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Breast Reconstruction Typically a Multi-Step Process

Optimal Results May Mean Expecting the Unexpected

Abstract: Once Is Rarely Enough: A Population-Based Study of Reoperations After Postmastectomy Breast Reconstruction

April 30, 2015, Orlando--Women who choose breast reconstruction following mastectomy can expect an average of two re-operations related to the restoration of their breasts, with the first occurring within seven months after their initial surgery, according to a new study presented this week at the American Society of Breast Surgeons (ASBrS) Annual Meeting. The study provides the first long-term population-level data on current post-mastectomy breast reconstruction (PMBR) re-operation rates and includes both planned and unplanned procedures.

“Women undergoing mastectomy and reconstruction must be aware that even after their cancer surgery is complete, their journey through the medical system and the after effects of this disease are ongoing,” said lead researcher Dr. Amanda Roberts of the University of Toronto. “This study helps build quantitative expectations of the typical path that follows reconstruction and promotes more informed patient-physician decisions on treatment options. Excessive additional surgeries can lead to other medical concerns and increased healthcare costs.”

The retrospective study analyzed 3,972 women aged 18 to 65 who underwent therapeutic or prophylactic mastectomies between 2002 and 2008, followed by an immediate or delayed PMBR (within three years of their initial surgery). Information was drawn from provincial administrative and cancer registry databases in Ontario, Canada. Re-operations were identified based on Ontario Health Insurance Plan (OHIP) billing codes. Patients were tracked for an average of 5.1 years or to their death.

“Our data clearly points out that for most women, reconstruction includes multiple surgeries,” said Dr. Roberts. “Some are part of a planned multi-stage breast restoration process and likely were discussed in

advance as part of surgical planning. However, others are unplanned and result from complications or suboptimal outcomes of the reconstruction process itself.”

Dr. Roberts noted that in the study, 88% of the women underwent a minimum of one re-operation. Of the patients studied, 65% had more than one reconstruction-related surgery, and the mean number of procedures was two. Thirty-nine percent of patients had three or more additional surgeries. During the five year follow up, 9,353 procedures were performed on the 3,504 women. Forty-two percent were anticipated, while 37% were unanticipated. The remainder were minor skin or scar-related procedures or cancer-related surgeries.

Planned re-operations included nipple reconstruction, replacement of tissue expanders with implants and rebalancing of the opposite breast for enhanced cosmesis. Unanticipated procedures for implant reconstructions included revisions related to undesirable implant placement or complications such as infection. Unanticipated procedures related to tissue-based reconstructions included failure or revision of the tissue flap and problems at tissue donor sites such as hernias. Tissue reconstructions involve restoring the breast with a flap of the patient’s own tissue harvested from other body parts, most commonly the abdomen.

“Without large studies like ours evaluating reconstruction outcomes, physicians may find providing patients with detailed information about potential unplanned surgeries particularly difficult. In addition, if multiple returns to the hospital and operating room are unanticipated, patients may endure negative psychological effects,” said Dr. Roberts. “Studies like these will help patients and physicians understand reconstruction in the broader context of future surgeries to help both have more realistic expectations.”

Dr. Roberts noted that this research is the first step in a multi-phased study ultimately aimed at elucidating the factors related to unanticipated repeat surgeries to target these for quality improvement.

Abstract, Official Proceedings

Presenter: Amanda Roberts

Institution: University of Toronto

Title: Once Is Rarely Enough: A Population-Based Study of Reoperations After Postmastectomy Breast Reconstruction

Objective: Postmastectomy breast reconstruction (PMBR) can be used to improve the quality of life (QOL) of breast cancer patients during their survivorship period. However, when additional surgical procedures required after initial PMBR are excessive, this can lead to increased postsurgical morbidity, decreased QOL for patients, and increased healthcare utilization and costs. The primary aim of this study was to determine the overall population-based re-operation rates following PMBR in the province of Ontario, Canada.

Methods: A population-based retrospective cohort study was completed using provincial administrative and cancer registry databases in Ontario, Canada. The main cohort included women between the ages of 18 and 65 years who underwent a prophylactic or therapeutic mastectomy between April 1, 2002, and March 31, 2008, followed by an immediate or delayed PMBR (within 3 years of primary mastectomy). Reoperations following PMBR were identified through Ontario Health Insurance Plan (OHIP) billing codes submitted by general or plastic surgeons. Patients were followed from the date of their reconstruction surgery to March 31, 2013, or death, whichever was earliest. Reoperations were categorized as anticipated, unanticipated, second oncologic breast, combinations of these categories, or unclassified. Anticipated procedures were considered an expected component of the reconstruction process. Unanticipated procedures were related to emergency operations or those requiring revision of the PMBR. Second oncologic breast operations also included prophylactic procedures. Unclassified were procedures that were unable to be categorized and consisted mainly of skin/scar-related procedures.

