



Lactation and breast-feeding ability following lateral pedicle mammoplasty

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Summary A retrospective study was undertaken to evaluate the ability of breast-feeding using lateral pedicle reduction mammoplasty. A standard questionnaire was sent to 72 patients who had been operated on at a fertile age. Data was collected regarding the duration and quality of preoperative and postoperative breast-feeding, difficulties while breast-feeding, reasons for discontinuation of breast-feeding or for not attempting to breast-feed, and postoperative subjective sensitivity. Thirteen of the women who replied to the questionnaire had given birth after surgery.

The pressure threshold sensitivity of areola - nipple complex was measured in nine of the above cases.

To preserve lactation, a technique leaving structures untouched within the pedicle with increased dimensions was used.

Breast-feeding was considered successful in this study if it was performed exclusively, without supplementation, for two months.

Seven women (54%) breast-fed successfully for between two and 14 months (5.8 ± 1.3) following surgery. Two women (16%) were classified as unsuccessful and four women (30%) did not breast-feed at all. The success of breast-feeding was limited by nonsurgical factors including the influence of medical personal.

Five of eight women (62%) who had children preoperatively improved their rate of breast-feeding after surgery. No correlation was demonstrated between measured sensitivity and breast-feeding ($p = 0.65$). No significant correlation was found between the resected tissue and breast-feeding ($p = 0.08$). No relation was observed between the duration of breast-feeding and the period between operation and partus.

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Lactation and breast-feeding are the results of composite physiological processes and intimate interplay between mothers and their newborns.¹ Separation of the placenta after delivery stimulates secretion of pituitary prolactin, the level of which

increases considerably initiating *lactogenesis*. *Lactation* is maintained by a suckling reflex. Impulses are transferred along afferent neurones to the hypothalamus, regulating prolactin-oxytocin levels. For adequate lactation, normally functioning thyroid, pancreas and suprarenal glands are required in addition to an intact hypothalamus-pituitary axis and an intact afferent neural pathway. *Milk expression* depends on increased secretion of

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oxytocin, stimulated by suckling. A pump can also evoke the stimulation of areola-nipple complex instead of suckling.

Other factors, which influence lactation, include: heredity, psychological state, family situation, economical situation, the attitude of health-care professionals or maternal age and parental level of education/occupation.²

Although surgery is another factor, which can potentially influence lactation and breast-feeding, currently little data, is available, owing to the small number of patients that gave birth after reduction mammoplasty.

There is scepticism among doctors in other specialities concerning the possibility of breast-feeding after surgery. This attitude has probably survived from times when surgical techniques involving free areola-nipple graft or nonpedicled transposition were used and bottle nursing was generally popular. The circumstances experienced then may explain why little research has been carried out in this field and why the literature on breast-feeding is sparse. The publications on breast-feeding concern mainly Strombeck's method³⁻⁵ and modifications of the inferior pedicle.⁶⁻¹⁰

In this paper, we report a retrospective study of patient's ability to breast-feed after lateral pedicle reduction mammoplasty.

Technical aspects

In surgery on women who may become pregnant, it is essential to leave most of the breast lobules and their lactiferous ducts intact and connected with the transposed areola-nipple.

No guarantee is given that these structures will remain intact following surgery even with a large or relatively thick pedicle.⁸ Our technique, where a wide flap with a complete thickness of breast gland was used, preserves integrity of the structures inside the pedicle and causes minimal surgical trauma. Cutting perpendicularly, straight down from the skin, nearly to the fascia of the pectoralis muscle, the superficial and deep aspects of the pedicle have the same width. The pedicle should be only slightly smaller and not much thinner at its end, near to the areola-nipple.

Thinning of the pedicle should be avoided (Fig. 1). A large, thick flap can still be folded and transposed.

When using liposuction together with mammoplasty it is probably important to avoid the pedicle



Fig. 1 Lateral pedicle from the side. In this case, the breast-glandular tissue is lying close to the lower plane of the pedicle. When using a thinner pedicle or pedicle trimmed towards its apex, part of the gland or some of the lactiferous ducts, respectively, may be cut away.

in order to not damage the lymphatics or the lactiferous ducts.

