0021-7557/10/86-03/239
Jornal de Pediatria

Breastfeeding pattern in the first month of life in women submitted to breast reduction and augmentation

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Abstract

Objective: To describe the breastfeeding pattern in the first month of life in women submitted to two types of surgery – breast reduction and augmentation – and to compare it with the pattern exhibited by women who had no surgery.

Methods: Controlled prospective cohort with 25 women submitted to reduction surgery, 24 submitted to augmentation surgery and 25 with no breast surgery, who gave birth at Hospital Israelita Albert Einstein, São Paulo, Brazil. The data were obtained from assessments carried out 48 to 72 hours, between the 5th and 7th days, and 30 days after delivery. The following tests were used for data analysis: chi-square test, Fisher's exact test, Kaplan-Meier curve and Cox regression.

Results: The probability of an infant being on exclusive breastfeeding at the end of the first month of life was 29% in women with reduction surgery, 54% in those with augmentation surgery, and 80% in women who had no surgery. The probability of mixed breastfeeding being adopted during this same period amounted to 68% among women with reduction surgery, 32% in those with augmentation surgery, and only 16% among those without any breast surgery. The risk of an infant being on non-exclusive breastfeeding was five times greater in women submitted to reduction surgery when compared to those women with no surgery ($p = 0.002$). Among women with augmentation surgery, the risk of an infant being on non-exclusive breastfeeding was 2.6 times greater than that observed in infants whose mothers had no breast surgery ($p = 0.075$).

Conclusion: Breast reduction and augmentation surgeries led to lower rates of exclusive breastfeeding in the first month of life.

J Pediatr (Rio J). 2010;86(3):239-244: Breastfeeding, mammaplasty, breast augmentation, nursing.

Introduction

Numerous studies have shown the benefits of breastfeeding, not only to infants, but also to mothers, to their families, and to society.[1] These benefits are even greater if exclusive breastfeeding is adopted up to the sixth month of life, as recommended by the World Health Organization (WHO).[2]

Breastfeeding is a complex process that does not include physiological aspects alone, but also psychological, social

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This study was conducted at Hospital Israelita Albert Einstein, São Paulo, SP, Brazil, and was based on the Master's thesis presented by the first author at Universidade Federal de São Paulo (UNIFESP), São Paulo, SP, Brazil, in 2006.

No conflicts of interest declared concerning the publication of this article.

Suggested citation: de Andrade RA, Coca KP, Abrão AC. Breastfeeding pattern in the first month of life in women submitted to breast reduction and augmentation. J Pediatr (Rio J). 2010;86(3):239-244.

Manuscript submitted Feb 09 2009, accepted for publication Mar 05 2010.

doi:10.2223/JPED.2002

and cultural ones. Physiologically, for a woman to produce enough breast milk to meet her infant's requirements, she must have a healthy breast structure (alveoli, ducts and lactiferous sinuses), which stimulates production and subsequent letdown.[3]

Depending on the surgical technique used, plastic surgeries modify the healthiness and proper functioning of the breasts, eventually hindering breastfeeding or making it impossible.[4]

This is a very important issue as in many countries, and especially in Brazil, the number of women who undergo this kind of surgery has been increasing. A research study conducted in 2006[5] revealed that breast surgeries, augmentation, and reduction account, respectively, for 38, 23 and 15% of the most widely performed cosmetic surgeries. Another study undertaken in 2009 yielded similar rates.[6]

Most publications on this topic provide discussion about the types of breast surgeries and women's breastfeeding performance, without specifically comparing the surgeries.

Therefore, the present study aimed to describe the breastfeeding pattern in the first month of life in women submitted to two types of surgery – breast reduction and augmentation – and to compare it with the pattern exhibited by women who did not undergo these surgeries.

