Breast Reconstruction
Your Right, Your Choice

Kathy Steligo
The Breast Reconstruction Guidebook
Options After Mastectomy

- No reconstruction (optional prosthesis)

- Rebuild breasts with:
  - implants
  - your own tissue (autologous)
  - combination of implants and your own living tissue
Mastectomy without Reconstruction

Going Flat

- Elliptical incision is made around the nipple and across the width of the breast
- Breast tissue, skin, nipple and areola are removed
- Incision is closed
Mastectomy without Reconstruction
Mastectomy without Reconstruction
Mastectomy without Reconstruction

Reasons for Going Flat

- Comfortable not having breasts
- Want to avoid additional surgery/recovery
- Don’t want breasts that “aren’t real” or have little sensation
- Want to try going flat before committing to reconstruction
- Undecided at the time of your mastectomy
- Health condition/pending treatment precludes reconstruction
Mastectomy without Reconstruction

Breast Prostheses

- Many shapes, materials, weights and skin tones
- With or without nipples
- Adhere to chest or worn in bras, swimsuits, camisoles
- Custom prostheses available
- Covered by health insurance
Mastectomy without Reconstruction

Another Alternative: Knitted Knockers
Breast Reconstruction: Your Right

The Women’s Health and Cancer Rights Act of 1998

- Health insurers who cover mastectomy must also cover all stages of reconstruction (also related complications and prostheses)
- Does not guarantee coverage for any surgeon, any hospital, or any procedure. (May require use of in-network physicians/hospitals)
- Insurers must provide usual and customary coverage consistent with existing plan benefits: same deductibles and co-payment
# Mastectomy and Reconstruction

<table>
<thead>
<tr>
<th>Mastectomy</th>
<th>Reconstruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creates incisions</td>
<td>Can camouflage/hide scars</td>
</tr>
<tr>
<td>Eliminates breast tissue</td>
<td>Restores breast volume</td>
</tr>
<tr>
<td>Removes breast skin</td>
<td>Replaces breast skin</td>
</tr>
<tr>
<td>Removes nipple/areola*</td>
<td>Replaces nipple/areola</td>
</tr>
<tr>
<td>Severs nerves (sensory loss)</td>
<td>May encourage some nerve regeneration (tissue flap)</td>
</tr>
<tr>
<td>Removes milk ducts</td>
<td>Cannot restore ability to breastfeed</td>
</tr>
</tbody>
</table>

*unless nipple/areola are preserved*
Reconstruction Options

- **Immediate reconstruction** with mastectomy
  - two back-to-back procedures
  - breast surgeon removes breast tissue
  - plastic surgeon reconstructs breasts

- **Delayed reconstruction** after mastectomy
  - additional surgery/recovery
  - weeks, months or years later
## Reconstruction Options

<table>
<thead>
<tr>
<th>Immediate</th>
<th>Delayed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most breast skin is retained</td>
<td>Most breast skin removed</td>
</tr>
<tr>
<td>Nipple and/or areola removed or retained</td>
<td>Nipple and areola removed</td>
</tr>
<tr>
<td>Breast is recreated while you’re still sedated</td>
<td>Incision closed over flat chest</td>
</tr>
<tr>
<td>Incision minimized</td>
<td>Wide incision across chest</td>
</tr>
</tbody>
</table>
Reconstruction Process

Mastectomy: Remove breast tissue

Step 1: Replace breast tissue (implant or your own tissue)

Step 2: Exchange/revision surgery, create nipple

Step 3: Tattoo
Mastectomy Incisions

Immediate Reconstruction
Skin-sparing mastectomy

- Preserves most breast skin; removes nipple and areola
- Implant or tissue flap replaces removed breast tissue
Immediate Reconstruction

