

Postoperative monitoring in pregnant patients undergoing surgery for advanced malignancy in last trimester: How long is enough?

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Abstract

Surgery for advanced breast malignancy in the last trimester of pregnancy is uncommon. We present successful management of a 32-year-old woman, 30 weeks pregnant with stage 3 breast malignancy, for surgery followed by normal labor and chemotherapy. Surgery and intraoperative period were uneventful. Patient had uterine contractions 36 h postsurgery, which were managed timely with active interventions and tocolytics. Risk of premature labor following nonobstetric surgery in pregnant patients is estimated to be 8.3%, but majority of the studies have been carried out in second trimester following appendectomy. There is insufficient data in literature regarding the estimation and duration of persistence of risk of premature labor in these patients. No guidelines are available regarding how long they need to be monitored for premature labor. There is some evidence, although little that risk of premature labor persists for 7 days postsurgery. In the absence of convincing studies and guidelines, we recommend postoperative monitoring for at least 7 days in patients undergoing major surgeries for malignancies in last trimester. Multidisciplinary approach is required to manage these patients.

Key words: Postoperative monitoring, pregnancy, premature labor, stage 3 breast cancer

Introduction

Surgery for malignancy in the last trimester of pregnancy is uncommon and challenging for anesthesiologists. The onus of safety of two lives lies with them, which extends beyond the intraoperative period. We present management of a 30-week pregnant patient with advanced breast malignancy scheduled for surgery and chemotherapy with favorable outcomes for maternal disease and fetus, possible by multidisciplinary effort and active postoperative monitoring.

Case Report

A 32-year-old multiparous, 30 weeks pregnant parturient presented with a 4 × 3 cm lump in her left breast. On

examination, lump was hard, immobile, and non-tender with palpable axillary lymph nodes. Fine needle aspiration cytology revealed the lump to be infiltrating ductal carcinoma and estrogen receptor and progesterone receptor negative. Abdominal ultrasound ruled out metastasis in liver. To avoid radiation hazards to fetus and due to financial constraints, computed tomography scan of brain or spine was not done.

A treatment plan was formulated following discussion among oncologist, surgeon, anesthesiologist, gynecologist, neonatologist, and patient. It was decided that patient would undergo modified radical mastectomy, followed by chemotherapy after wound healing. Labor would be induced before starting chemotherapy if patient did not deliver normally by then, to allow time for fetal maturity. After weighing pros and cons, and due to technical constraints it was agreed that fetal heart rate (FHR) would not be monitored intraoperatively.

Informed consent was taken for surgery and patient was scheduled for modified radical mastectomy. Patient was administered 12 mg betamethasone intramuscularly 1 hour prior to surgery as advised by neonatologist for foetal lung maturity in case of preterm labor. Half an hour prior to surgery, anti-aspiration prophylaxis with ranitidine 150 mg was given. In the operating room, patient was positioned supine with a wedge under right hip to avoid aortocaval compression.

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Initial monitoring included non-invasive blood pressure, electrocardiogram, pulse oximeter, and capnography. FHR was checked before induction. Patient was preoxygenated for 5 min. A modified rapid sequence induction with cricoid pressure using fentanyl 100 µg, thiopentone 200 mg, and succinylcholine 75 mg was carried out. Trachea was intubated and anesthesia maintained on 50% oxygen and nitrous, sevoflurane, and intermittent doses of fentanyl and rocuronium. Body temperature was kept normal with a warming blanket.

Hemodynamic and respiratory variables were stable through the surgery with mean arterial blood pressure between 70 and 85 mm of mercury, heart rate 70-85 beats per minute, SpO₂ 99%-100%, and ETCO₂ at 35. Surgery lasted for 4 h. Blood loss was minimal. Toward end of surgery, antiemetic ondansetron 6 mg was given. Neuromuscular blockade was reversed with neostigmine and glycopyrrolate and trachea extubated after patient was fully awake. FHR was checked. Patient was shifted to postoperative ward. Postoperatively vitals and FHR were monitored regularly. Analgesia was maintained with tramadol 75 mg intravenously thrice daily and paracetamol 1 g intravenously as rescue analgesic. Patient was comfortable with stable vitals. Thirty six hours postsurgery, patient complained of cramping pain in lower abdomen. Obstetrician was alerted and patient was shifted to labor room. She was monitored for uterine contractions by tocography which showed 4-5 contractions in a 10 min period with no significant FHR variations. Ritodrine infusion at the rate of 0.20 mg/kg was initiated. Uterine contractions subsided after 6 h and tocolytics subsequently tapered off. Patient was observed for 48 h in labor room before shifting to ward.

