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# Reducing Narcotic Prescriptions in Breast Surgery: A Prospective Analysis

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**ABSTRACT**

**Background.** No clear standards regarding number or type of narcotics for adequate postoperative pain control have been established in breast surgery. The authors of this study reviewed their opioid-prescribing patterns and implemented a planned change, evaluated the effectiveness of a departmental practice adjustment, and prospectively evaluated patient narcotic usage.

**Methods.** The narcotic prescriptions for 100 consecutive breast surgery patients were reviewed to establish baseline postoperative narcotic-prescribing patterns. The median of narcotics prescribed was used to educate surgeons and implement a planned change in prescribing practices. Data on narcotic prescriptions for 100 consecutive breast surgery patients then were prospectively collected, and the number of pain pills the patients actually took after discharge was recorded using a standardized template.

**Results.** A baseline review of narcotic-prescribing practices showed that the median number of pills given was 15 for excisional biopsy/lumpectomy, 20 for mastectomy, and 28 for mastectomy with reconstruction. After departmental education, the median number decreased to 10 for excisional biopsy/lumpectomy ($p < 0.01$) and 25 for mastectomy with reconstruction ($p < 0.01$). Prospective recording of patient usage compared with the prescribed number of pills indicated that most prescribed pills were not used, with the excisional biopsy or lumpectomy patients using a median of 1 pill ($p < 0.01$), the mastectomy patients using a median of 3 pills ($p < 0.01$), and the mastectomy with reconstruction patients using a median of 18 pills ($p < 0.01$) postoperatively. Only three patients, all of whom had breast reconstruction performed, required a refill of narcotics.

**Conclusions.** Successful reduction in narcotic prescriptions can be implemented for breast surgery patients. Further reductions in narcotic prescriptions may be feasible based on prospective collected patient usage.

The opioid epidemic is a critical focus in health care. Narcotic prescriptions have increased significantly during recent years. At the same time, opioid-related abuse has risen concurrently, and opioid-related deaths have exceeded all other drug-related deaths.[1–4]

One source contributing to the opioid epidemic stems from an excess of narcotic pills prescribed for postoperative pain management. Several studies have shown that a large amount of narcotics given by surgeons for postoperative pain management is unused and that surgeons may be incorrectly overestimating the amount of opioids needed for adequate pain control.[5–9] Leftover narcotic pills can be stolen or used inappropriately by family and friends.[10–12]

Lewis et al.[11] studied what patients do with their unused opioid medications and found that the majority of patients save unused opioid pills from a prescription and that medication sharing, especially with family and friends, is common. A recent review of the narcotic-prescribing practices specifically for breast surgical oncology patients confirmed that the amount of narcotics provided postoperatively at discharge varies widely, and that a large proportion of these opioids are unnecessary, indicating room for optimization in breast surgery narcotic practices.[13]

Although the literature suggests opportunity for decreasing narcotic prescriptions for breast surgical patients, no clear standard for an ideal postoperative pain management strategy exists. We designed a study to review our opioid-prescribing patterns for breast surgery patients and implement a planned change, evaluate the effectiveness of a departmental practice adjustment, and prospectively evaluate patient narcotic usage.

## METHODS

### Study Design

After institutional review board approval, the narcotic-prescribing practices for breast surgery patients treated at our institution in 2017–2018 were reviewed. The patients who underwent excisional biopsy or lumpectomy, mastectomy, or mastectomy with reconstruction were included in the review. The variables collected were patient demographics, number and type of narcotics prescribed, number of narcotic refills, and patient-reported actual narcotic pill usage. The charts for a baseline of 100 consecutive breast surgery patient were reviewed in October 2017. The type of postoperative narcotic given and the number of pills prescribed were collected for excisional biopsy or lumpectomy, mastectomy, and mastectomy with reconstruction.

Using the median number of narcotics prescribed for the baseline cohort, a departmental change to standardize prescribing patterns and reduce narcotic prescription pills was recommended in February 2018. A postoperative prescription guideline of 10 pills for excisional biopsy or lumpectomy, 20 pills for mastectomy, and 25 pills for mastectomy with reconstruction was suggested. The type of

narcotics used was at the discretion of the surgeon and recorded. Surgeons were encouraged to maximize the use of intraoperative local anesthetics, but this was not required.

The patients received preoperative education on the use of narcotic alternatives such as ice, Tylenol, and nonsteroidal anti-inflammatory drugs (NSAIDs) before narcotic use at the discretion of the surgeon. Standardized templates were incorporated into postoperative office notes in the electronic medical record (EMR) for prospective collection of data regarding type of narcotic prescribed, number of pills given, refills, and number of pills reportedly used by breast surgery patients postoperatively.