Immediate implant reconstruction

Immediate reconstruction (DIEP flap)
### Nipple-sparing Mastectomy

#### Evolution: From Radical Mastectomy to NSM
- Similar rates of recurrence/survival as standard mastectomy
- Candidates: small, early-stage tumors not close to skin/nipple
- Tissue removed at base of nipple (nipple removed if pathology shows cancer cells)
- Requires greater surgical skill to remove breast tissue through smaller incision, preserve blood supply to nipple
- Nipples may flatten, lose most sensation/response, or die
Mastectomy Incisions

Immediate Reconstruction
Nipple-sparing mastectomy

✧ Preserves breast skin, nipple and areola
✧ Implant or tissue flap replaces removed breast tissue
Mastectomy Incisions

Immediate Reconstruction
Nipple-sparing mastectomy

Photo: Dr. C. Andrew Salzberg
Mastectomy Incisions

Delayed Reconstruction

- Preserves breast skin, nipple and areola
- Wider mastectomy incision
- Breast tissue, nipple, areola and most of breast skin are removed
- Mastectomy scar remains across the chest

Image: The Mayo Clinic
Mastectomy Incisions

Delayed Reconstruction

Photos: The Center for Restorative Breast Surgery
## Breast Implants

<table>
<thead>
<tr>
<th></th>
<th>Saline</th>
<th>Silicone</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Components</strong></td>
<td>Silicone shell filled with saltwater solution</td>
<td>Silicone shell filled with gel</td>
</tr>
<tr>
<td><strong>Texture/feel</strong></td>
<td>Firm, like a water balloon</td>
<td>Closer to natural breast tissue</td>
</tr>
<tr>
<td></td>
<td>Firm, like a water balloon</td>
<td></td>
</tr>
<tr>
<td><strong>Incision</strong></td>
<td>Smaller (implant is deflated when inserted)</td>
<td>Larger (implant is full when inserted)</td>
</tr>
</tbody>
</table>

*Implant information/statistics at www.fda.gov*
Breast Implants

Different Shapes

Shaped Implant
Natural Upper Contour

Round Implant
Rounded Upper Contour
Breast Implants

Different Projection (profile)

Depends on the base diameter of your chest and implant volume

Image: Allergan
Breast Implants

Different Placement

Subpectoral: below the muscle
Muscle covers implant
(requires lifting/cutting muscle, somewhat deforms implant)

Prepectoral: above the muscle
Acellular dermal matrix adds layer of soft tissue over implant
Breast Implants

Prepectoral Placement

- Made possible by use of acellular dermal matrix (ADM):
  - Biologic mesh made from donated human skin or pig skin that is stripped of cellular material
  - Forms a cushioning layer between the implant and the breast skin.
  - Integrates into tissue
Breast Implants

Traditional method → Expansion

Newer method → Direct-to-Implant ("one-step") eliminates expansion
Implant Reconstruction

Expansion

- Pectoral muscle is cut and lifted away from ribs
- Tissue expander (temporary inflatable implant) is placed behind muscle
- Saline added in surgeon’s office every 7-10 days
- Skin and muscle stretches over several weeks, creating pocket for implant of desired size
Implant Reconstruction

Tissue Expander is Gradually Filled with Saline

The amount of saline affects the shape, firmness and feel of the new breast
Implant Reconstruction

- Expansion is a temporary process!
- May be larger, higher or different shape than final breast
- Settles in place for 1-3 months; then exchanged for implant
- Optional nipple reconstruction with or without tattoo
Implant Reconstruction

Patient-controlled Expansion

- AeroForm inflates with carbon dioxide instead of saline
- Patient uses self-paced, remote control to expand at home
  No needles – No office visits for saline “fills”
- Median completion during clinical trial:
  AeroForm: 21 days    Saline expanders: 46 days

AeroForm expanders: www.airxpanders.com
Implant Reconstruction

Direct-to-Implant

✧ Implant placed immediately under the pectoral muscle

✧ Acellular dermal matrix sewn to muscle edges and breast fold

✧ “Internal bra” forms instant pocket; supports implant in position, covers lower portion of implant

Image: LifeCell
Direct-to-Implant

- One step. One surgery. One recovery. No expansion. No exchange surgery
- Requires nipple-sparing mastectomy
- “One-step” = “two-step” if revision is required
Implant Reconstruction

Direct-to-Implant

Before mastectomy

After reconstruction: Nipple-sparing mastectomy, reconstruction with high-profile silicone gel implants

Photos: Dr. C. Andrew Salzberg
Implant Reconstruction

Size matters

“My implants are too big!”
“My implants are too small!”

