Pre-Pectoral Breast Reconstruction

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Disclosures

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Goals for Today’s Talk

• Review relevant anatomy

• Introduce pre-pectoral implant breast reconstruction

• Compare and contrast to current standard techniques

• Share patient examples

• Foster discussion
Anatomy

- Clavicle
- Deltoid
- Cephalic vein
- Pectoralis major
- Latissimus dorsi
- Axillary process (tail) of breast
- Areola
- Serratus anterior
- Pectoral fascia
- Subcutaneous tissue
- Pectoralis major
- Suspensory ligaments of breast
- Lactiferous duct
- Lactiferous sinus
- Fat

Anterior View
Skin-Sparing Mastectomy
Post-Mastectomy Breast Reconstruction

- None/Delayed
- Two/One Stage Implant
- Autologous Tissue Flaps
  - DIEP, TRAM, SIEA (abdominal wall)
  - SGAP/IGAP (buttock)
  - TUG/PAP (medial thigh)
- Combination Tissue/Implant
  - Latissimus dorsi
- Etc.
Post-Mastectomy Breast Reconstruction

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• Etc.
History of Breast Implant Reconstruction

• 1960s – silicone implants in subcutaneous pocket

• Pros – simple, quick, preserves integrity of pec

• Cons – implant bottoming out, palpability, visibility/rippling; exposure with wound breakdown; capsular contracture

• Problems associated with insufficient soft tissue coverage

• Therefore, move to sub-muscular position
Implant Breast Reconstruction

- Subcutaneous
- Pre-Pectoral with ADM
- Submuscular
- Dual plane with ADM
- Sub-pectoral/dual plane
Sub-muscular Position

• Implant placed under pectoralis muscle without releasing its inferior insertion

• Serratus anterior and rectus abdominis sheath elevation provide additional coverage

• **Pros** – eliminates soft tissue coverage limitations

• **Cons** – unnatural appearing breast, including poor projection, ptosis and breast shape; significant donor site morbidity from muscle elevation
Inferior Border of Pec Major does NOT always reach IMF of Breast
Sub-Muscular Coverage of TE (no ADM)
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Dual Plane Technique

• Addresses inferior restriction of full muscle coverage

• Muscle coverage superiorly by pectoralis, inferiorly by mastectomy flap

• **Pros** – better lower pole expansion, less morbid without other muscle elevation

• **Cons** – without inferior attachment, pectoralis muscle migrates superiorly “Window shading”

• Also, only have subcutaneous coverage inferiorly, with resultant issues
Dual Plane with Acellular Dermal Matrix

• Introduced in 2006

• Prevents window shading of pectoralis and provides support of lower pole implant

• **Pros** – complications of subcutaneous implant placement minimized without restricting lower pole expansion

• **Cons** – morbidity of muscle elevation, animation deformity; difficult to place implant medially

• Has become the standard technique
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<th>Source</th>
<th>Manufacturer</th>
<th>Cross-linking</th>
<th>Sterilization</th>
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<td>E-beam</td>
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</table>
Acellular Dermal Matrices
Allograft or xenograft collagen matrices used for tissue support/regeneration

Alleged Benefits of ADM in Breast Reconstruction
1. Decreased tension on mastectomy skin flaps
2. Minimize morbidity to musculature
3. Increased intraoperative implant volumes
4. Better placement of implant on chest wall
5. Decreased capsular contracture rates
6. Long-term maintenance of implant position
7. Better aesthetics
Inferior Border of Pec Major does NOT always reach IMF of Breast
Inferior Border of Pec Major does NOT always reach IMF of Breast

That’s ok... Bridge the lower pole with ADM. Now implant is in proper position.
Dual Plane with ADM
Lower Pole Expansion
IMF shape and Position
Dual Plane with ADM
Radiated TE to Permanent Implant
Radiated TE to Permanent Implant
Radiated TE to Permanent Implant
Radiated TE to Permanent Implant
Radiated TE to Permanent Implant – 2 years after exchange
Radiated TE to Permanent Implant – 4 years after exchange
Implant Breast Reconstruction

- Subcutaneous
- Submuscular
- Pre-Pectoral with ADM
- Dual plane with ADM
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Rationale for Pre-Pectoral Placement

• Breast is naturally in pre-pectoral position

• Immediate DIEP flap reconstruction is placed pre-pectorally

• Larger piece of ADM can be used to mimic muscle coverage, and avoid pitfalls of subcutaneous placement

• Procedure is potentially quicker with less morbidity, less pain and faster recovery
Only Pre-Pec has demonstrated benefits like this

Less pain. No animation.
Better mobility. Faster recovery.

Learn more about AlloDerm™ and pre-pectoral breast reconstruction at Allergan booth 811.

