

Outcome Study in Liposuction Breast Reduction

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Liposuction as a primary modality of treating breast hypertrophy has been reported in the literature; however, many of these reports are small series and personal experiences. This report is the first outcome study to attempt to validate the effectiveness of liposuction as a primary method of breast reduction surgery. Questionnaires were sent to 117 patients who had undergone liposuction breast reduction surgery in our office during a 4-year period. Seventy-eight questionnaires were returned (67 percent response rate). The patients were asked about their complaints, their surgical results, and their satisfaction with the operation. Complaints such as neck and back pain, shoulder ruts, and intertrigo were improved or eliminated in the vast majority of patients. Women returned to work in 5 days on average and resumed full exercise in 2 weeks. Eighty percent of patients were either very or completely satisfied with their outcomes, 87 percent would choose the liposuction method again, and 92 percent would recommend the liposuction method to a friend. This study demonstrates that liposuction breast reduction is an effective method of breast reduction surgery. (*Plast. Reconstr. Surg.* 114: 55, 2004.)

Breast reduction surgery has advanced over the past century based on new information and technology. The increased knowledge of blood supply and skin flap viability has allowed new and better techniques of breast reduction to evolve. Modern plastic surgeons can use several different pedicle techniques, free nipple grafts, and scar reduction modalities to properly treat their patients and provide optimal results.

The introduction of liposuction has provided a new technology to treat mammary hypertrophy. Liposuction as an exclusive treatment of gynecomastia has been reported by several authors,^{1,2} and lipoplasty as an adjunct to breast reduction has been described by sev-

eral surgeons.³⁻⁵ Matarasso and Courtiss⁶ introduced the use of liposuction alone as a breast reduction modality in 1991. As originally reported, this technique was applicable to women with well-placed nipple-areola complexes and predominantly fatty breasts. In a follow-up article in 1992, however, Courtiss⁷ dismissed these two requirements, stating that even large breasts with ptosis could be treated and that parenchyma as well as fat can be removed. A key point raised in that article was that there is no single technique applicable to all women and that the final choice of operation depends on breast anatomy, patient desire, and surgeon experience. Matarasso⁸ also expanded his original criteria in a follow-up article to include those patients with pseudoptosis and has described his operative technique in detail.⁹ The liposuction reduction technique was more broadly applied by Gray and described in two reports.^{10,11} His 3-year experience and follow-up on 204 patients noted acceptable results with low morbidity.

The evolving use of liposuction in breast reduction surgery has developed steadily but without data from specific outcome studies. The importance of patient-driven outcome studies has been championed repeatedly in the literature. Physicians, patients, and insurance carriers view the data of outcome research with great scrutiny because these studies provide the validation or refutation of proposed therapies. We therefore examined our experience of 117 consecutive liposuction breast reductions over the past 4 years.

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PATIENTS AND METHODS

All liposuction breast reduction patients treated in our office over the past 4 years were sent questionnaires regarding their surgery. A total of 117 questionnaires were mailed. One month after the initial mailing, telephone calls were made to all pending patients and another set of questionnaires was sent to those patients. After a 3-month collection period, a total of 78 questionnaires were returned for a response rate of 67 percent. All patients had undergone liposuction breast reduction procedures alone with no concurrent mastopexy procedure.

The questionnaire examined the patient's anatomy, the complaints that led them to surgery, and their satisfaction with the operation (Table I).

Patients were asked whether their complaints were eliminated, improved, unchanged, or worsened by the surgery. Additional patient comments were also requested. In addition, patients were asked whether they had undergone a prior plastic surgical consultation for a standard reduction mammoplasty before choosing the liposuction reduction.

RESULTS

The mean follow-up time in the responding group was 12 months (range, 2 to 48 months). Patients ranged in age from 17 to 70 years and had brassiere cup sizes ranging from B to F. Additional data are presented in Table II.

