

## Effect of Antenatal Breast Milk Expression at Term Pregnancy to Improve Post Natal Lactational Performance

Lamba Sunita · Chopra Simmy · Negi Mamta

Received: 12 June 2014 / Accepted: 21 November 2014 / Published online: 20 January 2015  
© Federation of Obstetric & Gynecological Societies of India 2015

### About the Author



**Dr. Sunita Lamba** is a senior consultant and the HOD (Obs & Gynae) at Mata Chanan Devi Hospital, New Delhi. She is an MBBS, MS from S.N. Medical College, Jodhpur, Rajasthan. She has been successfully running the DNB program in Mata Chanan Devi Hospital since 2005. She is a visiting professor with NBE and chairperson of the Delhi Gynae Forum. She is the editor of IMA, Westtown Medical Bulletin, and is actively involved in CME presentations at various gynae fora.

### Abstract

**Objectives** To study the effect of antenatal breast milk expression at term pregnancy and subsequent effect on postnatal lactation performance.

**Methods** A sample size of 200 pregnant women who had completed 37 weeks of gestational period was selected. The sample size was divided equally into study (group 1) and control (group 2). The pregnant women in study (group 1) were advised to gently manually express their breasts at least once daily at any time, preferably during bathing. The remaining women constituted the group 2. At the time of delivery, all the mothers were advised to initiate breast-feeding their baby within half an hour of delivery. The time

from initiation of lactation to full lactation when no top feed is required was noted. Assessment of sufficient lactation was judged by the objective and subjective criteria.

**Result** In the group 1, 89 % of the cases established full lactation within 6 h of delivery, whereas in the group 2 only 72 % of the cases had established full lactation within 6 h. The difference in the group 1 and the group 2 is statistically significant ( $P < 0.05$ ) with regard to time interval from initiation of lactation to full lactation. Maternal perception of satisfactory lactation was statistically significantly higher in group 1 compared with group 2. In the group 1, 100 % of vaginal delivery (FTND) cases had established full lactation within 6 h compared with 81 % in the group 2. The result is statistically significant ( $P < 0.10$ ). In the group 1, 80 % of the lower segment cesarean section deliveries established full lactation within 6 h, whereas in the group 2, it was 61 %. The result is statistically significant ( $P < 0.10$ ). In objective criteria, the post-feed weight gain was higher in the group 1.

Lamba S., Senior Consultant and Head of Department ·  
Chopra S., Consultant · Negi M. (✉), Clinical Assistant  
Mata Chanan Devi Hospital, C 1, Pankha Road, Janakpuri, New  
Delhi 110058, India  
e-mail: gautamnegi.fms@mrii.edu.in

**Conclusions** Antenatal manual breast milk expression at term shortens the time taken to from initiation to full establishment of lactation, thus significantly improving postnatal lactational performance by early establishment of plentiful milk secretion.

**Keywords** Lactational performance · Breast milk expression · Breastfeeding failure rate

## Introduction

Breast milk is ideal and complete food for an infant for initial few months [1]. It provides nutrients and also helps in building up the immune system of newborns [2]. Breastfeeding is beneficial for both mother and infant. Breastfeeding is instinctive and natural and is adopted naturally by mother and infant, but in most cases, early initiation and exclusive breastfeeding is often delayed and not properly established.

The common obstacles to the establishment of breastfeeding are lack of proper knowledge, prenatal education and promotion, physician's under-education and lack of support, cultural views, promotion of commercial formula milk products, hospital practices, and lack of follow-up after discharge from hospital. Parental educational levels, attitude, and social status; mother's physical and mental health; and employment, partner's attitude, and family support strongly influence breastfeeding [3, 4].

To overcome these obstacles in establishing breastfeeding, the motivation and preparation of breastfeeding should start during antenatal period [3, 5]. Early initiations of breastfeeding and refraining from prelacteal and pro-lacteal feeds are crucial to establish successful breastfeeding.

