

BACKGROUND

- Nipple-sparing mastectomy (NSM) is widely accepted and increasingly popular.
- Associated with high patient satisfaction.
- Can be performed prophylactically in high-risk patients or therapeutically in select patients.
- Ability to perform NSM dependent on oncologic characteristics such as tumor size, distance from nipple, etc.
- Continued surveillance is paramount to determine risk of cancer recurrence.
- Short-term oncologic safety has already been demonstrated.
- Limited evidence from long-term follow up currently available.

Purpose of Study

This study aims to establish the long-term oncologic safety of NSM by assessing recurrence of breast cancer in a cohort of patients with a median of 10 years of follow-up after undergoing therapeutic NSM.

METHODS

Retrospective Chart Review

Therapeutic Nipple-Sparing Mastectomy

2006 2012

Breast Cancer Recurrence

Selection & Surgical Technique

- NSM considered as an option in all women with TND >1cm.
- Relative contraindications if multiple present: preoperative radiation, morbid obesity, severe macromastia, grade III ptosis, significant chest wall/NAC asymmetry.
- Clinical evaluation of mastectomy flaps intraoperatively: bleeding, visible dermis, mastectomy flap thickness.
- Skin envelope ischemia management based on individual surgeon preferences.

Patient Demographics

Mastectomy Specimen Pathology

Oncologic Outcomes

Local Recurrence

Subsequent disease in the breast after initial mastectomy

Regional Recurrence

Breast-derived malignancy on ipsilateral chest wall or in lymph nodes after initial mastectomy

Metastasis

Breast-derived malignancy in distant solid organ or lymph nodes after initial mastectomy

Subareolar frozen and permanent biopsies sent at discretion of breast surgeons. Patients with positive frozen subareolar biopsy included in study on intention-to-treat basis.

Statistical analysis performed using IBM SPSS Version 25 (IBM Corp., Armonk, N.Y.). Pre-determined level of significance set at p<0.05.

To compare individuals that developed locoregional recurrence with those that did not, a univariate analysis was performed to identify independent risk factors for cancer recurrence.

RESULTS

Demographics & Operative Characteristics

Mean Age ± Standard Deviation (Years)	58.3 ± 8.7
Mean Body Mass Index ± Standard Deviation (kg/m ²)	24.0 ± 5.1
Smoking	
Current	9 (7.5)
Former	3 (2.5)
Diabetes Mellitus	5 (4.2)
Prior Radiation Therapy	3 (2.4)
Prior Chemotherapy	3 (2.4)
Mastectomy Laterality	
Unilateral	30 (25.0)
Bilateral	90 (75.0)
Mean Tumor Size ± Standard Deviation (cm)	1.62 ± 1.28
Histologic Type	
IDC	61 (48.4)
ILC	14 (11.1)
DCIS	48 (38.1)
LCIS	8 (6.3)
Other	3 (2.4)
Multifocal/Multicentric Disease	39 (31.0)
Lymphovascular Invasion	13 (10.3)
Sentinel Lymph Node Biopsy Performed	107 (84.9)
Positive Frozen Sentinel Lymph Node Biopsy (n=107)	19 (17.8)
Positive Lymph Node on Permanent Pathologic Examination (n=107)	20 (19.0)
Average Number of Positive Lymph Nodes on Permanent Pathological Examination ± Standard Deviation (n=107)	0.52 ± 1.45
Positive Frozen Subareolar Biopsy (n=82)	6 (7.32)
Positive Permanent Subareolar Biopsy	12 (9.52)
Estrogen Receptor-Positive	83 (65.9)
Progesterone Receptor-Positive	79 (62.7)
HER2/neu-Positive	53 (42.1)
Pathologic Cancer Stage	
0	41 (33.9)
I	54 (44.6)
II	21 (17.4)
III	5 (4.1)
IV	0 (0)
Mastectomy Incision	
Inframammary Fold	54 (42.9)
Lateral Radial	36 (28.5)
Vertical Radial	18 (14.3)
Wise Pattern	5 (4.0)
Prior Incision	11 (8.7)
Periareolar	2 (1.6)
Immediate Reconstruction	
Tissue Expander	85 (67.5)
Direct-to-Implant	8 (6.3)
Microsurgical Autologous	31 (2.5)
Latissimus Flap/Implant	2 (1.6)
Adjuvant Radiation Therapy	8 (6.3)
Adjuvant Chemotherapy	27 (21.4)
Mean Follow-Up ± Standard Deviation (Months)	124.4 ± 11.9
Median Follow-Up (Months)	120.4

Complications & Management

Classification	Number (Percent)
Per Breast	126
Locoregional Recurrence*	3 (2.4)
Local Recurrence	2 (1.6)
Regional Recurrence	2 (1.6)
Per Patient	120
Locoregional Recurrence*	3 (2.5)
Local Recurrence	2 (1.7)
Regional Recurrence	2 (1.7)
Distant Metastasis	2 (1.7)

Characteristics of Mastectomies with Recurrence

Characteristic	Number (Percent)
Local Recurrence	2
Tumor Histology	
IDC	2 (100)
DCIS	1 (50)
Mean Tumor Size (cm)	1.45
Multifocal Disease	0 (0)
Sentinel Lymph Node Biopsy Performed	2 (100)
Positive Sentinel Lymph Node Biopsy	1 (50)
Positive Frozen/Permanent Subareolar Biopsy	Not performed; 1 (50)
Initial Pathologic Cancer Stage	
II	2 (100)
Regional Recurrence	2
Tumor Histology	
IDC	2 (100)
DCIS	1 (50)
Mean Tumor Size (cm)	1.75
Multifocal Disease	0 (0)
Sentinel Lymph Node Biopsy Performed	2 (100)
Positive Sentinel Lymph Node Biopsy	0 (0)
Positive Frozen/Permanent Subareolar Biopsy (n=1)	0 (0); 0 (0)
Initial Pathologic Cancer Stage	
I	1 (50)
II	1 (50)
Distant Metastases	2
Tumor Histology	
IDC	2 (100)
DCIS	1 (50)
Mean Tumor Size (cm)	1.4
Multifocal Disease	1 (50)
Sentinel Lymph Node Biopsy Performed	2 (100)
Positive Sentinel Lymph Node Biopsy	0 (0)
Positive Frozen/Permanent Subareolar Biopsy	Not performed; 0 (0)
Initial Pathologic Cancer Stage	
I	1 (50)
II	1 (50)

Univariate Analysis of Risk Factors for Locoregional Recurrence

No demographic, operative, or tumor-specific variables identified as independent risk factors for locoregional recurrence.

CONCLUSIONS

Overall cancer recurrence rates in patients who undergo NSM are low at a 10-year follow up point.

NSM remains a viable and oncologically safe option for select patients with breast cancer.

Continued surveillance and even longer follow up are essential to ensure the continued recurrence-free survival.