Oncoplastic Breast Cancer Surgery

- Intraoperative Targeting
- Oncoplastic Breast Conservation
- Oncoplastic Mastectomy
Intraoperative US (CPT=76998)

Consider 18G spinal needle (76942,19290)
Intraop US with Preop Wire Localization

Key:
Know lesion location before incision
Intraoperative US (76998)
Examine specimen
Improving Patient Access to Oncoplastic Breast Cancer Surgery
The ASBS-ASPS “Team Up!” Initiative

Courtesy of Pat Maxwell MD

Courtesy Albert Losken M.D.

Courtesy of Pat Maxwell MD
Women's Health and Cancer Rights Act (WHCRA) of 1998 (Federal Law)

- Insurance Plans must cover:
  - Reconstruction for Mastectomy Patients
  - Opposite Breast Symmetry Procedures
  - (ICD-9 = 612.1: asymmetry native vs. reconstructed breast)
- “Mastectomy” includes Partial Mastectomy
  - Tennessee State Attorney General
Breast Conservation
Before Oncoplastic Breast Surgery

Excellent-Good-Fair-Poor
(Minimal - Mild - Moderate - >1/4 Breast)

“Most patients don’t need oncoplastic techniques, just a simple lumpectomy”
Oncoplastic Breast Surgery
Shared Philosophy:

• **Key:** Breast Surgeon – Plastic Surgeon Team

• **Best QOL = Optimal Oncology & Aesthetics**

• **Modern Plastic Surgical Techniques for**
  
  – Breast Conservation and Mastectomy

  • Mastectomy: SSM or NPM

  • Conservation: Successful Resection

    – Clear margins / Form / Beauty
Partial Mastectomy with Reduction Mammaplasty

- Breast and Plastic Surgeon Together in O.R, or
- Staged Resection... Reduction/reconstruction

Images Courtesy of Albert Losken MD
First case: Simple Crescent Periareolar Mammaplasty
Crescent Lumpectomy
(consider the opposite breast)
Implementing Oncoplastic Breast Surgery

• At preop visit: **ONCOPLASTIC PAUSE**:

• Mastectomy **AND** Partial Mastectomy

• Plastic Surgeon Consultation:
  – Routine or Very Low Threshold

Patient Anatomy  
Tumor Map  
Location In the Breast
Special Equipment
Additional Superficial Margin (ASM)

+SSM=38% ......... +ASM=8%
ONCOPLASTIC PAUSE

• Sit in front of patient
• Mark:
  – Tumor Position (TM or BCS)
  – Ideal nipple position (BCS)
    • Infra-mammary crease
  – Planned Incisions
• Photograph patient
Key: Determine New Nipple Position
Therefore: New Areolar Border Location
Outer Ring Tumor - LT UOQ
(Concave Contour)
Operating Room
IOUS for Location and Flap Thickness
De-epithelialize or Remove Skin
Flap Incision at Outer Edge
“Mastectomy-Thickness” Flap Over Tumor

View from Below

UOQ Flap Elevated

Nipple

View from Below
Wide Flap Over Tumor Mobilized before Parenchymal Resection
Segment Resected and Oriented
>30 cm² Tissue Advance Closure (14301)

“Gathering Technique”
Opposite Mastopexy (19316)
What about Inferior Lesions?
Patient Desires
APBI
Mammaplasty with APBI
Placeholder
Mammoplasty with APBI
Placeholder
Oncoplastic Mastectomy (Immediate Reconstruction)

- Skin Sparing
- Nipple Sparing
What is Oncoplastic Breast Surgery?
Before Oncoplastic Breast Surgery
Oncoplastic Breast Surgery

Courtesy Scott Spear M.D.
Oncoplastic Mastectomy
Old School (1990s) vs New School (2010)

Old school (Halsted + Autologous Flaps)
- **Scorched Earth** (thin flaps, wide gland margins)
- Surgeon performs radical resection
  - with “no concern about closure”, because
  - Plastic surgeon will use autologous flaps

New School (Spare skin + Implant / Flap)
- Resection to obtain clear tumor margins
- **Oncologic Preservation of tissue and form**
- Often sub-pectoral implant + dermal matrix
Old School: Dermal Flaps

From Stavros, Breast Ultrasound
New School: Subcutaneous Flaps

From Stavros, Breast Ultrasound
“Mastectomy Removes 97% of Breast Tissue”
(not 100% - patients understand this)