After the planned modification of prescribing practices, a representative sample of 100 consecutive breast surgery patients after the change was reviewed in August 2018. The type and number of narcotics, refills, and patient-reported usage were analyzed and compared.

### Statistical Analysis

Patient demographics, types of narcotic, and number of narcotic pills were described using medians and ranges or counts and percentages as appropriate. Univariate analyses were applied to compare two cohorts using the Chi square test, Fisher's exact test, and the Wilcoxon rank-sum test. All the tests were two-tailed and performed at a significance level of 0.05.

## RESULTS

The characteristics of the patient cohorts at baseline and after the change in prescribing practices are shown in Table 1. The median age in both cohorts was 61 years

**TABLE 1** Patient characteristics at baseline and after change in narcotic-prescribing practices

|  | Baseline breast surgery patients ($n = 100$) | Breast surgery patients after change in prescribing practices ($n = 100$) | $p$ value |
|---|---|---|---|
| Median age: years (range) | 61 (42–84) | 61 (27–90) | 0.805 |
| Race (%) |  |  | 0.558 |
| Caucasian | 78 | 83 |  |
| African American | 16 | 14 |  |
| Other | 6 | 3 |  |
| Median BMI: kg/m$^2$ (range) | 28.43 (16.32–52.06) | 28.81 (18.31–51.96) | 0.500 |
| Pathology diagnosis (%) |  |  | 0.001 |
| Malignant | 63 | 84 |  |
| Benign | 37 | 16 |  |
| Type of surgery (%) |  |  | 0.275 |
| Excisional biopsy/lumpectomy | 70 | 60 |  |
| Mastectomy | 12 | 19 |  |
| Mastectomy with reconstruction | 18 | 21 |  |

*BMI* body mass index

(range, 27–90 years). No significant difference was seen between the groups in terms of age, race, or body mass index (BMI). The second surgery cohort group had a larger number of patients with malignant disease, but the overall distribution of surgery type performed between the groups did not differ statistically.

A review of the narcotic-prescribing practices in the baseline breast surgery patients showed that the median and range for the number of pills prescribed was 15 (range, 0–30) for the excisional biopsy or lumpectomy patients, 20 (range, 0–40) for the mastectomy patients, and 28 (range, 20–40) for the mastectomy with reconstruction patients (Fig. 1). After the departmental change to standardize and reduce the amount of narcotics prescribed postoperatively, a subsequent prospective review of 100 patients showed that the median number of pills prescribed was consistent with the planned decreased amounts of 10 narcotic pills for the excisional biopsy or lumpectomy patients, 20 narcotic pills for the mastectomy patients, and 25 narcotic pills for the mastectomy with reconstruction patients. This planned reduction in the median number of narcotic pills prescribed was statistically significant for the excisional biopsy or lumpectomy patients ($p < 0.01$) and the mastectomy with reconstruction patients ($p < 0.01$). The median number of pills prescribed for the mastectomy patients remained unchanged ($p = 0.21$).

Furthermore, in addition to the implemented reduction in narcotics pills prescribed, we found that the median and range for the number of narcotic pills used as reported by the patients at their initial postoperative visit was still significantly less than that prescribed for the patients in all categories: 1 pill (range, 0–12 pills; $p < 0.01$) for

**TABLE 2** Type of narcotics prescribed

| | Baseline breast surgery patients ($n = 100$) | Breast surgery patients after change in prescribing practices ($n = 100$) |
|---|---|---|
| Hydrocodone | 50 | 46 |
| Oxycodone | 29 | 24 |
| Codeine | 2 | 1 |
| Tramadol | 5 | 21 |
| None | 14 | 7 |
| Other | 0 | 1 |

excisional biopsy or lumpectomy, 3 pills (range, 0–10 pills; $p < 0.01$) for mastectomy, and 18 pills (range, 0–50 pills; $p < 0.01$) for mastectomy with reconstruction (Fig. 1).

The type of narcotics prescribed in both cohorts is shown in Table 2. Hydrocodone-based narcotics were the most commonly used in both patient groups followed by oxycodone-based narcotics. Notably, after the planned change in prescribing patterns, the findings showed an increase in the use of weaker opioids such as tramadol compared with oxycodone and hydrocodone. This was not a planned reduction but an interesting trend observed.