We have noticed that in all cases, most of the breast gland tissue can be found between the superior and lateral quadrants of the breast, at the base of the lateral pedicle (Fig. 1).

Patients and method

The patients were operated between on 1985 and 2000 using a modified Strombeck's mammoplasty. From this material the 72 women in childbearing age (between 17 and 42) were selected and reviewed. One experienced surgeon performed all of the surgery and the postoperative observation for 3-6 months.

A questionnaire was sent to all patients 1-15 years after surgery. The following data was requested: the duration of breast-feeding before and after surgery, the reason for not attempting to breast-feed or for discontinuation of breast-feeding, changes of the subjective sensitivity of areola-nipple after surgery and the time of its recurrence. Seventeen of 72 patients had given birth after surgery. Only thirteen patients in this group were operated with lateral pedicle and were included in this study. Nine of these patients (living within one day's travel from the Hospital) were examined and tested by the authors between three and seven years after surgery.

The sensitivity of the areola-nipple complex was measured with a set of 20 Semmes-Weinstein's monofilaments (North Coast Medical, Inc., Morgan Hill, Ca.)^{11,12}

A period of at least two months of exclusive breast-feeding was regarded as successful in this

study. Periods shorter than this or breast-feeding with supplementation within the first two months were regarded as unsuccessful. Breast-feeding for less than two weeks was regarded as an attempt to breast-feed.

Preoperatively patients were informed that they were expected to preserve the ability to breast-feed.

Statistics

Results are expressed as mean \pm standard error of the mean unless otherwise stated. All statistical analysis was performed using of SPSS 10.0 (SPSS 10.0[®] SPSS Inc. Chicago, USA).

Results

Seven out of 13 women (54%) who had given birth after surgery breast-fed successfully between 2 and 14 months (mean 5.6 ± 1.3). Two women (16%) had unsuccessful breast-feeding; they breast-fed exclusively for two and four weeks, respectively. Four women (30%) did not breast-feed (Table 1).

The patients were aged between 22 and 34 years at the time of surgery. Four were first-time mothers. Tissue excision ranged from 225 to 1100 g per side (mean 601 ± 63 g). Two of the women had given birth one year after surgery. In the remainder, birth occurred 2-5 years after reduction mammoplasty.

Eight women had born children prior to surgery; five of these (62%) improved the duration of breast-feeding after surgery (mean 2.1 ± 0.7 , range 0.5-5 months).

The pressure sensitivity threshold of the areola was 13.84 ± 2.3 g/mm² (range 2.53-33.85 g/mm²) and of the nipple 13.80 ± 2.2 g/mm² (range 2.53-27.87 g/mm²).

No significant correlation was observed between breast-feeding and the amount of resected tissue ($p = 0.08$). There was no significant correlation

between duration of postoperative breast-feeding and measured sensitivity (areola $p = 0.44$, nipple $p = 0.59$).

Seven women (54%) reported no change in the subjective sensitivity of the areola-nipple after surgery. Five (38%) reported a mildly reduced sensation of their areola-nipple.

One patient reported 50% decrease in the subjective sensation of areola-nipple.

Two women breast-feed successfully despite reported reduced sensitivity. Two reported reduced sensation bilaterally and breast-feed unsuccessfully. Four women with decreased subjective sensitivity did not breast-feed for other reasons (Table 1).

There was one case of mastitis in this sample. We had no inverted nipples in this study.

Discussion

The wide and full thickness flaps allow transposition of the breast lobuli and their lactiferous ducts untouched (see Technical aspects). Using such a pedicle the influence of surgery on lactation will be minimised. In other studies, it has been demonstrated that the lactiferous ducts in some cases recanalised and connected to the ducts in the breast gland tissue, outside the pedicle. Only few such ducts have been found.³

In the small or trimmed flaps the breast gland volume will be reduced and some of the lactiferous ducts can be divided or excised. Examples of these pedicles are a vertical bi-pedicle, thin and small at areola-nipple¹³ or pyramidal inferior pedicle, which is wide at its base but thinner at its end.^{14, 15} The use of a larger pedicle is a good alternative where the goal of reduction mammoplasty is to preserve sufficient lactation and competent breast-feeding.

