV stat and continuous infusion of Remifentanyl by simulation program iTIVA v 2.4.1 objective of 1.5 ng/ml. Consciousness is checked by a sedation scale-Richmond agitation (RASS) obtaining a score of -2, which was maintained throughout the surgical procedure by administration of 2 mg Midazolam when RASS score was 0. After 60 minutes of the initial dose of Epidural Bupivacaine, a continuous Bupivacaine 0.5% infusion is given at a rate of 3.5 cc/hour for 6 hours via an epidural catheter. Post-surgery Analgesia: 0.125% Bupivacaine is given through a thoracic epidural catheter at 4 cc/hour rate. After 24 hours, the patient was discharged from hospital with adequate pain control without evidence of neurological damage.

### Results

The intervention lasted seven hours. The adequate anesthesia was regularly checked by talking with the patient and there were no anesthetic incidents. Intraoperative hemodynamic results are shown in (Table 1). Once in the post-anesthesia care unit (PACU) this patient has a rating ASSR scale of 0 and the visual analogue pain scale (VAS) of 0, she was keeping trends in its hemodynamic parameters (Table 2). There were no significant ventilatory changes despite the sum of the side effects of the epidural anesthesia and continuous sedation. There were neither neurological damages associated with the anesthetic technique nor derived from described usage of local anesthetic concentrations.

Intraoperative hemodynamic results											
Hemodynamic Parameter	Basal	5 min	15 min	30 min	1 hour	2 hour	3 hour	4 hour	5 hour	6 hour	7 hour
SBP	132	123	114	122	124	118	126	114	121	111	108
DBP	76	84	77	76	76	65	63	72	76	65	52
HR	68	64	65	64	64	65	65	64	65	70	64
POS	93	99	99	96	96	95	96	96	95	96	95

SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure; HR: Heart Rate; POS: Partial Oxygen Saturation

**Table 1:** Intraoperative hemodynamic results.

Post operative hemodynamic results and analgesia rate according to pain analogic visual scale					
Hemodynamic Parameter	0 min	15 min	30 min	60 min	90 min
SBP	103	105	118	107	111
DBP	73	69	65	64	76
HR	76	72	76	74	72
POS	98	99	99	99	99
PAVS	0	0	0	0	0

SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure; HR: Heart Rate; POS: Partial Oxygen Saturation; PAVS: Pain Analogic Visual Scale

**Table 2:** Post operative hemodynamic results and analgesia rate according to pain analogic visual scale.

## Discussion

Currently, plastic surgery reconstruction procedures, and breast reduction or breast lifting are widely accepted by the general population, a situation that requires the need for updating and bringing about changes in the anesthetic management of these patients. Although the current evidence has not been able to define the impact on mortality and morbidity compared to other techniques, the least economic cost, quality of analgesia, satisfaction and comfort of patients positioned it as an excellent alternative and contribute to provide an adequate assistance quality [4,5]. It was considered a regional anesthetic technique against a given general anesthesia described for AETA efficiency and the ability to long the anesthetic effect.

Technically puncture and insertion of a catheter into the thoracic epidural space is more difficult than in the lumbar region, it needs to develop some degree of expertise to a safer practice. Many authors agree that the paramedian access is often easier and provides access to the epidural space with a lower angle. Bromage, describes that the appropriate approach to the thoracic epidural anesthesia varies according to the thoracic segment, he suggests the medial approach to segments T1 to T4 and T10 to T12 since the spinal processes are less inclined, while in segments T5 to T9 paramedian approach is the great inclination of spinal process [6]. Since there are not articles based on scientific evidence that tell us clearly what the best approach is, the

anesthesiologist should choose the approach with which it has more experience and feels more secure items.

The remarkable factors of the level and duration of thoracic epidural anesthesia (TEA) are mainly the injection site, type and concentration of the local anesthetic administered, the use of adjuvant medications and patient characteristics especially extreme weight, age, height, pregnancy and obesity [7]. Hirabayashi establishes requirements according to age groups: 20-29 years: 1.4 mL; 30-29 years: 1.2 mL; 40-49 years: 1.0 mL; 50-59 years: 1.0 mL; 60-69 years: 0.8 mL; 70-79 years: 0.7 mL [8] these considerations are used by the author to determine the volume of local anesthetic to the introduction of epidural anesthesia. I believe that the continuous administration of local anesthetic to lengthy procedures cause secondary hemodynamic changes under the administration of subsequent doses of local anesthetic, it reduces the risk of toxicity maintained in a therapeutic range and an appropriate level of anesthesia for surgical needs are obtained.

Thoracic epidural anesthesia through continuous technique requires close monitoring, which not only assess the quality of anesthesia but also assesses the possible occurrence of complications. A continuous infusion of bupivacaine for epidural catheter 3 to 6 cc QH commonly used for epidural analgesia continues in order to maintain the anesthetic level reached at the start of surgery. It is important to note that the continuous sedation is needed in epidural anesthesia to achieve patient comfort. To ensure this objective and achieve a minimal impact on the ventilation iTIVA tool v 2.4.1 for Smartphone application, which allows an approximation in plasma levels and effect insurance site, avoiding sudden changes in the secondary fan to deep sedation was implemented.

In short, in this case the implementation of a continuous epidural anesthesia technique allowed an adequate level of anesthesia, permanent hemodynamic stability without deterioration in ventilatory parameters, as well as the absence of neurological damage. Provides excellent anesthesia during surgery and in turn achieves an immediate and 24 hours postoperative analgesia.

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