The most common preoperative complaints (Table III) were difficulty wearing/finding clothing (88 percent) and shoulder ruts from brassiere straps (74 percent). A majority of patients also had back and shoulder pain as well as poor posture. Roughly one-third of patients had neck pain or intertrigo, and 15 percent of patients noted chest pain before surgery.

Postoperatively, the majority of patients had total resolution of their neck, back, and chest

pain and an additional third had significant improvement (Table III). Shoulder pain was alleviated or eliminated in 93 percent of patients, whereas intertrigo was eliminated or improved in 96 percent of respondents. Shoulder ruts were improved or eliminated in 88 percent of patients, 91 percent of patients felt that buying and wearing clothes was easier, and 72 percent felt that their posture was improved.

The mean brassiere cup change after surgery was a loss of 1.9 cup sizes (SD = 1.0) and a median reduction of two cups (Fig. 1). Seven percent of patients reported less than one-cup reduction; 30 percent reported a one-cup reduction; 48 percent reported a two-cup reduction; 12 percent reported a three-cup reduction; and two patients (3 percent) reported a four-cup reduction (Table IV).

The average time for patients to resume work was 4.8 days, with a median of 4 days and a range of 1 to 24 days. The average time needed to resume full activity and exercise was 10.9 days, with a median of 10 days and a range of 1 to 30 days (Table V).

Nipple sensation was unaffected by surgery in 67 percent of patients whereas 18 percent noted an increase in sensation and 15 percent noted a decrease (Table VI). No cases of complete sensation loss were reported. After surgery, 70 percent of patients noted a decrease in their sagging (ptosis) whereas 24 percent felt their ptosis was the same and 6 percent felt it had worsened. Forty-three percent of respondents noted that their overall weight had decreased since surgery whereas 9 percent reported a weight gain. Patients reported that their quality of life had improved in 61 percent of cases, stayed the same in 38 percent, and decreased in 1 percent (one patient).

Patient satisfaction with the operation was high throughout (Table VII). Ninety-two percent of respondents stated that they would recommend liposuction reduction to a friend,

TABLE I
Questionnaire Inquiries

Anatomy	Complaints	Recovery	Satisfaction
Height	Pain in the neck/chest/shoulder/back	Days out of work, including child care, and soon	Change in quality of life
Weight	Difficulty fitting into clothes	Days until regular activity and exercise	Would you recommend this procedure to a friend?
Preoperative brassiere size	Skin irritation	Postoperative weight change	Would you choose the liposuction technique again?
	Brassiere strap grooves	Postoperative nipple sensation	General satisfaction
	Poor posture	Postoperative brassiere size	

TABLE II
Anatomy

	Mean	SD	Median	Range
Age, years	42.4	14.3	41.5	17-70
Height, inches	64.3	2.7	64	59-71
Weight, pounds	156.3	27.6	150	100-230
Preoperative brassiere cup size	DD	1 cup	DD	B-F

and 87 percent stated that, in hindsight, they would choose the liposuction reduction again. Forty-seven percent of patients were "completely satisfied" with the procedure whereas 33 percent were "very satisfied." Eleven percent of respondents were "somewhat satisfied," 8 percent were "somewhat unsatisfied," and one patient was "completely unsatisfied."

Forty-eight patients (65 percent) responded that they had not seen a plastic surgeon for breast reduction consultation before inquiring about the liposuction breast reduction, and 26 patients (35 percent) had seen a surgeon about traditional breast reduction.

On chart review, the mean operating room time, measured from the time the patient entered the operating room until they exited the operating room, was 71 minutes (SD 17.1), with a range of 45 to 130 minutes.

Two complications were noted in the 117 patients who were sent questionnaires (1.7 percent). One unilateral hematoma was noted; it responded to nonoperative management and resolved without negative impact. One case of skin redness without fever or tenderness was treated as a cellulitis and managed effectively with a 1-week course of oral antibiotics.

