Successful Anesthetic Management for Total Mastectomy in a Pregnant Woman Using General Anesthesia Combined with Continuous Erector Spinae Plane Block: A Case Report

Atsushi Sawada, M.D., Ph.D., Sayaka Sotomo, M.D., Mikako Kusakai, M.D., Michiaki Yamakage, M.D., Ph.D.
Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan

Abstract

Background: Anesthetic considerations for surgery during pregnancy include the safety of both mother and fetus. We successfully administered anesthesia for total mastectomy to a pregnant woman using general anesthesia combined with continuous erector spinae plane block.

Case presentation: A 41-year-old woman was scheduled to undergo total mastectomy at 18 weeks of gestation. Hence, we decided to administer general anesthesia combined with continuous erector spinae plane block to minimize physiological stress on both mother and fetus. Continuous erector spinae plane block provided sufficient postoperative analgesia for our patient, completely eliminating the need for additional rescue analgesia during the entire postoperative period.

Conclusions: General anesthesia combined with continuous erector spinae plane block provided adequate analgesia without maternal hypotension in a pregnant woman undergoing total mastectomy.

Keywords: Pregnant woman, Mastectomy, Erector spinae plane block

Background

Breast cancer is one of the most common cancers in pregnant women. Surgical procedures and postoperative pain increase the potential risks of miscarriage, preterm delivery and threatened premature labor. Hence, use of regional block techniques might be a safer option during surgery in pregnant women.

The erector spinae plane (ESP) block is a relatively new truncal nerve block first described for thoracic analgesia.

Here, we report a case of successful anesthetic management for total mastectomy in a pregnant woman using general anesthesia combined with continuous ESP block.

Case presentation

A 41-year-old woman (weighing 68 kg, 157 cm tall) became pregnant during follow-up of breast cancer. She was scheduled to undergo total mastectomy with sentinel lymph node biopsy at 18 weeks of gestation. In order to minimize physiological stress on both mother and fetus during the perioperative period, we decided to administer general anesthesia combined with continuous ESP block.

After establishing standard monitoring, general anesthesia was induced with intravenous propofol (target-controlled infusion [TCI] of 3.3 µg/mL) and remifentanyl (0.25 µg/kg/min). We administered rocuronium until the required degree of muscle relaxation was achieved. Tracheal intubation was uneventfully performed.

Erector Spinae Plane Block

After placing the patient in the right lateral position, a high-frequency linear ultrasound transducer was aseptically placed on the patient's back in a longitudinal parasagittal orientation.

An 18-gauge, 100 mm needle was inserted using an in-plane approach and in a cranial-to-caudal direction to contact the tip of the T3 transverse process (Fig. 1). A total of 20 mL of 0.25% levobupivacaine was injected through the needle, followed by insertion of a 19-gauge catheter 5 cm beyond the needle tip. Then, infusion of 0.25% levobupivacaine into the erector spinae plane was started at the rate of 6 mL/h.

General anesthesia was maintained with propofol (TCI of 3.0-3.3 µg/mL), remifentanyl (0.05-0.1 µg/kg/min) to maintain systolic blood pressure within 20% of preoperative values.

Fig. 1. Ultrasound image of the erector spinae plane block.

The end point is visible spread of the local anesthetic fluid, resulting in lifting of the erector spinae muscles. ESM: erector spinae muscles; TP: transverse process.

The operative time was 111 min. One thousand mg of acetaminophen was intravenously administered 15 min before the end of surgery. After full recovery from general anesthesia, the patient was extubated and transferred to the general ward of the department of surgical oncology.

Postoperative pain was measured using a Numerical Rating Scale (NRS) immediately after the surgery. NRS scores remained at 1 point throughout the postoperative period, indicating minimal pain (Fig. 2).

The catheter of the ESP block was removed at 24 hours after surgery. Postoperative pain did not worsen after termination of the block. The patient did not need any additional analgesics during the postoperative period and was discharged home on the 15th day after surgery with no adverse effects on either mother or fetus.

Fig. 2. Postoperative pain measured after the surgery.

Conclusions

We performed ESP block for breast cancer surgery in our pregnant patient because it is associated with a lower risk of complications than thoracic epidural anesthesia and paravertebral block. In our patient, continuous ESP block at the rate of 6 mL/h of 0.25% levobupivacaine provided adequate and safe postoperative analgesia, eliminating the need for rescue analgesia during the entire postoperative period.

In summary, general anesthesia combined with continuous ESPB provided adequate analgesia without maternal hypotension in our pregnant patient undergoing total mastectomy.