Reevaluating the Need for Routine Drainage in Reduction Mammoplasty

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The incidence of complications after reduction mammoplasty without drains was reviewed by analysis of 50 bilateral reduction mammoplasty procedures. Patients ranged in age from 14 to 65 years; the average combined volume removed was 953 g. Eighty-four percent of the patients underwent a Pitanguy technique, and the remaining patients underwent an inferior pedicle or amputative technique with free nipple grafts. Three patients had six complications; one of these patients had three of the complications. Complications included two cases of fat necrosis and one case of wound disruption. One patient had a hematoma with wound disruption and partial nipple loss. There were no cases of infection. The purpose of this study was to determine the rate of complications in reduction mammoplasty performed without drains. Incidentally, statistical analysis using the chi-squared test revealed that this series without drains compared favorably with previously published data for reduction mammoplasty using drains. It is concluded that routine closed suction drainage after reduction mammoplasty is unnecessary and should be reconsidered. (Plast. Reconstr. Surg. 102: 1917, 1998)

Often surgeons do not challenge their established routines unless a need arises. For example, until the advent of concerns over blood transfusions, most reduction mammoplasty patients had a type and screen for blood products. Similarly, the use of closed suction drainage after reduction mammoplasty has been the tradition in plastic surgery. Although many surgeons use drains, Goldwyn1 pointed out that a proper randomized study to investigate the value of drainage after reduction mammoplasty was lacking in the literature. Ostensibly, drains reduce fluid collection and its sequelae. Notwithstanding this, patients often complain about the discomfort associated with drains; drain sites can leave conspicuous scars and may represent potential sources of tract formation or infection. Furthermore, with shorter hospital stays, the outpatient management of drains can be a source of concern for patients.

Early reports describing breast reduction techniques do not state whether drains were used.2-5 The reports that mention drains merely state that they were used; the reasons for their use are not discussed.6-14 Other authors sometimes use drains,15 but again, their criteria for doing so are absent. Nevertheless, some surgeons do not use them at all.16,17 Many authors who discuss the complications of breast reduction often do not mention the value of drainage or how its use may affect outcome.18-22 The purpose of this study was to determine the rate of complications in breast reduction surgery when no drains were used.

PATIENTS AND METHODS
We analyzed a retrospective series of 50 consecutive female patients who underwent a bilateral reduction mammoplasty performed by one surgeon without the use of drains. All patients had general anesthesia. Patient ages ranged from 14 to 65 years, with a mean age of 28 years.

A Pitanguy or superior pedicle technique was used in 84 percent of the cases (42 patients), whereas the remainder were performed by either an inferior pedicle technique (14 percent, 7 patients) or an amputative technique with free nipple grafts (2 percent, 1 patient). The technique used was based on pre-
operative patient assessment, as previously described. The volume reduction from each breast ranged from 112 to 1152 g from the right breast and 108 to 1200 g from the left breast, with an average reduction of 476 g from the right and 477 g from the left breast. The average total was a 953-g reduction bilaterally. Volume reduction was the weight recorded by the pathologist (“dry weight”), not the weight recorded intraoperatively (“wet weight”). Follow-up ranged from 1 to 7 years (Table 1). An operating table that could be placed in a sitting, beach chair position was used. General anesthesia was administered by an anesthesiologist. Patients were prepared and marked in a sitting position, according to previous reports.

The breasts were then injected with a local anesthetic solution containing epinephrine. During the procedure, normotensive blood pressure was maintained, and a warming blanket was used. Some patients underwent simultaneous aesthetic operations; those who did so had the reduction performed as the first procedure. Patients received broad-spectrum perioperative antibiotic coverage and corticosteroids. The right breast reduction was performed as indicated, and then initial hemostasis was obtained. The procedure was repeated on the opposite breast. The breasts were then reinspected, and final hemostasis was obtained in both breasts. The breasts were then mounted and compared for symmetry, shape, and volume. Finally, the breasts were closed. These steps did not differ from previous breast reductions performed with drains by the senior surgeon.

At the completion of surgery, a Telfa dressing was placed on the suture line; compression garments were not used. The nipple/areola complexes were left exposed and were periodically evaluated. Patients were given the option of wearing brassieres based on their comfort level. During hospitalization, routine postoperative instructions were given, i.e., maintenance of appropriate blood pressure and avoiding salvia maneuvers. An anatomic data sheet was filled out describing the procedure. Surgery was performed on an ambulatory or same-day basis, and patients were regularly examined within the first 48 hours of surgery for any abnormalities. Sutures were removed in stages over the first week, and patients progressed to normal activity over the ensuing weeks.

**Results**

All patients were satisfied with their outcomes (Fig. 1). An occasional patient had revisions of her scars revised.

Complications occurred in 3 of the 50 patients. A Pitanguy technique was used in two of these patients. Both had fat necrosis, and one had wound disruption. The first patient, who

<table>
<thead>
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<th>TABLE I</th>
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<td>Breast Reduction Surgery without Drains: Data Summary</td>
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<table>
<thead>
<tr>
<th>Techniques*</th>
<th>84%</th>
<th>42 patients</th>
</tr>
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<tbody>
<tr>
<td>Superior pedicle</td>
<td>14%</td>
<td>7 patients</td>
</tr>
<tr>
<td>Inferior pedicle</td>
<td>2%</td>
<td>1 patient</td>
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<tr>
<td>Amputative reduction with free nipple graft</td>
<td>14-65 years</td>
<td>Mean, 28 years</td>
</tr>
<tr>
<td>Ages</td>
<td>No. of patients</td>
<td>50</td>
</tr>
<tr>
<td>Volume removed</td>
<td>Right breast</td>
<td>112-1152 g</td>
</tr>
<tr>
<td></td>
<td>Left breast</td>
<td>108-1200 g</td>
</tr>
<tr>
<td>Total (average)</td>
<td>953 g</td>
<td>1-7 years</td>
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* All patients were female, and all had general anesthesia.