From Stavros, Breast Ultrasound
Individualize Flap Thickness
(courtesy Alan Stolier MD)

Principle: Dissect Subcutaneous Tissue Flaps off of Anterior Mammary Fascia
Skin-Subcu Flap thins at Areola
(courtesy Alan Stolier MD)
Sharp Dissection (minimize cautery)
Sharp Dissection (minimize cautery)

Skin Flap TLC!
Sharp Dissection (minimize cautery)
Hemostasis permits sharp dissection
Minimal flap trauma (stretch, heat)
Hemostatic Tumescence

- 250 cc per breast
- Epi (2 amps/liter)
- Expands subcu.
- Make flaps thicker !!
- Concerns
  - Diabetes
  - Smoking
Nipple Preserving Mastectomy

for

Breast Cancer Treatment and Prevention

Technical Details
Nipple-Sparing Mastectomy for Breast Cancer and Risk Reduction: Oncologic or Technical Problem?

Virgilio Sacchini, MD, José A Pinotti, MD, Alfredo CSD Barros, MD, Alberto Luini, MD, Alfonso Pluchinotta, MD, Marianne Pinotti, MD, Marcelo G Boratto, MD, Marco D Ricci, MD, Carlos A Ruiz, MD, Antonio C Nisida, MD, Paolo Veronesi, MD, Jean Petit, MD, Paolo Arnone, MD, Fabio Bassi, MD, Joseph J Disa, MD, FACS, Carlos A Garcia-Etienne, MD, Patrick I Borgen, MD

BACKGROUND: We evaluated the risks and benefits of nipple-sparing mastectomy in a multiinstitutional experience in the settings of risk-reducing surgery and breast cancer treatment.

STUDY DESIGN: We analyzed data on 123 patients who had undergone nipple-sparing mastectomy with breast reconstruction for prophylaxis \( n = 55 \), treatment of breast cancer \( n = 41 \), or both \( n = 27 \) at four large centers.
NSM: Multi-institutional Series


206 NSMs in 123 patients (55 prophylaxis, 68 cancer)

• 192 NAC clear on pathology
• 14 NSM pos Nipple Margin (NAC removed < 40 d)

All carcinomas ≤ 1.5 cm

Exclusions: T-N Distance ≤ 1 cm; grade 3 ptosis (relative)
No recurrences at the NAC in any patient

25 months median f/u (2-57 mo.)

- **Cancer Pts:** 2 UOQ Local Recurrences
- **Prophylactic Pts:** 2 UOQ Breast Cancers
- **Good/Excellent:** 96% (pts), 86% (surgeons)

NSM: Multi-institutional Series

Incisions: 68% periareolar, 32% mammary fold

• NAC necrosis minimal in 7%, major in 5%
• Flap necrosis (as with SSM) in 10%
• “Do not stretch the skin”
• “Mammary crease incision may be best”

Implementing NSM - Technical Experience

- Worst
- Better
- Best

Crossing NAC
Radial
Inframammary

Select Incision Based on Anatomy

Large Breast - Lateral Incision
Elevate Subcu off of Anterior Mammary Fascia
- Enter Sub-dermal Plane under Areola -

From Stavros, Breast Ultrasound
Posterior Nipple Biopsy

From Stavros, Breast Ultrasound
Individualize Based on the Tumor
Upper Dissection via Sentinel Node Incision
Preserve Lateral Fascia

- Detached Pectoralis
- Rib
- Infra-mammary Line
Diabetes, Smoking
Need Significant Nipple Reposition?
→ Non-nipple-preserving SSM + Nipple Reconstruction
112 patients, minus 14 with + margins
- <3cm size, >2cm N-T-D, clear MR margin
98 patients with 186 NSMs
- No Nipple or TE loss
- No recurrences (9-36 months f/u)
Review Article

Oncologic Safety of Skin-Sparing and Nipple-Sparing Mastectomy: A Discussion and Review of the Literature

Christopher Tokin,1 Anna Weiss,1 Jessica Wang-Rodriguez,2 and Sarah L. Blair1

1 Department of Surgery, University of San Diego, San Diego, CA 92103, USA
2 Department of Pathology, University of San Diego, San Diego, CA 92103, USA