✧ Smaller, larger or same as your natural breast size

✧ Discuss size with your plastic surgeon before your reconstruction
Tissue Flap Reconstruction

Breasts of your own living tissue

- Segments ("flaps") of your own living tissue are removed, relocated to the chest, then shaped into a breast
- Additional incision at donor site
- Different procedures, surgical skill, length of surgery, hospital stay and recovery
Tissue Flap Reconstruction

Breasts created of your own living tissue from your:

- Abdomen
- Back
- Buttocks
- Hips
- Thighs
Tissue Flap Reconstruction

Placement

Implants are placed under or over the muscle

Tissue flaps are placed over the muscle
Tissue Flap Reconstruction

Traditional procedures → Use muscle

Newer procedures → Spare muscle

Difference in length of surgery, recovery and potentially function
Tissue Flap Reconstruction

The new breast needs a healthy blood supply to survive.

Blood vessels feeding the tissue travel through muscle:

- Attached (pedicled) flaps use entire muscle
- Free flaps cut into and use “small” amount of muscle*
- Perforator flaps don’t cut into or use muscle (blood supply is detached from muscle; reconnected in chest)

* “small” varies, depending on surgeon’s skill
Tissue Flap Reconstruction

Perforator Flaps:

Don’t remove muscle to use blood supply for flap
Tissue Flap Reconstruction

Perforator Flaps: the most advanced type of breast reconstruction

- Requires microsurgical skills
- Fewer qualified surgeons
- Shorter, less intense recovery than procedures that use muscle
Tissue Flap Reconstruction

Attached Flap: Latissimus dorsi (Lat)

- Skin, fat, muscle tunneled under skin to chest
- Adequate for A- or B-cup
- Implant usually added for fullness
- Usually no loss of routine movement
Tissue Flap Reconstruction

Attached Flap: Transverse Rectus Abdominis Myocutaneous (TRAM)

- Low hip-to-hip incision
- Uses skin, fat, muscle, blood vessels
- Flap tunneled under skin
- Mesh used to strengthen abdomen

Perforator Flap: Deep Inferior Epigastric Perforator (DIEP)

- Low hip-to-hip incision
- Preserves muscle/core strength
- Flap transplanted
- Less intense recovery

Images: The Breast Reconstruction Guidebook
Tissue Flap Reconstruction

Perforator Flap: Superficial Inferior Epigastric Artery (SIEA)

- Same abdominal flap as DIEP with a different blood supply
- SIEA runs just below the surface of skin
- Absent, too small or severed from previous hysterectomy or C-section in most women
Tissue Flap Reconstruction

**Free Flap: Transverse Upper Gracilis (TUG)**
- Uses skin, fat, gracilis muscle (inner thigh)
- Scar in groin
- Inner thigh lift

**Perforator Flap: Profunda Artery Perforator (PAP)**
- Uses skin, fat (no muscle) in upper back thigh
- Scar in groin/buttock crease
- Inner thigh lift
Tissue Flap Reconstruction

Superior Gluteal Artery Perforator (S-GAP)
Inferior Gluteal Artery Perforator (I-GAP)

- Option for women without enough abdominal fat
- Firmer than abdominal tissue
- Longer surgery; less intense recovery
- Few surgeons perform GAP
# Tissue Flap Reconstruction

## Other Perforator Flaps

<table>
<thead>
<tr>
<th>Flap Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stacked DIEP</td>
<td>Uses entire abdominal flap for 1 breast (folded over or 2 separate flaps)</td>
</tr>
<tr>
<td>ICAP</td>
<td>From the underarm</td>
</tr>
<tr>
<td>LAP</td>
<td>From the “love handles”</td>
</tr>
<tr>
<td>TDAP/TAP</td>
<td>From the back</td>
</tr>
</tbody>
</table>
Tissue Flap Reconstruction

Results look similar on the outside.
The difference is on the inside.

