Innovative Nipple-Sparing Mastectomy with Reconstruction

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Evolution Mastectomy

- Skin-sparing or nipple-sparing mastectomy preserves breast skin envelope
Acellular Dermal Matrix

- Immediate Reconstruction with Partial Muscle Release and ADM
  - Prevents pectoralis retraction
  - Implant positioning
  - Offloads weight
  - Extra layer lower pole

Evolution Breast Reconstruction

- Increased in immediate implant-based reconstruction
- Increase in single-stage breast reconstruction
- Increase in reconstruction following nipple-sparing mastectomy
Nipple-Sparing Mastectomy with ADM-Assisted Single-Stage Reconstruction

Single-Stage Reconstruction

- Patient Selection and Decision-Making
- Single-Stage Technique
- Outcomes
Single-Stage Reconstruction Indications

- Patient desire to be similar or smaller size (for NSM may be able to increase size)
- Healthy skin envelope (may be breast surgeon dependent)

ADM-Assisted Single-Stage Implant Reconstruction

450cc Moderate Plus Profile Silicone Gel Implants
Single-Stage Reconstruction with Round Implants

Single-Stage Reconstruction with Shaped Implants
ADM-Assisted Single-Stage Implant Reconstruction

ADM-Assisted Two-Stage Implant Reconstruction

Two-Stage Reconstruction –
Increase Size -600cc High Profile Silicone Gel Implants
Bilateral vs. Unilateral Procedures

Left Mastectomy and Single Stage Reconstruction with 325cc Moderate Plus Profile Gel Implant
Previous Breast Surgery

Previous Lumpectomy Scars
Preoperative Mantle Radiation

Preoperative Radiation
Postoperative Radiation

Single Stage Challenges

- Very small breasts
- Significant asymmetry

NSM challenges
- Significant size reduction
- Large breasts
- Grade III ptosis

Left mastectomy and single stage implant reconstruction with 100cc round silicone gel
Asymmetry

Single Stage Challenges: Large Breasts
Comparative Analysis of Single Stage Direct-to-Implant vs. Two Stage Tissue Expander-Implant Reconstruction: 742 Consecutive Cases

Amy S. Colwell, M.D., Branimir Damjanovic, M.D., Bita Zahedi, Laura Medford-Davis, Catherine Hertl, M.D., and William G. Austen Jr., M.D.

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AAPS Leonard R. Rubin Award Best Paper 2011
Methods

• Retrospective review of three surgeons MGH 2006-2011

• Immediate direct-to-implant reconstruction with acellular dermal matrix vs. tissue expander reconstruction without acellular dermal matrix

Methods:
Muscle release: 4 o’clock and 8 o’clock position
ADM sewn to IMF/chest wall to create pocket
Assessing the Pocket

Single-Stage Reconstruction Results

- 323 patients, average age 49 (27-81)
- 511 reconstructions – 188 bilateral and 135 unilateral (362 skin-sparing, 149 nipple-sparing)
**Single-Stage Reconstruction Complications**

- Total complications: 11.5%
  - 13 (2.5%) infections
  - 6 (1.2%) seromas
  - 5 (1.0%) hematomas
  - 35 (6.8%) skin necrosis

- Implant loss 1.4%

**Two-Stage Reconstruction**

- Total Complications (13.9%) (p=0.12)
  - 9 (3.9%) Infections
  - 3 (1.3%) Seromas
  - 3 (1.3%) Hematomas
  - 17 (7.4%) Skin necrosis

- Implant loss 4.8%
Aesthetic Result

- Patient satisfaction following mastectomy with Breast-Q
  - Similar high scores in satisfaction with breasts

Costs

5 bilateral direct-to-implant reconstructions with ADM and 5 bilateral tissue expander-implant reconstructions without ADM

No difference in charges
Breast Reconstruction Outcomes Following Nipple-Sparing Mastectomy: Predictors of Complications


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Presented at the ASPS 2013, Poster presentation at AAPS 2013

Methods

- Single Institution (MGH) 5 year retrospective review
- Nipple-Sparing Mastectomy Procedures
- Outcomes: Complications, Type Reconstruction
Results