Fig. 1. (Above) An 18-year-old female patient randomly selected from this series, before breast reduction surgery. (Below) A 1-year postoperative view of the patient after a Pitanguy-type breast reduction. She had 424 g removed from the left breast and 338 g removed from the right breast.
TABLE II
Complication Rates of Breast Reduction Surgery without Drains

<table>
<thead>
<tr>
<th>Complication</th>
<th>%</th>
<th>No. of Patients</th>
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<tbody>
<tr>
<td>Partial nipple loss</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Complete nipple loss</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Skin slough</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hematoma</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Infection</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fat necrosis</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Wound disruptiona</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

a Same patient.

had a total of 500 g removed, presented with fat necrosis followed by wound disruption on postoperative day 10, and the second patient, who had a total of 907 g removed, presented with fat necrosis only on postoperative day 18. Both patients healed uneventfully. The third patient had three of the complications. She underwent an inferior pedicle technique, with a reduction of 1035 g on the right breast and 1200 g on the left. Although the nipple/areola complexes both were pink with good capillary refill at the time of surgery, the patient was noted to have a dusky right nipple/areola complex on postoperative day 2. When she failed to improve with release of the sutures and pharmacologic means, the breast was reexplored and a hematoma was evacuated from posterior to the pedicle. The pedicle was trimmed, and the nipple/areola complex was replaced as a free graft. The final result was a partial nipple loss with some wound disruption on the right side. This was subsequently revised, and long-term (greater than 7 years) follow-up revealed a satisfactory result.

There were no cases of infection, total loss of the nipple/areola complex, or seroma formation. The total complication rate of each category (Table II) compares favorably with previous reports (Table III).18-22 Statistical analysis was performed using the chi-squared test.

When comparing our data with earlier studies, the data suggest that our complication rates for all categories, except for wound disruption and complete nipple loss, are significantly lower statistically than in those procedures performed with drains. For wound disruption and partial nipple/areola loss, our complication rates were 4 percent (2 patients) and 2 percent (1 patient), respectively. Partial nipple/areola loss rate was significantly lower (p < 0.05). There was no significant difference in the wound disruption rate or in the complete nipple loss rate (Table IV). Skin slough rate, hematoma rate, infection rate, and fat necrosis rate all were significantly lower (p < 0.01). A comparison of our data with those of the more recent studies (excluding Gupta’s13 work) demonstrates no statistical difference in the complication rates.

DISCUSSION

Breast reduction surgery is highly successful in improving functional, aesthetic, and psychological problems.25 Mitigating any adverse aspects of this elective procedure is advantageous. Drains have conventionally been used after reduction mammoplasty, perhaps because they are believed to reduce fluid collection. However, it is recognized that drains do not prevent hematomas, and there is nothing in the literature to support their use. Consequently, if drains are unnecessary, eliminating them might be beneficial.

There are a number of potential disadvantages in closed suction drains. An increased risk of wound infection has been reported.26-28 Drains may also require a separate stab incision or, when brought out through the mammoplasty incision, may increase the risk of scarring. In addition, with ambulatory, nonhospital admissions becoming increasingly common,
the onus is placed on the patient to be responsible for managing the drains.

There are numerous potential advantages to not using drains in reduction mammoplasty. Theoretically, the absence of a drain limits the risk of infection from migration of bacteria along the drain tract. Also, the drain has to exit the suture line or a separate stab incision, either one of which can result in additional scarring. Finally, the patient does not have the responsibility of caring for the drains. In the Pitanguy procedure, the embryologic relationship of the skin and the parenchyma is maintained and dead space is avoided; therefore, drains for this technique in particular are most often unnecessary.25

This study was not designed to determine whether the results would be the same if drains were used, but rather to determine the incidence of complications given that no drains were used. However, we did compare our results with earlier studies on breast reduction surgery that used drains. It is probably unnecessary to compare our data with those of Gupta,24 because his data are based on procedures performed more than 30 years ago, using techniques that are no longer common26; however, we included his work in our comparison because it was one of the only studies available in the literature. Modern studies using drains employ techniques similar to those used by us. When our data from reduction mammoplasty without drain use are compared with modern studies of the same surgery using drains, there is no statistically significant difference in complication rates. Stated differently, performing reduction mammoplasty without drains did not increase the risk of complications. Statistical analysis was performed using the chi-squared test and not a Fisher's exact test because the sample sizes were large. Comparison was made with each of the studies individually. Although it may be coincidental, we also did not see any infections, which have been estimated to occur in 3 to 7 percent of reduction mammoplasties.18-22

A randomized, prospective study with drain use as the only variable would represent the ideal way to investigate the value of drainage after reduction mammoplasty. This, however, would probably require a large, multicenter study with the collaboration of several surgeons at each institution.

Our study was designed to determine what the complication rate of breast reduction surgery would be when drains were not used. We found that not using drains did not increase complications, nor is it likely that the complications that did occur could have been avoided by using drains. However, we recognize that certain situations may warrant the use of drains, based on a surgeon's judgment of each individual case.

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REFERENCES