Updates in Breast Care

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Truth or Hype

Princess Bust Developer Sears, Roebuck and Co. 1897
Promised to make the breast “round, firm and beautiful”

History of Breast Cancer Surgery

- Second half 19th century: anesthesia (Morton) & antiseptic principles (Lister) facilitated surgery
- 1867: Moore “radical mastectomy”
- 1882: Halsted “radical mastectomy” Johns Hopkins, standard for 60 years in USA
- 1955: George Crile Jr. "A Plea Against the Blind Fear of Cancer" Life Magazine
History of Breast Cancer Surgery

- 1905: Ombredanne—1st pectoral muscle flap for breast reconstruction France
- 1906: Tansini latissimus dorsi mastectomy repair in Italy
- 1967 Bernard Fischer NSABP chairman
  - 1976 NSABP B-06 MX=PM +XRT
  - Later trials would validate the use of tamoxifen to treat breast cancer, introduce the idea of neoadjuvant chemotherapy to reduce the size of breast tumors, and prove the efficacy of tamoxifen for the prevention of the disease.

Bernard Fisher

The Surgical Breast

Thomas Eakins “The Agnew Clinic”
Philadelphia - 1889
Evolution of Breast Surgery

- Radical Mastectomy (Skin, Breast, Chest Wall Muscles, Many Lymph Nodes)
- Modified Radical Mastectomy ([less] Skin, Breast, Lymph Nodes)
- Partial Mastectomy/lumpectomy
- Skin-Sparing Mastectomy (NAC, breast, SLN)
- Nipple Sparing Mastectomy (no skin, breast, +/- LN)

Timing of Reconstruction

- 1960s: rare reconstruction, always delayed (recurrence rates, survival)
- 1980s: immediate vs. delayed (lower recurrence rates, psychological benefit)
- 1990s: tissue expanders, microsurgery
- 2000s Oncoplastic surgery

Evolution of Reconstruction for Mastectomy

Autologous vs. Implants
MODERN ERA: Mastectomy vs. Lumpectomy

- Since the 1970s, it has been well-established that survival rates are comparable*
- Why would a woman ever have a mastectomy?

INDICATIONS FOR MASTECTOMY

- Multi-centric cancer
- Hereditary predisposition
- Large tumor*
- Patient preference
MASTECTOMY RATES

CONTRALATERAL PROPHYLACTIC MASTECTOMY (CPM)

EVOLUTION OF RECONSTRUCTION OVER THE PAST 50 YEARS
Transposition of Flaps (1960s)

Labial nipple / areola graft

Simple Augmentation (1970s)

Modified radical mastectomy
Implant alone

1980s-1990s: Pedicled TRAM Flap

Pre Op TRAM
Post Op TRAM
1990s-2000s: Latissimus Reconstruction

1990s: DIEP Flap
Microsurgery Advantage
- Better overall outcomes
- Less donor site morbidity
- Improved patient satisfaction
- 1991: DIEP perforator flap, Japan
- 1994: Allen for breast reconstruction

Wilkins, Prospective Outcomes in Breast Reconstruction
Plast Reconstr Surg 106: 2000

Implant Reconstruction
Whole muscle coverage
3-D Tattoo Now Popular

NIPPLE SPARING MASTECTOMY

NSM v. MRM/SSM
- Patient satisfaction
- Patient selection
- Recurrence rates
- Complications
**NSM: Patient Satisfaction**

- Higher sexual/psychosocial well-being
- Higher satisfaction with cosmetic outcome
- Greater sensation over breast mound (~50% at NAC)

**NSM: Patient Selection**

- Prevention
- Treatment

**NSM For Prophylaxis**

- 3 studies published encompassing over 200 pts with BRCA mutations
- 7% rate of incidental cancers
- Follow-up ranged from 10-60 months
- 1 new cancer observed (0.7%)
**Patient Selection for NSM**

- Tumor size less than 5cm
- Distance from nipple >2cm
- HER2/Neu nonamplified
- No prior radiation, smoking*
- Breast Size/Degree of Ptosis*

**Oncologic Safety of NSM**
(Headon, et al, 2016)

- Retrospective review of 12,358 NSM from 73 studies published up till 2015
- Local recurrence rate of 2.4% (mean follow-up of 38 months)
- Nipple necrosis rate 5.9% (8.7% v. 3.4% comparing before/after 2013)

