Aesthetics and Oncologic Breast Surgery: The Science and the Art
Beth Baughman DuPree MD FACS, ABIHM

Adjunct Assistant Professor of Surgery
University of Pennsylvania

Vice President Holy Redeemer Health System
Surgical Services, Women’s Health Integrative Medicine and Wellness
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Disclosures

Speaker / Consultant - Medtronic
- Invuity

Speaker - Myriad
- Devicor
- Agenda

Advisory board - Breastcancer.org
- Viver Health

The Healing Consciousness Foundation - Founder
Breast Cancer Surgical Treatment

- HALSTED RADICAL MASTECTOMY PREVAILED FOR NEARLY 100 YEARS!!!!!!!

- NO ONE HAS EVER DIED OF BREAST CANCER IN THEIR BREAST

THEY DIE WHEN THE CANCER TRAVELS ELSEWHERE
The Flawed Science
Importance of Oncoplastic Technique

Oncoplastic Techniques

- Nipple Sparing Mastectomy
- Reduction Pattern Oncoplastic Lumpectomy
- Modified Beneli Lumpectomy
- “Hidden Scar” concept Lumpectomy
Why increased mastectomy?

- Internet 2002
- Improved implants and reconstruction options
- Increase in Genetic testing (panels)
- Triple negative breast cancer association
- Risk reduction Surgery
- Early detection DCIS
- Patient choice
- AJ Factor
Angelina Jolie and the Dirty Little Secret of BRCA Breast Cancers

The actress was quite a blur,
but she took her health seriously.

One of her decisions can
be traced back to her friend,
the director Angelina Jolie,
who underwent a double mastectomy.

This decision put genetic testing in the spotlight.
What her choice reveals about calculating risk,
cost and peace of mind.

BY JEFFREY KLUGER & ALICE PARK
HIDDEN SCAR™ BREAST CANCER SURGERY
THE BREAKTHROUGH IN BREAST CANCER YOU’LL NEVER SEE

Holy Redeemer
HealthCare

comprehensivebreastcare.com
The Evolution of Breast Cancer Surgery

- Modified Radical Mastectomy
- Nipple Sparing Mastectomy
- Skin Sparing Mastectomy
- Hidden Scar™ Nipple Sparing Mastectomy (single IMF incision)

REFINERY29

BODY

How My Fake Breasts Help Me Sleep At Night

BY SUZANNE ZUPPELLO
APR 22, 2016

She popped on her new breasts and couldn't believe the change. Suddenly, she was a completely different person.
Nipple Sparing Mastectomy
Is it Oncologically Sound??
Nipple Sparing Mastectomy

- First described in the 1960’s for benign disease but not for cancer or risk reduction
- 10 year follow up of 1500 patients with subcutaneous mastectomy for benign disease
- 0.4% incidence of breast cancer
How Did NSM Gain Acceptance?

2009 Review Article on Indications for Therapeutic NSM

Nipple-Sparing Mastectomy

Scott L. Spear, M.D.
Catherine M. Hannan, M.D.
Shawna C. Willey, M.D.
Costanza Cocilovo, M.D.
Washington, D.C.

Background: The debate over nipple-sparing mastectomy continues to evolve. Over the past several years, it has become more widely accepted, especially in the setting of prophylactic mastectomy, but its role in the treatment of breast cancer has only recently been reexamined.

Methods: Two indications for the procedure are discussed: prophylactic, for the high-risk patient; and the more controversial topic, therapeutic nipple-sparing mastectomy, for the patient with breast cancer. A review of the literature suggests that certain breast cancers may be amenable to retaining the nipple if they meet specific oncologic criteria: tumor size 5 cm or less, at least 2 cm from the nipple, not multicentric, and with clinically negative nodes. Moreover, newer technologies such as magnetic resonance imaging and preoperative mammotome biopsy may make the procedure even safer in this setting. Practical and technical aspects of the procedure are discussed, including patient selection.

Results: The accumulating data from multiple series of nipple-sparing mastectomy show that properly screened patients have a low risk of local cancer recurrence, that recurrences occur rarely in the nipple, and that recurrences in the nipple can be managed by removing the nipple.

Conclusions: Despite continued controversy and the need for more long-term outcome data, nipple-sparing mastectomy is a procedure that is gaining increasing visibility and acceptance. Provided that certain oncologic and practical criteria are applied, it has the potential for allowing less invasive surgery and improved cosmetic outcomes without increased oncologic risk in appropriately selected patients. (Plast Reconstr Surg. 123: 1665, 2009.)

