

Original Article

Effects of bilateral early breast sucking and unilateral early breast sucking within 2 h after delivery on lactation, breast distending pain and postpartum lochia

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Abstract: Objective: To investigate the effects of bilateral early breast sucking and unilateral early breast sucking within 2 h after delivery on lactation, breast distending pain and postpartum lochia. Methods: The clinical data of 128 parturients were analyzed retrospectively. According to the different ways of early breast suction, the parturients were divided into control group (n=64) and observation group (n=64). Among them, unilateral early sucking was performed within 2 h after delivery in the control group, while bilateral early sucking was carried out in the observation group. We compared the lactation, breast distending pain, postpartum lochia, nutritional status, coagulation index, complications and breast feeding success rate. Results: The lactation amount of the observation group was higher than that of the control group on the 3rd, 5th and 7th day after delivery; the VAS scores showed opposite trends; the amount of lochia in the observation group was less than that in the control group; the ALb, PA and Hb levels in the observation group were higher on the 7th day after delivery. Compared with the control group, the FIB, PT and APTT time was shorter and the D-D level was higher; the incidence of postpartum hemorrhage, galactostasis and postpartum depression in the observation group was lower, and the success rate of feeding on the 1st, 3rd and 7th day after delivery was higher in the observation group seven days after intervention. Conclusion: Bilateral early breast sucking within 2 h after delivery is helpful to increase lactation and reduce breast distending pain and postpartum lochia. It also promotes maternal nutritional status and coagulation function, reduces the incidence of postpartum complications, and improves the breastfeeding rate.

Keywords: 2 h after delivery, bilateral early breast sucking, unilateral early sucking, maternal lactation, breast distending pain, postpartum lochia

Introduction

Breastfeeding is beneficial to the development of infants, which can enhance their immunity and intelligence and reduce the incidence of sudden death and childhood obesity [1, 2]. Foreign researches have indicated that prenatal stimulation of nipple and areola can reflexively cause the posterior pituitary to release estrogen and oxytocin, which is beneficial to promote the success of vaginal delivery. At the same time, early breastfeeding can make mothers and babies have early skin contact and promote the success of breastfeeding [3, 4]. Early breastfeeding can stimulate lactation reflex, promote mother's uterine contraction and reduce postpartum hemorrhage rate [5, 6]. However, due to bodily weakness and motor

disturbance of extremity, more women choose unilateral early sucking 2 h after delivery. Although it can meet the needs of lactation, the amount of lactation is relatively small, which makes it difficult to stimulate the uterus effectively and affects the amount of postpartum lochia [7, 8]. Previous studies have shown that bilateral breast sucking within 2 h after delivery can improve the success rate of lactation, enhance the immunity of infants, and contribute to early lactation and milk secretion, but there is a lack of systematic clinical control studies [9, 10]. In this study, the clinical data of 128 parturients were retrospectively analyzed to explore the effects of bilateral early sucking and unilateral early sucking on lactation, breast distending pain and postpartum lochia within 2 h after delivery.

Materials and methods

Clinical data

The clinical data of 128 parturients delivered in our hospital from August 2018 to October 2020 were analyzed retrospectively. In view of the different ways of early breast suction, they were divided into control group (n=64) and observation group (n=64). Unilateral early sucking was performed within 2 h after delivery in the control group, while bilateral early sucking was applied in the observation group. This study was approved by the hospital ethics committee, and the informed consent forms were obtained from patients and their families.

Inclusion and exclusion criteria

Inclusion criteria: (1) primipara delivered their baby in our hospital [11]; (2) primipara with singleton, cephalic position and transvaginal natural delivery, and there was no abnormality in fetal heart monitoring during delivery; (3) primipara had complete baseline data and follow-up data. Exclusion criteria: (1) those complicated with twin pregnancy, contraindication of vaginal delivery and multipara; (2) those with mental disorder, hearing impairment or severe liver and kidney dysfunction; (3) those with congenital nipple development or abnormal breast development; those participated in other research at the same time or not cooperated with researchers.

