The Changing Face of Mastectomy

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Historical Perspective

Ancient Egypt 1600 BC
  No Treatment

Hippocrates 400 BC
  “Hasten Death”
Historical Perspective

Leonides - 1st century AD
1st operative treatment

Galen – 1st surgical cure
Historical Perspective

Guillotine

Petit –

1st radical mastectomy
Historical Perspective
Historical Perspective

Halsted
Mastectomy
Breast Reconstruction
Skin Sparing Mastectomy
Skin-Sparing Mastectomy

Kroll 1991
Singletary 1996
Carlson 1996
Kroll 1997
Nipple-Areola Skin Sparing Mastectomy

• Goals:
  – Oncologic safety
    • No increase in local recurrence (5%)
    • Atypia of nipple base
  – Technical aspects - difficult
    • Nipple blood supply
    • Ability to remove all breast tissue
    • Ability to access the axilla
  – Cosmesis
  – Body image / quality of life
  – Nipple sensation / responsiveness
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th># of Specimens</th>
<th>Nipple Involvement (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smith</td>
<td>1976</td>
<td>541</td>
<td>12</td>
</tr>
<tr>
<td>Parry</td>
<td>1977</td>
<td>200</td>
<td>8</td>
</tr>
<tr>
<td>Andersen</td>
<td>1979</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>Lagios</td>
<td>1979</td>
<td>149</td>
<td>30</td>
</tr>
<tr>
<td>Wertheim</td>
<td>1980</td>
<td>1000</td>
<td>23</td>
</tr>
<tr>
<td>Quinn</td>
<td>1981</td>
<td>45</td>
<td>25</td>
</tr>
<tr>
<td>Morimoto</td>
<td>1985</td>
<td>141</td>
<td>31</td>
</tr>
<tr>
<td>Luttges</td>
<td>1987</td>
<td>166</td>
<td>38</td>
</tr>
<tr>
<td>Santini</td>
<td>1989</td>
<td>1291</td>
<td>12</td>
</tr>
<tr>
<td>Menon</td>
<td>1989</td>
<td>33</td>
<td>58</td>
</tr>
<tr>
<td>Verma</td>
<td>1997</td>
<td>26</td>
<td>0</td>
</tr>
<tr>
<td>Vyas</td>
<td>1998</td>
<td>140</td>
<td>16</td>
</tr>
<tr>
<td>Laronga</td>
<td>1999</td>
<td>286</td>
<td>6</td>
</tr>
</tbody>
</table>
Terminal duct lobular units: Stolier Ann Surg Oncol 2008 Feb; 15 (2); 438-42.
Nipple-sparing Mastectomy
Nipple-Areola Skin Sparing Mastectomy

- Lagios -1979: 149 mastectomy specimens
  - In 95%, primary tumor within 25mm of nipple
  - Poorly differentiated tumors
  - Tumors > 2 cm
  - Axillary node involvement

- Fisher: 967 mastectomy specimens
  - Tumors > 4cm
  - poorly differentiated
  - Axillary nodal involvement

- Laronga: 256 skin sparing mastectomies
  - Nipple involved in 5.6%; 1.8% if primary peripherally located
  - Axillary nodal involvement
Nipple-Areola Skin Sparing Mastectomy
# Nipple-Areola Skin Sparing Mastectomy

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th># of Cases</th>
<th>Indication for Surgery</th>
<th>Follow-Up</th>
<th>LR or New</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hartmann</td>
<td>1999</td>
<td>575 SCM</td>
<td>Prophylaxis</td>
<td>14 years</td>
<td>1%</td>
</tr>
<tr>
<td>Hartmann</td>
<td>2001</td>
<td>26 SCM</td>
<td>Prophylaxis</td>
<td>13.4 years</td>
<td>0</td>
</tr>
<tr>
<td>Petit</td>
<td>2003</td>
<td>25 NSM</td>
<td>Treatment</td>
<td>6 months</td>
<td>NR</td>
</tr>
<tr>
<td>Gerber</td>
<td>2003</td>
<td>61 NSM</td>
<td>Treatment</td>
<td>4.9 years</td>
<td>5%</td>
</tr>
<tr>
<td>Crowe</td>
<td>2004</td>
<td>44 NSM</td>
<td>Both</td>
<td>6 weeks</td>
<td>NR</td>
</tr>
</tbody>
</table>
Subcutaneous Mastectomy

- Inframammary incision or infra-areola incision
- Removes the majority of the breast
- Spares the skin and the nipple-areola complex
- Requires reconstruction of breast mound
- Mayo clinic: 1/7 recurrences involved nipple-areola complex

