

# Does Acellular Dermal Matrix Really Improve Aesthetic Outcome in Tissue Expander/Implant-Based Breast Reconstruction?

Ahmed M. S. Ibrahim<sup>1</sup> · Pieter G. L. Koolen<sup>1</sup> · Oren Ganor<sup>1</sup> · Mark K. Markarian<sup>1</sup> · Adam M. Tobias<sup>1</sup> · Bernard T. Lee<sup>1</sup> · Samuel J. Lin<sup>1</sup> · Marc A. M. Mureau<sup>2</sup>



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## Abstract

**Background** The expectation for improved results by women undergoing postmastectomy reconstruction has steadily risen. A majority of these operations are tissue expander/implant-based breast reconstructions. Acellular dermal matrix (ADM) offers numerous advantages in these procedures. Thus far, the evidence to justify improved aesthetic outcome has solely been based on surgeon opinion. The purpose of this study was to assess aesthetic outcome following ADM use in tissue expander/implant-based breast reconstruction by a panel of blinded plastic surgeons.

**Methods** Mean aesthetic results of patients who underwent tissue expander/implant-based breast reconstruction with ( $n = 18$ ) or without ADM ( $n = 20$ ) were assessed with objective grading of preoperative and postoperative photographs by five independent blinded plastic surgeons. Absolute observed agreement as well as weighted Fleiss Kappa ( $\kappa$ ) test statistics were calculated to assess inter-rater variability.

**Results** When ADM was incorporated, the overall aesthetic score was improved by an average of 12.1 %. In addition, subscale analyses revealed improvements in breast contour (35.2 %), implant placement (20.7 %),

lower pole projection (16.7 %), and inframammary fold definition (13.8 %). Contour ( $p = 0.039$ ), implant placement ( $p = 0.021$ ), and overall aesthetic score ( $p = 0.022$ ) reached statistical significance. Inter-rater reliability showed mostly moderate agreement.

**Conclusions** Mean aesthetic scores were higher in the ADM-assisted breast reconstruction cohort including the total aesthetic score which was statistically significant. Aesthetic outcome alone may justify the added expense of incorporating biologic mesh. Moreover, ADM has other benefits which may render it cost-effective. Larger prospective studies are needed to provide plastic surgeons with more definitive guidelines for ADM use.

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**Keywords** ADM · Acellular dermal matrix · Implant-based breast reconstruction · Aesthetic outcome · Photographic analysis

✉ Marc A. M. Mureau  
m.mureau@erasmusmc.nl

Ahmed M. S. Ibrahim  
aibrahim@bidmc.harvard.edu

<sup>1</sup> Division of Plastic Surgery, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA

<sup>2</sup> Department of Plastic and Reconstructive Surgery, Erasmus MC Cancer Institute, University Medical Center Rotterdam, P.O. Box 2040, NL-3000 CA Rotterdam, The Netherlands

## Introduction

Over the last decade, the expectation for improved results by women undergoing postmastectomy reconstruction has steadily risen [1]. Eighty percent of these procedures are performed using a tissue expander/implant-based approach owing to the relatively straightforward operative technique and reduced operative time [2]. Despite this overwhelming majority, implant-based breast reconstruction has some drawbacks including capsular contracture and implant