

Breast Implants And Breast Cancer Immunosurveillance: An Updated And Longitudinal Analysis Of Antibody Responses To Breast Cancer Antigen Post Implant Placement

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Introduction

Historically, there has been public concern that breast implants may be associated with breast cancer. In reality, women with cosmetic breast implants have significantly reduced rates of future breast cancer development than the general population.¹ We previously demonstrated women with breast implants have higher antibody responses to select breast cancer proteins compared to women with no implant exposure. **Here, we present antibody response data on a larger cohort of women and with a longer follow-up period.**

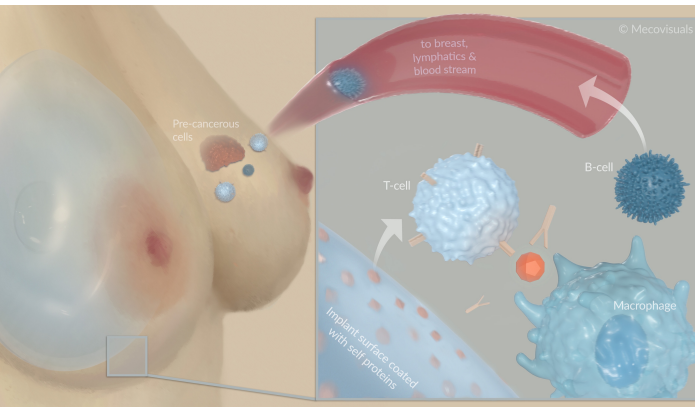


Figure 1. Diagrammatic illustration of the hypothesis.

Objectives

1. To compare antibody responses to common breast cancer-related proteins before and one-month after breast implant placement.
2. To determine whether elevated antibody responses one month after breast implant placement were sustained at six months after breast implant placement.

Results

Thirty-four women presenting with breast-related complaints were recruited from the plastic surgery outpatient clinic. Average age was 31.6 years (SD 8.2 years) and average BMI 24.1 (SD 5.1). Twenty-nine patients (85.3%) received silicone and all received smooth implants.

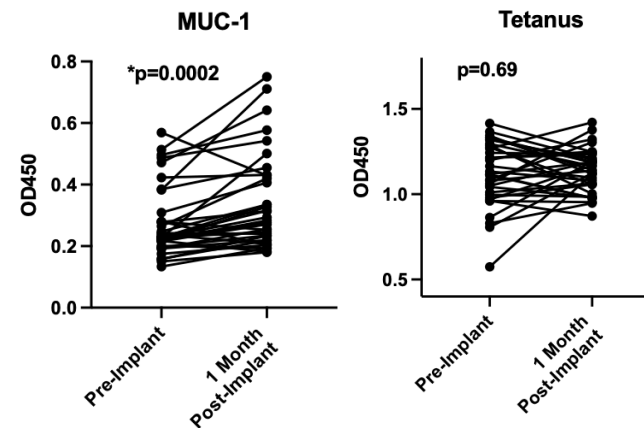


Figure 2. Antibody levels to the breast cancer-associated antigen MUC-1 and tetanus in 34 women pre- and one month post-breast implant placement. Antibody levels were significantly elevated to MUC-1 post-implant placement.

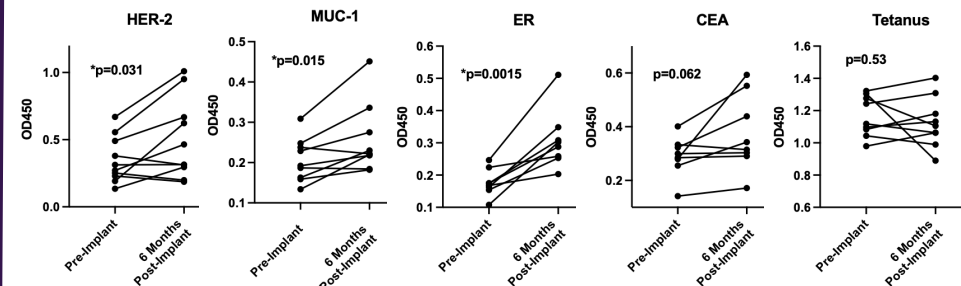
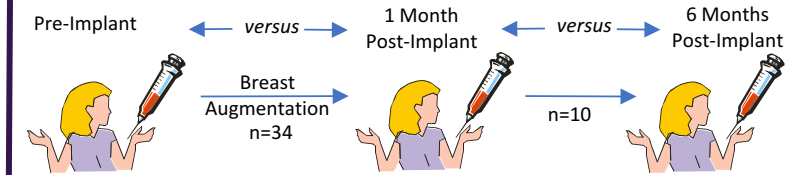
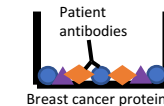


Figure 3. Antibody levels to various breast cancer-associated antigens in 10 women pre- and six months post-breast implant placement. Antibody levels were significantly elevated to ER, HER-2, and MUC-1 at six months post-implant placement.

Methods



Blood samples were also collected from women prior to breast implant placement, one-month post-implant placement, and six-months post-implant placement. Paired t-tests were performed to compare antibody responses before and after implant placement.



ELISA assays were performed according to standard established protocols to measure antibody responses to breast cancer-associated antigens. OD₄₅₀ values were utilized for comparison.

Conclusion

Women with cosmetic breast implants have elevated antibody responses to common breast cancer proteins as early as one month post implant placement, and sustained at six months. Further studies will elucidate the immunologic mechanism for this potential cancer surveillance role.

¹Noels EC, Lapid O, Lindeman JH, Bastiaannet E. Breast implants and the risk of breast cancer: a meta-analysis of cohort studies. *Aesthet Surg J.* 2015;35(1):55-62.