Methods

After admission, all parturients were given health lectures on the production process and postpartum maternal and child knowledge, with emphasis on breast-feeding education, so that they could have a positive understanding of breast-feeding and build up confidence. After the parturient entered the ward after delivery, the newborn and the parturient were allowed to touch the skin and suck in the early 30 min. During this process, the parturient was instructed to give breast feeding correctly [12]. Control group: unilateral early sucking was performed within 2 h after delivery. Observation group: bilateral early breast sucking was performed within 2 h after delivery, each sucking time was more than 30 min, the parturient was actively informed of the significance and importance of sucking, and the newborn

was assisted and urged to suck every 2-3 h. In view of the recovery of the parturient, they were guided to move earlier. For those with poor sucking effect, the psychological guidance of parturients were strengthened and their feelings were listened; simultaneously, the nursed should inform them of breast-feeding skills, and give targeted guidance. Both groups completed 7-day intervention.

Outcome measures

(1) Maternal lactation: the lactation amount of parturients in the two groups on the 1st, 3rd, 5th and 7th day after delivery was recorded. Based on the "Breastfeeding Consultation and Training Course", the investigators adopted unified guidance to teach parturients to feed correctly. If the condition permits, the staff should inform the parturient to start manual milking as early as possible after the birth of baby, once every 3 h, at least 20 min; collect the milk into the aseptic storage cup and measure it. When the parturient is aware of the sudden fullness of the breast, a milk aspirator can be used to suck milk. The duration of each sucking lasts until the milk is no longer ejected into a drop, and then continue to suck 2 min, and the volume of breast milk was recorded [13, 14].

(2) Degree of breast distending pain: the visual analogue pain (VAS) scale was used to evaluate the degree of breast distending pain on the 1st, 3rd, 5th and 7th day after delivery; the total score of the scale is 10 points, and the higher score indicates the higher degree of breast distension [15, 16].

(3) The amount of postpartum lochia: the amount of postpartum lochia was recorded on the 1st, 3rd, 5th and 7th day after delivery. The daily amount of lochia was measured by blood-gathering paper weighing method, and then converted into milliliters with the formula of daily lochia volume (mL) = (moist dressing weight - dry dressing weight)/1.05 [17].

(4) Nutritional status: the levels of serum albumin (Alb), hemoglobin (Hb) and prealbumin (PA) were measured by automatic biochemical analyzer (Olympus, Japan, AU2700) before intervention and 7 days after intervention [18].

(5) Coagulation index: the levels of prothrombin time (PT), activated partial thromboplastin time

Effects of bilateral and unilateral early aspiration within postpartum 2 h

Table 1. Comparison of general data between both groups ($\bar{x} \pm sd$)

General information	Observation group (n=64)	Control group (n=64)	χ^2/t	P
Age (years)	32.6 $\pm$ 4.4	32.6 $\pm$ 4.4	0.591	0.378
BMI (kg/m ²)	24.16 $\pm$ 1.64	23.94 $\pm$ 1.61	0.766	0.445
Gestational week (week)	39.91 $\pm$ 2.46	39.68 $\pm$ 2.41	0.883	0.591
Sucking frequency (times)	8.6 $\pm$ 1.8	9.2 $\pm$ 1.9	1.834	0.069
Complications (n)			0.623	0.771
Hypertension	4	3		
Diabetes	7	5		

Note: BMI: body mass index.

Table 2. Comparison of milk production between two groups (mL, $\bar{x} \pm sd$)

Point in time	Observation group (n=64)	Control group (n=64)	t	P
Day 1 after delivery	18.62 $\pm$ 3.74	17.95 $\pm$ 3.66	0.416	0.791
Day 3 after delivery	50.81 $\pm$ 4.15***	31.36 $\pm$ 3.47***	7.313	<0.001
Day 5 after delivery	74.13 $\pm$ 6.71***	49.35 $\pm$ 5.09***	5.679	<0.001
Day 7 after delivery	79.49 $\pm$ 6.83***	67.32 $\pm$ 5.69***	8.314	<0.001
F	6.916	5.123		
P	<0.001	<0.001		

Note: Compared with Day 1 after delivery, *** P <0.001.

(APTT), plasma fibrinogen (FIB) and D-dimer (D-D) were measured by automatic coagulation analyzer [19].

(6) Complications and the success rate of breastfeeding: the incidence of postpartum hemorrhage, galactostasis and postpartum depression in both groups was recorded by outpatient or telephone follow-up. The incidence of complications = the number of complications/the total number of cases $\times$ 100%. The feeding success rate of the two groups was statistically recorded in the form of questionnaire. Feeding success rate = successful feeding cases/total cases $\times$ 100%.

