

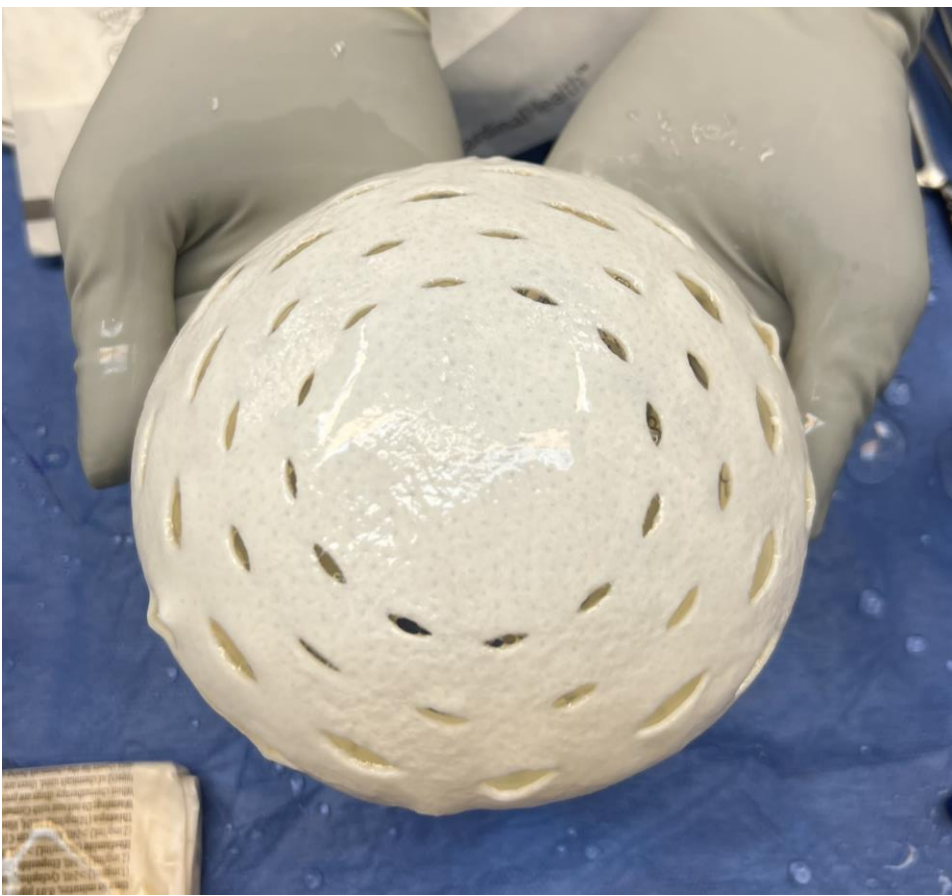
# Comparative Postoperative Complications of Acellular Dermal Matrix and Mesh Use in Prepectoral and Subpectoral One-Stage Direct to Implant Reconstruction: A Retrospective Cohort Study

Michael Diffley, MD; Jamie Hall MD; Yitzchok Greenberg, MD; Amy Tang PhD; Donna Tepper MD;  
Vigen Darian MD; Maristella Evangelista MD; Dunya Atisha MD  
Henry Ford Hospital, Detroit, Michigan



## Background

- Immediate direct to implant (DTI) prepectoral reconstruction has increasingly popular due to<sup>1,2</sup>:
  - Improved aesthetic outcomes
  - Improved psychological well-being
  - Decreased animation deformity
  - Improved physical functioning
  - Decreased recovery time
- Historically immediate DTI has been associated with higher rates of:
  - Seroma, infection, contracture, and explantation<sup>1,2</sup>
- Immediate DTI, specifically prepectoral, requires use of acellular dermal matrix (ADM).
- To provide a safer approach to DTI, we evaluated the complication profile associated with the different types of dermal matrices and surgical meshes available for use in immediate DTI reconstruction.