Results: Overall 3,972 women underwent primary mastectomy and PMBR between 2002 and 2008. Among these women, 3,506 (88%) underwent at least 1 reoperation during an average follow-up of 5.1 years. Two-thirds (66%) of the cohort had more than 1 reoperation; median number of procedures per patient was 2 (interquartile range, 1–3) and the first operation was on average within 7 months of the PMBR. A total of 9,404 procedures were performed during the follow-up period, the majority of which were anticipated (55%) followed by unanticipated (22%).

Conclusion: Our results provide the first long-term population-level data on the current state of PMBR reoperation rates. The results from this study will inform patient-physician surgical decision-making and provide quantitative expectations of morbidity related to PMBR. Future analysis will compare reoperations for implant vs tissue-based PMBR, immediate vs delayed PMBR, and identify factors contributing specifically to unanticipated reoperations - as these unplanned operations are an ideal target area for quality improvement.

Postmastectomy Breast Reconstruction Reoperation Results

Procedure Type		
	Anticipated	5,138 (55%)
	Unanticipated	2,063 (22%)
	Unclassified	1,453 (15%)
	Second oncologic breast	658 (7%)
	Combinations	92 (1%)
Time to First Procedure (days)		
	Mean (SD)	207.2 ± 246.7
	Median (IQR)	168 (58 - 261)
	Range (min, max)	(1, 3765)
Number of Reoperations (by patient)		
	1	1,207 (34%)
	2	918 (26%)
	3	615 (18%)
	≥4	724 (22%)

Abstract, Revised after Official Proceedings Publication**Presenter:** Amanda Roberts**Institution:** University of Toronto**Title:** Once Is Rarely Enough: A Population-Based Study of Re-operation After Post-mastectomy Breast Reconstruction

Objective: Post-mastectomy breast reconstruction (PMBR) can be used to improve the quality of life (QOL) of breast cancer patients during their survivorship period. However, when additional surgical procedures required after initial PMBR are excessive, this can lead to increased postsurgical morbidity, decreased QOL for patients, and increased healthcare utilization and costs. The primary aim of this study is to determine the overall population-based re-operation rates following PMBR in the province of Ontario, Canada.

Methods: A population-based retrospective cohort study was completed using provincial administrative and cancer registry databases in Ontario, Canada. The main cohort included women between the ages of 18-65 years who underwent a prophylactic or therapeutic mastectomy between April 1, 2002, and March 31, 2008, followed by an immediate or delayed PMBR (within 3 years of primary mastectomy).

Re-operations following PMBR were identified through Ontario Health Insurance Plan (OHIP) billing codes submitted by general or plastic surgeons. Patients were followed from the date of their reconstruction surgery to March 31, 2013, or death, whichever was earliest. Reoperations were categorized as anticipated, unanticipated, oncologic, or unclassified. Anticipated procedures were considered an expected component of the reconstruction process. Unanticipated procedures were related to emergency operations or those requiring revision of the PMBR. Oncologic breast procedures may include prophylactic procedures. Unclassified procedures consisted mainly of skin/scar-related procedures.

Results: Overall 3,972 women underwent primary mastectomy and PMBR between 2002 and 2008. Among these women, 3,504 (88%) underwent at least 1 re-operation during an average follow-up of 5.1 years. Two-thirds (65%) of the cohort had more than 1 reoperation; median number of procedures per patient was 2 (interquartile range, 1–3) and the first operation was on average within 7 months of the PMBR. A total of 9,353 procedures were performed during the follow-up period, the majority of which were anticipated (42%) followed by unanticipated (37%).

Conclusion: Our results provide the first long-term population-level data on the current state of PMBR reoperation rates. The results from this study will inform patient-physician surgical decision-making and provide quantitative expectations of morbidity related to PMBR. Future analysis will compare re-operations for implant versus tissue-based PMBR, immediate versus delayed PMBR, and identify factors contributing specifically to unanticipated re-operations - as these unplanned operations are an ideal target area for quality improvement.

Post-mastectomy Breast Reconstruction Re-operation Results

Procedure Type	Number
Anticipated	3,881 (42%)
Unanticipated	3,443 (37%)
Unclassified	1,520 (16%)
Oncologic	509 (5%)
Measure	Time to First Procedure (days)
Mean (SD)	206 ± 241,1
Median (IQR)	168 (58 - 261)
Range (min, max)	(1, 3765)
Number of Re-operations by patient	Count
1	1,216 (35%)
2	915 (26%)
3	610 (17%)
≥4	763 (22%)