Breast duct anatomy
3D

“many ducts share a few common openings onto the surface of the nipple”

129 mastectomy specimens

Shawna Willey “Nipples WANT to LIVE”
Increasing Eligibility for Nipple-Sparing Mastectomy

Suzanne B. Coopey, MD\textsuperscript{1}, Rong Tang, MD\textsuperscript{1}, Lan Lei, MD\textsuperscript{1}, Phoebe E. Freer, MD\textsuperscript{2}, Kari Kansal, MD\textsuperscript{1}, Amy S. Colwell, MD\textsuperscript{3}, Michele A. Gadd, MD\textsuperscript{1}, Michelle C. Specht, MD\textsuperscript{1}, William G. Austen Jr., MD\textsuperscript{3}, and Barbara L. Smith, MD, PhD\textsuperscript{1}

\textsuperscript{1}Division of Surgical Oncology, Massachusetts General Hospital, Boston, MA; \textsuperscript{2}Department of Radiology, Massachusetts General Hospital, Boston, MA; \textsuperscript{3}Division of Plastic and Reconstructive Surgery, Massachusetts General Hospital, Boston, MA

ABSTRACT

Background. Eligibility for nipple-sparing mastectomy (NSM) varies widely on the basis of patient and tumor factors.

Methods. Review of patients undergoing NSM from June 2007 to December 2012 at our institution was performed. Patient and tumor characteristics, complications, and recurrences were collected. NSM from 2007 to 2010 and 2011 to 2012 were compared to assess trends in eligibility and outcomes over time.

Results. NSM was performed on 645 breasts in 370 patients. Indications were risk reduction in 330 (51.2 %), invasive cancer in 226 (35.0 %), and ductal carcinoma-in situ in 89 (13.8 %). With NSM increasing, the rate of patients with positive subareolar margins decreased from 40.7 % to 29.0 %.

Conclusions. Eligibility for NSM has expanded to include women with higher body mass index and larger breasts, with no increase in nipple loss due to ischemia. Rates of positive subareolar margins have decreased over time, even though NSM is being performed more frequently for cancer, suggesting improved patient selection.

The surgical management of breast cancer continues to evolve. At present, most women undergoing mastectomy are candidates for immediate breast reconstruction. Immediate reconstruction is facilitated by preservation of the skin envelope at the time of mastectomy utilizing the NAC.
Techniques and Outcomes of Nipple Sparing Mastectomy in the Surgical Management of Breast Cancer

Carrie K. Chu • Grant W. Carlson

Abstract Tailored therapy for breast cancer with conservation of uninvolved tissue is becoming increasingly important, especially as the benefits of breast reconstruction are recognized. Preservation of the nipple areolar complex during mastectomy is emerging as a viable option in selected patients. Technical considerations for prevention of adverse outcomes such as nipple necrosis are reviewed, along with implications for reconstructive method and outcomes. Finally, the oncologic efficacy of nipple-sparing mastectomy is discussed in the context of occult nipple disease and local recurrence. Standardization of technique, optimization of aesthetic outcome, and examination of long-term prognosis represent future areas of development.

Keywords Breast • Cancer • Oncology • Nipple • Skin sparing • Nipple sparing • Total skin sparing • Mastectomy • Nipple preservation • Breast conservation • Breast surgeon-driven progression in breast conservation to improve reconstructive cosmesis. The nipple-areolar complex (NAC) is integral to women’s body image and quality of life. Dissatisfaction with conventional methods of nipple reconstruction after mastectomy and increase in incidence of prophylactic mastectomy in high-risk patients of younger age also contribute to growing interest in nipple-sparing mastectomy (NSM). Other touted advantages include superior symmetry, potential for maintaining sensation, and possible single-step immediate reconstruction. Nevertheless, restricted indication, difficult exposure, nipple ischemia risk, and unproven oncologic safety represent current limitations.

As such, surgeons today continue to refine the technical details, oncologic indications, and reconstructive applications of this procedure. This article aims to discuss the recent developments in techniques and outcomes of NSM.
Issues with Nipple Sparing:

- Nipple necrosis: ranging from 10-30%
- Loss of nipple sensation
- Loss of contractility
- Symmetry issues


Breast Reconstruction following Nipple-Sparing Mastectomy: Predictors of Complications, Reconstruction Outcomes, and 5-Year Trends

- Increased complications
- Smoking
- Increased BMI
- Pre-op radiation
- And incision type can decrease complications

**Inframammary fold incision decreased complications** (OR, 0.018; 95 percent CI, 0.0026 to 0.12089)

doi: 10.1097/01.prs.0000438056.67375.75
Incision Selection:

- 48 studies, 6615 NS mastectomies

**Nipple Necrosis Rates**

- Radial: 8.83%
- Periareolar: 17.81%

**Inframammary:** 9.09%

**Mastopexy:** 4.76%

- Transareolar: 81.82%
The Breast Journal

ORIGINAL ARTICLE

The Lateral Inframammary Fold Incision for Nipple-Sparing Mastectomy: Outcomes from Over 50 Immediate Implant-Based Breast Reconstructions