LAT flap  TRAM flap  DIEP flap
## Comparing Implants and Flaps

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional implants</td>
<td>Expansion</td>
<td>Exchange surgery; Build nipple</td>
<td>Tattoo</td>
</tr>
<tr>
<td>Direct-to-Implant*</td>
<td>Replace breast tissue with implants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tissue flaps</td>
<td>Harvest tissue for breast mound</td>
<td>Revision surgery; Build nipple</td>
<td>Tattoo</td>
</tr>
</tbody>
</table>

* with nipple-sparing mastectomy
# Comparing Implants and Flaps

<table>
<thead>
<tr>
<th></th>
<th>Implants</th>
<th>Flaps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eventual replacement</td>
<td>Lifelong</td>
<td></td>
</tr>
<tr>
<td>Less natural shape</td>
<td>Warmth, softness of living tissue</td>
<td></td>
</tr>
<tr>
<td>and feel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incision @ mastectomy site</td>
<td>Incisions @ mastectomy and donor sites</td>
<td></td>
</tr>
<tr>
<td>More difficult to match opposite healthy breast</td>
<td>Easier to match opposite healthy breast</td>
<td></td>
</tr>
<tr>
<td>Shorter surgery; longer timeline*</td>
<td>Longer surgery; shorter timeline</td>
<td></td>
</tr>
<tr>
<td>Easier, quicker recovery</td>
<td>More intense, longer recovery</td>
<td></td>
</tr>
</tbody>
</table>

*Traditional expansion. Direct-to-implant represents shortest overall timeline*
## Comparing Implants and Flaps

<table>
<thead>
<tr>
<th></th>
<th>Hospital Stay</th>
<th>Revision Surgery</th>
<th>Recovery*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tissue expanders</td>
<td>1-2 days</td>
<td>Yes</td>
<td>4-6 weeks</td>
</tr>
<tr>
<td>Direct-to-Implant</td>
<td>1-2 days</td>
<td>No</td>
<td>2-4 weeks</td>
</tr>
<tr>
<td>Attached flaps</td>
<td>2-5</td>
<td>Yes</td>
<td>Lat: 3-6 weeks</td>
</tr>
<tr>
<td>Perforator flaps</td>
<td>3-5</td>
<td>Yes</td>
<td>TRAM: 6-8 weeks</td>
</tr>
</tbody>
</table>

*Varies depending on the individual; Progressively improves each week.*
Reconstruction and Radiation

Delay reconstruction 6-12+ months

- Radiation inhibits blood flow and skin elasticity; can delay healing
- Implants may interfere with radiation
- Implants = greater likelihood of complications
  - Radiated breast skin can be difficult to expand
  - Radiated tissue can squeeze/deform implant
- Tissue flap brings healthy tissue to radiated area
  fewer complications, better aesthetics
Delayed-immediate reconstruction

1. Skin-sparing mastectomy
2. Place fully inflated tissue expander
3. Pathology indicates need for radiation? (yes/no)
   - yes: Deflate expander → Complete radiation → Reinflate expander
   - no: Exchange expander for implant or tissue flap

Exchange expander for tissue flap
Reconstruction and Chemo

Delay reconstruction 3-6 months

- Body needs to recover before enduring stress of another operation
- Chemo could be delayed complications occur from reconstruction (although this usually doesn’t happen)
- Doctor may recommend delay if other health concerns preclude another operation
Nipple Reconstruction

- Optional last step
- Usually created from mini-flap of breast skin
- Many different types of nipple flaps