Method

A controlled prospective cohort was carried out with women admitted to Hospital Israelita Albert Einstein, in the city of São Paulo, Brazil. The maternity ward, which occupies two different floors, attends to approximately 240 puerperal women per month, among whom 13 to 15% undergo cosmetic breast surgery. Even though the institution has not been granted the "Baby-Friendly Hospital" label, the clinical practice supports and encourages breastfeeding. The newborn infant is breastfed for the first time while in the delivery room, and after resting for 1 h in an incubator, he/she is transferred into the rooming-in facilities. There, the first breastfeed is monitored by a nurse who instructs the mothers about breastfeeding techniques.

In this study, we included uniparous women whose infants were being breastfed. The following exclusion criteria were used: puerperal women who reported having low breast milk production in the first month after delivery in a previous breastfeeding period; presence of diseases or pseudo-inverted or inverted nipples; more than one type of plastic surgery of the breast; preterm newborns and/or infants with birth weight less than 2,500 g, and newborn infants with any disease. These criteria were used for women who underwent plastic surgery and those who did not.

The study was approved by the Research Ethics Committee of Universidade Federal de São Paulo (UNIFESP), São Paulo, Brazil, and was conducted only after an informed written consent form was signed by all participants. The data were collected between December 2004 and July 2005. Those women who were eligible for the study were interviewed, submitted to physical examination and assessed in terms of breastfeeding practice on a daily basis. First, the women who had undergone breast reduction and augmentation were identified. The controls were selected from the same floor as the cases, but as they were in a larger number, they were randomly drawn. The following data were obtained from the interview:

- *Mothers' characteristics* – age and schooling in years; number of pregnancies; parity; type of delivery; type of breast surgery (no surgery, reduction, augmentation); and type of breastfeeding. The type of breastfeeding was assessed according to the classification adopted by WHO,[6] which recommends exclusive breastfeeding when the infant is fed breast milk only; predominant breastfeeding when the infant is fed breast milk, water or water-based drinks, such as teas or juices; mixed breastfeeding when the infant is fed breast milk and another type of milk; and artificial breastfeeding when the infant is fed artificial milk only.
- *Newborns' characteristics* – gestational age, sex and birth weight.

The data were collected from three assessments carried out with mothers and infants. The first one took place while the mothers were in hospital (48 to 72 hours after delivery), and the second and third ones were conducted at home (from the 5th to the 7th day and around 30 days after delivery, respectively).

The initial sample consisted of 90 women. Some mothers withdrew from the assessments and, therefore, the final sample included 74 women. Based on this sample size, we calculated the power of the association between the type of breastfeeding and group for the three assessments. The significance level (type I error) was set at 5%, with 44.2% for the first assessment, 91.6% for the second and 87.4% for the third one. The probability of the difference being detected amounted to approximately 87% in the second assessment and was greater than 90% in the third assessment.

The chi-square test or Fisher's exact test was used for qualitative variables and the one-way ANOVA was used for quantitative variables in order to establish a comparison between the groups. The time elapsed up until the adoption of non-exclusive and mixed breastfeeding was assessed by Kaplan-Meier curves, and the comparison of these curves was made using the log-rank test. The univariate analysis included the risk presented until the adoption of either type of breastfeeding. The multivariate analysis used the Cox regression model. Two-tailed tests were used throughout the study period, and a p less than 0.05 was considered to be statistically significant.[7]

The data were entered into a Microsoft Excel spreadsheet, and the analysis was carried out by SPSS version 12.0 for Windows.

Results

The mothers' characteristics were homogenous in terms of age and schooling ($p > 0.05$), mean age was 33 years and there was a high percentage of women who had finished college education. With respect to obstetrical data, even though primiparity was found in most of the women submitted to breast reduction and augmentation, the statistical test could not establish any differences in comparison with the group of women who did not undergo surgery ($p = 0.068$). The rate of surgical delivery was higher among women submitted to breast reduction than in the other groups, but no statistical significance was observed ($p = 0.351$). In terms of newborns' characteristics, male infants were more frequent among women who had undergone breast reduction or who had had no breast surgery compared to women submitted to breast augmentation; but again, no statistically significant difference could be observed ($p = 0.247$). In addition, all infants were born full term and were appropriate for gestational age (Table 1).

