

JLTS: Of 12,835 patients younger than age 40 years, 53.9% underwent mastectomy (39.7% unilateral and 60.3% bilateral). Patients from an ethnic minority group, lower socioeconomic status, without private insurance were more likely to undergo unilateral mastectomy (odds ratio [OR] 2.04; OR 1.12; OR 1.37). Controlling for demographics, tumor grade, and adjuvant therapies, contralateral mastectomy patients had significantly improved 10-year overall survival vs unilateral mastectomy patients (96.6% vs 94.2%; hazard ratio [HR] 0.69; 95% CI 0.53–0.90). Additionally, breast-conserving surgery (BCS) demonstrated significantly higher overall survival vs unilateral mastectomy (95.7% vs 94.2%; HR 0.69; 95% CI 0.57–0.88), but no difference vs bilateral mastectomy (95.7% vs 94.2%; HR 0.97; 95% CI 0.75–1.23).

CONCLUSIONS: In this study, the majority of women younger than 40 years old underwent mastectomy instead of BCS. This finding reflects increased rates of bilateral/contralateral prophylactic mastectomy. We demonstrate a small but statistically significant overall survival benefit with bilateral mastectomy and BCS vs unilateral mastectomy in women younger than 40 years. This finding warrants further investigation to determine the clinical implications for decision making in younger women.

Decreasing Rates but Increasing Complexity of Axillary Lymph Node Dissection for Breast Cancer



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INTRODUCTION: With multiple trials indicating a lack of benefit for many breast cancer (BC) patients undergoing axillary lymph node dissection (ALND), indications for this procedure are decreasing. In addition, use of neoadjuvant chemotherapy (NAC) is increasing for women with BC. We hypothesized that surgeons performing fewer ALND, but in more complex clinical scenarios.

METHODS: A statewide query was performed for women diagnosed with BC who underwent ALND from 2007 to 2016. Demographic information, clinical stage, and treatment details were extracted. Complications were defined as lymphedema, axillary vascular injury, nerve injury, pneumothorax, paresthesia, and axilweb syndrome. Statistical analysis was completed using chi-square test and multivariable logistic regression.

RESULTS: We identified 2,635 patients who met the criteria. Table 1 shows the proportion of surgery-eligible BC patients receiving ALND, which decreased steadily from 2007 (6.3%) to 2016 (4.1%), while receipt of NAC increased significantly ($p < 0.0001$). Patients with higher clinical stage were more likely to receive NAC ($p < 0.0001$). When placed in a multivariable model, receipt of NAC, clinical stage, and BMI were significantly associated with ALND receipt (p values of 0.0373, 0.0003, and 0.0031, respectively). Clinical stage was significantly associated with ALND year

($p = 0.0002$), with an increase in the proportion of patients with stage 3 BC receiving ALND by 2016 (Table).

Table. Proportion of Surgery-Eligible Breast Cancer Patients Undergoing Axillary Lymph Node Dissection

| Year | Proportion, % |
|------|---------------|
| 2007 | 5.6 |
| 2008 | 7.5 |
| 2009 | 6.3 |
| 2010 | 7.5 |
| 2011 | 6.8 |
| 2012 | 6.3 |
| 2013 | 4.8 |
| 2014 | 2.4 |
| 2015 | 2.7 |
| 2016 | 1.4 |

CONCLUSIONS: Although the performance of ALND for BC patients has decreased precipitously since 2012, the complexity of patients undergoing this procedure has increased. This will likely have long-term implications for trainees and attending surgeons performing this procedure. (Support: Wyss Foundation Fund 2388132/WYSS.)

Facilitating Outpatient (Same Day) Mastectomy Using Multimodal Pain Control



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INTRODUCTION: National data demonstrate an increasing trend toward outpatient mastectomy. Concerns of hospital costs, combined with the recent opioid epidemic, have resulted in methods to minimize inpatient admissions, while decreasing the use of oral narcotics. We present our retrospective study of outpatient mastectomy patients with the use of a novel regimen of multimodal pain management.

METHODS: This is a retrospective review of consecutive mastectomies performed at a single, academic hospital between November 2015 and July 2017. Our pain regimen was standardized to include 1 gram of IV acetaminophen intraoperatively, combined with a 4-level intercostal nerve block with liposomal bupivacaine and 30 mg of IV ketorolac. All patients were discharged to home on the same day with acetaminophen with codeine. We recorded patient demographics, 30-day emergency department (ED) visit, re-admission rate and postoperative complications.

RESULTS: Seventy-two patients underwent mastectomies, 11 (15.3%) bilateral and 61 (84.7%) unilateral, during the study period. Average follow-up was 20.1 weeks, average age was 56.9 years, and average BMI was 30.0 kg/m². Five (6.9%) patients presented to the emergency room in the 30-day postoperative period; 2 (2.8%) patients required readmission, 1 for a stroke and 1 for a wound infection. The other 3 patients presented to the ED with pain, but none required hospital admission.