The initial 2–3 days of lactation period are very crucial as during this period, lactation is being established. Often during this period, even if the family encounters a trivial problem in breastfeeding they feel that the baby would be hungry and to avoid this, they start top feeding [4]. This has a negative impact on establishment of breastfeeding. Introduction of bottle feeding would lead to nipple confusion, and the baby will become reluctant to breastfeeding. Partial breastfeeding leads to reduced milk output because the intensity and duration of further lactation largely depend on repetitive stimulus of nursing, thus resulting in breast engorgement. This vicious cycle continues, breaking down mother's confidence, who ultimately gives up breastfeeding, thus leading to lactational failure. The problem is common in primipara, and mothers with cesarean deliveries, as they are less aware, low in confidence, more exhausted and stressed out mentally and physically, and more readily inclined to introduce top feeding.

To overcome this problem of the need of supplementary food in the initial 2–3 days of lactation, pregnant women who have completed 37 weeks of gestation are advised to gently manually express their breast at least once every day, preferably during bathing. This practice significantly improves early onset of plentiful milk secretion after delivery [3, 4].

## Materials and Methods

A total of 200 pregnant women with known last menstrual period or ultrasound evidence of having completed 37 weeks of gestation with no obstetrical and medical risk factors, attending the antenatal clinic of MCDH during the study period from January 2012 till December 2012 were selected for the study. The cases were divided randomly and equally into group 1 and group 2. Breast examination was done for all cases to treat any cracked or retracted nipple or significant pathology. The cases in the group 1 were explained to gently express their breast at least once every day manually for 5 min daily at home, preferably during bathing time. Though women were not advised to measure the exact quantity of milk expressed, but different women were able to express variable amounts of milk. In the weekly follow-up visit during antenatal period in the group 1, women were asked about the improvement in the amount of milk expressed and also examined for the same. The remaining women constituted the group 2. All mothers in immediate postnatal period were advised to initiate breastfeeding within half an hour of delivery or as soon as the mother became physically comfortable. The time from the initiation of lactation to full lactation when no top feed was required was noted. Assessment of lactation was done based on the subjective and objective criteria.

In subjective analysis, lactation was considered as satisfactory or unsatisfactory. The criterion for lactation to be satisfactory was, if after breastfeeding baby does not cry for a minimum of two hours for want of milk and passes urine five to six times a day [3, 4]. The time intervals from initiation to full lactation of the two groups were compared.

Mother was also assessed for satisfactory lactation. Maternal perception of fullness of breast before feed and softness after feed was assessed. Discharge from another breast, while feeding the baby and audible swallowing by the baby was taken as the criteria for satisfactory lactation. Maternal perception of all these subjective finding was taken as a valid indicator of satisfactory lactation by Kathryn G Dewey in a study published in the American Academy of Paediatrics 2003 [6].

Objective criteria of satisfactory lactation were measured by pre- and post-feed weight gain of the baby any time once in a day and daily weight check-up till baby and

mother were discharged from the hospital, and in the follow-up, baby was checked for normalcy of weight loss (average of 7 %, should not exceed 10 % in term newborns) and regain of birth weight by day 10 and normal bowel movements. Test weighing is the gold standard to document Lactogenesis Stage II, although it is very cumbersome and impractical. It is assumed that 1 ml is equivalent to 1 gram. The infant was weighed daily; pre- and post-feed weights were recorded for both the study group 1 and the group 2. The weight measurement was done till the baby was in hospital. The weight of the baby was also measured on day 10, during the follow-up visit.

The data were collected through the interview of the patient and observation of the mother and neonate. The data were analyzed through Chi-squared test.

## Results

The group 1 and the group 2, each comprises 100 cases. Table 1 shows the distribution of cases according to lactational intervals for both the groups.

Out of the 100 patients in group 1, 89 (89 %) of the cases established full lactation within a period of 6 h, whereas in the group 2, out of 100 only 72 (72 %) of cases had established full lactation within 6 h. The difference is statistically significant ( $P < 0.05$ ) with regard to time interval from initiation of lactation to full lactation.

Lactation according to mode of delivery is reported in Table 2.

In the test group, 100 % of the vaginal delivery cases had established full lactation within 6 h, whereas it was 80 % of the cesarean deliveries in the test group who established full lactation within 6 h.

In the group 2, 81 % of the vaginal delivery cases had established full lactation within 6 h, whereas only 60 % of the cesarean delivery cases in the group 2 had established full lactation within 6 h. The difference is statistically significant. Thus, statistically significant more women with vaginal delivery established full lactation within 6 h compared with women with cesarean delivery in both the groups ( $P < 0.10$  in the test group and  $P < 0.20$  in the group 2).