Correspondence should be addressed to Sarah L. Blair, slblair@ucsd.edu

Received 23 February 2012; Revised 6 June 2012; Accepted 7 June 2012

Academic Editor: Kefah Mokbel

Copyright © 2012 Christopher Tokin et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Breast conservation therapy has been the cornerstone of the surgical treatment of breast cancer for the last 20 years; however, recently, the use of mastectomy has been increasing. Mastectomy is one of the most frequently performed breast operations, and with novel surgical techniques, preservation of the skin envelope and/or the nipple-areolar complex is commonly performed. The goal of this paper is to review the literature on skin-sparing mastectomy and nipple-sparing mastectomy and to evaluate the oncologic safety of these techniques. In addition, this paper will discuss the oncologic importance of margin status and type of mastectomy as it pertains to risk of local recurrence and relative need for adjuvant therapy.
<table>
<thead>
<tr>
<th>Author</th>
<th>Study design</th>
<th>Number of Pts</th>
<th>LR</th>
<th>NAC recurrence</th>
<th>Median followup (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gerber et al. [17]</td>
<td>Prospective</td>
<td>112</td>
<td>5.4% NSM, 8.2% MRM (P = 0.6)</td>
<td>0.9%</td>
<td>59</td>
</tr>
<tr>
<td>Petit et al. [16]</td>
<td>Prospective</td>
<td>27</td>
<td>0.00%</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Caruso et al. [20]</td>
<td>Prospective</td>
<td>50</td>
<td>2%</td>
<td>2%</td>
<td>66</td>
</tr>
<tr>
<td>Sacchini et al. [21]</td>
<td>Prospective</td>
<td>192</td>
<td>3%</td>
<td>0</td>
<td>24.6</td>
</tr>
<tr>
<td>Petit et al. [19]</td>
<td>Prospective</td>
<td>106</td>
<td>1%</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Benediktsson and Perbeck [73]</td>
<td>Prospective</td>
<td>216</td>
<td>20.8%</td>
<td>0</td>
<td>156</td>
</tr>
<tr>
<td>Regolo et al. [23]</td>
<td>Retrospective</td>
<td>102</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Petit et al. [27]</td>
<td>Prospective</td>
<td>579</td>
<td>2.40%</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>Crowe et al. [22]</td>
<td>Prospective</td>
<td>149</td>
<td>1.30%</td>
<td>0</td>
<td>41</td>
</tr>
<tr>
<td>Sookhan et al. [26]</td>
<td>Retrospective</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>10.8</td>
</tr>
<tr>
<td>Voltura et al. [30]</td>
<td>Retrospective</td>
<td>51</td>
<td>5.9</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Garwood et al. [31]</td>
<td>Prospective</td>
<td>102</td>
<td>0.6%</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Gerber et al. [74]</td>
<td>Prospective</td>
<td>112*</td>
<td>11.7% NSM, 10.4% SSM, 11.5% MRM (P = 0.974)</td>
<td>0.9%</td>
<td>101</td>
</tr>
<tr>
<td>Garcia-Etienne et al. [32]</td>
<td>Retrospective</td>
<td>42 NSM</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Paepke et al. [28]</td>
<td>Retrospective</td>
<td>96</td>
<td>2%</td>
<td>0</td>
<td>34</td>
</tr>
<tr>
<td>De Alcantara Filho et al. [29]</td>
<td>Prospective</td>
<td>353</td>
<td>0</td>
<td>0</td>
<td>10.4</td>
</tr>
<tr>
<td>Petit et al. [75]</td>
<td>Prospective</td>
<td>934</td>
<td>4%</td>
<td>1.18%</td>
<td>50</td>
</tr>
</tbody>
</table>
Flap Safety – Lessons Learned

• Healthy Patient

• NSM Selection: Nipple Position
  – TE/Implant may remedy Mild Ptosis
  – SSM w Nipple Recon. in More Ptotic Breast

• Elevate Subcu off of Anterior Mammary Fascia

• NSM Incisions: Avoid crossing nipple
  – Inframammary ... or Radial (Large Breast)

• Negative Nipple Margin $\rightarrow$ $\approx$ 1% NAC Recurrence
Mastectomy
Informed Consent

1. Breast Conservation vs Mastectomy

2. Immediate Reconstruction with Radiation
## Age and Local Recurrence

<table>
<thead>
<tr>
<th></th>
<th>BCS</th>
<th>TM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young (30-40)</td>
<td>24-46%</td>
<td>12-27%</td>
</tr>
<tr>
<td>Older</td>
<td>6-12%</td>
<td>2-12%</td>
</tr>
</tbody>
</table>

### 5 yr BCS LR: EBCTCG Overview of Trials

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 50</td>
<td>11%</td>
<td></td>
</tr>
<tr>
<td>Over 50</td>
<td>5%</td>
<td></td>
</tr>
</tbody>
</table>

New Primary Breast Cancer: 0.5%/yr
Q: What about the mastectomy patient who may need radiation?