DISCUSSION

This outcome study demonstrates that liposuction can be effectively used to treat the effects of excess breast size and weight. Common complaints such as neck pain, back pain,

shoulder pain, intertrigo, and shoulder ruts, can be ameliorated or eliminated by a liposuction reduction approach. Furthermore, the liposuction reduction method requires a short recovery time with minimal postoperative care. No drains are used and no sutures need to be removed. The complication rate is low and the patient satisfaction rate is high.

The efficacy of liposuction breast reduction compares to that of traditional open techniques and the complication rate is lower. In a respondent pool of 328 patients, Schnur et al.¹² noted an amelioration of back, neck, and shoulder pain in 92 percent, 93 percent, and 94 percent, respectively, with a complication rate of 20 percent. Our population demonstrated respective improvement rates of 93 percent, 86 percent, and 93 percent with a complication rate of 1.7 percent. Glatt et al.¹³ reported an improvement in intertrigo and posture in 65 percent and 71 percent of patients, respectively, compared with 96 percent and 72 percent in this study. Other similar outcome studies have shown complication rates as high as 33 to 34 percent.^{14,15} Satisfaction with liposuction reduction also compares favorably with standard reduction. Ninety-four percent of patients were satisfied with traditional reduction in Schnur et al.'s series, compared with 80 percent of liposuction patients in our population. In the series of traditional reduction surgery by Brown et al.,¹⁴ 92 percent of patients would chose traditional reduction surgery again versus 87 percent of patients in our series that would choose liposuction again.

The favorable, but lower, satisfaction rate in the liposuction reduction series did prompt a review of the unsatisfied liposuction breast reduction patients. Of the eight "somewhat satisfied" liposuction breast reduction patients, seven experienced a single cup size reduction

TABLE III
Complaints

	Patients		% Gone*	% Better*	% Same*	% Worse*
	No.	%				
Neck pain	29	37	52	34	10	3
Back pain	44	56	55	38	7	0
Chest pain	12	15	75	25	0	0
Shoulder pain	45	56	42	51	7	0
Intertrigo	27	35	40	56	4	0
Strap grooves	58	74	28	60	12	0
Poor posture	40	51	0	72	28	0
Clothing difficulty	69	88	0	91	9	0

* Percentage is of patients who originally presented with the complaint.