Pre-operative MRI
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th># of Cases</th>
<th>Indication for Surgery</th>
<th>Follow-Up</th>
<th>LR or New</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sookhan</td>
<td>2008</td>
<td>18 NSM 2 ASM</td>
<td>Treatment Prevention</td>
<td>10.8 mos</td>
<td>0%</td>
</tr>
<tr>
<td>Voltura</td>
<td>2008</td>
<td>51 NSM (NAC+ 6%)</td>
<td>Treatment Prevention</td>
<td>18 mos</td>
<td>5.9%</td>
</tr>
<tr>
<td>Kiluk</td>
<td>2008</td>
<td>87 NSM</td>
<td>Treatment Prevention</td>
<td>6.5 mos</td>
<td>0%</td>
</tr>
<tr>
<td>Petit</td>
<td>2009</td>
<td>579 NSM + ELIOT</td>
<td>Treatment</td>
<td>19 mos</td>
<td>0.9% / yr</td>
</tr>
<tr>
<td>Garwood</td>
<td>2009</td>
<td>170 NSM</td>
<td>Treatment Prevention</td>
<td>13 mos</td>
<td>0.6%</td>
</tr>
<tr>
<td>Gerber</td>
<td>2009</td>
<td>60 NSM</td>
<td>Treatment</td>
<td>101 mos</td>
<td>11.7%</td>
</tr>
<tr>
<td>Petit</td>
<td>2009</td>
<td>1001 NSM + ELIOT</td>
<td>Treatment</td>
<td>20 mos</td>
<td>1.4%</td>
</tr>
</tbody>
</table>
Lymphatic Mapping Technique
Nipple-Areola Skin-Sparing
## Nipple-Areola Skin Sparing Mastectomy

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th># of Cases</th>
<th>Nipple Loss</th>
<th>Sensation</th>
<th>Cosmesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garwood</td>
<td>2009</td>
<td>170 NSM</td>
<td>13%</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Petit</td>
<td>2009</td>
<td>1001 NSM + ELIOT</td>
<td>Full 3.5% Partial 5.5%</td>
<td>Partial 15%</td>
<td>Yes</td>
</tr>
<tr>
<td>Sookhan</td>
<td>2008</td>
<td>18 NSM</td>
<td>Partial 11%</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Yueh</td>
<td>2009</td>
<td>17 NSM</td>
<td>Partial 17.6% Full 11.8%</td>
<td>Partial 75%</td>
<td>Yes</td>
</tr>
<tr>
<td>Didier</td>
<td>2009</td>
<td>159 NSM</td>
<td>0%</td>
<td>15%</td>
<td>Yes; QOL, Body Image</td>
</tr>
</tbody>
</table>
Performing NACSSM
Moffitt NACSSM trial

Inclusion

A. All patients who will be surgically treated for breast cancer at Moffitt Cancer Center with a nipple-areola skin-sparing mastectomy will be eligible for this study if all of the following are true:

1. The cancer is invasive ductal, invasive lobular, or a sarcoma
2. The invasive tumor size is 3cm or smaller
3. The tumor margin is greater than 2cm from the areolar edge
4. The tumor margin is greater than 2cm from the posterior margin of the nipple-areola base
5. The invasive cancer is unifocal
6. Clinically the patient is lymph node-negative

or

B. All patients who will have a prophylactic mastectomy (unilateral or bilateral) for risk-reduction will be eligible for a nipple-areola skin-sparing mastectomy of the breast without cancer.
Moffitt NACSSM trial

Exclusions:

• Previous history of irradiation to the breast area
• Previous history of nipple-areola surgery
• History of smoking within 6 mos of planned surgery
• Obesity (defined as a BMI of greater than 30)
• Not a candidate for immediate breast reconstruction
• The location of the nipple is below the infra-mammary fold with the patient sitting or standing
• The breast size is > 500 grams or significant contour abnormalities of the nipple-areola complex itself
Nipple-Areola Skin-Sparing
Incision Types: NACSSM

- Inverted Teaspoon
- Teaspoon
- Lateral
- Radial
Incision Types: NACSSM

Omega 1

Omega 2

Inframammary
Body Image Survey

Make the following ratings based on how you feel about your partner’s physical appearance

• 1 _ Strongly disagree
• 2 _ Disagree
• 3 _ Neither agree nor disagree
• 4 _ Agree
• 5 _ Strongly agree

• ___I am satisfied with the appearance of her left nipple
• ___I am satisfied with the appearance of her left breast
• ___I am satisfied with the appearance of her right nipple
• ___I am satisfied with the appearance of her right breast
• ___I think her left nipple is attractive
• ___I think her left breast is attractive
• ___I think her right nipple is attractive
• ___I think her right breast is attractive
Nipple-Areola Skin-Sparing

- The ultimate in cosmesis
- Technically more challenging
  - Intra-op frozen section
  - Vascular viability
- Oncologic Safety in Selected Pts
  - Unifocal Peripherally located tumors
  - T1 and small T2 lesions
  - No axillary involvement
  - No extensive DCIS