Our technique with increased dimensions of the pedicle was used in all women in this study, even in cases of moderate hypertrophy.

We expect that surgery involving different methods of reduction mammoplasty, using much the same pedicle might give a similar sufficiency of lactation.

The weight of resected tissue, however, seems to have no effect on the duration of breast-feeding (Table 2). These results contrast with Strombeck's who reported shorter duration of breast-feeding and reduced subjective sensitivity after resection larger than 500 g per side.³

The improved duration of breast-feeding after surgery in the majority of women who breast-fed

Table 1 Reasons for unsuccessful or nonbreast-feeding

	<i>n</i>
Baby unable to suck the breast	2
Pain of the nipple	1
Mother with general virus infection	1
Mother back to work	1
Cessation of lactation in the delivery ward	1
Totally	6 (46%)

Table 2 Postoperative Breast-feeding using the lateral pedicle technique

Consecutive number	Tissue resection (g/side)	Duration of BF (month)	BF category	Comments
1	635	3	Exclusive	
2	750	2	Exclusive	
3	450	4	Exclusive	
4	450	14	Exclusive	
5	450	4	Exclusive	
6	625	6	Exclusive	
7	840	1	Exclusive	Premature child
8	225	0.5	Exclusive	General infection
9	785	2	Exclusive	

The four patients who had not breast-fed are not listed in this table.

preoperatively was related probably to the mother's experiences and not to any other parameters. Among the remainder of women in this subsample the duration of breast-feeding declined in those with premature babies.

Breast-feeding was not correlated with measured sensitivity. The maximum duration of breast-feeding (14 months) in the sample was observed in a patient who had considerable experience from preoperative childbirths and a high level of education (medical student)² and was not necessarily a result of excellent sensitivity (2.53 g/mm²) or modest rate of resection (450 g).

Most of the women gave birth 2-5 years after their operation. At this time the nerves will normally have regenerated. This was reflected in the high incidence of reports of the same subjective sensibility as before the operation. One patient, who experienced a 50% reduction of her subjective sensation, could not breast-feed her premature baby because she had no access to a pump.

Of all the reasons for not breast-feeding in this sample there was only one following surgery—the case with pain in the nipple (Table 1).

Of all nonsurgical factors influencing the results in this study, the negative effect of the attitude of members of the medical professional might be the most important. Doctors, nurses and all staff working in the delivery ward and in neonatal clinics frequently pass on their belief that breast-feeding could not be performed after reduction mammaplasty. Women following breast surgery may experience less support for suckling than other women in the wards. Possibly as a consequence, the mothers in this study (especially these with premature babies) were less successful in breast-feeding. There was a tendency to encourage bottle-feeding rather than to help these women with breast-pumps or encouragement with breast-feeding. The rate of breast-feeding in this study might have been much higher if these patients had been given the same help as unoperated women.

These problems are not unusual. Brzozowski et al. reported 27 of 72 mothers in their study were discouraged from breast-feeding.⁸

Cessation of breast-feeding was practised in the delivery ward in one of our first time mothers as a prophylactic against mastitis.

The patient with mastitis in this sample had had mastitis before surgery, following a giant fibroadenoma. This woman was nevertheless able to breast-feed exclusively for four months. In our experience, mastitis is not more frequent among breast-operated than in other women and, furthermore, mastitis is not any contraindication for breast-feeding.

There are very few reasons for performing a cessation of breast-feeding.

The studies based on Strombeck's method showed nearly the same rate of successful, postoperative breast-feeding as in the present study: 50% using horizontal bi-pedicle or medial pedicle,⁴ 54% with superior pedicle⁵ and 54% in our study, based on lateral pedicles. The results based on an inferior pedicles indicated a lower rate of success in breast-feeding 35,⁶ 8,⁷ and 19.2%.⁸ Two other articles based on inferior pedicles reported 100% 'moderate lactation'⁹ and a short report noted 72% of breast-feeding.¹⁰ Neither of the latter included any data about which patients were included or about the rate of breast-feeding.

In contrast to other authors,^{16,17} we have not found any patients who sacrificed the opportunity to breast-feed because of their anxiety about changing the shape of their breasts. Despite one mother who prioritised her job, all women wanted to breast-feed their babies. Moreover, they showed not much more tendency to moderate or major ptoses after they breast-fed than before (Figs. 2-4).