CONCLUSIONS: A multimodal pain regimen allows for a safe and effective method for same-day discharge mastectomy patients. Patient satisfaction and pain control is excellent, with limited postoperative need for stronger oral narcotic use.

Functional “Hotness” Score of Cytotoxic T Lymphocyte Infiltration in Tumor Microenvironment Is a Stronger Prognostic Factor of Breast Cancer Patients’ Overall Survival than Cytotoxic T Lymphocyte Infiltration



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INTRODUCTION: High cytotoxic T lymphocyte (CTL) infiltration in the tumor microenvironment (TME) predicts better prognosis in breast cancer (BC) patients; however, prognostic value of the TME-associated CTLs’ functional markers remains unclear. CD8A is a surface marker of CTLs, while GZMB, secreted by CTLs, is the key factor inducing apoptosis of tumor target cells.

METHODS: Using the large BC cohort in the Cancer Genome Atlas, we analyzed patient survival based on CTL marker (CD8A and GZMB) expression, as well as chemokine markers (CCL5 and CXCL10). Immune cell fractions were calculated using Cibersort.

RESULTS: High expression of CTL markers and chemokines showed significantly better overall survival (OS). Expression of chemokine markers were correlated with CTL markers, indicating the roles of these chemokines in CTL attraction. The optimal separation between long- vs short-survival cohorts was achieved when all 4 markers were highly expressed, defined as “hotness,” compared with CD8 alone (hazard ratio [HR] 1.88), high expression of both CD8A and GZMB high (HR 1.96), and their combinations (HR 2.18). “Hotness” tumors are more frequent in triple-negative BC ($p < 0.001$) and have higher mutation burden ($p < 0.001$). Cibersort revealed that “hotness” tumors predominantly included anticancer effector cells (activated memory CD4, CD8, $\gamma\delta$ T cells, memory B cells, and M1 macrophages), while having reduced presence of regulatory T cells and M2 macrophages, which promote cancer progression.

CONCLUSIONS: Tumors with higher expression of GZMB, CCL5, and CXCL10, in addition to elevated CD8 prevalence, show improved prognosis compared with tumors that do not express this combination or express only some of these 4 functional CTL markers, and may be particularly responsive to immunotherapies.

Higher CD73 Expression Is Associated with Poor Prognosis in Estrogen Receptor-Positive Breast Cancer



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INTRODUCTION: CD73, a surface enzyme, converts AMP into adenosine. Accumulated extracellular adenosine in the tumor microenvironment generates immunosuppression and a pro-angiogenic environment that promotes cancer progression. However, the clinical significance of CD73 expression in breast cancer (BC) patients’ survival remains controversial.

METHODS: Using the publicly available breast cancer cohort in the Cancer Genome Atlas and Gene Expression Omnibus, patient survival and gene expression levels were analyzed.

RESULTS: CD73 expression was significantly lower in cancer than normal breast tissue ($p < 0.001$). CD73 high-expression patients showed worse relapse-free survival in the neoadjuvant chemotherapy patient cohort ($p = 0.003$). CD73 expression was significantly elevated in tumors after chemotherapy compared with before the treatment ($p < 0.001$). These findings imply that CD73 expression is associated with chemotherapy response. The CD73 expression level was significantly lower in estrogen receptor (ER) positive BCs compared with negative tumors. Higher CD73 expression was associated with worse overall survival in the treatment-naïve whole cohort ($p = 0.021$), as well as ER-positive tumors ($p = 0.003$), but not ER-negative tumors ($p = 0.998$). Gene Set Enrichment Analysis revealed that epithelial-mesenchymal transition (EMT) and angiogenesis gene sets were enriched in CD73 high-expressing ER-positive tumors; estrogen response gene sets were enriched in CD73-low, ER-negative tumors.

CONCLUSIONS: ER-positive tumors with high expression of CD73 had a worse prognosis in treatment-naïve patients as well as in patients who underwent neoadjuvant chemotherapy. The worse prognosis of the patients with high-CD73 expression may be due to the enrichment of pro-metastatic gene signatures such as EMT and angiogenesis; CD73-low expressing tumors might respond better to hormonal therapy.

Impact of Insurance, Hospital Type, and Sociodemographic Factors on Breast Reconstruction Rates: A Look at National Trends



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INTRODUCTION: Financial reimbursement plays an important role in breast reconstruction. Autologous reconstruction rates have declined recently, as has reimbursement for such procedures, leading to an increase in implant-based reconstruction. Therefore, patients with public insurance may be disadvantaged when it comes to reconstruction choice. This study examines changing patterns of breast reconstruction in recent years and the impact of hospital/sociodemographic factors on outcomes.

METHODS: We queried the Nationwide Inpatient Sample to identify breast cancer patients who underwent mastectomy between 1998 and 2014. We present here our preliminary results from 2009 to 2010. Using ICD-9 codes, women undergoing immediate