Interestingly, 40% of all the reviewed breast surgery patients reported that they did not take any narcotic prescriptions after their operation. In particular, 48% (29/60) of the excisional biopsy or lumpectomy patients reported using no narcotic prescription pills after their surgery. Similar findings showed that 32% (6/19) of the mastectomy patient subset and 24% (5/21) of the mastectomy with reconstruction patient subset also reported no narcotic needs for pain control postoperatively after hospital discharge (Fig. 2).

Only three patients (3%) reviewed after the reduction in narcotic-prescribing practices required a refill of their narcotic prescription at the postoperative follow-up visit. All three of these patients had undergone a mastectomy with reconstruction.

## DISCUSSION

When reviewing the postoperative pain medicine requirements of breast surgery patients, we found that many patients do not require as many narcotic pain pills as initially assumed to control their pain. Even with a purposeful decrease in narcotic-prescribing practices, patients demonstrated that they still were requiring fewer opiate pills to control postoperative pain than they had been given.



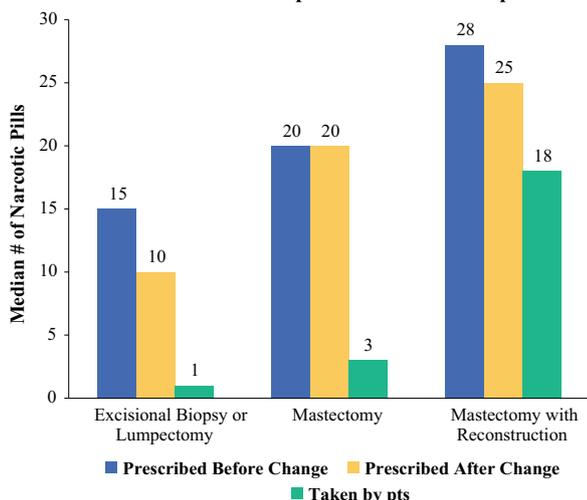**Reduction in Narcotic Prescriptions and Patient Reported Usage**

**FIG. 1** Summary of reduction in narcotic prescriptions and patient-reported narcotic usage after discharge

## Percentage of Patients Using NO Narcotics After Discharge
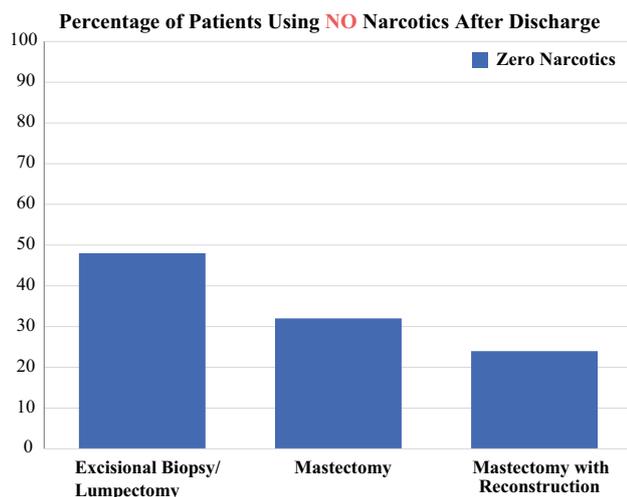


FIG. 2 Percentage of patients using no narcotics after discharge

This study helps to continue the initiative to decrease narcotic overprescribing for breast surgery patients by suggesting definitive numbers of prescription pills that can be given for each surgery type based on patient feedback. Additionally, our findings identify that there is a group of breast surgery patients who do not require any narcotics after discharge.

Our study results showing the wide variability in initial prescribing practices and the low number of narcotics actually used by breast surgery patients are similar to other findings in the literature. The Hill et al.[6] review of opioid prescription usage in general surgical procedures, including lumpectomies with and without lymph node sampling, found that the ideal number of pills needed for postoperative pain control was 5 to 10 pills. They also identified that 41% of patients who underwent a partial mastectomy with lymph node sampling used no narcotics at discharge.[6]

Fujii et al.[14] used a prospective telephone questionnaire to review opioid-prescribing patterns and patient-reported usage after several common surgical procedures and similarly found that the median number of narcotics used by their lumpectomy patients was zero. Park et al.[13] reviewed the narcotic-prescribing and usage among 332 breast surgical oncology patients and found similar wide variability in prescribing practices and a significant excess of narcotics given. They also noted that a large percentage (32.2%) of patients undergoing unilateral breast-conserving therapy without axillary dissection used no narcotics at discharge.