The surgeon should explain the possibility of postoperative preservation of normal functions following surgery. In cases, in which a long period elapses between surgery and pregnancy

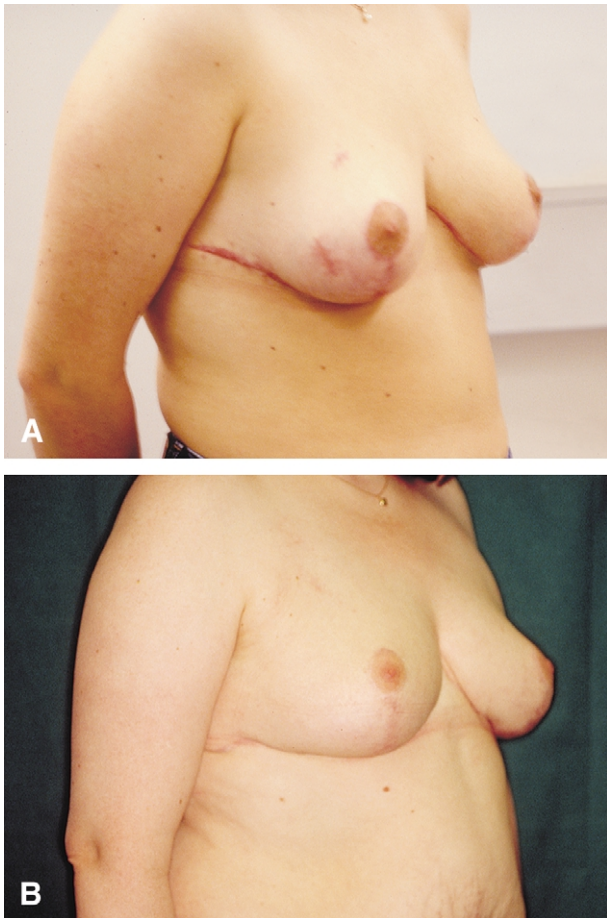


Fig. 2 (A) Twenty-six year old woman, three months after surgery, tissue excision 635 g per side. One child before operation. (B) The same patient five year after surgery and two years after postoperative partus. The duration of breast-feeding was three months.

new information is needed. In the prenatal period, breast-operated pregnant women need education and careful support to enable them to decide about



Fig. 3 Twenty-seven year old woman, three years after surgery, tissue excision 840 g per side. Partus two years after surgery. The duration of breast-feeding was one month. The minimal ptosis.

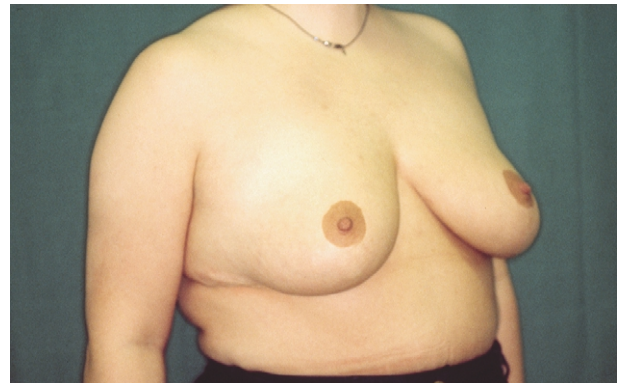


Fig. 4 Twenty-nine old year woman, multipara. Five years after surgery (tissue excision 450 g per side) and four years after partus number three. The total breast-feeding fourteen months. A moderate ptosis accepted by the patient.

breast-feeding.¹⁸ In the postpartum period, it is most important that breast-operated women are given instructions about how to establish correct nursing in the same way as unoperated women.

Information/education about current methods in the surgical treatment of breast hypertrophy is necessary for doctors and all staff in delivery wards and neonatal clinics to minimise negative, non-surgical factors that hinder successful breast-feeding for breast-operated women.

An example of an initiative to improve the rate of exclusive breast-feeding is the The-Baby-Friendly-Hospital which, after four years 1992-1996 of education and encouragement improved the duration of breast-feeding by approximately about 1.1 months in Tromsø.²

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