Keith M. Blechman, MD,* Nolan S. Karp, MD,* Chaya Levovitz, BA,* Amber A. Guth, MD,* Deborah M. Axelrod, MD,* Richard L. Shapiro, MD,* and Mihye Choi, MD*

*New York University, School of Medicine, New York

Abstract: Nipple-sparing mastectomy (NSM) as a therapeutic or prophylactic procedure for breast cancer is rapidly gaining popularity as the literature continues to support its safety. The lateral inframammary fold (IMF) approach provides adequate exposure and eliminates visible scars on the anterior surface of the breast, making this incision cosmetically superior to radial or periareolar approaches. We reviewed 55 consecutive NSMs performed through a lateral IMF incision with immediate implant-based reconstruction, with or without tissue expansion, between June 2008 and June 2011. Prior to incision, breasts were lightly infiltrated with dilute anesthetic solution with epinephrine. Sharp dissection, rather than electrocautery, was used as much as possible to minimize thermal injury to the mastectomy flap. When indicated, acellular dermal matrix was placed as an inferolateral sling. Subsequent fat grafting to correct contour deformities was performed in select patients. Three-dimensional (3D) photographs assessed changes in volume, antero-posterior projection, and ptosis. Mean patient age was 46 years, and mean follow-up time was 12 months. Twelve mastectomies (22%) were therapeutic, and the remaining 43 (78%) were prophylactic. Seven of the nine sentinel lymph node biopsies (including one axillary dissection) (78%) were performed through the lateral IMF incision without the need for a counter-incision. Acellular dermal matrix was used in 34 (62%) breasts. Average permanent implant volume was 416 cc (range 176–750 cc), and average fat grafting volume was 86 cc (range 10–177 cc). In one patient a positive intraoperative subareolar biopsy necessitated resection of the nipple-areola complex (NAC), and in two other patients NAC resection was performed at a subsequent procedure based on final pathology. Two patients required medical follow-up for infection treatment, and one patient had a revision at 1 year for capsular contracture. The cosmetic result was rated as excellent or good in all patients, with 64% having excellent results.
Breast Reconstruction Outcomes after Nipple-Sparing Mastectomy and Radiation Therapy

Richard G. Reish, M.D., Alex M. Lin, B.S., William G. Austen, Jr., M.D., Jonathan Winograd, M.D., Eric C. Liao, M.D., Curtis L. Cetrulo, Jr., M.D., Barbara L. Smith, M.D., Amy S. Colwell, M.D.

Massachusetts General Hospital, Boston, MA, USA.

PURPOSE: Nipple-sparing mastectomy (NSM) has significantly increased in prevalence in recent years, and it has the potential for dramatically improved cosmetic results. Concomitantly, chest wall/breast irradiation is a common adjuvant for lumpectomy patients who later need mastectomy, and as adjuvant treatment for mastectomy patients who have opted for breast reconstruction. Furthermore, nipple reconstruction following skin-sparing mastectomy remains a significant challenge. A retrospective analysis was performed to examine the reconstructive outcomes following NSM.
NSM and post op radiation therapy
If you Fail to Plan then
Plan to Fail
"Nurse, get on the internet, go to SURGERY.COM, scroll down and click on the 'Are you totally lost?' icon."
Normal
Grade 1 Ptosis: Mild sagging
Grade 2 Ptosis: Moderate sagging
Grade 3 Ptosis: Significant sagging
Pseudoptosis: Lower breast sagging
Parenchymal Maldistribution: Unusual shape
Original Patient Selection

- **Patient Criteria:**
  - very large or ptotic breasts may not be candidates

- **Oncologic criteria:**
  - tumors < 3cm
  - tumors at least 2 cm from the NAC
  - clinically negative axilla
  - no Paget’s disease, skin involvement or nipple involvement
  - absence of significant multifocal disease
  - no skin involvement/no inflammatory breast cancer
  - no radiographic evidence of nipple involvement

- **Ultimately it’s about clear margins**
Expanded oncologic criteria

- Larger tumors
- Tumors closer to the NAC
- Positive nodes
- After neo-adjuvant chemotherapy
- With radiation

Coopey et al, ASO 20:3218-3222. 2013
Fortunato et al, JSO. 2013
Absolute Contraindications

- Scleroderma
- Smoker who won’t quit
- Inflammatory breast cancer
- Locally advanced breast cancer
- NAC involved with the tumor clinically or radiographically
- Breast cancer associated with nipple discharge
Cautionary Criteria

- BMI > 30
- Smoker who will quit > 2 weeks pre-op
- Prior radiation therapy
- Significant Ptosis without lift
Incision Planning

- Pre-operative photos essential
- Measurements with the patient standing
  - Breast borders
  - Midline
  - Incision
- Option of separate incision for the LN biopsy
- Location of tumor-correlate with imaging
- Depth of tumor-remove skin?
- Be conscious of blood supply
Pre- OP Photos
Measurement