To assess the pattern of breastfeeding, survival curves were built by the Kaplan-Meier method for exclusive and mixed breastfeeding. As predominant breastfeeding occurred only in two cases during the study period, it was not possible to build the survival curves.

In the first month, exclusive breastfeeding was statistically different between the assessed groups ($p < 0.001$). Women who had no breast surgery showed a higher frequency of exclusive breastfeeding than that observed in women submitted to breast reduction and augmentation. The probability of an infant being on exclusive breastfeeding at the end of the first month of life was 29% among women who had undergone breast reduction surgery, 54% among those submitted to breast augmentation and 80% in those with no surgery (Figure 1).

The probability of mixed breastfeeding occurring by the end of the first month was 68% in the breast reduction group, 32% in the breast augmentation group and only 16% in women who had no surgery (Figure 2); again, there was significant difference among groups ($p < 0.001$).

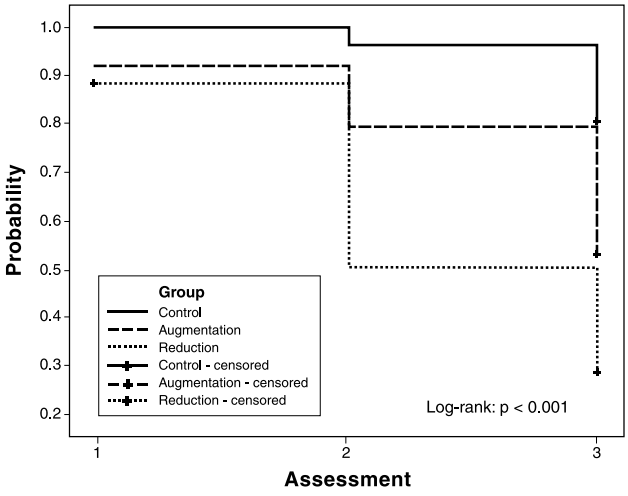

Figure 1 - Kaplan-Meier curve showing the time until adoption of non-exclusive breastfeeding

Table 1 - Demographic, obstetrical and neonatal data per group

Characteristics	Group			p
	Reduction, n (%) (n = 25)	Augmentation, n (%) (n = 24)	No surgery, n (%) (n = 25)	
Maternal age (years)	33±4.6	32±6.2	34±4.3	0.273*
Schooling (college education)	20 (80.0)	20 (83.3)	24 (96.0)	0.234†
First pregnancy	14 (56.0)	11 (45.8)	7 (28.0)	0.129‡
Primiparity	16 (64.0)	13 (54.2)	8 (32.0)	0.068‡
Surgical delivery	23 (92.0)	19 (79.2)	19 (76.0)	0.351†
Gestational age (weeks)	38.3±0.8	38.8±1.2	38.4±0.9	0.154*
Birth weight (g)	3,218.0±386.3	3,147.5±339.0	3,322.8±403.8	0.269*
Male sex	16 (64.0)	10 (41.7)	15 (60.0)	0.247‡

* One-way ANOVA.
† Generalization of Fisher's exact test.
‡ Chi-square test.
Birth weight, and maternal and gestational age expressed as mean ± standard deviation.

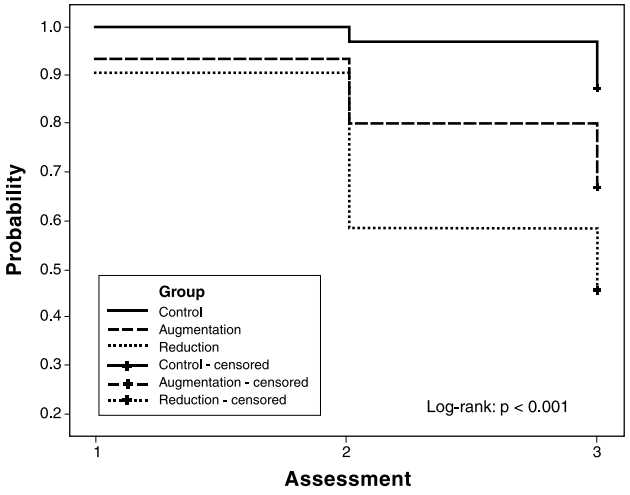

Figure 2 - Kaplan-Meier curve showing the time until adoption of mixed breastfeeding