After wound healing, patient was induced for labor at 35 weeks. She delivered a normal baby weighing 2.2 kg vaginally. Baby had an APGAR score of 9 at 1 and 5 min. Chemotherapy was initiated 14 days post-delivery.

Discussion

Breast cancer is becoming increasingly common during pregnancy with an incidence of approximately 15-35 per 100,000 deliveries.^[1] The diagnosis of breast cancer during pregnancy is expected to rise due to delay in child bearing by women.^[1,2]

Our patient presented with stage 3, (T4N1M0) according to American Joint Committee on Cancer staging of breast cancer. Treatment options in third trimester of gestation with advanced stage of cancer include surgery followed by chemotherapy. Although chemotherapy is considered to be safe during third trimester,^[3] our patient was not willing to

undergo chemotherapy. Oncologist opined that she should undergo surgery followed by chemotherapy as soon as possible due to advanced nature of disease.

Anesthesia for nonobstetric surgeries in pregnant patients is challenging. Changes in maternal anatomy and physiology have profound anesthetic implications. Parturients are at an increased risk of aspiration pneumonitis after 16 weeks of gestation due to progesterone reducing lower esophageal sphincter tone.^[4] Hence, anti-aspiration prophylaxis is recommended.

General anesthesia is associated with risk of aspiration and failed intubation. Changes in maternal position can have profound hemodynamic effects. 15-30° uterine tilt is recommended to avoid supine hypotension that can occur after 20 weeks of pregnancy.^[5] Intraoperatively, it is important to maintain normothermia, normocarbida, and avoid maternal hypoxia and hypotension. Hypotension caused by hypovolemia or anesthetic drugs pose major risk to fetus. There is a linear relationship between maternal PaCO₂ and fetal PaCO₂. Maternal hypercarbia can cause fetal acidosis and loss.^[6]

Modified radical mastectomy can be performed under thoracic epidural anesthesia and paravertebral block. Regional anesthesia avoids airway manipulation and risk of teratogenic effects of anesthetic drugs but carries risk of hypotension, pneumothorax, and intravascular local anesthetic injections.^[7,8] We were not comfortable performing these regional techniques in an obese anxious pregnant patient, hence decided to administer general anesthesia.

Monitoring of FHR and fetal heart variability is possible after 16 and 26 weeks of gestation, respectively. But, there is considerable controversy regarding FHR monitoring, as it is technically difficult when surgery is in progress and requires the presence of an additional trained personnel for interpretation in the operating room. Moreover, there are reports where misinterpretations of FHR have led to unnecessary actions.^[9] American College of Obstetricians and Gynecologists recommend FHR monitoring when technically feasible, availability of trained obstetrician and neonatologist with infrastructure back up, and a minimum of FHR monitoring pre- and postsurgery when FHR monitoring is not feasible intraoperatively.^[10] Intraoperative FHR monitoring was not technically feasible in our setup, but FHR was checked pre- and postoperatively.

Timing of delivery is crucial. Preterm delivery is associated with complications like low-birth weight, lung immaturity, and should be avoided. Preoperative use of tocolytics is associated with maternal complications like hypotension, tachycardia, and are best avoided unless uterus is handled.

Ritodrine, a beta 2 agonist, is associated with palpitations, tremors, tachycardia, and pulmonary edema. Its use has declined over the past few years but according to Royal College of Obstetricians and Gynecologists it is still used in UK and many other parts of the world. Use of safer tocolytics such as calcium channel blockers (e.g., nifedipine) and oxytocin receptor antagonist (atosiban) has been advocated.^[11]

Another important issue in these patients is the risk of surgical site infection as these patients are immunocompromised and often malnourished in developing countries. Moreover, they would be subjected to chemotherapy which would further compromise their immunity. Strict asepsis by health workers and family members should be adopted. Prophylactic antibiotics should be administered within 60 min of starting surgery and continued in postoperative period.^[12]

Since these patients require chemotherapy postoperatively, insertion of Hickman's chemoport by open/percutaneous method can be considered. Radiation exposure is not an issue in the third trimester but should be discussed with the patient. However, the risk of surgical scar healing and infection should also be discussed by the entire team and patient preoperatively.