ADM wrap for prepectoral immediate DTI reconstruction



Intraoperative subpectoral ADM placement in immediate DTI reconstruction

## Methods

- A retrospective cohort study of patients undergoing immediate DTI reconstruction in either the prepectoral or subpectoral plane from 2019-2022 at a large metropolitan healthcare system was performed.
- Data extracted included:
  - Demographics, comorbidities, procedural details, cancer treatments received, and major and minor complications
- Univariate and multivariate analyses

| Complication                 | Autologous<br>n = 23 | AlloDerm<br>n = 120 | Flex HD<br>n = 192 | DermACELL<br>n = 21 | GalaFLEX<br>n = 21 | Meso<br>BioMatrix<br>n = 22 | p value |
|------------------------------|----------------------|---------------------|--------------------|---------------------|--------------------|-----------------------------|---------|
| Full Thickness Skin Necrosis | 3 (13.0%)            | 12 (10.0%)          | 16 (8.3%)          | 2 (9.5%)            | 1 (4.8%)           | 2 (9.1%)                    | 0.950   |
| Hematoma                     | 1 (4.3%)             | 5 (4.2%)            | 7 (3.6%)           | 0                   | 0                  | 0                           | 0.990   |
| Seroma                       | 5 (21.7%)            | 12 (10.0%)          | 7 (3.6%)           | 0                   | 0                  | 0                           | 0.008   |
| Capsular Contracture         | 6 (26.1%)            | 34 (28.3%)          | 17 (8.9%)          | 1 (4.8%)            | 6 (28.6%)          | 3 (13.6%)                   | 0.008   |
| Flipped Implant              | 0                    | 2 (1.7%)            | 6 (3.1%)           | 0                   | 0                  | 0                           | 0.960   |
| Cellulitis                   | 3 (13.0%)            | 24 (20.0%)          | 22 (11.5%)         | 2 (9.5%)            | 0                  | 6 (27.3%)                   | 0.037   |
| Explantation (Infection)     | 2 (8.7%)             | 13 (10.8%)          | 14 (7.3%)          | 0                   | 1 (4.8%)           | 0                           | 0.430   |
| Explantation (Exposure)      | 1 (4.3%)             | 7 (5.8%)            | 8 (4.2%)           | 1 (4.8%)            | 3 (14.3%)          | 4 (18.2%)                   | 0.430   |
| Explantation (Contracture)   | 2 (8.7%)             | 15 (12.5%)          | 5 (2.6%)           | 0                   | 0                  | 0                           | 0.004   |
| Revision Surgery             | 5 (21.7%)            | 44 (36.7%)          | 59 (30.7%)         | 7 (33.3%)           | 9 (42.9%)          | 7 (31.8%)                   | 0.770   |

## Results

- 242 patients (**402 breasts**) underwent prepectoral (**n = 188**) or subpectoral (**n = 54**) direct to implant reconstruction
- Univariate analyses** of complications between the matrices used demonstrated:
  - AlloDerm** use resulted in a statistically significant higher incidence of:
    - Cellulitis (p = 0.037)**
    - Capsular contracture (p = 0.008)**
    - Implant exchange for capsular contracture (p = 0.004)**
    - Seroma requiring drainage (p = 0.008)**
  - No significant differences in demographics, diabetes, smoking, implant type or size, mastectomy type, neoadjuvant or adjuvant chemotherapy, radiation therapy, or axillary lymph node dissection.
  - No significant difference in rates of cellulitis, explantation for infection, hematoma or seroma requiring drainage, and skin necrosis
- Multivariate analysis** demonstrated that patients reconstructed with **FlexHD** demonstrated:
  - Decreased risk of capsular contracture (p = 0.023 OR 0.17; CI [0.04-0.78])**
  - Decreased rate of reoperation for capsular contracture (p = 0.03 OR 0.15; CI [0.03-0.83])**
- No statistically significant difference in the rates of cellulitis or seroma on multivariate analysis
- No significant difference in postoperative complication rates between autologous dermal flaps and matrices

## Conclusions

- Certain products have improved safety profiles which should be considered during operative planning.

## Bibliography

- Maruccia M, Elia R, Tedeschi P, et al. Prepectoral breast reconstruction: an ideal approach to bilateral risk-reducing mastectomy. *Gland Surg.* 2021;10(10):2997-3006. doi:10.21037/gs-21-339
- Mirhaidari, S. , Azouz, V. & Wagner, D. (2020). Prepectoral Versus Subpectoral Direct to Implant Immediate Breast Reconstruction. *Annals of Plastic Surgery*, 84 (3), 263-270. doi: 10.1097/SAP.0000000000002059.

### Minor

- Skin necrosis
- Hematoma or seroma requiring drainage
- Contracture
- Flipped implant

### Major

- Cellulitis
- Explantation for infection, exposure, or contracture
- Revision surgery