The data in Table 2 show the risk estimates for exclusive and mixed breastfeeding according to the assessed characteristics.

The analysis of exclusive breastfeeding revealed that only the group variable was statistically significant (p = 0.005), and therefore, a multivariate analysis was not necessary.

For mixed breastfeeding, no variable other than group had statistical significance; however, as schooling yielded a p less than 20%, a multivariate analysis was conducted. Group and schooling were included in the Cox regression model, but schooling was not independently associated with time until adoption of mixed breastfeeding (unadjusted relative risk with p = 0.445 and adjusted relative risk with p = 0.124).

Discussion

The present study showed that plastic breast surgeries interfered with the breastfeeding pattern during the first month of life, and that the negative impact of breast reduction surgery on exclusive breastfeeding was higher than that of breast augmentation, compared with women who had no breast surgery.

Studies on this topic have been published in the past decades; nevertheless, few of them have a prospective design as does the present study, which assesses the effects of these surgeries on the type of breastfeeding used.

Only one partially prospective and retrospective study with similar results was carried out in Brazil with 49 women submitted to breast reduction using the transposition technique, compared with 96 women with no surgery. The prevalence of exclusive breastfeeding in the first month amounted to 21% among women submitted to breast reduction vs. 70% among those with no surgery. At 4 months, this prevalence dropped to 4 and 22% for the surgery and no-surgery groups, respectively.[8]

Table 2 - Univariate analysis for exclusive and mixed breastfeeding

	Exclusive breastfeeding			Mixed breastfeeding		
	Relative risk	**95%CI**	**p**	**Relative risk**	**95%CI**	**p**
Group			0.005			0.005
Augmentation vs. control	2.613	0.908-7.523		3.003	0.941-9.581	
Reduction vs. control	5.029	1.847-13.698		5.852	1.959-17.477	
Age	1.004	0.940-1.073	0.908	1.013	0.947-1.085	0.705
Schooling			0.228			0.124
No college vs. college	1.672	0.726-3.852		1.936	0.834-4.494	
Gestation			0.209			0.209
1 vs. 2	1.549	0.782-3.068		1.572	0.776-3.183	
Parity			0.505			0.505
Multiparous vs. primiparous	1.328	0.576-3.061		1.328	0.576-3.061	
Delivery			0.964			0.746
surgical vs. non-surgical	0.980	0.404-2.373		0.863	0.354-2.104	
Gestational age	0.895	0.639-1.254	0.520	0.921	0.649-1.309	0.921
Birth weight	1.000	0.999-1.001	0.653	1.000	0.999-1.001	0.691
Sex			0.238			0.289
Female vs. male	1.516	0.759-3.029		1.466	0.722-2.977	

95%CI = 95% confidence interval.

From 48 to 72 hours after delivery, all women assessed in the study were breastfeeding. However, the Kaplan-Meier curves show that, from the end of the first week after delivery to around 30 days, exclusive breastfeeding among women submitted to breast reduction and augmentation was significantly lower than among women with no surgery. Also, the impact of breast reduction was much stronger than that of breast augmentation, representing twice the risk for non-exclusive breastfeeding (5.0 in the breast reduction group and 2.6 in the augmentation group). A similar effect of surgery on breastfeeding was also demonstrated in a study conducted with 22 women submitted to breast augmentation or breast reduction, with periareolar incisions, with a fivefold greater risk for insufficient lactation compared with women with no surgery.[9]