The aforementioned studies further confirm that breast surgery patients may be a population that requires very few narcotic pills for adequate pain management. Our study adds to this initiative to decrease narcotic overprescribing for breast surgery patients by evaluating our historical practices and demonstrating that a successful reduction is

possible and can be practically implemented. Furthermore, our prospective analysis of patient-reported actual usage of narcotic pills continues to add to the evidence that breast surgical patients require less pain medication than clinicians assume.

Additionally, many of these studies, with the exception of the Park et al.[13] study, focused only on partial mastectomy patients. Our study is unique because it included the narcotic consumption patterns of patients who underwent mastectomy as well as the patterns of those who had mastectomy with reconstruction. Our inclusion of this patient subset helps to clarify the narcotic consumption patterns of patients undergoing these procedures.

A few studies have recently attempted to clarify the ideal amount of narcotics to be given for breast surgery patients. Hill et al.[15] reviewed the number of narcotics taken by patients who underwent several general surgery procedures and concluded potentially that using a 24-h inpatient before-discharge calculation to determine postoperative opioid pill prescriptions could help decrease excess by 40%. Although this may be effective for many general surgery procedures, it can be limiting for breast surgery patients, who often are discharged the same day as their procedure.

Overton et al.[16] attempted to form a guideline for narcotic-prescribing after common surgical practices using a multidisciplinary expert panel. These authors noted that a range of 0–10 oxycodone 5-mg tablets for lumpectomy without lymph node sampling and 0 to 15 oxycodone 5-mg tablets for lumpectomy with lymph node sampling would be acceptable.[16] The medians and ranges of narcotic usage reported by our excisional biopsy or lumpectomy patients suggest that these ranges are feasible but may be even further reduced. Additionally, a recent program implemented in the state of Michigan updated prescribing recommendations in 2019 and suggested 5 oxycodone pills for lumpectomy, with or without lymph node sampling, 20 oxycodone pills for simple mastectomy, and 30 oxycodone pills for modified radical mastectomy.[17]

The aforementioned studies mirror closely our own findings. Based on our median reported patient usage, we believe that a suggested guideline of narcotic pills to prescribe for breast surgery patients is 5 pills for excisional biopsy or lumpectomy, 10 pills for mastectomy, and 20 pills for mastectomy with reconstruction. However, further studies are needed to verify that this is adequate pain control postoperatively. The authors acknowledge that with a change to reduce narcotics, a fine line exists between overprescribing narcotic pills and undertreating true surgical pain, about which surgeons are cautious and patients are fearful. For this reason, we designed our study to be a

stepwise process so as not to reduce the narcotics in a manner that could result in poor postoperative patient pain control.

Furthermore, Enhanced Recovery After Surgery (ERAS) protocols are shown to facilitate improved pain control in breast surgical procedures. Many published ERAS protocols for breast procedures in plastic surgery patients have shown a decrease in narcotic use and length of hospital stay.[18–20] Rojas et al.[21] demonstrated a recent successful implementation of an ERAS program for breast surgery patients undergoing lumpectomy that uses long-acting liposomal bupivacaine injections and non-narcotic adjuncts such as ketorolac and acetaminophen. This program resulted in no narcotic pain medications at discharge. These studies suggest that further narcotic-reducing improvements, as suggested in this current study, may be possible with the addition of a formal ERAS protocol.

Our study had several limitations. First, self-reporting of narcotic pill use by patients could have been subject to recall bias. Second, we did not distinguish or exclude patients with chronic pain who may have been receiving daily narcotics at baseline. Third, although a local anesthetic was encouraged and commonly used at our institution, our study had no standardization. Several studies have shown improvement in postoperative pain and decrease in narcotic use with local infiltrate usage.[22–25] A future focus on maximizing dose and type of local anesthetic should be encouraged.

The strengths of this study were that it was able to create a simple change in the department by reviewing practice patterns and using that information to educate our departmental team. This change can be easily applied in many other institutions. Usage of a standardized EMR template allowed for an easy and accurate prospective collection of data. We also were able to show a statistical significance in our reduction of narcotic pills prescribed and to illustrate that patients report much less need for narcotics than we currently assume, and that their feedback will allow us to reduce our prescribing patterns even more.

## CONCLUSION

Our results show that a program that reduces narcotic-prescribing can be successfully implemented for breast surgery patients. Further reductions in narcotic pills for postoperative pain control in breast surgery should be feasible based on patient self-reported consumption patterns. Additionally, a subset of patients may require no narcotics postoperatively at discharge, and further research is needed to clarify who these patients are and what factors are predictive.

**DISCLOSURE** There are no conflicts of interest.

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