RECONSTRUCTION GOALS

Shape
Symmetry
Size
Soft
Sensual
Natural
Mastectomy with No Reconstruction

The ill patient
Advanced tumor
Patient choice
Alternatives: Breast Prostheses Fitted with Post-Mastectomy Brassieres

JHH has Image Recovery Center to assist with fittings for patients with no reconstruction and those with asymmetry during staged reconstruction. Insurance generally covers cost.
Reconstructive Options

Autologous Tissue (Your own tissue)
- Options:
  - Abdominal tissue
  - Buttock tissue
  - Back tissue
  - Inner thigh tissue

Implant
- Options:
  - Temporary Tissue Expander
    - Saline
    - Silicone gel

Combination
- Autologous tissue + Implant for increased projection
**Immediate, Staged, or Delayed Reconstruction**

<table>
<thead>
<tr>
<th>Reasons for Immediate</th>
<th>Reasons for Staged</th>
<th>Reasons for Delayed</th>
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<tbody>
<tr>
<td>• Prophylactic or early stage cancer (no radiation)</td>
<td>• Possible radiation</td>
<td>• Metastatic or inflammatory breast cancer</td>
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<tr>
<td>• Schedule permits date in near future</td>
<td>• Other medical issues complicating longer procedure</td>
<td>• Other medical issues complicating immediate reconstruction</td>
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<td>• Relative indication: May have better results if patient has large or drooping breasts or breast asymmetry</td>
<td>• Patient choice</td>
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- Relative indication: May have better results if patient has large or drooping breasts or breast asymmetry.
Implant

Tissue Expander

Expansion in office
Until desired size achieved

Replacement With Permanent Implant

Single Stage Implant

• High rate of revisions
• Limited in size and shape
• Must have skin-sparing and better w/nipple-sparing mastectomy

Satisfactory Result?
Expander -> Implant

Expansions: In clinic weekly (at most)
Usually stop during chemotherapy
Always stop during radiation
Generally not painful, may have 1-2 days muscle soreness

Tissue Expanders

Functions:

• Expand muscle and skin
• Create a pocket for eventual implant or flap
• Preserve lower fold of breast

Firm, can be uncomfortable/sore initially. Improves with time and they are TEMPORARY

What to Expect

Initial mastectomy w/expander or implant

- One night inpatient hospital stay
  - At least one drain per breast
    (removed 1-2 weeks on average)
- Most able to return to work in 2-4 weeks
Tissue Regeneration Matrix

- **Acellular dermal collagen matrix** (i.e. AlloDerm, Surgimend, Veritas)

- Blood vessels grow into over time

- “Internal bra” or sling

- Preserves fold under breast

- Complications (i.e. infection), but cannot be rejected

What tissue expanders may look like right after surgery

Amount of fluid in expanders at time of surgery depends on blood flow to the skin

Larger amount possible with good blood flow
Staged Implant Reconstruction

Good Candidates:
- No history of chest wall radiation
- Will not undergo radiation therapy
- Thin patients

1st Stage: Mastectomy with Tissue Expanders

Final Implants and Nipple Reconstruction (without areolar tattoo)

Before mastectomy
Staged Implant Reconstruction with Intermediate Tissue Expanders
Prior to Mastectomy

Post-Mastectomy with Single Stage Implants

Staged Bilateral Implant Reconstruction

Better candidates are small-breasted, with skin and nipple-sparing mastectomies as seen here. High rate of revisions.
Left tissue expander followed by implant reconstruction
Staged Unilateral Implant Reconstruction

Tissue Expander (slightly inflated during initial placement)

Right Implant and Left Breast Lift
Advantages of Implants:

- Quicker reconstruction process
- Shorter outpatient surgeries
- Faster recovery
- No scarring of other areas of body

Disadvantages of Implants:

- Implants may need replacement (approx. 10% will rupture in 9 yrs)
- Under chest muscle, can cause some tightness/discomfort
- Less natural-feeling

Ultimately patient’s preference, but with radiation, autologous has better outcome.
Delayed Implant Reconstruction with Tissue Expanders

Previous Mastectomy with No Reconstruction

Delayed Placement of Tissue Expander

Final Implant Reconstruction with Right Side Breast Reduction
Potential Implant Complications

Following Radiation Therapy

Complications with implants & radiation:

- Unacceptable cosmetic outcome (high-riding, firm)
- Pain/tightness
- Capsular contracture
- Slowed healing
- Infection
- Exposure of implant through the skin

LIFELONG RISKS
Potential Implant Complications Following Radiation Therapy

Left Implant After Nipple-Sparing Mastectomy & Radiation, Right Breast Augmentation

Tissue expanders followed by implants after left side radiation
Pedicled Latissimus Dorsi Flap

- Done less frequently, uses back muscle
- **T-dap** uses back skin and fat, spares back muscle, but not enough tissue to reconstruct entire breast
- Both often require an implant for increased projection
Healed Lat Flap w/Implant for Increased Projection

Healed Back Scar
DIEP Flap

- Skin, fat, and blood vessels taken from lower portion of abdomen
- Vessels connected under microscope to chest vessels
- Hip to hip scar on abdomen, around belly button, & scar around abdominal skin flap on breast