The difference found between groups may stem from the reduction in milk production by a breast submitted either to reduction surgery or augmentation. In the case of reduction, the difficulty in maintaining production is more remarkable because, in addition to the removal of the mammary parenchyma, vessels and nerves are injured, leading to the loss of nipple-areolar sensitivity.[10] In augmentation surgery, although some studies assert that it does not interfere with lactation,[11,12] others mention insufficient lactation and low milk production, closely related to the periareolar incision and to the compression of the glandular tissue, as a result of the implanted volume and of the placement of the prosthesis under the gland.[9,13-15] Its impact is weaker than that of the breast reduction surgery because the damage to the glandular structure is smaller or nonexistent.

A retrospective study assessed 42 women with breast augmentation and 42 without augmentation and found insufficient lactation in 64% of the women submitted to augmentation surgery vs. 7% in those without this type of surgery.[13] The same author in a later study stressed the importance of women knowing about the factors that interfere with lactation, such as surgical technique, augmentation volume and possible complications.[16]

Even though no significant differences were noted in the characteristics of the three groups analyzed, some important differences that may overestimate the negative impact of surgery on exclusive breastfeeding rates in the first month of life can be observed, probably due to the small sample size. Higher level of education and vaginal delivery may be associated with better exclusive breastfeeding rates. Women from the no-surgery group had a better level of education whereas women from the breast reduction group showed a larger number of C-sections. On the other hand, the fact that women who reported milk insufficiency in previous breastfeeding periods were not included in the sample may have underestimated the impact of surgeries, because it is common knowledge that women submitted to surgery often have this problem. Thus, given this exclusion criterion, proportionally more women with surgery are likely to have been excluded from the study than women with no surgery. If these women had been included in the study, this problem would probably occur more frequently in women with surgery.

It was observed that mixed breastfeeding occurred 48 to 72 hours after delivery (first assessment), in a similar fashion, only in the surgery groups. The second assessment (5th to 7th day after delivery) revealed that supplementation was also present in the control group, but at a lower frequency than in the surgery groups. The risk for the introduction of artificial milk was sixfold higher among women submitted to breast reduction and three times greater in women submitted to breast augmentation compared to the no-surgery group.

This practice has been present when one observes the data obtained by a study conducted in 2000, which found that only 15 (19.2%) out of 78 women submitted to breast reduction in 2 or more weeks exclusively breastfed their infants, 8 (10.3%) supplemented breastfeeding with formula, 14 (17.9%) could not breastfeed and 52% did not even try to breastfeed.[17]

A classical survey conducted with women submitted to breast reduction showed that breastfeeding was practiced by 73% of women at hospital discharge. Close to the third month, this rate decreased to 27%.[18]

One should take into consideration that inadequate milk production is still a frequent complaint among breastfeeding women, but this does not mean, however, that a woman has problems with breast milk production. Surgery may add to the existing uncertainty or be an impediment due to cosmetic reasons. Studies have shown that this concern exists since the gestational period and that it increases after childbirth.[13,19] In addition, health professionals are not properly prepared to attend to women who have difficulty breastfeeding, especially those submitted to breast surgeries. More women submitted to cosmetic breast surgeries will succeed in breastfeeding if they are cared for by qualified professionals who are aware of lactation difficulties faced by these women and who are skilled to manage these problems. Because support is important for breastfeeding efficiency,[20] these women should be encouraged to breastfeed, as many of them do not believe this is possible.

The present study made important contributions by showing the negative impact that both types of surgery had on breastfeeding, indicating that breast reduction has a higher risk of failure than does breast augmentation. It also demonstrated that the introduction of other types of milk occurs early on and in a similar way in both groups analyzed, despite the fact that they are surgeries with different techniques and effects.

Our suggestion is that other prospective studies be carried out with a larger sample size, establishing an association between the type of breastfeeding and the assessment of breast milk production, among other issues, in order to identify the actual need of supplementation.

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