Statistical analysis

SPSS23.0 was used for data processing, and the figures were drawn via Graphpad Prism7.0. The measurement data were expressed by ($\bar{x} \pm sd$). Independent sample t-test was used for comparison between the two groups, paired t-test was used for intra-group comparison, and F test was used for data among multiple groups. The counting data were analyzed th-

rough χ^2 test and represented as n (%). P <0.05 indicates there were marked differences.

Results

Comparison of baseline data between both groups

The general data of the two groups had no statistical significance (P >0.05), indicating the two groups were comparable, as shown in **Table 1**.

Comparison of maternal breast milk volume between two groups

There was no remarkable difference in breast milk volume between the two groups on the first day after delivery (P >0.05). The lactation amount on the 3rd, 5th and 7th day after delivery was higher than that on the 1st day after delivery in both groups (all P <

0.001). The lactation amount of the observation group was higher than that of the control group on the 3rd, 5th and 7th day postpartum (all P <0.001), as shown in **Table 2**.

Comparison of VAS score on breast distending pain between two groups

There was no marked difference in VAS scores on the first day after delivery between the two groups (P >0.05). The VAS scores on the 3rd, 5th and 7th day after delivery were lower than those on the 1st day after delivery in both groups (P <0.001). The VAS scores of the observation group were lower than those of the control group on the 3rd, 5th and 7th day after delivery (all P <0.001), as shown in **Table 3**.

Comparison of lochia between the two groups

There was no obvious difference in lochia on the first day after delivery between the two groups (P >0.05). The amount of lochia on the 3rd, 5th and 7th day after delivery was less than that on the 1st day after delivery (all P <0.001). The amount of lochia in the observa-

Table 3. Comparison of VAS score on breast distending pain between two groups (scores, $\bar{x} \pm sd$)

Point in time	Observation group (n=64)	Control group (n=64)	t	P
Day 1 after delivery	6.15 $\pm$ 0.82	6.43 $\pm$ 0.70	0.831	0.314
Day 3 after delivery	3.58 $\pm$ 0.41***	5.41 $\pm$ 0.56***	6.413	<0.001
Day 5 after delivery	2.09 $\pm$ 0.29***	3.67 $\pm$ 0.43***	7.198	<0.001
Day 7 after delivery	1.47 $\pm$ 0.14***	1.95 $\pm$ 0.17***	6.571	<0.001
F	9.381	6.141		
P	<0.001	<0.001		

Note: Compared with Day 1 after delivery, *** P <0.001.

Table 4. Comparison of lochia content between two groups (mg, $\bar{x} \pm sd$)

Point in time	Observation group (n=64)	Control group (n=64)	t	P
Day 1 after delivery	33.29 $\pm$ 3.51	33.31 $\pm$ 3.53	1.218	0.314
Day 3 after delivery	40.61 $\pm$ 4.30***	54.36 $\pm$ 3.96***	7.396	<0.000
Day 5 after delivery	48.67 $\pm$ 5.72***	57.63 $\pm$ 5.97***	6.102	<0.000
Day 7 after delivery	59.35 $\pm$ 6.61***	74.28 $\pm$ 6.94***	8.317	<0.000
F	5.216	7.019		
P	<0.000	<0.000		

Note: Compared with Day 1 after delivery, *** P <0.001.

tion group was less than that in the control group on the 3rd, 5th and 7th day after delivery (all P <0.001), as shown in **Table 4**.

Comparison of nutritional status between the two groups

There was no statistical significance in the nutritional status of the two groups one day after delivery (P >0.05). The nutritional status of the two groups was lower than that of the first day after delivery (all P <0.001). The levels of ALB, PA and Hb in the observation group were higher than those in the control group 7 days after delivery (all P <0.001), as shown in **Table 5**.

Comparison of coagulation function between the two groups

There was no significant difference in coagulation function between the two groups before intervention (P >0.05). Seven days after intervention, FIB, PT and APTT time in the observation group were shorter than those in the control group (all P <0.001). The level of D-D of the observation group was higher than that of the control group (P <0.001), as shown in **Table 6** and **Figure 1**.

Comparison of complications and success rate of breastfeeding between the two groups

The incidence of postpartum hemorrhage, galactorrhea and postpartum depression in the observation group was lower than that in the control group (all P <0.05). The feeding success rate on the 1st, 3rd and 7th day after delivery was higher than that of the control group (all P <0.05), as shown in **Table 7**.

