Evaluation of Changes in the Severity of Nausea and Vomiting Following Breast Surgery at Different Times

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ABSTRACT

Nausea and vomiting following breast surgery are the most common complications of this surgery; The incidence of these complications varies in different ethnicities and geographical areas. The aim of this study was to evaluate the changes in the severity of nausea and vomiting following breast surgery at different times. This cross-sectional descriptive study was performed during 2019 and 2020 in Imam Reza Hospital (Tabriz Medical Sciences) with the participation of 174 women candidates for breast surgery. The severity of nausea and vomiting at different times until after discharge was measured and recorded for each patient and its severity changes over time were measured by Chi-square test. The results of nausea showed that the highest rate of nausea was on the day of surgery and the lowest rate of nausea was on the second day after surgery. The highest number of vomiting was in the day after surgery and the lowest amount of vomiting was in two days after surgery. Pain intensity was highest on the first day and lowest on the second day. Although PONV and PDNV have been identified as problems that require clinical management, our ability to prevent these troublesome symptoms, especially nausea, appears to be limited.

Keywords: Nausea, Vomiting, Breast Surgery, Pain
Introduction

Today, paying attention to the time after surgery is as important as the time during surgery. Postoperative nausea and vomiting (PONV) is an unpleasant and common phenomenon after surgery(1). Nausea refers to the tendency to vomit and vomiting to reflux gastric contents(2). Nausea and vomiting is a multidimensional phenomenon and is affected by various risk factors. The most important factors affecting postoperative nausea and vomiting include the following(3,4): Patient factors: Female gender, non-smoker and age less than 50 years, motion sickness and previous history of PONV(5). Factors related to anesthesia: anesthesia method (general anesthesia leads to higher PONV than local anesthesia), long duration of anesthesia, inhaled gases, nitrous oxide (more than 50%), opioids during and after surgery, increasing doses of neostigmine (More than 3 mg) (6). Although there is no accurate data on the prevalence of PONV worldwide, individual studies indicate a prevalence of 20 to 30% in normal populations and 70 to 80% in high-risk populations (tonsils, strabismus, and laparoscopy). (7) The type of surgery affects the risk of PONV. Abdominal surgery, breast and ear and tonsillectomy have a high risk for PONV.(8) Surgeries with severe postoperative pain and the need for higher doses of postoperative opioids, such as major orthopedic surgery, are also at risk(9). PONV has a great effect on health and quality of life in these patients and has a significant effect on morbidity (dehydration, wound opening, pain, inactivity), delayed discharge from the post-anesthesia care unit (PACU), increase in hospital stay. In the hospital, there is an increase in hospital costs and patient dissatisfaction(10, 11). Postoperative nausea and vomiting is still one of the most common and distressing complications that patients experience after surgery. Especially for women undergoing cancer surgery(12). The incidence of PONV after breast cancer surgery has been reported to be up to 80%. Because the incidence of breast cancer is expected to continue to rise and most of them undergo surgery as part of their treatment, PONV is a very significant clinical issue in this population(13).

PONV is also the most common reason for hospitalization and non-discharge on the day of surgery after breast cancer surgery. In addition, with the advent of surgery on the same day as the standard for most breast cancer surgeries, these women experience postnatal nausea and vomiting (PDNV) at home. Patients also reported experiencing the highest levels of nausea on
the day of discharge after outpatient surgery. Therefore, the present study aimed to investigate the incidence of nausea and vomiting after breast surgery.

Methods

In this study, which was performed in Imam Reza Hospital of Tabriz University of Medical Sciences, a prospective plan was used to evaluate the incidence of postoperative nausea and vomiting in women with breast cancer after breast surgery. Women with breast cancer who were scheduled for surgery were evaluated for vomiting, as well as for the presence and severity of nausea.

Inclusion criteria

Women with early stage breast cancer (stages I, II and IIIA) and planning to have cancer surgery under general anesthesia. Exclusion criteria: included breast reconstruction surgery (due to prolonged anesthesia) or a previous history of neurological diseases such as stroke, head injury, spinal cord injury, and intracerebral hemorrhage, which can also cause nausea. According to the planned goals of the study, all patients referred to the hospital for breast surgery between 2019 and 2020 were included in the study if they met the inclusion criteria. According to the exclusion criteria, 174 patients were finally evaluated. The study team consulted with members of the surgery team each morning to review the day's breast surgery schedule and determine if patients who met the inclusion criteria were scheduled for surgery. One of the team members, after receiving the complete history of the patients who are on the day operation list and reviewing the inclusion criteria, explained about the study conditions and if the patient wishes to participate in the study, the patient informed the informed consent form and contact information from He is obtained and all information is recorded. Anesthesia management was the same for all patients: after initial hydration, patients were intubated with 2 mg of midazolam, 100 μg of fentanyl, 100 mg of lidocaine, 200 mg of propofol, and 50 mg of atracurium and tube 7.5. Maintenance of anesthesia was performed with isoflurane gas. Finally, at the end of the operation, 4 mg of ondansetron was injected for all patients, and the effects of atracurium reversed with the combination of atropine and neostegmine. Collection of preoperative information: Personal characteristics, including age, history of smoking, history of PONV and motion sickness.
Postoperative data collection: measurable variables for this study: PONV and PDVN; Postoperative and post-discharge vomiting, as well as postoperative and post-discharge nausea. Vomiting was assessed both as a nominal variable (yes / no) and as a continuous variable to measure the number of separate differential events. Nausea was measured on a verbal numerical scale (NNS), with 0 (zero) no nausea and 10 indicating the highest level of nausea experienced. Pain was measured on a similar numerical verbal pain scale (VAS). The amount and type of antiemetic and analgesic drugs as well as the type of surgery, time of surgery, anesthesia agents and drugs prescribed during anesthesia were collected from the patient's file and recorded. 1 hour after surgery: One of the study team members called the patients 2 hours after surgery to follow up and asked about nausea or vomiting after discharge (PDNV) and recorded the necessary information using the same measurement method. Turned. People who are still in the hospital They were hospitalized and evaluated in person. Information about the amount and type of antiemetic and analgesic drugs was received from discharged patients. They were hospitalized and evaluated in person. The collected data were displayed by percentage and frequency. Chi-square test was used to evaluate the changes in the severity of nausea and the number of vomiting and pain intensity at different times.

