



PLASTIC CORD CLAMP: DOES IT AFFECT PROPER POSITIONING OF BREAST FEEDING

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ABSTRACT

The aim of present study is to determine the appropriateness of breast feeding position in presence of commercial plastic cord clamp in healthy term neonates. The present study was conducted in shrivastava clinic, chhindwara Madhya Pradesh. Over a period of 10 months. 100 term healthy appropriate for gestational age inborn neonates were randomly divided into 2 groups (50 babies in each group) in the postnatal ward group A (neonates with umbilical cord ligated with plastic cord clamp) and group B (neonates with umbilical cord ligated with autoclaved thread) were observed and assessed for proper positioning using 4 points standard objective validated criteria during breast feeding. The maternal satisfaction score was also evaluated using 6 point validated questionnaire. Results: Neonates in both the groups A and B were comparable as far as their birth weight, gestation, mode of delivery, gender and Apgar scores were concerned. On evaluation of mother's satisfaction score, the commercially available plastic cord clamp was affecting the daily clothing and unclothing activities of the baby ($p=0.005$) with more maternal concern about plastic cord clamp ($p=0.005$). Conclusion: The present study concludes that the mothers have a very good knowledge and neutral attitudes toward breast feeding. Our findings also show that the level of exclusive breast feeding was low among Indian mothers. Thus, it is important to provide prenatal education to mothers and fathers on breast feeding. We also recommend strengthening the public health education campaigns to promote breast feeding. Breastfeeding is of prime importance for survival and optimal neurodevelopment of the new-born. It's important to provide prenatal education to mothers and fathers on breast feeding. Also recommend strengthening the public health education campaigns to promote importance of breast feeding.

KEYWORDS : Breastfeeding, Attachment, Positioning, Cord clamp

INTRODUCTION:

Each year, about 4 million deaths occur in the world to infants below the age of four weeks. The great majority of these newborn deaths occur in the first days. Early newborn deaths in many countries represent a substantial proportion of infant mortality, often over 30%.

Forty thousand children die each day (28 every minute) in developing countries, the victims of malnutrition and frequent illnesses made worse by malnutrition. In many developing areas, 25% of all children die before reaching their fifth birthday. For many different reasons, some babies don't get enough breast milk to gain well. Sometimes the problem is the baby's difficulty with removing milk well; sometimes the mother is not making enough milk. Realizing that baby needs more milk can be upsetting, especially if mother milk supply is low.

Breastfeeding is a fundamental component of this strategy. The superbly balanced nutrients and enzymes, the life-protecting immunological substances and epidermal growth factor and the adjustment of this content to match the changing needs of the infant are remarkable. Exclusively breastfed infants have 2.5 times fewer episodes of illness and are 25 times less likely to die of diarrhea during the first six months of life than those fed substitutes. The frequent physical contact entailed in breastfeeding assures continuing protection and warmth for the infant, while

Breastfeeding has many health benefits for both mother and infant. Breast milk contains all the nutrients an infant need in the first 6 months of life. Therefore, WHO recommends infants should be exclusively breastfed for the first 6 months of life to achieve optimal growth (WHO. 2016). Early initiation of breastfeeding and feeding of colostrum provides a natural immunity against many infections which significantly reduces infant mortality (Lenja A, Demissie T, Yohannes B, Yohannis M 2016).

Newborn baby when placed skin-to-skin on his mother's chest, he instinctively crawls and self-attaches to her breast. When held in his mother's arms or placed skin-to-skin, he instinctively throws back his head and opens his mouth wide-the perfect positioning for an effective latch (Lothian JA.2017). Breast feeding is a fine tuned reflex controlled by hypothalamus and pituitary gland. Prolactin stimulates milk production while oxytocin helps in milk ejection from mammary glands (Ghai O 2013).

Umbilical cord is a conduit between the developing embryo and the placenta (Meyer WW, Rumpelt HJ, Yao AC, Lind J.1978). Cord clamping is recommended for all births and the modern cord clamps remain in place for about 3-4 days in all babies (Jain A, Dixit S, Agarwal S, Devgan V. 213). This foreign body (plastic cord clamp) in between baby's and mother's abdomen may affect proper positioning while breast feeding. There is paucity of data in India and worldwide regarding its effect on positioning while breast feeding. Hence, we planned this study to see the effect of plastic cord clamp on appropriateness of breast feeding positioning.

REFLEXES IN THE BABY

A baby is born with certain reflexes which help the baby to feed.

- 1. Rooting reflex:** When cheek or side of mouth is touched, baby opens her mouth and searches for the nipple. This is called rooting reflex. This helps the baby to find the nipple and also helps in proper attachment to the breast.
- 2. Suckling reflex:** When baby's palate is touched with nipple, the baby starts sucking movements. This reflex is very strong after birth. It consists of drawing in the nipple and areola to form an elongated teat inside the mouth. Drawing milk from the lactiferous sinuses is in the form of wave like peristaltic movements of the tongue underneath the areola and nipple and compressing them against the palate above.
- 3. Swallowing reflex:** When the mouth is filled with milk, the baby reflex swallows the milk. It requires a couple of suckles before baby can get enough milk to trigger swallowing reflex. It requires coordination with breathing. The suckle-swallow-breath cycle lasts for about one second (Edmond KM, Zandoh C, Quigley MA, et.al. 2006).

