Horizontal or Vertical? An Evaluation of Patient Preferences for Reduction Mammaplasty Scars

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In the United States, the inferior pedicle Wise pattern technique of reduction mammaplasty has been well established as a safe and reliable method of reducing breast size while maintaining nipple-areolar vascularity and sensation. Nonetheless, the typical inverted-T scar of the Wise pattern reduction is a consistent source of patient and surgeon dissatisfaction with the operation, which has led to the increased popularity of limited-incision techniques of breast reduction.

Background: In the United States, the inferior pedicle Wise pattern technique of reduction mammaplasty has been well established as a safe and reliable method of reducing breast size while maintaining nipple-areolar vascularity and sensation. Nonetheless, the typical inverted-T scar of the Wise pattern reduction is a consistent source of patient and surgeon dissatisfaction with the operation, which has led to the increased popularity of limited-incision techniques of breast reduction.

Objective: In this study, it was our goal to evaluate patient preferences for breast reduction scar location.

Methods: A retrospective chart review was undertaken that identified 121 patients who underwent bilateral Wise pattern reduction mammaplasty between July 1999 and June 2004. The patients were asked to rate their satisfaction with the surgery on a 1 to 10 scale and to rate the extent, if any, to which they were bothered by their scars. Those patients who were bothered by their scars were asked to delineate which part of the scar bothered them most—the horizontal component, the vertical component, or the areolar component. A statistical analysis of the results was performed with a standard two-tailed t test and a χ² analysis.

Results: Of the 121 surveys mailed out, 27 surveys were undeliverable. Fifty-seven of the remaining 94 surveys were returned, for a response rate of 61%. Although 49 of the respondents (86%) were highly satisfied with their surgery, 37 patients (65%) indicated dissatisfaction with their scars. Forty-one patients (72%) responded to the question asking which of the scars was most bothersome. Of these 41 respondents, 10 were bothered by all scars equally. Among the remaining 31 patients, 20 (65%) indicated that the horizontal component bothered them most—a statistically significant proportion (P < .001). Twenty-three of 46 patients (50%) who responded to the questions asking which scar they would erase if they were able to do so indicated that they would erase the vertical scar, which was also statistically significant (P < .001).

Conclusions: Our survey confirms the widespread satisfaction reported by patients who have undergone Wise pattern breast reduction surgery. However, it also demonstrates that a statistically significant number of patients are bothered by their scars. These results underscore the importance of developing techniques that minimize breast reduction scars and suggest that short-scar options would be welcomed by women considering breast reduction surgery. (Aesthetic Surg J 2007;27:257–262.)
A review of the recent plastic surgery literature makes it clear that substantial effort has been put forth to eliminate the horizontal component of the inverted-T scar of the traditional Wise pattern reduction mammoplasty and to understand and quantify the consequences of that surgical modification. However, it seems that relatively little attention has been paid recently to the elimination of the vertical scar. Passot19 is credited with the first description of the no-vertical scar procedure in 1925. More recently, it was described by Lalonde et al,20 with a demonstration of excellent aesthetic results. While this technique is not as widely studied as the vertical reduction techniques in terms of complications, revision rates, and patient satisfaction, it certainly represents another safe, effective, and aesthetically sound option. As suggested by Lalonde et al,20 the no-vertical scar technique may represent a superior aesthetic option, because it eliminates non-areolar scars on the visible breast mound.

Although not all patients are good candidates for all of the available reduction mammoplasty techniques, most patients are good candidates for several different options. In this study, it was our goal to evaluate patient preferences for breast reduction scar location, in terms of its position on the breast mound—horizontal, vertical, areolar, or no preference. Evaluation of patient preferences for breast reduction scars is an important component in our efforts to develop the ideal breast reduction operation. In addition, it is useful to learn whether the most commonly performed breast reduction techniques deliver scars that match with current trends in patients’ aesthetic priorities.

Methods

The patients in the study group were selected by retrospective chart review. All patients who had undergone bilateral Wise pattern reduction mammoplasty between July 1999 and June 2004 in the practices of the four senior authors were included. This time interval ensured that all the selected patients were greater than or equal to 1 year after surgery, to allow maximal scar maturation before patient assessment. Patients who underwent surgery before 1999 were difficult to consistently locate, so we limited our study group to this 5-year increment. This method generated 121 patients as potential subjects for this study.

