

Title: Abdominal Wall Reinforcement Using Acellular Tissue Matrix after Deep Inferior Epigastric Perforator Flap Harvest for Breast Reconstruction

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## ABSTRACT

### Introduction

Deep inferior epigastric perforator (DIEP) flap is a common method of autologous breast reconstruction. Abdominal wall bulges and hernias are known complications following DIEP flap harvest. Abdominal wall reinforcement (AWR) by synthetic meshes can decrease bulges by up to 70%, but such meshes have been associated with seromas and infections. Reinforced tissue matrix (RTM) is another material used for AWR. RTM can recruit fibroblasts, providing a scaffold for proliferation. This differs from the foreign body response caused by synthetic meshes. There is no literature on RTMs for AWR following DIEP flap harvest. Therefore, this study aimed to evaluate the efficacy and safety of RTMs for AWR following DIEP flap harvest.

### Methods

A retrospective review was performed for patients undergoing unilateral or bilateral DIEP flaps for autologous breast reconstruction at our institution between 01/2020-12/2022. Patients were required to have completed at least 6 months of follow up. The primary outcome of interest was efficacy of RTM in reducing abdominal-wall-related complications. Descriptive statistics and univariate analysis were used.

### Results

A total of 152 patients met inclusion criteria. The mean age at the time of surgery was 51.7 years and BMI was 29.1 kg/m<sup>2</sup>. AWR was used in 48 (31.6%) patients of which 45 (93.8%) received RTM and 3 (6.3%) received synthetic mesh. A bulge/hernia developed in 16 (10.5%) patients. Of those, 1 (6.3%) received synthetic mesh, and none received RTM. Patients that received RTM were significantly less likely to develop a bulge/hernia post-operatively ( $P=0.006$ ) as compared to patients without mesh. Additionally, RTM was associated with reduced rates of developing a seroma/hematoma when compared to synthetic mesh (8.9% vs. 100%,  $P=0.002$ ) and RTM did not differ in seroma/hematoma rates compared to the no mesh cohort (8.9% vs. 5.8%,  $P=0.490$ ).

### Conclusion

This study demonstrates the effectiveness of RTMs in reducing the rate of bulges and hernias following DIEP flap harvest. Our findings also showed that RTMs may reduce the rates of post-operative seroma/hematoma when compared to synthetic meshes. Despite the small sample sizes, we find that these results highlight the safety and efficacy of RTM for AWR following DIEP flap harvest.

## References

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