Comparisons of Latching on between Newborns Fed with Feeding Tubes and Cup Feedings

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Background: *Feeding tubes and cup feedings were used as alternative feedings. There is scant data regarding the facilitation of latching on by newborns with the use of these alternative supporting techniques.*
Objective: *The comparison of the latching on of newborns when fed with the additional support of feeding tubes or cup feedings.*
Material and Method: *The subjects were 120 normal, postpartum women, who delivered without complications at the HRH Princess Maha Chakri Sririndhorn Medical Center in the Nakhon Nayok Province between October, 2012 and September, 2013. No breast milk was expressed by the mothers at day 2, postpartum. They were divided into two groups by simple randomization. In the first group, the newborns were fed with a feeding tube in support of breastfeeding. In the second group, the newborns were fed by cup feedings. Latch scores were assessed at the end of postpartum day 3. Demographic data and latch scores were collected and analyzed by Chi-square, t-test and Mann-Whitney U test.*
Results: *No differences in the demographic data of mothers and newborns between the two groups were found. Latch scores for the feeding tube group were significantly higher than the latch scores in the cup feeding group ($p<0.05$).*
Conclusion: *Latching of newborn after feeding tube method is better than latching of newborn after cup feeding.*

Keywords: *Feeding tube, Cup feeding, Latch score*

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Breastfeeding is universally accepted as the preferred method for feeding a newborn in the first six months of life. However, mothers, who breastfeed newborns exclusively at six months of age, amount to only about 14.5% here in Thailand[1]. One of the most frequently encountered problems in breastfeeding is a poor attachment of the baby to the mother's breast or what is termed as 'latching on'[2]. The health professional has the ability to help the mother position herself correctly for breastfeeding and assist with the infant's appropriate attachment. In some cases, the mother had developed a delayed onset of lactogenesis. The mothers concerned about inadequate feeding. Alternative support was given by cup feedings or with the use of a feeding tube and syringe[3]. There is scant literature regarding the latching on of newborns fed with the support of a feeding tube or cup feedings. Thus, we were interested in the comparisons of latching between newborns fed with the additional support of feeding tubes and syringes or supported with cup feedings in this study.

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Material and Method

The data were collected between October 2012 and September 2013. Inclusion criteria were women who delivered without complications such as multiple pregnancies, preeclampsia, antepartum hemorrhage and preterm labor at the HRH Princess Maha Chakri Sririndhorn Medical Center. Their newborns had birth weights of more than 2,500 grams and no complications were detected. Exclusion criteria were women who had postpartum hemorrhages or contraindications to breastfeeding. The mothers were encouraged to stimulate their newborns for breastfeeding every 2-3 hour while at the postpartum ward. Amounts of breast milk produced by the mothers were assessed by manual expression at 42-48 hours into the postpartum period. If no breast milk was detected, the mothers were

counseled for continuation of breastfeeding or use of an alternative means of support. The mothers who chose alternative support were processed for their informed consent to participate in this study. The subjects were chosen from 120 couples of mothers and newborns. The subjects were then divided in two groups of 60 by the simple randomization method. The newborns in first group were fed with support of a feeding tube and a syringe following routine breastfeeding stimulation. The formula was filled in a 10 ml syringe that was then connected to a No. 5 feeding tube. The feeding tube was attached to the mother's breast with the end of a tube 1 centimeter from the tip of the nipple as shown in Fig. 1. The newborn attached to the mother's breast and suckled milk from the feeding tube simultaneously. The duration of each feeding was set for 10-20 minutes.

In the second group, the newborns feedings were fed with the support of cup feedings. After routine breastfeeding stimulation, a 30 ml medicine cup was filled with 10 milliliters of formula. The mother positioned the milk cup while breastfeeding her newborn so the milk was allowed to touch the lower lip and the newborn would lap or sip the milk as exhibited in Fig. 2. Care was taken so as not to have the formula poured into the newborn's mouth. The duration of each feeding was set for 10-20 minutes.

Latch scores were used for latching-on assessment at 66-72 hours postpartum. The staffs who assessed the latch score were two nurses who trained 20 hours breastfeeding assessment courses. Demographic data and latch scores were collected and analyzed by Chi-square, t-test and Mann-Whitney U test. A *p*-value less than 0.05 was considered statistically significant. Statistical analysis was performed using SPSS IBM Singapore Pte Ltd (Registration No. 1975-01566-C). We used 0.05 of α error, 0.95 of power and an effect size equal to 0.7. The calculated sample size for each group was 55. The Ethical committee of the Faculty of Medicine, Srinakharinwirot University has approved this study.