Results

The mean age of the study participants was 49.12 ±5.61 years. 89 of them underwent surgery on the right breast. None of the patients had a previous history of radiotherapy and only 55 patients had a previous history of red chemistry. 59 patients had grade I, 100 patients had grade II and the rest had grade IIIA. The duration of surgery was 115.48± 15.66 minutes and the duration of anesthesia was 18.10±130.59 minutes. The results of nausea showed that the highest rate of nausea was on the day of surgery and the lowest rate of nausea was on the second day after surgery. The highest number of vomiting was in the day after surgery and the lowest amount of vomiting was in two days after surgery. Pain intensity was highest on the first day and lowest on the second day.
Table 2: Prevalence of nausea, vomiting and pain at different times

<table>
<thead>
<tr>
<th>Variable</th>
<th>Nausea</th>
<th>Vomiting</th>
<th>Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>PACU</td>
<td>30.3%</td>
<td>10.2%</td>
<td>3.49 ±1.61</td>
</tr>
<tr>
<td>Day of surgery</td>
<td>35.1%</td>
<td>14.3%</td>
<td>5.14 ±1.22</td>
</tr>
<tr>
<td>After 24 hours</td>
<td>33.6%</td>
<td>10.6%</td>
<td>4.36 ±1.59</td>
</tr>
<tr>
<td>After 48 hours</td>
<td>18.8%</td>
<td>6.3%</td>
<td>3.10 ±1.10</td>
</tr>
<tr>
<td>P Value*</td>
<td>0.009</td>
<td>0.001</td>
<td>0.036</td>
</tr>
</tbody>
</table>

*: Chi-square test

Discussion

The mechanism of PONV is very complex and not fully understood. The brain structures involved in the pathophysiology of vomiting are located throughout the medulla oblongata and are not concentrated at a single anatomical point as the "vomiting center." The Chemoreceptor trigger zone is located in the fourth ventricle in the postrema region and the nucleus accumbens in the postrema and pons area(13, 14). The use of inhaled anesthetics and the use of narcotics almost doubles the risk of developing PONV, and this risk increases in a dose-dependent manner. A history of migraine and preoperative anxiety predicts an increased risk of PONV(15, 16). The strongest predisposing factors for PONV are female gender, non-smoker, history of past PONV, history of motion sickness and drug use during and after surgery. Prevention of this complication plays an important role in the management of the operation. Also, this unpleasant complication may cause the patient discomfort and dissatisfaction, delay in discharge and possibly readmission to the hospital. Occasionally, in the long term, electrolyte dehydration, dehydration, bleeding, suture opening, aspiration pneumonia, emphysema, and additional costs due to long-term hospitalization may result(17-20). According to the findings of our study, which can be seen in Table 1, the incidence of nausea is 30.3% and vomiting is 10.2% in PACU, and on the day of surgery, the maximum nausea is 35.1% per day and vomiting is 14%. 3% increase. 24 hours after discharge, this rate decreased slightly and 33.6% of patients had nausea and 10.6% had vomiting. 48 hours after surgery, nausea and vomiting decreased to 18.8% and 6.3%, respectively(21, 22). One study reported that the prevalence of PONV worldwide is between 7% and 74% in breast surgery; Also, the results of another study conducted in Iran reported a prevalence of this complication following breast surgery of 29 to 100%; The results of these studies are consistent with the results of the present study. In a recent study, patients
underwent surgery; In patients receiving antiemetics as prophylaxis; 30% of nausea was reported in PACU and 35% of postoperative nausea and vomiting (23, 24). In another study, the incidence of PONV in patients undergoing mastectomy, even with double-dose anti-nausea treatment, was reported to be 38%. In another study, the results showed that if prophylaxis was not used, the incidence of nausea and vomiting during the first 24 hours after surgery was 75%. The data show that in this study, despite the use of propofol as an anesthetic induction drug as well as anesthetic maintenance, no use of N2O, no use of narcotics as analgesic, use of ondansetron as anti-nausea and paracetamol as analgesic and other measures. The incidence of nausea and vomiting in breast surgery is still high and further studies are needed to improve patient satisfaction (25-27).

**Conclusion**

Although PONV and PDNV have been identified as problems that require clinical management, our ability to prevent these troublesome symptoms, especially nausea, appears to be limited. We performed this study in a single center, and procedures for prescribing pre- and postoperative medications may affect the incidence of PONV and PDNV. In addition, our findings cannot be generalized to other racial / ethnic groups. To better describe the experience of PONV and PDNV in all women after breast cancer surgery, a larger study is considered to increase the racial and ethnic diversity of different individuals. Due to the importance of the subject, it is recommended that future research be conducted with a larger sample size and approved treatment measures and interventions (PONV prevention methods and a combination of different methods) to prevent PONV.

**References**


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