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Using propensity score analysis to compare major complications between DIEP and free MS-TRAM flap breast reconstructions

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Background: Previous studies comparing muscle-sparing transverse rectus abdominis myocutaneous (MS-TRAM) versus deep inferior epigastric artery perforator (DIEP) free flaps have not considered procedure selection bias. Propensity score analysis provides a statistical approach to consider pre-operative factors in surgeons' selection of free MS-TRAM versus DIEP flaps, and was used in this study to compare major complications (breast and abdominal separately) between the two methods of microsurgical breast reconstruction.

Methods: This study evaluated major breast and abdominal complications in 292 consecutive patients (428 free abdominal flaps). Propensity scores were calculated for patient differences that affected flap selection (DIEP vs. free MS-TRAM). Multivariate logistic models using selected covariates separately analyzed breast and abdominal complications between flap methods.

Results: There were 83 (28%) major complications, (20% breast; 8% abdomen). Using propensity scores, the adjusted odds of abdominal complications was significantly higher in free MS-TRAM vs. DIEP flaps (OR=2.73 (95% CI 1.01-7.07)). With prior chemotherapy, BMI significantly increased abdominal complications (OR=1.16 (95% CI 1.01-1.34)). Using propensity scores, there was no significant association between reconstruction method and breast complications; diabetics had significantly increased breast complications (OR=4.19 (95% CI 1.14-15.98)). Previous abdominal surgeries (OR 1.77, 95% CI 0.96-3.30) and immediate reconstruction (OR 1.86, 95% CI 0.94-3.71) approached significance.

Conclusion: Propensity score analysis indicated significantly higher abdominal complications in free MS-TRAM compared to DIEP flaps. This study highlights the importance of separately evaluating recipient breast and donor abdominal complications and use of propensity scores to minimize procedure selection bias.

Biography

Toni Zhong, MD, FRCS, MHS is a graduate of the Plastic Surgery Residency Training Program at the University of Western Ontario and became a Fellow of the Royal College of Physicians and Surgeons of Canada in 2007. Following the completion of her residency, she was awarded the Zeiss Canada Microsurgery Scholarship to pursue a year-long Microvascular and Reconstructive Surgery Fellowship at Memorial Sloan Kettering Cancer Center in New York City. In 2012, she was awarded the prestigious 2012 Career Development Award from the American Society of Clinical Oncologists. She currently has over 30 peer-reviewed publications in high impact oncology and surgical journals, holds 10 active national level research grants, and numerous Canadian and American Plastic Surgery Foundation Funds. She is also the Co-Director of Research for Women for Women, a non-profit humanitarian organization for the International Plastic and Reconstructive Aesthetic Surgery Society. She is an Assistant Professor, Fellowship Director for the Breast Reconstruction Fellowships Program, and the Fellowship Director for the Division of Plastic and Reconstructive Surgery at the University of Toronto. She is also the Clinical and Research Lead of the Breast Restoration Program at University Health Network, a leading center for advanced techniques in breast reconstruction in North America.

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