**Table 1** Intervals between the initiation of lactation and full lactation

Time interval from initiation of lactation to full lactation	Study group (G1) ( $N = 100$ )	Control group (G2) ( $N = 100$ )	$\chi^2$ value	$P$ value
6 h	89 (89 %)	72 (72 %)	11.94	$P < 0.05$
6–72 h	10 (10 %)	17 (17 %)		
>72 h	1 (1 %)	11 (11 %)		

**Table 2** Modes of delivery and lactation

Time interval	Test group 1				Test group 2			
	$V_t$	$C_t$	$\chi^2$	$P$ value	$V_c$	$C_c$	$\chi^2$	$P$ value
<6 h	45	44	10.11	$P < 0.10$	44	28	7.47	$P < 0.20$
6–72 h	0	10			8	9		
>72 h	0	1			2	9		

The coefficient of contingency is 0.22 for the Test group and 0.19 for the group 2

$V_t$ — number of cases with vaginal delivery in Test group (45),  $C_t$ — number of cases with cesarean delivery in Test group (55),  $V_c$ — number of cases with Vaginal Delivery in group 2 (54),  $C_c$ — number of cases with cesarean delivery in group 2 (46)

The distribution of primi/multi cases according to FTND/LSCS cases is reported in Table 3.

In Group 1, all 20 primi/full term normal delivery (FTND) cases had lactation within 6 h. In the group 1, 42 cases had lower segment cesarian section (LSCS) delivery, among which, 74 % successfully established full lactation within a duration of 6 h, and 23.8 % of the cases had full lactation between 6 and 72 h. All multi/FTND cases and multi/LSCS cases in Group 1 had lactation within 6 h.

In objective criteria, it was found that the mean post-feed weight gain in all categories (normal delivery, cesarean delivery, and multipara) was higher in group 1 compared with group 2 (Table 4). The number of times urine passed by neonate was satisfactory in group 1.

## Discussion

In spite of knowing the health benefits of mother's milk, most mothers fail to establish early and satisfactory lactation in the initial postpartum period, and formula milk is introduced to the neonates, which hampers the process of lactation, and thus, a vicious cycle starts [4].

Interaction between hormones and reflexes plays major role in the onset of lactation. Prolactin stimulates the glandular tissue of breast to produce milk.

During infant suckling, the nerve endings in the nipple carry the stimuli to anterior pituitary to release prolactin to enhance milk production. The more the number of times and the more efficiently the infant suckles, the greater is the stimulation for release of prolactin which subsequently leads to copious milk production. Oxytocin released by posterior pituitary is responsible for ejection of milk—the let down reflex. Oxytocin is released not only by the stimulation of nerve endings of nipple during suckling but also by thought, sight, smell, or cry of baby.

Mammary glands start secreting colostrum from the 20th gestational week onward and can be expressed

**Table 3** Group 1/Group 2 comparison of primi/multi cases

Group 1				Group 2			
Primi (N = 62)		Multi (N = 38)		Primi (N = 45)		Multi (N = 55)	
<6 h	52 (84 %)	<6 h	38 (100 %)	<6 h	17 (37 %)	<6 h	55 (100 %)
6–72 h	9 (15 %)	6–72 h	0	6–72 h	17 (37 %)	6–72 h	0
>72 h	1 (1 %)	>72 h	0	>72 h	11 (26 %)	>72 h	0

**Table 4** Pre-feed and post-feed weight analysis

Weight (gms)	Group 1		Group 2	
	FTND	LSCS	FTND	LSCS
Day 1				
Pre-feed	3,031.50	3,036.83	3,006.85	2,986.39
Post-feed	3,033.46	3,037.83	3,008.63	2,987.08
Difference	1.97	1.00	1.77	0.70
Day 2				
Pre-feed	2,967.82	2,981	2,942.26	2,913.24
Post-feed	2,976	2,987	2,950.67	2,917.94
Difference	8.17	6	8.40	4.70
Day 3				
Pre-feed	–	2,934.65	–	2,847.85
Post-feed	–	2,944.27	–	2,855.52
Difference	–	9.62	–	7.67

manually or spontaneously [6]. It is feared that antenatal breast milk expression may cause loss of colostrum and may initiate premature contraction leading to preterm onset of labor and also that the infant will lose health benefits of colostrum. Many studies have found that in follow-up of these babies born in group 1, there was no increased incidence of growth compromise [4]. In certain studies, pregnant women are advised to store milk for their infants for postpartum period like in case of diabetic mothers [7, 8]. Also some women become pregnant and continue to feed their baby in period of lactational amenorrhea. These women carry the pregnancy safely, as well as the baby born attains normal mile stone.