- Surgery length varies (Generally 4-6+ hrs per side)
- Hospital stay 3 nights
- Drains in each side of abdomen and in the breast
- Return to work approx. 4-6 weeks

Recipient Vessels in Chest

Generally Internal Mammary Artery & Vein (IMA/IMV)

Accessed through rib resection

(removal of small piece of cartilage from end of rib)

Mapping Abdominal Perforator Vessels with 3D CT Scan

Sensate Breast Reconstruction

- During unilateral autologous breast reconstruction, this is attempted if nerves can be found in abdomen and chest
  - Reconnected using nerve tube
- Hope to gain some sensation of skin and chest wall, but will never regenerate full sensation/nipple sensation
Staged Bilateral DIEP Flaps

Tissue Expanders
(left side radiation)
Unilateral DIEP flap
Results similar to a “tummy tuck”

Abdominal scar often hidden by most underwear/clothing
Prior to mastectomy

Tissue Expander after radiation

Left DIEP flap

Right breast lift to match
Completed DIEP Flaps w/Nipple Reconstruction and Tattoo
Healed Flap After 2 Years

*Nipple reconstruction is patient’s preference
SGAP Flap

SGAP Breast Reconstruction

1st Stage: Tissue Expanders
Lateral SGAP (L-SGAP)

Flap taken from more lateral position of the buttock

Results in shorter, more lateral scar
Bilateral SGAP with skin paddles excised
Lateral SGAP (L-SGAP)

Flap is taken from more lateral (side) area of buttock, creating shorter scar
Unilateral SGAP
Markings made prior to surgery to map blood vessels

Delayed Bilateral SGAP
Revisions to buttock may include fat grafting and/or liposuction of the opposite side for symmetry.
Good candidates are those who are eligible for breast conservation with lumpectomy and have larger breasts or desire a breast reduction.
Oncoplastic Breast Reduction
Complications

**Autologous**
- **Flap Loss**
  - **Risk = 1-3%**
  - (L-SGAP, S-GAP, DIEP)

**Implant**
- **Unacceptable result with implants**
  - (contracture, radiation, infection, exposure)
COMPLICATIONS

Reason for Failure:

Blood not properly flowing in and/or out of blood vessels to the flap

* Can sometimes correct medically or surgically

Otherwise, must remove flap and consider other options

Healthy flap (warm, pink)

Failing Flap (cool, pale)

* Most likely to fail within 24-48 hours WHILE IN HOSPITAL
Methods to Attempt to Save a Failing Flap

**Surgical:**
Explore vessels for clot, kink, hematoma, etc.

**Medical:**
- Aspirin (blocks platelets)
- Heparin (blood thinner)
- Viagra (dilates blood vessels)
- Leech therapy (secretes blood thinners)
Right DIEP Flap and Left Implant (after failed left DIEP flap)
Necrosis of Mastectomy Skin

Healed, following operation to remove dead skin
Failed Left Reconstruction
Pedicled Latissimus Flap + Implant
Scarring

Everyone scars differently. Some people develop keloid or hypertrophic scarring as seen here.
Anticipate Asymmetry

Normal side can be adjusted to match reconstructed breast

Options:
Saline or Silicone Gel Implant
Stages of Breast Development

Ptosis = “sagging” of breast

Bilateral Immediate DIEP Flap

Although things may not look cosmetically pleasing initially...

With time and small outpatient revision surgeries...

The end result is greatly improved
Bilateral DIEP Flaps

With slight asymmetries that can be improved upon
Breast Mound Reconstruction Complete

Lift/Reduction/Augmentation for normal side + Nipple Reconstruction (outpatient surgery approx. 2-3 hrs)

Acceptable Symmetry ?

No

6-8 weeks later

Color Tattoo of areola

Yes

Nipple Reconstruction (outpatient surgery approx. 1 hr or less)
Revisions may include liposuction, direct excision, and/or fat-grafting to improve symmetry.

Nipple Reconstruction

Reconstructed from tissue of the same area.

Made larger initially as they flatten dramatically over first few months.

The color can be tattooed 6-8 weeks following nipple reconstruction.
Breast Reduction
Removes excess skin and breast tissue

Discarded tissue
Breast Reduction as Matching Procedure
Breast Reduction as Matching Procedure
Breast Lift

Removes excess skin from breast envelope, no breast tissue removed

Breast Lift
Breast Lift
Breast Augmentation

Left breast implant reconstruction with right breast augmentation matching procedure
Summary of Options

- **Prosthetic/Implant-Based**
  - Tissue Expander
  - Saline or Silicone Implant

- **Autologous Tissue**
  - Free DIEP/SIEA
  - Free S-GAP
  - Free L-SGAP
  - Free TUG
  - T-Dap
  - Pedicled Lat Dorsi
  - Free TRAM
  - Pedicled TRAM

- **Other**
  - Flap + Implant
  - Oncoplastic Breast Reduction

*Remember, breast reconstruction is a work in progress over time.*

With your patience, we strive for natural results with symmetry in shape and size.