- Height of patient
- Measure distance from mid-clavicle to inframammary fold over the nipple with the patient upright
- 30 cm limit
- Incision length >10 cm
Pre operative Imaging

Courtesy of Alan Stolier
Staged nipple-sparing mastectomy

- Incision location
- Macromastia
  - Reduction
- Ptosis
  - Mastopexy
- Asymmetry
- Nipple Delay procedure
Nipple-Sparing Mastectomy in The Larger or More Ptotic Breast

- 15 patients (24 breasts) NSM
- 10 patients (19 breasts) planned mastopexy prior to NSM
- 5 patients (5 breasts) unplanned mastopexy prior to NSM
- 17 (71%) NSM’s were prophylactic and 7 (29%) were therapeutic

Technique

- In select patients with ptosis or macromastia who do not meet the *Anatomic Criteria* for NSM, a staged mastectomy with a mastopexy or reduction prior to the mastectomy can be performed
- moves the nipple to a more anatomic position
- reduces the breast skin envelope
Planning with large breast mastopexy/incisions
Pre planning in motivated patient with ptosis
Nipple Sparing Mastectomy:
“Triangle of Doom”
Triangle of Doom
False positives were significantly more likely to occur with a history of smoking and/or the use of intraoperative epinephrine.
Sub Optimal results

- Lateral breasts
- Ptosis
- Radiation therapy
Ptosis and lateral nipples
Ptosis and size
Ptosis
Ptosis and lateral
Previous Lumpectomy and Radiation
Outcomes

- Pre-op selection dictates outcomes
- Begin with excellent candidates and end with excellent results
- Begin with suboptimal candidates and end with fair results
- Offer it to the wrong patients and no one is happy
The right patients
Oncoplastic lumpectomy

- Reduction pattern
- Modified Benelli
- “Hidden Scar”
Approaches

- Periareolar incision
- Modified Benelli Mastopexy
- Axillary incision
- Inframammary incision
Consider **EVERY** Patient for hidden scar breast conservation

- Location of Tumor
- Volume to be Excised
- Breast Size, Shape, Degree of Ptosis
- Integrity of Skin, Density of Breast Tissue
- Need for Skin Excision
- Ability to Achieve Desired Cosmetic Outcome
- Patient Expectations
- APBI considerations
- Radiation Fiducial placement
Incision Planning by Tumor Location
Modified Beneli Mastopexy Option
Volume Considerations

- **Maximum excision volume ratio:**
  - **Up to 20% of Volume**
    - Undermining superficial and/or posterior planes
    - +/-NAC Recentralization
  - **20% - 50% of Volume**
    - Mammoplasty
Technical Considerations

- Ability to approach, reach, and remove the tumor under direct visualization
- Ability to mobilize surrounding tissue to eliminate the defect
  - Mobilize surrounding tissue
  - Mobilize/undermine superficial/posterior planes
  - Addition of mastopexy (i.e., Modified Benelli)
- Close the pathway on the way out
- Do not overcorrect
- Leave no space behind
- Excellent illumination and retraction
  - Provides for optimal visualization
  - Creates space to operate in
Reposition / Re-centralize the NAC
Post-op Swelling

- Possible NAC post op swelling, resolves on own
Reduction Pattern
Lumpectomy

- 55 yo w female
- Left lower inner quadrant DCIS multifocal
- 2 areas span 3X 5 Cm region
- MRI otherwise negative
- Desires breast conservation
“Hidden Scar” Lumpectomy

- 56 yo
- Mammographically detected R UOQ Grade II IDC
- MRI revealed L clumped enhancement US –
- MRI Bx ADH/ ALH
- Breast Conservation planned
US post US bx and MRI BX
Mobilization of tissue
Mobilizing surrounding tissue

- Superficial Plane (posterior)
  - 3-4x (either side of defect and past lesion)
  - Anterior / Posterior
- Posterior Plane (superficial)
  - +/- additional posterior plane mobilization
- Close in layers
Superficial and Posterior Undermining

IMF incision closed
Confirmation
CHOOSE WISELY
Especially when redecorating your home
MS presented for second opinion offered MRM & XRT

- 55 yo w female
- Left breast IDC ER+, PR-, Her 2 neu-
- Felt a mass in her left axilla
- G6,P3
- Father prostate CA, Pat cousin ovarian CA
- Former smoker
- Occasional wine
Treatment Course

- VAB / FNA axillary LN  cT1c, N1, M0
- Neo-adjuvant chemotherapy
- AC X 4 T X 4
- Breast Size A Cup
- BRCA negative
- She knew she needed XRT either way and chose bilateral Nipple Sparing Mastectomies
- Post mastectomy XRT with tissue expander
Post XRT & implant exchange