Our study aims to prepare the mother psychologically and physically for lactation. It prepares the breast mechanically by opening up the milk duct, facilitating milk flow [3, 4]. The study is also supported by the fact that parity has strong influence on the success of lactation. The more the number of children a woman has, the faster is the onset and volume of milk she produces. In our study, the multi cases had more successful lactation. Prior lactation as in multipara prepares the breast mechanically and accustoms the gland for milk production, as supported by

observation. Multiparity also has a positive influence on mother's confidence and knowledge about breastfeeding technique, enabling mothers to have successful lactation. Mode of delivery has a strong influence on lactation [9]. Women with vaginal delivery are more comfortable to initiate early breastfeeding compared to cesarean deliveries [10]. In our study, we mechanically prepare the breast antenatally so that during early lactation, all mothers can achieve successful lactation.

## Conclusions

Antenatal breast milk expression after completing 37 weeks of gestation significantly improves post-partum lactation by early establishment of plentiful milk secretion.

## Recommendations

Considering the poor socioeconomic status and low sanitary level in India, mother's milk is of immense benefit to both mother and infant. Our study shows that pregnant women subjected to antenatal breast milk expression had improved lactation. Antenatal breast milk expression at term pregnancy prepares mother physically and psychologically, and boosts her confidence about breastfeeding.. Antenatal breast milk expression is technically very easy to be taught, and simple to be learned and followed by the patient. It is safe, effective, involves no cost, and has good acceptance. It also involves breast examination which aids in opportunistic screening of breast ailments. Thus, on the basis of above facts, it is strongly recommended that all pregnant women at term pregnancy be subjected to antenatal breast milk expression to enhance lactational performance.

**Compliance with ethical requirements and conflict of interest** We confirm that the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation and with the Helsinki declaration of 1975, as revised in 2000. We will ensure the confidentiality of the subjects. There is no conflict of interest to declare.

## References

1. Houghton J, Gregorio D, Perez-Escamilla R. Factors associated with breastfeeding duration among Connecticut special supplemental nutrition programme for women, infants and children participants. *J Hum Lact.* 2010;26(3):266–73.
2. Walker A. Breastmilk as the gold standard for protective nutrients. *J Pediatr.* 2010;156(2 Suppl):S3–7.
3. Singh G, Dasgupta E. Effect of antenatal expression of breast milk at term to improve lactational performance: a prospective study. *J Obstet Gynaecol India.* 2009;59(4):308–11.
4. Singh G, Chouhan R, Sidhu K. Effect of Antenatal expression of breast milk at term in reducing breast feeding failures. *Med J Armed Forces India.* 2009;65(2):131–3.
5. Lumbiganon P, Martis R, Laopaiboon M, et al. Antenatal breastfeeding education for increasing breastfeeding duration. *Cochrane Database Syst Rev.* 2012;12(9):CD006425.
6. Wright NE, Cordes R. ABM Clinical protocol # 3: hospital guidelines for the use of supplementary feedings in the healthy term breastfed Neonate, Revised 2009. *Acad Breastfeed Med.* 2009;4(3):175–82.
7. Soltani H, Scott AMS. Antenatal breastmilk expression in women with diabetes: outcomes from a retrospective cohort study. *Int Breastfeed J.* 2012;7:18.
8. Forster DA, McEgan K, Ford R, et al. Diabetes and Antenatal milk expressing: a pilot project to inform the development of a randomised controlled trial. *Midwifery J.* 2011;27(2):209–14.
9. Prior E, Santhakumaran S, Gale C, et al. Breastfeeding after cesarean delivery: a systematic review and metaanalysis of world literature. *American Journal Of Clinical nutrition, AJCN.* 2012; 95(5):1113–35.
10. Malik S, Dasgupta U, Naskar S, et al. Knowledge of breastfeeding and timely initiation of it amongst post natal mothers: an experience from a baby-friendly teaching hospital of a metropolitan city. *IOSR J Dent Med Sci.* 2013;4(1):25–30.