Once Is Rarely Enough:  
A Population-Based Study of Re-operations After Post-mastectomy Breast Reconstruction

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Introduction/Objective

Introduction
• Post-mastectomy breast reconstruction (PMBR) aims to surgically restore a breast mound following mastectomy.
• Both immediate (during the same surgery as mastectomy) and delayed forms of PMBR can be used to significantly improve the quality of life (QOL) of some mastectomy patients.
• Additional surgeries after the initial PMBR can lead to post-surgical morbidity - potentially reducing the patient’s QOL, and at the same time increasing healthcare utilization.
• Understanding PMBR re-operation and its healthcare utilization will aid in identifying important areas for quality of care improvement initiatives.
• Current literature lacking long-term population-based evaluations of PMBR re-operations.
• Ontario maintains administrative records for each patient visit to a hospital or ambulatory facility - ideal environment to comprehensively and accurately evaluate re-operations following PMBR

Objective
• To determine population-based patterns of re-operations following PMBR in Ontario, Canada.
Methods

• Population-based retrospective cohort study
• Provincial administrative databases in Ontario, Canada (Institute for Clinical Evaluative Sciences)
• Women 18-65 years who underwent 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 identified through Ontario Health Insurance Plan (OHIP) billing codes submitted by general or plastic surgeons.
• Patients followed from date of PMBR surgery to March 31, 2013 or death; whichever was earliest.
• Re-operations were categorized as anticipated, unanticipated, oncologic, or minor.
  – *Anticipated*: expected component of the reconstruction process (ex. second stage procedure to replace a temporary expander to a permanent implant, contralateral balancing procedure, nipple areolar complex reconstruction)
  – *Unanticipated*: operations to treat acute, sub-acute or long-term complications at breast or donor site (ex. abscess drainage, capsular contraction correction, abdominal wall hernia repair)
  – *Oncologic*: additional prophylactic or therapeutic procedures related to breast cancer care
  – *Minor*: consisted mainly of skin and scar-related procedures
Results

- 3,972 women underwent PMBR between April 1, 2002 and March 31, 2008
- 3,504 (88%) underwent at least one re-operation during an average follow up of 5.1 years (max follow up 11 years)
  - However, 39% of these patients required 3 or more re-operations
- Median number of procedures per patient was 2 (mean 2.7 ± 2.2, range 1-26)
  - Median number of Unanticipated procedures per patient: 1 (mean 1.0 ± 1.5, range 0-18)
- One in 10 patients had 3 or more unanticipated re-operations

Table 1. Average number of re-operations, by re-operation type

<table>
<thead>
<tr>
<th>OVERALL (n=3504)</th>
<th>All Re-operations</th>
<th>Anticipated</th>
<th>Unanticipated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD)</td>
<td>2.7 ± 2.2</td>
<td>1.1 ± 0.8</td>
<td>1.0 ± 1.5</td>
</tr>
<tr>
<td>Median (IQR)</td>
<td>2 (1 - 3)</td>
<td>1 (1 - 1)</td>
<td>1 (0 - 1)</td>
</tr>
<tr>
<td>Range (min, max)</td>
<td>(1, 26)</td>
<td>(0, 7)</td>
<td>(0, 18)</td>
</tr>
</tbody>
</table>

Table 2. Unanticipated Re-operations

<table>
<thead>
<tr>
<th>Unanticipated procedures</th>
<th>Number of patients</th>
<th>% of patients with at least one Unanticipated (n=1764)</th>
<th>% of all PMBR patients (n=3972)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>989</td>
<td>56.1</td>
<td>24.9</td>
</tr>
<tr>
<td>2</td>
<td>394</td>
<td>22.3</td>
<td>9.9</td>
</tr>
<tr>
<td>3 or more</td>
<td>381</td>
<td>21.6</td>
<td>9.6</td>
</tr>
</tbody>
</table>
Discussion/Conclusion

- Patients who undergo PMBR should expect an average of two re-operations following their primary reconstruction over a 5-year follow up period.
- To our knowledge, first long-term population-level data on the current state of PMBR re-operation rates.
- Results will inform patient-physician surgical decision-making and provide quantitative expectations of morbidity related to PMBR.
- Results will aid in the identification of important areas for quality of care improvement initiatives.
References