Perioperative Management May Lead to Less Pain After Breast Cancer Surgery

“If we can identify those people who we think will have a problem with chronic pain, we’ll be better equipped to garner our resources to treat them appropriately.”

—Kristin L. Schreiber, MD, PhD

A recent prospective, observational study published in the *Annals of Surgical Oncology* (2018;25:2917-2924) describes associations between surgical factors and patients’ physical and psychological characteristics and chronic pain after breast surgery.

Prior studies of this postoperative complication reported a prevalence of 20% to 30%, and a substantial adverse impact on quality of life for affected women.

Kristin L. Schreiber, MD, PhD, assistant professor of anesthesia at Harvard Medical School in Boston, Massachusetts, and senior author of the report, believes their new study advances the understanding of this complex issue. “While we may not be the first people to show these associations,... bringing it forward in a prospectively measured way is relatively new. I think it could be a new concept for many surgeons who have traditionally focused on what they’ve done surgically, and how that impacts pain afterwards, rather than considering the patient’s individual characteristics that might make them more susceptible to developing chronic pain.”

Dr. Schreiber, a neuroscientist in the department of anesthesiology, perioperative and pain medicine at Brigham and Women’s Hospital in Boston, says one question she and her colleagues wanted to address is whether preoperative depression and anxiety are risk factors for developing chronic pain (defined in this study as a pain severity of at least 4 on a scale of 0 to 10 at 6 months). “Knowing this could allow these psychosocial traits to be used as markers to help predict who would have higher risk of long-term pain, and possibly treat them differently in the perioperative period.”

The authors also wanted to examine which surgical procedures are related to chronic postoperative pain.

**Study Details**

Women who were aged 18 to 80 years and who were scheduled to undergo breast surgery with or without known malignancy were recruited in the preoperative anesthesia clinic at Brigham and Women’s Hospital between 2014 and 2017. Of the 216 patients who completed the study, all were female and 86.4% were white.

The patients completed questionnaires that addressed baseline pain and psychosocial factors, including the Pain Catastrophizing Scale (which measures magnification, rumination, and helplessness related to pain) and short-form instruments with which to assess anxiety and depression from the Patient-Reported Outcomes Measurement Information System (PROMIS).

Surgical procedures studied included breast-conserving surgery, mastectomy, mastectomy with reconstruction, sentinel lymph node biopsy, and axillary lymph node dissection. Surgeries were performed by 11 different breast surgeons.

The researchers used the Pain Burden Index (PBI) to assess the chronic pain experienced by patients 6 months after surgery. The PBI was calculated by adding the pain severity scale ratings (from 0-10) from 4 anatomic locations (the breast, axilla, chest wall, and arm) multiplied by the frequency of

**KEY POINTS**

- Chronic pain after breast surgery is influenced by surgical, demographic, and psychosocial factors.
- Younger patients and those with a higher body mass index had a greater risk of chronic pain.
- Also found to be at greater risk were patients with higher preoperative measures of anxiety, depression, and catastrophizing.
- In this study, axillary lymph node dissection was the only surgical factor found to be associated with an increased risk of pain at 6 months after surgery.
the pain at each site. Constant daily pain was worth 5 points, daily pain was worth 4 points, occasional pain was worth 3 points, weekly pain was worth 2 points, monthly pain was worth 1 point, and never was worth 0 points.

One-way analysis of variance, Kruskal-Wallis analysis of variance, and Spearman rank correlation were used to assess baseline patient characteristics and PBI 6 months postoperatively.

**Study Results**

The researchers found no group differences with regard to 6-month PBI measurements among patients who underwent different primary breast operations (including breast-conserving surgery, mastectomy, and mastectomy with reconstruction) and no association between PBI and duration of surgery. However, axillary lymph node dissection was associated with a higher PBI compared with sentinel lymph node biopsy and no axillary procedure ($P < .001$).

Patient characteristics found to be associated with a higher 6-month PBI included younger age ($P < .001$) and higher body mass index ($P = .010$) as well as higher preoperative anxiety ($P = .017$), depression ($P < .001$), and Pain Catastrophizing Scale scores ($P = .005$).

**Study Strengths and Weaknesses**

Tuomo Meretoja, MD, PhD, adjunct professor and consultant breast surgeon in the comprehensive cancer center and breast surgery unit at Helsinki University Hospital in Finland, says the study adds to the existing body of evidence regarding factors associated with persistent pain after breast surgery but has some shortcomings. “These include a relatively small sample size not allowing for multivariable analysis, which would be crucial, as many of the variables associated with chronic pain are intercorrelated.”

Dr. Schreiber says the study population reflects the demographic characteristics of patients seen at the Brigham and Women’s Hospital preoperative clinic, and that her research goals include increasing the number and demographic diversity of patients studied in the future. “Right now it tends to skew more Caucasian and we are looking at ways to make it less so.”

Dr. Meretoja believes an endpoint at 6 months after breast cancer surgery is too short when adjuvant chemotherapy and radiotherapy are given after surgery. “These adjuvant treatments are still ongoing or have just been concluded at 6 months from surgery.” He also believes that chemotherapy and radiotherapy should be included as variables in future studies.

Dr. Meretoja notes that persistent postsurgical pain typically is multidimensional and difficult to treat, and agrees that psychological factors play an important role in the equation. “It is therefore important to recognize persisting postsurgical pain as early as possible, and preferably these patients should be referred to and treated in specialized pain clinics with multidisciplinary evaluation and treatment.”

Dr. Shreiber says she hopes this new study will serve as a stepping stone to a better understanding of an individual patient’s propensity for chronic pain. “If we can identify those people who we think will have a problem with chronic pain, we’ll be better equipped to garner our resources to treat them appropriately.”

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