Fig. 1 Feeding tube with syringe.

Fig. 2 Cup feeding.

Latch score

Latch scores are assessed by latching on, audible swallowing, the type of nipples, comfort and assistance requirement parameters. The criteria of 'latching on' scores are two for the baby grasps the breast, tongue positioned down and forward, lips are flanged and the baby has rhythmic suckling; one is scored for the baby's repeated attempts, the mother must hold her nipple in the baby's mouth or must stimulate the baby to suck; zero is given when the baby is too sleepy, reluctant or no latch is obtained. The criteria of 'audible swallowing' scores are summed up as two for spontaneous or frequent audible swallowing; one for a few audible swallowing with stimulation; and zero for none. The criteria of 'types of nipples' scores were two for everted (after stimulation),

one for flat, and zero for inverted nipples. The criteria of 'comfort' scores set as; two for soft, tender and intact nipples (no damage); one for filling, small blisters or bruises of the breasts or the mother complains of pinching or mild to moderate discomfort of her nipples or breasts. The criteria of 'assistance requirement' scores are two for no assistance requirement from the staff or the mother can position or hold the baby; one for minimal assistance, teach on one side and the mother utilizes the other breast or the staff helps and the mother takes over the feeding independently; and zero for full assistance or the staff holds the infant at the breast[4].

Results

The number of postpartum women and newborns who had enrolled in our research project was 120. They were then divided into two groups of 60. The demographic data of the postpartum women and newborns in the feeding tube and cup feeding groups are shown in Table 1.

The median of the parameters of latch scores include latching on, audible swallowing, the type of nipples, level of comfort and assistance required in the feeding tube group were valued at 2, 2, 2, 1 and 1, respectively. The equivalent median of the identical parameters of latch scores in the cup feeding group were valued at 1, 2, 2, 1 and 1, respectively. The differences in the scores in each parameter were not significant. The median of the sum of the latch scores in the feeding tube group was significantly more than the mean of sum of latch scores in the cup feeding group. The details of latch scores in the feeding tube and the cup feeding groups are shown in Table 2.

Table 1. The numbers, means, percentages and *p*-values of demographic data of the feeding tube and cup feeding groups

Mother and newborn's data	Mean and percentage		*p*-value
	Feeding tube group (n = 60)	Cup feeding group (n = 60)	
Age (years)	27.0±5.7	27.2±6.4	0.809
Gestational age (week)	38.2±1.1	38.0±1.0	0.166
Primipara (%)	48.3	45.0	0.714
Multipara (%)	51.7	55.0	
Housewife or self-employed (%)	50.2	48.8	0.455
Employee (%)	49.8	51.2	
Vaginal delivery (%)	50.0	45.0	0.811
Cesarean section (%)	50.0	55.0	
Blood loss (ml)	395.8±196.2	435.8±213.9	0.288
Body mass index (kg/m^2)	26.2±2.8	25.8±3.8	0.579
Nipple length (cm)	0.7±0.2	0.7±0.2	0.205
Birth weight (gram)	3,075.0±448.8	3,137.6±414.8	0.280
Tongue-tie (%)	36.7	45.0	0.353

Table 2. The median of latch scores and *p*-values for the feeding tube and the cup feeding groups

Latch scores and parameters in latch scores	Median		*p*-value
	Feeding tube group (n = 60)	Cup feeding group (n = 60)	
Latching on	2	1	0.067
Audible swallowing	2	2	0.352
Type of nipples	2	2	0.127
Comfort	1	1	0.069
Assistance needed	1	1	0.634
Sum of latch scores	8	7	0.039*

* Statistically significant ($p<0.05$)

Discussion

This study divided subjects into two groups by a simple randomization method. The demographic data from the two groups were not significantly different. This result indicates that the study groups were appropriately selected. The mothers' characteristics had shown a normal age range. Gestational age for all infants was stated to be full term. The differences in percentages of the womens' histories of primipara and multipara births were insignificant. Occupational situations for the self-employed and employed women were close in number. The percentage of cesarean sections was high (50-55%). No postpartum hemorrhages were found. The body mass index was within the obese range. The mean nipple lengths were normal and measured at 0.7±0.2. The rate of newborns with tongue-tie was high (36.7-45.0)[5]. The factors of high cesarean section rates, obesity and the incidence of tongue-tie were likely to cause delayed lactogenesis prompting the mothers to choose supplemental feedings with formula in this study. Cesarean section delivery had negative effects on breastfeeding[6,7]. The obese mother was less likely to initiate breastfeeding than women with normal BMIs[8]. The newborn with tongue-tie had difficulty latching on[9]. The incidence of tongue-tie in the subjects in this study was high as the reported incidence in existing literature ranges from 1.7% to 13.4%[5,10-12].