*Image: Dr. David Greenspun*
Nipple Reconstruction

- Initially 50% larger than desired; new nipple shrinks in time
- Nipple/areola tattooed by physician or tattoo artist to match natural nipples or lip color; eventually fades
- Optional “stuffing” with acellular dermal matrix:
  
  Headlights on!
Nipple Reconstruction

Reconstructed Breasts: Before

Immediate reconstruction  Delayed reconstruction
Nipple Reconstruction

Reconstructed Breasts: After

Photos: Center for Restorative Breast Surgery
Nipple Reconstruction: Alternatives

- No nipples
- Tattoo to simulate 3-D nipple and/or areola
- Prosthetic adhesive nipples

Photo: Red Rose Tattoo
Nipple Reconstruction: Alternatives

Photos: Black and Blue Tattoo, Ink Couture
The Best Reconstruction...

...looks natural, with or without clothing

No reconstruction is one-size-fits-all:
all procedures have advantages and disadvantages
Choosing A Plastic Surgeon

The single most important aspect of reconstructive surgery

- All surgeons don’t have the same skill/expertise
- All surgeons don’t perform all procedures
- Choose a board-certified surgeon (ABPS)
- Get a second opinion (three is better) – it’s worth it
- Talk to patients who have had same procedure
Choosing A Plastic Surgeon

Increase Your Odds of Being Satisfied:
Choose a Surgeon Who Is:

- Compassionate
- Communicates well
- Skilled/experienced in the procedure you want
Choosing A Plastic Surgeon

- Which procedure is best for you? Why?
- How many have you done?
- What are the best and worst results I can expect?
- How long will the surgery be?
- What can I expect from recovery?
- What are the potential problems or risks?
- How will you fix problems that may occur?

More questions/issues on FORCE message boards
# Mastectomy: You Have More Options

<table>
<thead>
<tr>
<th>Traditional Methods</th>
<th>Newer Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removes breast tissue, skin and muscle</td>
<td>Preserves most breast skin*</td>
</tr>
<tr>
<td>Removes nipple and areola</td>
<td>Preserves muscle</td>
</tr>
<tr>
<td>Nipple- and/or areola-sparing (qualified candidates)</td>
<td></td>
</tr>
</tbody>
</table>

*When immediate reconstruction is performed*
# Reconstruction: You Have More Options

<table>
<thead>
<tr>
<th>Traditional Methods</th>
<th>Newer Methods</th>
</tr>
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<tbody>
<tr>
<td>Delayed reconstruction</td>
<td>Immediate reconstruction</td>
</tr>
<tr>
<td>Tissue expansion</td>
<td>Delayed-immediate</td>
</tr>
<tr>
<td>Flaps that sacrifice muscle</td>
<td>Direct-to-implant/Self-expansion</td>
</tr>
<tr>
<td>Few surgical options</td>
<td>Muscle-sparing flaps</td>
</tr>
<tr>
<td>Minimal/no insurance coverage</td>
<td>Numerous surgical options</td>
</tr>
<tr>
<td></td>
<td>WHCRA</td>
</tr>
</tbody>
</table>
Making Your Decision

✧ Reconstruction is a **BIG** decision:
  Take the time you need

✧ It’s a personal choice

✧ You’re the best one to decide
  what’s right for you
Making Your Decision

Informed decisions are the best decisions!

- Learn which options are best for you
- Consider the benefits/limitations of different procedures
- Stay local or travel for the procedure/surgeon you want?
- Insurance considerations/restrictions
Making Your Decision

✧ Talk to women who have made the journey
✧ Show & Tell (tonight)
✧ Reconstruction Q&A panels (today and tomorrow)
✧ “Ask the Experts” roundtable (tomorrow)
✧ FORCE website
✧ The Breast Reconstruction Guidebook
What Else Can You Do?

- Know what to expect
- Stop smoking
- Lose weight if you need to
- Eat well
- Get fit...train for surgery/recovery
- Cultivate a positive mental attitude