Model- not an actual patient


Physicians should consider whether or not this procedure is appropriate for patients including patients with poorly vascularized flaps. As with all implant reconstruction, proceed with caution on patients with prior radiotherapy.
Immediate Implant-based Prepectoral Breast Reconstruction Using a Vertical Incision

Hilton Becker, MD, FACS*†‡
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Elizabeth G. Hopkins, BA,
BS§

**Background:** Ideally, breast reconstruction is performed at the time of mastectomy in a single stage with minimal scarring. However, postoperative complications with direct-to-implant subpectoral reconstruction remain significant. These include asymmetry, flap necrosis, animation deformity, and discomfort.
Why Can We Do This Today?

• Larger pieces of ADM are available

• Breast Surgeons improved technique and therefore better skin flap perfusion

• Patient expectations

• No longer need to keep the implant in a “privileged space”
Mesh Placement in “Privileged Spaces”
Downsides to Pre-Pectoral Implant Placement

• Larger piece of ADM = greater cost

• Thin skin envelop = implant rippling

• Poor skin perfusion, delayed wound healing may lead to loss of reconstruction
Contraindications?

• Prior sub-pectoral breast augmentation
• Obesity
• Patient too thin
• History of or plan for radiation?
• Smoker
• Diabetic
• Poorly perfused skin flaps
How does one do it?

• **Option 1 – full wrap**
  – Wrap implant in ADM on back table
  – Place into mastectomy pocket
  – Secure expander tabs or ADM to chest wall
  – Close over drains

• **Option 2 – anterior sling**
  – Secure ADM to superior or inferior border
  – Place implant in mastectomy pocket under ADM
  – Secure remaining borders to chest wall
  – Close over drains
How do I do it?

- Anterior sling with ADM (Option 2)
- Air, rather than saline, in expander
- Exparel (or paravertebral block) for postop pain control
- One drain only (two if axillary dissection)
- Only remove air from expander if necessary to close skin without tension
- Direct to Implant is great too
Patient Examples

Immediate Reconstructions
Pre-Pectoral, Immediate, ADM, TE
Pre-Pectoral, Immediate, ADM, TE
Pre-Pectoral, Immediate, ADM, TE
Pre-Pectoral, Immediate, ADM, TE
Pre-Pectoral, Immediate, ADM, TE
PrePectoral, Immediate, ADM, TE
PrePectoral, Immediate, ADM, TE
PrePectoral, Immediate, ADM, TE
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Pre-Pectoral, Immediate, TE, ADM
Pre-Pectoral, Immediate, TE, ADM
Pre-Pectoral, Immediate, TE, ADM
Pre-Pec, Immediate, NAC-Sparing, TE, ADM
Pre-Pec, Immediate, NAC-Sparing, TE, ADM
Pre-Pec, Immediate, NAC-Sparing, TE, ADM
Pre-Pec, Immediate, NAC-Sparing, TE, ADM
PrePectoral, Immediate, ADM, DTI
PrePectoral, Immediate, ADM, DTI
PrePectoral, Immediate, ADM, DTI
Pre-Pectoral, Immediate, TE, ADM
Pre-Pectoral, Immediate, TE, ADM
Segmental, then completion mastectomy with pre-pec DTI, ADM
Segmental, then completion mastectomy with pre-pec DTI, ADM
Segmental, then completion mastectomy with pre-pec DTI, ADM
Segmental, then completion mastectomy with pre-pec DTI, ADM
Pre-Pectoral, Immediate, TE, ADM
Pre-Pectoral, Delayed, DTI, NAC-Sparing
Patient Examples

Delayed Reconstructions
PrePectoral, Delayed, No ADM, TE
PrePectoral, Delayed, No ADM, TE
PrePectoral, Delayed, No ADM, TE
PrePectoral, Delayed, No ADM, TE
Pre-Pectoral, Delayed, DTI, NAC-Sparing
Pre-Pectoral, Delayed, DTI, NAC-Sparing
Pre-Pectoral, Delayed, DTI, NAC-Sparing
Pre-Pectoral, Delayed, DTI, NAC-Sparing
Common Complications

- Seroma
- Thin soft tissue coverage
- Implant palpability
- Unilateral Asymmetry
Why do patients like it?

• Less pain
• Less restriction of upper extremity
• Easier expansion
• Great aesthetic outcome
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Why do I like it?
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Conclusions

• Pre-pectoral implant positioning is the next step in evolution of implant breast reconstruction

• Offers less pain, less morbidity, less animation deformity and faster recovery

• Requires larger pieces of ADM, which may increase seroma rates, costs, etc.

• Provides a more appropriate “anatomic” reconstruction, similar to immediate DIEP flaps
Thank you!

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