Latch scores of the feeding tube group were significantly higher than those found in the cup feeding group. This may be because the infants' sucking mechanism in the feeding tube group more closely simulates breastfeeding and the newborn spent more time attaching to the mothers' breast than had been found in the cup feeding group. However, the median of each parameter of the latch scores has not been found to show any significant differences. This is possibly due to the small sample size. Our hospital has a 'baby-friendly' hospital policy in support of breastfeeding. Thus, if a mother had shown a delayed lactogenesis, the first step in resolving this problem to counsel her and help to correct the position used to breastfeed. Following these interventions, if the mothers' concerns were proven to be genuine, alternative feedings were initiated. This was a limitation in our sample collection.

Conclusion

Latch scores in newborns fed by feeding tubes were significantly higher than the latch scores in the newborns fed by cup feedings. The feeding tube with syringe may be an alternative feeding method for a newborn who need cup feeding.

What is already known on this topic ?

Feeding tubes and cup feedings were used as alternative feedings. There is scant literature regarding the latching on of newborns fed with the support of a feeding tube or cup feedings.

What this study adds ?

Latch scores for the newborns fed by feeding tubes were significantly higher than the latch scores in the newborns fed by cup feeding. Feeding tube with syringe may be an alternative feeding method for a newborn who need cup feeding.

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Potential conflicts of interest

None.

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การเปรียบเทียบการเข้าเต้าของทารกที่ป้อนนมโดยใช้อุปกรณ์ช่วยให้นมที่ทำจากสายยางต่อหลอดฉีดยากับป้อนนมด้วยถ้วย

ภาวิน พัวพรพงษ์, เกษม เรืองรองมรกต, อรสา เหมะจันทร, สุขวดี เกษสุวรรณ, ศิณัฐชานันท์ วงษ์อินทร์

วัตถุประสงค์: *ศึกษาเปรียบเทียบการเข้าเต้าของทารกที่ป้อนนมโดยใช้อุปกรณ์ช่วยให้นมที่ทำจากสายยางต่อหลอดฉีดยากับป้อนนมด้วยถ้วย*

วัสดุและวิธีการ: *ศึกษาในมารดาและทารกหลังคลอดที่คลอดปกติไม่มีภาวะแทรกซ้อนที่โรงพยาบาลศูนย์การแพทย์สมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี อำเภอองครักษ์ จังหวัดนครนายก ตั้งแต่เดือนตุลาคม พ.ศ. 2555 ถึง เดือนกันยายน พ.ศ. 2556 จำนวนทั้งสิ้น 120 ราย ที่ตรวจไม่พบว่ามีน้ำนมในวันที่สองหลังคลอด แบ่งกลุ่มศึกษาเป็นสองกลุ่ม ๆ ละ 60 รายโดยการสุ่มอย่างง่าย กลุ่มแรกป้อนนมโดยใช้อุปกรณ์ช่วยให้นมที่ทำจากสายยางต่อหลอดฉีดยา กลุ่มที่สองป้อนนมด้วยถ้วย จากนั้นประเมินการเข้าเต้าโดยใช้ Latch score ในวันที่สามหลังคลอด รวบรวมข้อมูลพื้นฐานของมารดาและทารก ได้แก่ อายุ ลำดับครรภ์ อายุครรภ์ อาชีพ วิธีการคลอด การเสียเลือดหลังคลอด ดัชนีมวลกาย ความยาวหัวนม น้ำหนักทารก ภาวะลิ้นติด และคะแนนการเข้าเต้าเพื่อวิเคราะห์ผล*

ผลการศึกษา: *จากการศึกษาพบข้อมูลพื้นฐานของมารดาและทารกในทั้งสองกลุ่มไม่แตกต่างกัน คะแนนการเข้าเต้าในกลุ่มทารกที่ป้อนนมโดยใช้อุปกรณ์ช่วยให้นมที่ทำจากสายยางต่อหลอดฉีดยามากกว่ากลุ่มทารกที่ป้อนนมด้วยถ้วยอย่างมีนัยสำคัญ ($p<0.05$)*

สรุป: *การเข้าเต้าของทารกหลังการใช้อุปกรณ์ช่วยให้นมที่ทำจากสายยางต่อหลอดฉีดยาดีกว่าหลังการใช้การป้อนนมด้วยถ้วย*