A survey was designed that asked patients about their feelings about their breast reduction surgery scars (Figure). Specifically, patients were asked about their overall satisfaction with their breast reduction surgery and to what extent, if any, they were bothered by their scars. If they were bothered by their scars, they were further asked to delineate which part of the inverted-T–shaped scar bothered them most—the horizontal component, the vertical component, the areolar component, or all parts equally.

The survey was sent to all 121 patients identified as potential participants in the study. Twenty-seven surveys were undeliverable, because of a change of address without forwarding information, thus leaving us with 94 potential respondents. Of these, 57 surveys were returned, giving us a response rate of 61%.

Statistical analysis of the responses was performed with Microsoft Excel with a standard two-tailed t test for Table 2 and a \( \chi^2 \) analysis for Tables 3 and 4. The null hypothesis for Table 1 was that one half of the respondents would be bothered by scars and one half would not. For Tables 3 and 4 the null hypothesis in each case was that each scar type (horizontal, vertical, areolar) would represent one third of the responses and the alternate hypothesis was that each scar type would represent a proportion different from one third of the responses. A \( P \) value < .05 was used to delineate statistical significance. All components of this study, including its methodologic design and survey implementation, were evaluated and approved by the Institutional Review Board of the New York–Presbyterian Hospital–Cornell Medical Center.

Results

Of the 57 survey respondents, 49 (86%) were highly satisfied with their breast reduction surgery overall, as indicated by a score of 7 to 10 on the questionnaire. Another 5 patients (9%) were moderately satisfied, as indicated by a score of 4 to 6 on the survey. Only 3 patients (5%) indicated that they were dissatisfied with their experience (Table 1).

In spite of the large proportion of highly satisfied patients in this breast reduction surgery cohort, 37 respondents (65%) indicated dissatisfaction with their surgical scars. To quantify the extent of their dissatisfaction, patients were asked to quantify the extent to which they were bothered on a scale of 1 to 10. Of the 37 patients that were bothered by scarring, 17 (46%) were highly bothered, as indicated by a score of 7 to 10 on the survey. Another 5 patients (14%) were moderately bothered, as indicated by a score of 4 to 6. Fifteen patients (40%) were minimally bothered by their scars (Table 2).

Patients were next asked to indicate which part of their Wise pattern breast reduction scar bothered them the most—the horizontal component, the vertical component, the areolar component, or all parts equally.
Please answer the following questions:

How many years ago was your breast reduction surgery performed?__________________

Please rate your satisfaction with your breast reduction surgery overall:

1 2 3 4 5 6 7 8 9 10
not satisfied extremely satisfied

Are you bothered by your breast reduction scars? Yes No

If you answered Yes, please quantify your response:

1 2 3 4 5 6 7 8 9 10
minimally extremely
bothered bothered

Which part of the scar bothers you the most (see figure below):

Horizontal Scar (red arrows) Vertical Scar (blue arrows) Areolar (black arrow) All parts of scar bother me equally

If you could erase one part of your scar, which would it be:

Horizontal (red arrows) Vertical (blue arrows) Areolar (black arrow)

Figure. Breast reduction scar survey.
ponent, the areolar component, or all parts equally. Although only 37 patients indicated in the preceding question that they were bothered by their scars, 41 patients (72%) responded that one or more components of the scar was most bothersome. Of these 41 patients, 10 (24%) were bothered by all components of the scar equally. Of the 31 respondents who were bothered by one component of the scar more than other components, 20 (65%) indicated that the horizontal component was most bothersome. Eight patients (25%) indicated that the vertical component was most bothersome. The areolar component of the scar was most bothersome to 3 patients (10%). The large proportion of patients bothered most by the horizontal scar (65%) was statistically significant (P < .001) (Table 3).

The final question of the survey asked patients which one part of the scar they would erase, if they were able to do so. Forty-nine patients (86%) provided a response to this question. Of these respondents, 3 patients (6%) would erase all scars. Of the 46 respondents who would choose to erase only one component of the scar, 20 (43%) indicated that they would erase the horizontal component. Twenty-three patients (50%) indicated that they would erase the vertical component. Three patients (7%) indicated that they would eliminate the areolar component. The highest percentage of respondents indicated a desire to have the vertical scar erased, which was statistically significant (P < .001) (Table 4).

Table 1. Satisfaction with breast reduction surgery

<table>
<thead>
<tr>
<th>Satisfaction level</th>
<th>No. of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly satisfied 7-10</td>
<td>49</td>
<td>86</td>
</tr>
<tr>
<td>Moderately satisfied 4-6</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Dissatisfied 1-3</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

Scale: 1 = not satisfied, 10 = extremely satisfied.

