

## Case Report

# Same Day Breast Surgery Under Thoracic Epidural

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### Abstract:

Breast cancer is the most common cancer in women in the United States. In patients undergoing breast surgery who have significant pulmonary or cardiac comorbidities, an alternative anesthetic technique to general anesthesia may be desirable. This case report demonstrates the successful administration of a thoracic epidural as the primary anesthetic in a patient undergoing same-day bilateral partial mastectomies.

### Introduction

Breast surgery is typically performed under general anesthesia. However, in patients with significant comorbidities, alternative anesthetic techniques such as thoracic epidurals can be beneficial. We present a case of same-day surgery for partial bilateral mastectomies performed under thoracic epidural anesthesia.

### Case Report

A 72-year-old female with bilateral invasive ductal carcinoma presented for bilateral partial mastectomies. Her prior history is significant for obesity (BMI 43), laryngospasm with two prior anesthetics, negative pressure pulmonary edema with one anesthetic leading to prolonged intubation, previous right breast lumpectomy, and new onset of dyspnea on exertion. Work-up showed left anterior descending artery territory ischemia on nuclear perfusion study that would require future percutaneous intervention. Revascularization was delayed to avoid dual antiplatelet treatment prior to time-sensitive breast surgery. Due to her previous history of laryngospasm, the patient requested an anesthetic that would avoid airway manipulation if possible. On the day of the procedure, a T7-8 epidural was placed with a 17g tuohy needle with loss of resistance to saline at 7cm on the second attempt with the midline approach. The epidural catheter was left at 12cm at the skin. An initial test dose of 3mL of 1% lidocaine with 1:200,000 epinephrine was negative and resulted in bilateral dermatomal coverage from T4-T7.

Intra-operatively, a radial arterial line was placed prior to epidural dosing or IV medication administration for close hemodynamic monitoring in the setting of her active myocardial perfusion defect. At the onset of the case, 60 mg of 2% lidocaine and 50mg of 0.5% bupivacaine were administered. An additional 40 mg of lidocaine and 10mg of 0.5% bupivacaine was administered 30-45 minutes after the initial dosing. Epidural opioids were avoided due to the need for prolonged postoperative monitoring. Sedation was provided with propofol and dexmedetomidine infusions throughout the case, with IV midazolam administered at the onset of the case.

A low-dose norepinephrine infusion was started during the case. Nasal cannula with end tidal monitoring was utilized throughout the case. Additional medications given during the case were cefazolin and ondansetron. Intraoperative time spanned two hours and fifteen minutes without any complications. Heart rate and mean arterial pressure were maintained within 20% of baseline readings. The surgical team administered 10mL of 1% lidocaine for each breast throughout the surgery.

The patient's epidural was removed in the postoperative care unit. No subcutaneous heparin was administered prior or during surgery due to plans to remove the epidural postoperatively. Instead, sequential compression devices were used on both lower extremities during the case for venous thrombosis prophylaxis. Her pain scores in recovery ranged from a 0-3 on the numeric rating scale and she required no additional pain medications prior to discharge. She was able to ambulate and void on post-op day 0 and was discharged home the same day. On a follow-up telephone call on postoperative day 7, she admitted to intermittent back pain at the epidural insertion site that would last a couple of seconds prior to dissipating. Her postoperative pain was tolerable, and she denied any neuropathy or issues with voiding.

### Discussion

Breast surgeries are one of the most commonly performed surgeries. While general anesthesia is routinely used for these cases, alternative anesthesia techniques can be effectively utilized as an alternative for patients with severe comorbidities. In this case, we described a thoracic epidural as our main anesthetic for bilateral partial mastectomies. Thoracic epidurals selectively block cardiac sympathetic fibers, which attenuate the surgical stress response. This offers hemodynamic stability intraoperatively, as well as improved myocardial oxygen balance and decreased cardiac morbidity.<sup>1,2,3</sup> Additionally, an appropriately titrated epidural allows for spontaneous ventilation with a natural airway, which reduces the likelihood of post-operative pulmonary complications associated with

mechanical ventilation. These properties of thoracic epidurals proved beneficial in our patient who had both cardiac and pulmonary comorbidities.

There has been extensive literature about the analgesic benefits of epidural anesthesia in decreasing post-operative pain and opioid administration, as well as decreased postoperative nausea and vomiting. These factors contribute to shorter recovery times and decreased length of stay in the hospital.<sup>1,4,5</sup> In our case, our patient was able to be discharged the same day of surgery without administration of any opioids. The shorter recovery time and decreased risk of complications using thoracic epidurals compared to general anesthesia decreases hospital costs.

While we demonstrated that a thoracic epidural as the primary anesthetic for breast surgery is an effective technique, there are some unique considerations. It is important to communicate with the surgical and ancillary team about the anesthetic plan so that anticoagulation is held in the perioperative period for the neuraxial technique. Other measures to decrease the risk of deep venous thrombi should be taken, such as the use of sequential compression devices. Another consideration is the dosing of the epidural catheter. We avoided opioids through the epidural to prevent prolonging the recovery period for respiratory monitoring. It is also important to consider the volume and concentration of medication used to dose the epidural to prevent a high sympathetic block leading to airway instrumentation. The anesthesiologist should be familiar with the American Society of Regional Anesthesia (ASRA) guidelines for local anesthetic systemic toxicity as well as the relevant maximum doses for local anesthetics<sup>6</sup>. As per society recommendations, the minimum effective dose of local anesthetic should be used.

Another important consideration is that the innervation of the superior breast includes branches from the supraclavicular nerve which are not blocked by thoracic epidurals.<sup>7</sup> Studies have reported using brachial plexus blocks to supplement epidurals or pectoral nerve blocks to overcome this deficit. However, since our patient was undergoing bilateral partial mastectomies, we did not perform bilateral brachial plexus blocks due to the risk of respiratory failure that would ensue with bilateral phrenic nerve blockade. Supplemental local anesthesia administration by the surgical team is an alternative approach to appropriately anesthetizing the superior quadrant of breast innervated by the supraclavicular nerve branches.

This case report demonstrates that thoracic epidurals can be safely utilized as an alternative to general anesthesia in breast surgeries in patients at higher risk of complications undergoing same-day procedures.

#### Data Availability

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

#### Conflicts of Interest

The authors declare that they have no conflicts of interest regarding the publication of this article.

#### Consent

Informed consent was obtained from the patient discussed in this case report.

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