**OPTIMAL INCISION FOR NSM**

[Table image]
NSM: Reconstructive Options

- Autologous vs. Implants
- Direct-to-implant vs. Staged (tissue expander)
- Sub-pectoral vs. Pre-pectoral (ADM)
Case Study 3-stage NSM

- Preop mastopexy/reduction
- s/p bilateral tissue expansion
- s/p bilateral subpectoral implants

NSM CONCLUSIONS

- Cosmetic outcome superior
- Greater sensation/pt preference
- Risk of local recurrence similar to MRM
- Pt selection is critical (>2cm from nipple, <5cm tumor, neg. PATH at nipple)

Partial Mastectomy

- How big can the tumor be?
- Breast to tumor size ratio.
- Neoadjuvant chemo down sizes tumor
- Two different quadrants?
Oncoplasty

- The fusion of cancer=onco & plastics=plasty
- Better cancer surgery that yields better cosmetic results

Oncoplasty

- New concept to the US
- Several courses taught each yr
- Training for plastic surgeons as well as breast surgeons
- The marriage of two types of surgeries…better pt cosmesis

Why do we need a change?
Present Plan

- Lumpectomy
- Radiation
- Plastic Surgeon

Options

More options
Planning incision to optimize cosmesis

Reduction Mammaplasty
Cancer Gone

Oncoplasty

- Interdisciplinary Cooperation and detailed Discussion of the patient’s care plan BEFORE definitive tumor ablation:
  - improves patient outcomes; and
  - reduces invasiveness and number of surgical interventions
  - Avoids unnecessary complications

New technology getting us closer

- BioZorb
- Margin Probe
- Invuity retractors
- Plasma Blade
- Genetic testing
  - Tumors’ DNA
  - Patient’s DNA
Invuity

Plasma Blade

Plasma Blade

The Difference...

- PlasmaBlade Technology
  Tissue Temperature Range: 45 – 170°C
- Electrosurgical Pencil
  Tissue Temperature Range: 250 – 376°C

Scapel
PlasmaBlade
Electrosurgery
Genetics

- Patient’s DNA
- Tumor’s DNA

Patient’s DNA

- BRCA 1 & 2
- Multi gene panels
- Multiple companies offering various prices
- Limited genetic counselors
- VUS

Tumor DNA

- Oncotype
- MammaPrint
- Foundation One
- BCI
New for plastics

- New AVMs
  - Dermacell
- SPY
  - Immunofluorescence
- New techniques

DermACELL

- Terminally Sterile ADM
- >97% of Donor DNA Removed
- Faster Recovery
- Faster Drain Removal
- Significant decrease in complications (red breast, seroma, infection)

SPY Fluorescence Angiography

- Intraoperative Perfusion Assessment
- New Standard of Care in Breast Reconstruction
- Prevents Skin Necrosis
- New Techniques for Sentinel Lymph Node Mapping
- Improves Outcomes of Nipple Sparing & Direct to Implant Procedures
Sentinel Lymph Node Mapping

- Aids Surgeons in Anatomy ID
- Shortens Surgery times
- Reduces Risks of Lymphedema

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Providence Alaska Bowel Complications

<table>
<thead>
<tr>
<th>Year</th>
<th>Total # of Inpatient</th>
<th>Incidence of Complication</th>
<th>Complication Rate %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>20</td>
<td>10</td>
<td>17.6%</td>
</tr>
<tr>
<td>2013</td>
<td>30</td>
<td>15</td>
<td>50%</td>
</tr>
<tr>
<td>2014</td>
<td>40</td>
<td>30</td>
<td>75%</td>
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Alaska Native Bowel Complications

<table>
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## Alaska Regional Bowel Complications

<table>
<thead>
<tr>
<th>Year</th>
<th>Inpatient Large and Small Bowel</th>
<th>Total DRG Ops Volume</th>
<th>DRG Ops with Complication</th>
<th>Complication Rate %</th>
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</thead>
<tbody>
<tr>
<td>2012</td>
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<td>17</td>
<td>4</td>
<td>23.5</td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td>20</td>
<td>9**</td>
<td>45</td>
</tr>
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**More than 10 discharges were not reported for the fiscal year; Only DRG Ops representing ≥ 10 are publicly reported.**