Discussion

Breast-feeding can enhance the immunity and intelligence of infants and reduce the incidence of allergic diseases; which has been regarded as the most scientific and safest feeding mode [20]. However, some data show that nearly one third of mothers are forced to stop breastfeeding due to lack of milk secretion; fatigue

and other factors after delivery, and thus, early sucking is delayed or milk quantity is insufficient [21]. In the meantime, some parturients are unwilling to adjust their postures due to fatigue, which makes most infants suck unilaterally. This not only affects the success rate of breastfeeding, but also increases the incidence of postpartum complications [22].

In recent years, bilateral breast early sucking within 2 h after delivery has been advocated in parturient women, and the effect is ideal [23]. Compared with the control group, on the 3rd, 5th and 7th day after delivery, the lactation amount of the observation group was higher and the VAS score was lower. The amount of lochia in the observation group was less than that in the control group on the 3rd, 5th and 7th day after delivery, suggesting that bilateral early breast sucking within 2 h after delivery can increase the lactation amount, reduce the swelling degree of breast and the amount of lochia. Bilateral early breast sucking within 2 h after delivery is a common intervention method for breast feeding. Mother's body temperature is suitable for baby to keep warm, which is helpful for early skin contact between mother

Table 5. Comparison of nutritional status between the two groups ($\bar{x} \pm sd$)

Point in time	Observation group (n=64)			Control group (n=64)		
	Before the intervention	Day 1 after intervention	Day 7 after intervention	Before the intervention	Day 1 after intervention	Day 7 after intervention
Alb (g/L)	30.59±4.69	36.49±2.46 ^{###,ΔΔΔ}	33.21±2.14 ^{###,***,ΔΔΔ}	30.61±4.71	35.51±2.27 ^{###}	28.78±2.01 ^{###,***}
PA (mg/L)	113.36±9.45	184.36±12.63 ^{###,ΔΔΔ}	157.61±10.24 ^{###,***,ΔΔΔ}	113.58±9.43	185.47±12.38 ^{###}	124.39±8.56 ^{###,***}
Hb (g/L)	85.47±7.92	109.58±12.15 ^{###,ΔΔΔ}	101.43±8.68 ^{###,***,ΔΔΔ}	85.32±7.43	110.23±12.32 ^{###}	92.25±6.41 ^{###,***}

Note: Compared with control group, ^{ΔΔΔ} $P < 0.001$; Compared with Before the intervention, ^{###} $P < 0.001$; Compared with Day 1 after intervention, ^{***} $P < 0.001$. Alb: serum albumin; Hb: hemoglobin; PA: prealbumin.

Table 6. Comparison of coagulation function between two groups ($\bar{x} \pm sd$)

Point in time	Observation group (n=64)		Control group (n=64)	
	Before the intervention	Day 7 after intervention	Before the intervention	Day 7 after intervention
FIB (g/L)	4.97±0.83	3.26±0.32 ^{###,ΔΔΔ}	4.69±0.74	3.67±0.58 ^{###}
APTT (s)	26.52±4.35	23.25±3.21 ^{###,ΔΔΔ}	27.13±4.87	25.38±4.13 ^{###}
PT (s)	14.94±2.09	10.25±1.69 ^{###,ΔΔΔ}	15.05±2.21	13.21±2.07 ^{###}
D-D (mg/L)	2.85±0.46	3.79±0.71 ^{###,ΔΔΔ}	2.94±0.52	3.25±0.64 ^{###}

Note: Compared with control group, ^{ΔΔΔ} $P < 0.001$; Compared with Before the intervention, ^{###} $P < 0.001$. PT: prothrombin time; APTT: activated partial thromboplastin time; FIB: plasma fibrinogen; D-D: D-dimer.