Demographics

Indications

Risks Factors

<table>
<thead>
<tr>
<th>PATIENT POPULATION</th>
<th>n (%)</th>
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<tbody>
<tr>
<td>No. of Patients</td>
<td>285</td>
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<tr>
<td>NSM Reconstructions</td>
<td>500</td>
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<tr>
<td>Intraoperative Nipple Removal (emerges)</td>
<td>23 (8.9%)</td>
</tr>
<tr>
<td>Total NIM for analysis</td>
<td>482 (96.6%)</td>
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DEMOGRAPHICS | n (Range) |
<table>
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<tr>
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<tbody>
<tr>
<td>Mean Age</td>
<td>54 yrs (25–74)</td>
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<tr>
<td>Mean BMI</td>
<td>31.7 (18.9–37.8)</td>
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<tr>
<td>Mean Implant Volume</td>
<td>376.6cc (100–800)</td>
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<tr>
<td>Mean Initial VIM Volume</td>
<td>134.6cc (0.0–90.0)</td>
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<tr>
<td>Mean Follow-up Period</td>
<td>1.92 yrs (0.65–5.66)</td>
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</table>

INDICATION

Prophylactic | 260 (92.9%) |
Therapeutic  | 23 (8.1%) |

LATERALITY

Unilateral | 65 (13.5%) |
Bilateral   | 417 (86.5%) |

POCKET

Applique Dermal Matrix Assisted | 242 (70.5%) |
Vicryl Mesh Assisted | 94 (21.3%) |
Total or Partial Submuscular | 88 (20.3%) |

MASTECTOMY INCISION

 Inferolateral Breast Incision | 240 (51.0%) |
 Retropectoral Breast Incision | 241 (49.4%) |
 Inferior Radiolar Incision | 23 (4.4%) |
 Extension of Previous Incision | 52 (10.8%) |
 Periareolar Incision | 114 (23.7%) |

RISK FACTORS

Smoking | 79 (16.0%) |
Total Radiotherapy | 77 (16.0%) |
Pre-operative Radiotherapy | 42 (8.7%) |
Post-operative Radiotherapy | 55 (11.6%) |

BREAST FACTORS

History of Breast Cancer | 65 (13.5%) |
Previous Breast Surgery | 98 (19.9%) |
Complications

- Implant Loss: 1.9%
- Seroma: 1.7%
- Hematoma: 3.3%
- Infection: 5.2%
- Mastectomy Skin Flap Necrosis: 4.4%
- NAC Necrosis: 12.4%

Total Complications:
- Total: 8.5%
- NAC: 0.8%
- Mastectomy Skin Flap Necrosis: 2.0%
Regression Analysis

<table>
<thead>
<tr>
<th>POSITIVE RISK FACTOR</th>
<th>Outcome</th>
<th>p-values</th>
<th>OR</th>
<th>95% C.I.</th>
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</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>Total Complications</td>
<td>p=0.013</td>
<td>3.308</td>
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<tr>
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<td>Mastectomy Skin Flap Necrosis</td>
<td>p=0.001</td>
<td>7.044</td>
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<td>BMI</td>
<td>Total Complications</td>
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<td>Pre-operative Radiotherapy</td>
<td>NAC Necrosis</td>
<td>p=0.047</td>
<td>4.861</td>
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<td>Periareolar Incision</td>
<td>Total Complications</td>
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<td>3.626</td>
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<th>NEGATIVE RISK FACTOR</th>
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<tr>
<td>Inferolateral IMF Incision</td>
<td>Total Complications</td>
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<td>Mastectomy Skin Flap Necrosis</td>
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<td>NAC Necrosis</td>
<td>p=0.001</td>
<td>0.00058</td>
<td>0.00002-0.01854</td>
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</table>

Type of Reconstruction

- Direct-to-Implant Reconstruction: 3%
- Two-stage Reconstruction: 38%
- Autologous Reconstruction: 59%
Survey

- 57 patients with breast cancer or strong predisposition
  - 73.7% → reconstruction extremely important
  - 75% → IMF scar preferable
Conclusions

• NSM have high reconstructive rate and low complications
• IMF incision may be preferred for safety and patient preference
• Smoking, BMI, implant volume, preoperative radiation, and incision type predicted complications

Future Directions

• Nipple-sparing Mastectomy
• ADM or non-biologic-assisted implant reconstruction
• Air Xpanders
  • Clinical trial
• Anatomic textured implants
• Fat transfer
Fat Transfer

Tissue Expander-Implant Reconstruction with Fat Transfer

Thank You