2024 NEW YORK REGIONAL SOCIETY OF PLASTIC SURGEONS ANNUAL RESIDENTS' NIGHT RESEARCH COMPETITION

MONDAY, MARCH 11, 2024
NEW YORK ACADEMY OF MEDICINE

ABSTRACT SUBMISSION TITLE: *A1 - The Statistical Fragility of Outcomes on Breast Reconstruction with Acellular Dermal Matrix: A Systematic Review of Randomized Controlled Trials*

Additional Author(s):
Anya Wang; Esther Kim; Daniel Kwon; Janet Coleman-Belin; Olachi Oleru, MD; Nargiz Seyidova, MD, MQHS; Peter J Taub, MD, MS, FACS

Abstract Presenting Author:
Joshua M. Barnett, MD

Plastic Surgery Residency Training Program:
Icahn School of Medicine at Mount Sinai

Abstract Text:

PURPOSE:

Acellular dermal matrix (ADM) is pivotal in breast surgery, yet the statistical robustness of surgical outcomes remains underexplored. This study employs the fragility index (FI), reverse fragility index (rFI), and fragility quotient (FQ) to investigate the statistical fragility of ADM breast reconstruction outcomes.

METHODS:

Randomized controlled trials (RCTs) (2013-present) with dichotomous outcomes were sourced from PubMed, Embase, SCOPUS, Medline, and Cochrane databases. FI and rFI–event reversals needed to alter outcome significance–and FQ–standardized fragility across trials–were computed and reported as median (IQR). Subgroup analysis focused on intervention types.

RESULTS:

Out of 33 studies screened, 19 RCTs comprising 204 outcomes were included, with a median FI of 4 (3 - 5) and FQ of 0.039 (0.029 - 0.070). Twenty-six outcomes achieved statistical significance, with a median FI of 3.5 (1 - 5) and FQ of 0.033 (0.010 - 0.073). The remaining 178 outcomes were nonsignificant, exhibiting a median FI of 4 (3 - 5) and FQ of 0.040 (0.030 - 0.070). Of the 204 outcomes, 18% had a number of patients lost to follow up equal to or surpassing the FI. By intervention type, the median FIs were similar in value but remained low.

CONCLUSIONS:

ADM-related breast reconstruction outcomes are statistically fragile, so reversal of a few outcomes or maintaining follow-up with patients may alter the significance of findings. Future researchers are thus recommended to report FI and FQ metrics with P-values to accurately portray reconstructive surgery outcomes.