Comparison of Immediate Implant Placement vs. the Staged Tissue Expander Technique in Breast Reconstruction

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Kaiser Permanente Symposium
10 years ago: total autologous reconstruction.

- Medical environment is changing.
- Reimbursements are changing.
- Where are we now?
- Where are we going?
Bilateral DIEP flaps to IMAs

Bilateral Staged MRM / Bilateral Staged SGAP Free Flaps to IMA/V vessels.

Bilateral immediate TFL flaps
Prosthetic Based Reconstruction

- Most common method of breast reconstruction

- 76.8% of all breast reconstructions performed in US 2010. (71,533 of the total 93,083 breast reconstructions)
  - ~95% Staged Tissue Expanders
  - ~5% Immediate Implant Placement

Developments in Immediate Implant Reconstruction

- Skin-sparing/Subcutaneous Mastectomy

- Acellular Dermal Matrix
  - Better control of implant pocket / position & definition of IMF
  - Larger pocket for implant

Immediate Implant Reconstruction Benefits

- Fewer operations / Less Anesthetic exposure
- Decreased costs
- Fewer office visits
- Shorter time to completion
- Better psychosocial adjustment - “patients go to sleep and wake up with breasts”
Immediate implant reconstruction is safe and offers consistent results in **carefully-selected patients** (!!!)

- Smaller breasts
- Minimal ptosis
- No XRT
- Perfect mastectomy flaps


**Purpose**

To directly compare the overall outcomes of Immediate Implant and Staged Tissue Expander breast reconstruction techniques.


**Methods**

- Retrospective chart review of all patients who underwent immediate breast reconstruction between September 2004 and April 2009
- Comparison of all immediate implant breast reconstruction to randomly matched cohort of staged tissue expansion technique
- Demographic data, complication and revision rates, completion time, aesthetic scores, and costs were analyzed, mean follow-up of 14 months.
Results

- Immediate Implant
  - 35 patients
  - 62 breast reconstructions
  - 8 unilateral & 27 Bilateral

- Staged Tissue Expander
  - 50 patients
  - 87 breast reconstructions
  - 13 Unilateral & 37 Bilateral

<table>
<thead>
<tr>
<th>Demographic Data</th>
<th>Immediate Implant n = 35</th>
<th>Tissue Expander n = 50</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age</td>
<td>45.3 ± 8.7</td>
<td>47.3 ± 9.9</td>
<td>0.32</td>
</tr>
<tr>
<td>Mean BMI</td>
<td>22.3 ± 2.7</td>
<td>22.4 ± 3.9</td>
<td>0.80</td>
</tr>
<tr>
<td>Pre-Op Ptosis &lt; 2</td>
<td>30 (86%)</td>
<td>39 (78.0%)</td>
<td>0.37</td>
</tr>
<tr>
<td>Pre-Op Cup Sz &lt; D</td>
<td>28 (80.0%)</td>
<td>42 (84.0%)</td>
<td>0.49</td>
</tr>
<tr>
<td>Comorbidities</td>
<td>4 (11.4%)</td>
<td>9 (18%)</td>
<td>0.41</td>
</tr>
<tr>
<td>XRT</td>
<td>6 (17.1%)</td>
<td>7 (14%)</td>
<td>0.69</td>
</tr>
</tbody>
</table>

*p-value < 0.05 considered statistically significant

<table>
<thead>
<tr>
<th>Treatment Course</th>
<th>Immediate Implant n = 35</th>
<th>Tissue Expander n = 50</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Operative Time (Min)</td>
<td>244±55</td>
<td>213±53</td>
<td>0.02</td>
</tr>
<tr>
<td>Mean Hospital Stay (Days)</td>
<td>2.00 ± 0.50days</td>
<td>2.28 ± 0.93days</td>
<td>0.08</td>
</tr>
<tr>
<td>Complication Rates</td>
<td>5 (14.3%)</td>
<td>7 (14.0%)</td>
<td>0.97</td>
</tr>
<tr>
<td>Need for unplanned revision</td>
<td>16 (24.2%)</td>
<td>22 (24.7%)</td>
<td>0.88</td>
</tr>
</tbody>
</table>

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Complications by Breast

<table>
<thead>
<tr>
<th></th>
<th>Immediate Implant n = 62 Breast</th>
<th>Tissue Expander n = 87 breast</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rupture</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1.00</td>
</tr>
<tr>
<td>Infection</td>
<td>3 (4.8%)</td>
<td>1 (1.1%)</td>
<td>0.16</td>
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<tr>
<td>Seroma</td>
<td>1 (1.6%)</td>
<td>0 (0%)</td>
<td>0.42</td>
</tr>
<tr>
<td>Capsular Contracture</td>
<td>4 (6.5%)</td>
<td>10 (11.2%)</td>
<td>0.32</td>
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Time to Completion