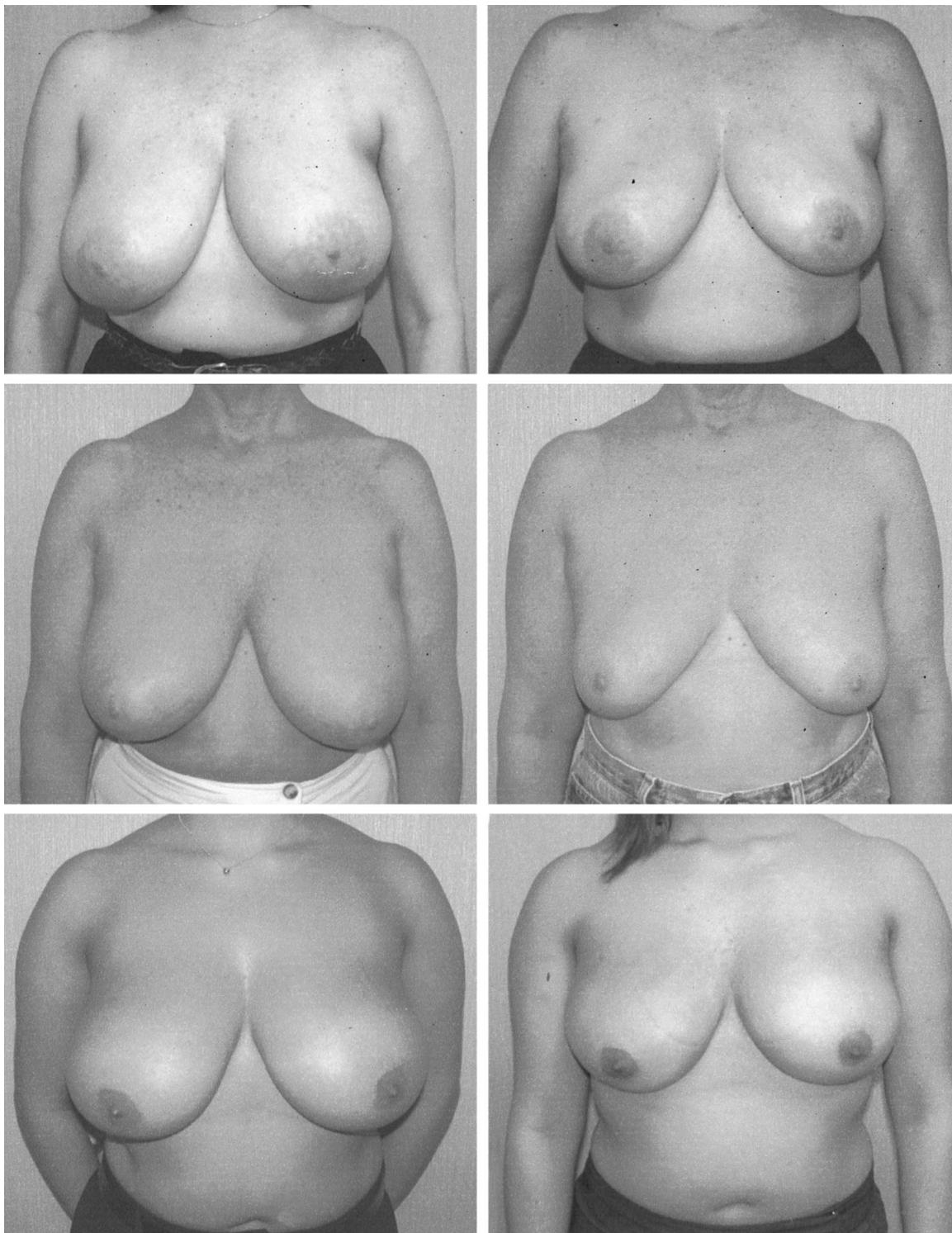


FIG. 1. (Above) A 40-year-old woman's brassiere size was reduced from a DDD cup (*left*) to C cup (*right*). (Center) A 55-year-old woman's brassiere size was reduced from a DDD cup (*left*) to a C cup (*right*). (Below) A 22-year-old woman's brassiere size was reduced from a DD cup (*left*) to C cup (*right*).

compared with the series-average two-cup reduction. All other parameters were similar. The eighth patient experienced an abnormally long recovery (28 days) and was unhappy with

that aspect of the surgery. Of the six "somewhat unsatisfied" patients, five experienced no reduction at all or a less than one-cup reduction. The sixth patient went down three cup sizes

TABLE IV
Brassiere Cup Change

	No. of Patients Responding	0 Cups	1 Cup	2 Cups	3 Cups	4 Cups
Cup reduction	73	5/73 (7%)	22/73 (30%)	35/73 (48%)	9/73 (12%)	2/73 (3%)

but was unhappy with her ptosis. The only "completely unsatisfied" patient had no reduction in cup size. This analysis of the data demonstrates that the largest determining factor of satisfaction with liposuction breast reduction is reduction in size. Unhappy patients are those who did not obtain the desired reduction in size and the occasional woman that did not understand the limitation in ptosis correction associated with liposuction breast reduction. This amplifies the need to properly screen and educate patients.

Candidates for liposuction breast reduction must be primarily concerned with breast weight and size. Patients who complain of breast ptosis should be referred for traditional breast reduction. All patients must also understand that the glandular portion of their breast may limit the effectiveness of liposuction breast reduction, in some cases rendering surgery ineffective. There are patients, mostly younger women, who have very glandular breasts and for them liposuction reduction surgery may fail completely. There is no reasonable screening method for fatty or glandular breasts, and the surgery itself is usually the best test of the situation. This finding has been echoed in the literature.¹⁶ It is vital to educate all patients to the possibility of treatment failure to avoid unnecessary disappointment. Traditional breast reduction surgery is the current alternative for these patients.