A: With MDACC Protocol for Reconstruction:

Even for post mastectomy radiation (PMRT),

There is Never * a Good Reason to Delay Breast Reconstruction*

• Acute complications are greater with delay
  — Dissect radiated skin/muscle off of chest wall

* never say “never”
All “Possible PMRT” Patients: SSM or NSM + Tissue Expander (± Dermal Matrix)

Asses Pathology, Radiation Consultation

- No PMRT needed
  - Definitive Reconstruction
    - TRAM/DIEP/GAP
    - LD&Implant

- PMRT needed
  - ± Partial Deflation
    - PMRT
  - Definitive Reconstruction
    - TRAM/DIEP/GAP
    - LD&Implant

(Technical Details) Kronowitz: Plastic and Reconstructive Surgery February 2010
Immediate Tissue Expander followed by Radiation and Definitive Reconstruction

Kronowitz, Tereffe, Hunt, Kuerer, Valero, Robb, Feng, Buchholz; MDACC; Plastic and Reconstructive Surgery, June 2011

- Patients planned for PMRT
- 47 protocol patients + 47 matched controls
- Learning Curve!
  - TE loss 32% overall 2003-2009
    - only one TE loss 2006-2009
      - Meticulous drain management (3wks)
      - Partial or No deflation during PMRT
Results: Tissue Expander followed by Radiation and Definitive Reconstruction

Kronowitz, Tereffe, Hunt, Kuerer, Valero, Robb, Feng, Buchholz; MDACC; Plastic and Reconstructive Surgery, June 2011

Definitive Reconstruction – Complications*:

- Immediate TE Group: 24% (3% wound healing)
- Standard Delayed: 38% (10% wound healing)

*most due to microsurgical flap
Results: Tissue Expander followed by Radiation and Definitive Reconstruction

Kronowitz, Tereffe, Hunt, Kuerer, Valero, Robb, Feng, Buchholz; MDACC; Plastic and Reconstructive Surgery, June 2011

- 3 yr RFS (40 months median follow-up):
  - Immediate TE group = 92%
  - Standard Delayed = 86% (p=NS)
Results: Tissue Expander followed by Radiation and Definitive Reconstruction

Kronowitz, Tereffe, Hunt, Kuerer, Valero, Robb, Feng, Buchholz; MDACC; Plastic and Reconstructive Surgery, June 2011

■ Conclusions:

■ Lower Complications Rate

■ Equivalent RFS

■ Better QOL for Patients (and surgeons)
Oncoplastic Breast Surgery

Just do it!

- Nike
- Mark Gittleman
Mastery of Breast Surgery Program

NIPPLE SPARING MASTECTOMY REGISTRY

What is the purpose of the registry?

The Nipple Sparing Mastectomy Registry (NSMR) has been designed to facilitate compiling information on metrics utilized, techniques utilized, aesthetic outcomes, as well as oncologic outcomes of the Nipple Sparing Mastectomy. The registry will aim to provide a large prospective collection of data points specifically gathered to provide evidence based medicine on outcome measures and metrics utilized for the nipple sparing mastectomy.

Who is eligible to participate in the registry and what are the basic requirements?
168 consecutive SSM with ASM

- ASM = ***Additional Superficial Margin***

- 64/168 (38%) +Superficial Specimen Margin

- 14/168 (8%) +ASM (so 4/5 +SSM were negative)
Additional Superficial Margin (ASM)

Superficial Specimen Margin

Gland

Muscle

+SSM=38% .......... +ASM=8%
SSM Margin Evaluation & Management

- 168 consecutive SSM with ASM
  - ASM = ***Additional Superficial Margin***
- 64/168 (38%) +Superficial Specimen Margin
  - 14/168 (8%) +ASM (so 4/5 +SSM were negative)
- Recommended Management for +ASM:
  - Surveillance - No Resection or Radiation (RT)
  - Our practice: ASM for all; Clips when close
    - if + (grade3?)… Follow, Focal RT or Resection