The Allegheny General Modification of the Harvard Breast Cosmesis Scale for the Retreated Breast

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Repeat lumpectomy and retreatment radiotherapy following ipsilateral breast tumor recurrence (IBTR) by either external-beam irradiation or brachytherapy in lieu of salvage mastectomy is an area of significant recent clinical interest. Multiple authors have reported their results, with encouraging numbers of patients avoiding mastectomy.[1-4]

Repeat lumpectomy and retreatment radiotherapy following ipsilateral breast tumor recurrence (IBTR) by either external-beam irradiation or brachytherapy in lieu of salvage mastectomy is an area of significant recent clinical interest. Multiple authors have reported their results, with encouraging numbers of patients avoiding mastectomy.[1-4] The cosmetic effects of such retreatment are not well established. Although an accepted cosmetic grading system has been used routinely to describe the long-term cosmetic effects of lumpectomy and irradiation in de novo breast cancers (Table 1),[5] no accepted cosmetic grading system exists for the retreated breast. Most of these patients have been treated in tertiary care referral institutions. Thus, uniform cosmetic grading is additionally confounded by the variability of primary cosmetic outcomes resulting from multiple and variable surgical and radiotherapeutic techniques of multiple operators, including multiple referring physicians from outlying centers. We propose a modification of the current cosmetic grading system for patients who undergo retreatment.

Proposed Modifications
We reviewed the increasing data reported in the retreatment of IBTR by several authors using
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Various techniques. In order to establish a scoring system that could provide translational correlation between the established criteria and a retreatment score, we decided that a modification of the Harvard system would be most meaningful. The existing system lacks a baseline score to reflect the prior post-therapeutic cosmesis. The decision to modify rather than institute an entirely new system was made to provide uniformity of description and ease of translation.

In our proposed retreatment score, the letter A is assigned to immediately delineate retreatment status (Table 2). To provide immediate understanding of the therapeutic difference secondary to retreatment, a binumeric designation of the cosmetic status is recommended. The first number in parentheses reflects the baseline score, while the second reflects the score following retreatment: ie, A (1; 1) for excellent cosmesis prior to and following treatment. Since this secondary score cannot be assessed until a future time, the initial second score would be delineated by the letter X; signifying an unknown (ie, 1; X). We present a modification of the accepted cosmesis criteria in order to reestablish a baseline in the previously treated breast and allow a meaningful and equivalent assessment of potential therapeutic change following retreatment (Table 2).

**Table 2**

<table>
<thead>
<tr>
<th>Allegheny General Modification of the Harvard Breast Cosmesis Scale for the Retreated Breast*</th>
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</thead>
<tbody>
<tr>
<td>A-1 When compared to the initial scoring, there is minimal or no change in the size or shape of the retreated breast. The breast texture is the same or slightly different. There may be thickening, scar tissue, or fluid accumulation within the breast, but not enough to change the appearance.</td>
</tr>
<tr>
<td>A-2 When compared to the initial scoring, there is a slight difference in the size or shape of the treated breast as compared to the opposite breast or the original appearance of the retreated breast. There may be some mild reddening or darkening of the breast. The thickening or scar tissue within the breast causes only a mild change in the shape or size.</td>
</tr>
<tr>
<td>A-3 When compared to the initial scoring, there is an obvious difference in the size and shape of the treated breast. This change involves one-quarter or less of the breast. There can be moderate thickening or scar tissue of the skin and the breast, and there may be obvious color changes.</td>
</tr>
<tr>
<td>A-4 When compared to the initial scoring, there is marked change in the appearance of the treated breast involving more than one-quarter of the breast tissue. The skin changes may be obvious and detract from the appearance of the breast. Severe scarring and thickening of the breast, which clearly alters the appearance of the breast, may be found.</td>
</tr>
</tbody>
</table>

*The modified scale requires an initial scoring delineating both an initial score and a posttherapeutic score. Example: score A (1; 1) reflects excellent cosmesis pre- and post-retreatment. Initial scoring for this same example would be graded as A (1; X) to denote the unknown future scoring. The initial retreatment score would be assessed following the Harvard/NSABP/RTOG system.

**NSABP = National Surgical Adjuvant Breast and Bowel Project; RTOG = Radiation Therapy Oncology Group.**

Literature Review

Several authors have reported on surgical management alone,[6-8] and others have reported on radiotherapy alone, including one author who added hyperthermia as an adjuvant to interstitial brachytherapy.[9] The greatest patient volume has been accumulated using repeat lumpectomy and either interstitial or intracavitary brachytherapy.[2-4,10,11] Despite this relatively wide experience, there is no uniform cosmetic scale for the retreated breast. The comparison of cosmetic terminology between a surgically altered breast in the de novo setting and a breast evaluated years after surgery and postoperative irradiation is intuitively not equivalent. Additional potential disparity is possible when the compounded cosmetic nonequivalence of postoperative retreatment radiotherapy is factored into the equation.

The NSABP and RTOG have adopted the Harvard scoring system in the ongoing partial breast protocol (NSABP B-39/RTOG 0413).[12] The RTOG is currently constructing a breast retreatment protocol. In our review of the literature, the established Harvard/NSABP/RTOG criteria to describe
cosmetic outcomes have been used regularly, but there is no established consensus regarding cosmetic criteria in the retreated breast. In order to preserve uniformity of cosmetic evaluation between the de novo and retreated breast, we present a modification of the established criteria and scoring system.

**Conclusion**

The Allegheny General Modification of the Harvard/NSABP/RTOG scoring scale may be used for accurate cosmetic grading of all patients who are treated for IBTR with repeat breast-conservation surgery followed by retreatment radiotherapy. Incorporation of this scoring modification into a clinical trial would help to validate its usefulness.

**References:**

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