Postoperative period is crucial in these patients. Adequate analgesia is essential as pain can precipitate premature labor.^[13] Cohen-Kerem *et al.*,^[14] reviewed 54 articles and found incidence of premature labor in pregnant patients undergoing nonobstetrical surgeries to be 8.3%. A total of 75% of the data were gathered from patients undergoing appendectomy in the second trimester. Mazze and Kallen,^[15] conducted a retrospective study of 5405 patients to study reproductive outcomes after anesthesia. They concluded that if pregnancy continues beyond the first postoperative week, the incidence of premature labour is no higher than in nonsurgical patients. The study does not mention whether risk of preterm labor increases with advanced stage of pregnancy, maternal disease, or duration of surgery. There is insufficient literature to estimate the risk and duration of persistence of risk of premature labor in postoperative period in patients undergoing major surgeries in third trimester. No guidelines are available specifying how long these patients need to be monitored postoperatively. Our patient was comfortable in postoperative period but developed uterine contractions 36 h postsurgery. More studies are required to estimate risk of premature labor in the postoperative period and accordingly guidelines need to be formulated regarding the infrastructural set up, frequency and duration of postoperative monitoring. In the presence

of little evidence that is available, we propose postoperative monitoring for at least 7 days in these parturients.

Emotional stress of cancer could have possibly contributory in triggering preterm labor in our patient. In hindsight, inclusion of a psychiatrist could have helped her cope with pregnancy and trauma of cancer. A multidisciplinary team effort is required to manage these patients.

References

1. Andersson TM, Johansson AL, Hsieh CC, Cnattingius S, Lambe M. Increasing incidence of pregnancy-associated breast cancer in Sweden. *Obstet Gynecol* 2009;114:568-72.
2. Stensheim H, Moller B, van Dijk T, Fossa SD. Cause-specific survival for women diagnosed with cancer during pregnancy or lactation: A registry-based cohort study. *J Clin Oncol* 2009;27:45-51.
3. Cardonick E, Iacobucci A. Use of chemotherapy during human pregnancy. *Lancet Oncol* 2004;5:283-91.
4. Wong CA, Loffredi M, Ganchiff JN, Zhao J, Wang Z, Avram MJ. Gastric emptying of water in term pregnancy. *Anesthesiology* 2002;96:1395-400.
5. Wee MY, Brown H, Reynolds F. The National Institute of Clinical Excellence (NICE) guidelines for caesarean sections: Implications for the anaesthetist. *Int J Obstet Anesth* 2005;14:147-58.
6. Ni Mhuireachtaigh R, O'Gorman DA. Anesthesia in pregnant patients for nonobstetric surgery. *J Clin Anesth* 2006;18:60-6.
7. Chan KK, Welch KJ. Cardiac arrest during segmental thoracic epidural anesthesia. *Anesthesiology* 1997;86:503-5.
8. Lonnqvist PA, MacKenzie J, Soni AK, Conacher ID. Paravertebral blockade. Failure rate and complications. *Anaesthesia* 1995;50:813-5.
9. Immer-Bansi A, Immer FF, Henle S, Spörri S, Petersen-Felix S. Unnecessary emergency caesarean section due to silent CTG during anaesthesia? *Br J Anaesth* 2001;87:791-3.
10. ACOG Committee on Obstetric Practice. ACOG Committee Opinion No. 474: Nonobstetric surgery during pregnancy. *Obstet Gynecol* 2011;117:420-1.
11. Royal College of Obstetricians and Gynaecologists. Tocolytics for women in preterm labour: Green-top guideline No. 1b. London: RCOG; 2011. p. 13
12. National Collaborating Centre for Women's and Children's Health UK. Surgical site infection: Prevention and treatment of surgical site infection. London, UK: National Institute for Health and Clinical Excellence (NICE); 2008 Oct. p. 142.
13. Kort B, Katz VL, Watson WJ. The effect of nonobstetric operation during pregnancy. *Surg Gynecol Obstet* 1993;177:371-6.
14. Cohen-Kerem R, Railton C, Oren D, Lishner M, Koren G. Pregnancy outcome following non-obstetric surgical intervention. *Am J Surg* 2005;190:467-73.
15. Mazze RI, Kallen B. Reproductive outcome after anesthesia and operation during pregnancy: A registry study of 5405 cases. *Am J Obstet Gynecol* 1989;161:1178-85.

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