Table 2. Patients bothered by breast reduction scarring

<table>
<thead>
<tr>
<th>Response</th>
<th>No. of patients</th>
<th>%</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>37</td>
<td>65</td>
<td>P = .02</td>
</tr>
<tr>
<td>No</td>
<td>20</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Quantified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highly bothered by scars (7-10)</td>
<td>17</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Moderately bothered by scars (4-6)</td>
<td>5</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Minimally bothered by scars (1-3)</td>
<td>15</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

Discussion

Although this study involved a relatively small study group, it yielded a number of important results. It confirms yet again the high satisfaction reported by patients undergoing Wise pattern breast reduction surgery, with a striking 86% of survey respondents indicating 7 to 10 on the satisfaction scale of 1 to 10, where 10 equaled greatest satisfaction. However, despite this widespread overall satisfaction with the operation, a statistically significant majority of patients indicated that they were bothered by their scars. Among those who indicated dissatisfaction with scarring, there was a fairly even distribution among respondents of those who were minimally bothered and those who were extremely bothered by their scars.

Of the patients bothered by scarring, a significant majority indicated that the horizontal component was most bothersome. Anecdotally, patients wrote additional comments on the survey that helped explain their discontent with this component of the scar. Patients indicated that the scar was irritating and itchy, because of its juxtaposition to the bra. Other patients complained that the horizontal scar extended into the axilla, where it was apparent in clothing or created unsightly “dog ears.”

In contrast to the response obtained to the question about the most bothersome component of the scar, the highest percentage of patients indicated a preference for eliminating the vertical component of the scar. The divergence in the responses to the two questions about preferences regarding scar components (most bothersome vs which to erase) was somewhat surprising—it was anticipated that one question would reinforce, rather than contradict, the other. One possible explanation for this divergence in the responses lies in an anecdote that one patient shared on her survey—the horizontal component was most bothersome because of its discomfort, but the vertical component was the most visually unacceptable because it was the only part of the scar that she saw when she looked in the mirror.
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The data in Table 3 suggest that the preponderance of effort that has been invested in improving the vertical mammaplasty technique is appropriately directed. Patients in this study indicated that the horizontal component of the Wise-pattern breast reduction scar bothered them most. However, the near-equal distribution of patient wishes for elimination of horizontal and vertical components demonstrated in Table 4 suggests that there are factors in addition to the extent to which they are bothered by the scar that affect which part of the scar they are willing to accept permanently. Additional factors may include a tendency toward hypertrophic scars, clothing style preferences, body habitus, and breast shape or extent of ptosis.

Conclusion

This study underscores the importance of developing and perfecting techniques that minimize breast reduction scars. The most extensive scar is the one resulting from the traditional Wise pattern mammaplasty, which is the approach most commonly used by plastic surgeons in the United States. One can deduce from the patient opinions expressed in this study that short-scar breast reduction options—both pure vertical and pure horizontal techniques—would be welcomed by these patients. The choice of technique must be tailored to a particular patient, taking into account patient preferences, body habitus, breast size, and surgeon experience, to minimize the overall scar burden, while maximizing symptom relief and aesthetic outcome.

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References


Table 3. Most bothersome part of scar

<table>
<thead>
<tr>
<th>Component</th>
<th>No. of patients</th>
<th>%*</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal component</td>
<td>20</td>
<td>65%</td>
<td>P &lt; .001</td>
</tr>
<tr>
<td>Vertical component</td>
<td>8</td>
<td>25%</td>
<td>P &lt; .001</td>
</tr>
<tr>
<td>Areolar component</td>
<td>3</td>
<td>10%</td>
<td>P &lt; .001</td>
</tr>
<tr>
<td>All scars bother equally</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scars do not bother</td>
<td>16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Percentage of patients indicating only 1 component.

Table 4. Scar component most desired to have erased

<table>
<thead>
<tr>
<th>Component</th>
<th>No. of patients</th>
<th>%*</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal component</td>
<td>20</td>
<td>43</td>
<td>P &lt; .001</td>
</tr>
<tr>
<td>Vertical component</td>
<td>23</td>
<td>50</td>
<td>P &lt; .001</td>
</tr>
<tr>
<td>Areolar component</td>
<td>3</td>
<td>7</td>
<td>P &lt; .001</td>
</tr>
<tr>
<td>All scars bother equally</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scars do not bother</td>
<td>8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Percentage of patients selecting only 1 component.


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