As in traditional breast reduction, histopathological examination of liposuction breast reduction specimens is required to help detect possible breast malignancy. Traditional breast reduction specimen examination includes gross sections of the specimen followed by slide preparation of any suspicious areas. The liposuction reduction method does not allow for serial sections; therefore, it is even

more important to screen patients before surgery. Although the incidence of occult breast cancer in reduction specimens is low, estimated at 0.16 percent in a recent study,¹⁷ the need to monitor for breast cancer cannot be overemphasized. This is best performed with preoperative breast examination and mammography with evaluation of all suspicious lesions before surgery.¹⁸

Liposuction as a primary method of breast reduction has not been widely adopted by plastic surgeons partly because the acceptance of liposuction as a breast reduction modality requires a shift in plastic surgery philosophy. Multiple surgical techniques have been devised over the past century to allow safe nipple transposition while forming a tighter skin envelope and reducing breast mass. These operations aim to achieve optimal breast form and nipple position while concurrently reducing weight. Incisions are required to gain exposure for tissue removal and to move the nipple areolar complex as desired. What if, however, some patients do not care about nipple position and breast form? What if there is a population of women who desire a straightforward breast weight reduction and would choose to forego optimal breast form and nipple position if they could achieve rapid recovery with no scars? These are the questions that plastic surgeons must ask, and the answers to these questions form the basis of a shift in breast reduction philosophy.

Women who currently seek breast reduction surgery have accepted that traditional surgery will require certain scars and postoperative sequelae. Most of these women will be happy with their outcome because they understand the risks and benefits of the surgery. We believe that there are a large number of women who desire treatment of their breast hypertrophy but will not acquiesce to traditional plastic surgical care and therefore have never sought the input of a plastic surgeon. This concept is buoyed by our finding that almost two-thirds of our patients had never seen a plastic surgeon for a breast reduction consultation before their liposuction breast reduction surgery.

Twenty years ago there was no option for

TABLE V
Recovery

	Mean	SD	Median	Range
Return to work, days	4.8	4.2	4	1-24
Return to full exercise, days	10.9	7.0	10	1-30

TABLE VI
Postoperative Findings

	Increased	Decreased	Same
Nipple sensation (individual breasts)	29/156 (18%)	23/156 (15%)	104/156 (67%)
Ptosis	4/69 (6%)	48/69 (70%)	17/69 (24%)
Body weight since surgery	7/77 (9%)	33/77 (43%)	37/77 (48%)
Quality of life	46/75 (61%)	1/75 (1%)	28/75 (38%)

TABLE VII
Satisfaction with Liposuction Breast Reduction

	Yes	No	Unsure	Completely Satisfied	Very Satisfied	Somewhat Satisfied	Somewhat Unsatisfied	Completely Unsatisfied
Would you recommend this operation to a friend?	71/77 (92%)	6/77 (8%)	–					
Looking back, would you choose the LBR again?	65/75 (87%)	4/75 (5%)	6/75 (8%)					
Overall, how satisfied are you with the LBR?	35/75 (47%)	25/75 (33%)	8/75 (11%)	6/75 (8%)	1/75 (1%)			

LBR, liposuction breast reduction.

removing breast weight without incisions so it only made sense that the incisions be placed strategically to improve breast form. Today, however, liposuction affords us the opportunity to reduce breast mass through tiny apertures that leave no significant scars. Liposuction breast reduction does not provide the same global improvement to the breast that traditional surgery does and it is not meant for all women. The high satisfaction rates found in this outcome study are largely attributable to the careful application of this method to those women who were certain that their complaints were based on breast weight and not ptosis. In conclusion, liposuction breast reduction gives patients and surgeons an effective choice in the management of breast hypertrophy and does so with little downtime, minimal scarring, and high patient satisfaction.

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