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<tr>
<td>Mean # of office visits</td>
<td>5 ± 4</td>
<td>9.2 ±3</td>
<td>p&lt;0.001</td>
</tr>
<tr>
<td>In weeks</td>
<td>22 ±19</td>
<td>43 ±10</td>
<td>p&lt;0.001</td>
</tr>
</tbody>
</table>

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Aesthetic Analysis

- Immediate Implant Average Score: 3.19
- Tissue Expander Average Score: 2.90
- p-value = 0.097

- Based on 10 member panel scoring on a 1-4 pt scale
- Two independent sample Wilcoxon Rank Sum Test
### Medicare Reimbursement Rate 2009

- **Implant**
  - 19340 $374
- **TE**
  - 19357 $1,412
  - Capsulotomy(19370) 620
  - TE exchange(19340) 374

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<th>2009</th>
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<td>Reimbursement</td>
<td>Amount</td>
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### Mean Billed Professional Fees

- **Implant** $4,000
- **TE** $7,615
- Capsulotomy 3,345
- TE exchange 2,940

### Added Hospital Costs

- **Allograft**
  - 4-6 x 16 cm sheet
  - $1,800 - 3,000 cost

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<tr>
<td>4 x 16</td>
<td>$1,830.24</td>
</tr>
<tr>
<td>6 x 16</td>
<td>$2,962.00</td>
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</table>
Staged Tissue Expander

Right sided expander exchanged for 350 cc MidProfile implant / left augmentation.

Immediate bilateral implant reconstruction.

36 year old female R IDC
Prior augmentation w/ 210 cc subglandular saline implants.

R MRM / L Prophylactic Mastectomy
Bilateral immediate implant placement with silicone implants (Inamed Style 15 290 cc) / Alloderm.
Secondary nipple recon / areolar tattoo
Immediate Implant

Bilat NAC Sparing mastectomies via extended IM incisions. Bilateral Inamed Style 15 Mod+ Profile 397cc

Bilateral nipple areolar sparing mastectomies via extended IM incisions. Immediate placement of subpectoral Inamed Style 115 400 cc textured mid profile implants / allograft 6x14 cm.
Bilat proph mastectomies via IM incisions
Bilat immediate Inamed 410-400 MM implants

Right NAC sparing mastectomy via lateral incision, immediate placement of Inamed 115-339 implant and 4x16 cm alloderm.

Bilateral mastectomies / 360 cc Inamed 153 implants. Implant reconstructions are unpredictable: w/ 50% lifetime revision rates. Notice 'stretching out of tissue in lower quadrants: aka 'bottoming out'.
Implant malposition / bottoming out

- Revision strategy:
  - Capsulorrhaphy
  - Allograft Sling / Reinforcement of lower poles

“Bottoming out”: can we prevent it?

Allograft

- Tethers down pec major muscle.
- Adds tissue to lower quadrants of breast reconstruction
- Allows for larger sized immediate implant recon.
- lower capsular contracture rates.
- USE DRAINS!
Allograft trimmed to fit IMF fold

Allograft sewn to IMF fascia and chest wall if fold violated

3 months later: allograft completely incorporated.
Typical two-stage exp/implant recon

1. Bilateral N/A sparing mastectomies / IM inc w/ allograft. Bilateral Inamed 300 SV expanders (13 cm bw)
2. Bilateral Inamed 410-335 MF implants (13 cm bw)

Implant / Expander Reconstruction and Radiation?

- High complication rates
- Baseline 20% Baker III/IV Contracture rates increase to 70-100% with XRT
- HOWEVER: results are unpredictable
- If patients are not candidates for total autologous reconstruction, it is better to place expanders at the time of mastectomies.
  - “Better to irradiate expanded skin than try to expand radiated skin.”

Immediate 133MV tissue expanders, radiated, then exchanged for Inamed 410-295 MF
Inamed 410-410MF

Single stage / Immediate implants and postop XRT

03/09  05/09  11/09  08/10

Inamed 410-295 MF textured silicone form stable / highly cohesive implants. 18 months postop.

Inamed 410 Implant
Inamed 410 Implant

- Highly cohesive
- Form stable
- Lower complication rates

Summary

- Immediate Implant reconstruction has similar complication rates, need for revision, and aesthetic outcomes, but is lower in costs and reimbursement, number of office visits and reconstructive time when compared to the staged tissue expander technique.

Key points

- Know your general surgeon
- Have tissue expanders available
- Perfectly done mastectomies allow for beautiful reconstructive results
- Allograft makes the procedure much easier
- Take time to ‘get it right’ ... sit patient up, what you see is what you’ll get later
Conclusions

- In the appropriately selected patient, IIBR is a safe option that provides similar outcomes in less time and cost compared to staged tissue expander-based reconstruction.