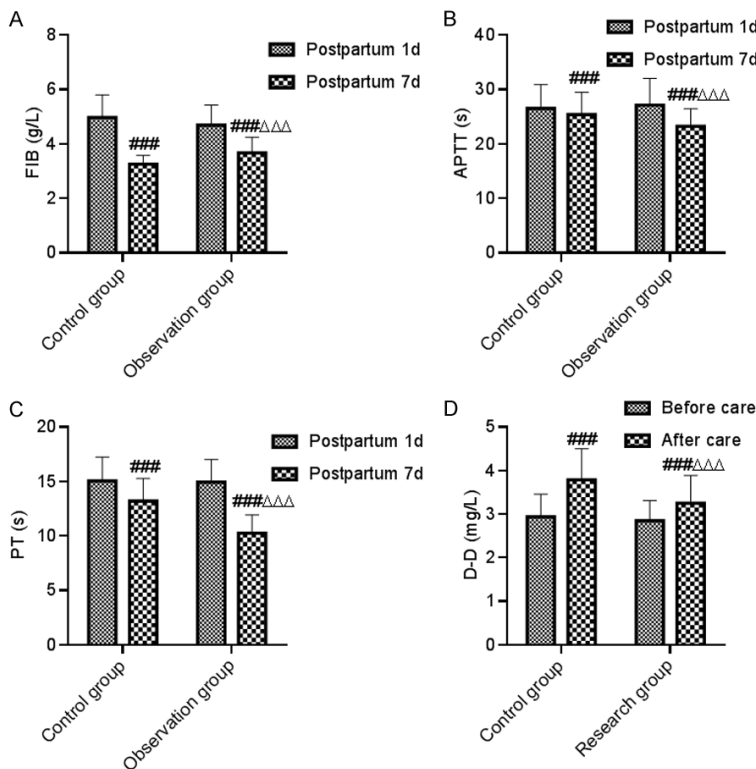


Figure 1. Comparison of coagulation function between two groups. A: FIB; B: APTT; C: PT; D: D-D. Compared with Control group, ^{ΔΔΔ} $P < 0.001$; Compared with before intervention, ^{###} $P < 0.001$. PT: prothrombin time; APTT: activated partial thromboplastin time; FIB: plasma fibrinogen; D-D: D-dimer.

and baby and early sucking, and can improve the success rate of breast feeding [24]. Meanwhile, bilateral early sucking within 2 h after

delivery can stimulate lactation reflex, form milk ejection reflex as soon as possible, and increase lactation. This can make the baby get colostrum with high nutritional and immune value, enhance the immunity of the baby and help the mother recover. The levels of ALB, PA and Hb in the observation group were higher than those in the control group 7 days after delivery. Seven days after intervention, the FIB, PT and APTT time in the observation group were shorter than those in the control group. The D-D level was higher than that of the control group, suggesting that bilateral early breast sucking within 2 h after delivery can improve the nutritional status and coagulation function of mothers. This may be related to the early breast sucking stimulation, which can reduce the secretion of pituitary prolactin inhibitory factor, promote the secretion of prolactin, and boost the release of oxytocin from the posterior lobe of hypothalamus [25]. The research of foreign scholars shows that bilateral

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Table 7. Comparison of complications and success rate of breastfeeding between two groups (n, %)

Item	Observation group (n=64)	Control group (n=64)	χ^2/t	P
Complications			3.905	0.048
Postpartum hemorrhage	0 (0.00)	3 (4.69)		
Milk deposition	1 (1.59)	2 (3.13)		
Postpartum depression	1 (1.59)	3 (3.69)		
Breast feeding				
Day 1 after delivery	35 (54.69)	21 (32.81)	6.222	0.013
Day 3 after delivery	42 (65.63)	30 (46.88)	4.571	0.033
Day 7 after delivery	53 (82.81)	41 (64.06)	5.767	0.016

early breast sucking within 2 h after delivery can comprehensively promote uterine contraction, increase milk secretion, and help reduce the incidence of postpartum complications [26]. In this research, the incidence of postpartum hemorrhage, galactorrhea and postpartum depression in the observation group was lower than that in the control group. The success rate of feeding on the 1st, 3rd and 7th day after delivery was higher than that of the control group, suggesting that bilateral early breast sucking within 2 h after delivery can reduce the incidence of postpartum complications and obtain higher success rate of breast feeding.

However, there are still some limitations in this study due to the limited number of cases involved in this study, which needs to be verified by a large sample size.

To sum up, bilateral early breast sucking within 2 h after delivery is helpful to increase lactation and reduce breast distending pain and postpartum lochia. It also improves maternal nutritional status and coagulation function, reduces the incidence of postpartum complications, thus obtaining a higher breastfeeding rate.

Disclosure of conflict of interest

None.

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