BENEFITS OF BREASTFEEDING

It is safe, clean, hygienic, cheap and available to the infant at correct temperature. It fully meets the requirements of infants in first few months of life. It contains antimicrobial factors such as lymphocytes, macrophages, secretory IgA, anti-streptococcal factor, lysozyme and lactoferrin which provide protection against diarrheal as well as respiratory diseases. It is easy to digest by both the normal and premature babies. It promotes bonding between mother and infant. Sucking is good for baby as it helps in the development of jaws and the teeth. It prevents baby from becoming obese. It prevents malnutrition and reduces infant and child mortality. It provides several biochemical

advantages such as prevention of neonatal hypoglycemia and hypomagnesemia. It also helps parents to space their children by prolonging their period of infertility. Special fatty acids in breast milk lead to increased intelligent quotients and better visual acuity (MacArthur C, Jolly K, Ingram L,2009).

TECHNIQUE OF BREASTFEEDING

Position of the mother: The mother can take any position that is comfortable to her and the baby which can be sitting or lying down. Her back should be well supported and she should not be leaning on her baby. It would be easier for the baby to latch, if he or she is in a good position for feeding. The most common feeding positions are the following:

- **Cradle hold:** The baby is held in the crook or elbow area of the arm of the mother on the same side as breast to be used for feeding. The mother supports breast with opposite hand. The baby's body is rolled in toward mother's body so they are belly-to-belly. The baby's arm closest to mother's body should not be seen.
- **Cross-cradle hold:** The baby's head is supported by the hand opposite the breast to be used for feeding. The mother supports breast with another hand. The baby is rolled in toward mother's body belly-to-belly. As in the cradle hold, the baby's arm closest to mother's body should not be seen.
- **Football position:** Baby's head is supported by the hand on the same side as breast to be used for feeding. The baby's body is supported on a pillow and tucked under the arm on the same side as breast to be used for feeding. Women having cesarean deliveries prefer this position as it keeps pressure off a mother's belly.
- **Side-lying position:** In this position, the baby lies next to the mother with mother's and baby's bodies facing each other. The baby is kept in the crook of the arm. This position keeps the baby's head at a good angle to bring baby and breast together, with the baby's head higher than his or her tummy, which can be helpful for babies who are more likely to spit up (Legesse M, Demena M, Mesfin F, Haile D 2015).

AIM and OBJECTIVES

- 1) To determine the appropriateness of breast feeding position in presence of commercial plastic cord clamp in healthy term neonates.
- 2) To study the effects of plastic cord clamp on appropriateness of breast feeding positioning in healthy term neonates.
- 3) To assess the satisfaction score of mother regarding breastfeeding her baby in two groups a) plastic cord clamp and b) autoclaved thread, used for ligating umbilical cord.

METHODOLOGY:

1. Study area: This study was conducted at **shrivastava clinic, chhindwara Madhya Pradesh.**

Inclusion criteria

- Full term, appropriate for gestational age (AGA) healthy inborn neonates from PNC ward.
- Guardians willing to give consent.

Exclusion criteria:

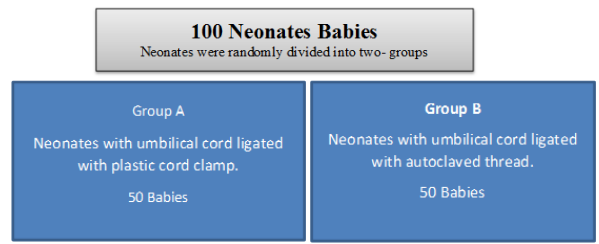
- Sick babies admitted to NICU (Neonatal Intensive Care Unit)
- Babies with congenital abnormalities
- Syndromic babies
- Guardian unwilling to give consent.

Sample size: 100 term healthy inborn neonates from post-natal care (PNC) ward.

Study period: The proposed study was conducted from June 2017 to February 2018.

The study was conducted in a tertiary care teaching institute This study was conducted at **shrivastava clinic, chhindwara Madhya Pradesh** over a period of ten months. Ethical clearance was taken from the Institutional Ethical Committee (IEC). 100 terms healthy appropriate for gestational age inborn neonates were enrolled after obtaining a written informed parental consent. All the mothers were counselled antenatally by doctors and staff nurse regarding appropriate positioning of breast feeding.

FIGURE NO.1- FLOW CHART OF NEONATES BABIES



These neonates were observed and assessed within 24 hrs of birth by a Pediatrician for proper positioning using 4 points standard objective validated criteria during breast feeding. Observer was not aware of the study. The maternal satisfaction score was evaluated using 6 point validated questionnaire based on Likert's scale. Questionnaire was administered soon after assessment of breastfeeding positioning in both the groups and attitude towards breast feed.

At the end of assessment, the possibility of effective positioning by four points standard objective criteria with and without cord clamp was determined. Similarly, satisfaction score of mother was also assessed.

Study design: Observational cross questionnaire based study.

Procedure of Data collection

Data was collected by a proforma containing following information and validated questionnaire. The first part included detailed antenatal, natal and postnatal history along with detailed newborn examination. Questions related to breast feeding were included in the second part. The third part consisted of validated questionnaire comprising standard 4 points criteria for breast feeding.

Data analysis: Data entry and analysis on computer was done using software IBM -SPSS 25. Continuous data with normal distribution was analyzed by paired t test. Categorical data was analyzed by Chi-square or Fisher exact test. P value of <0.05 was considered significant.

RESULTS AND OBSERVATION:

TABLE 1: SOCIO-DEMOGRAPHIC PROFILE OF STUDY POPULATION:

Parameters	GROUP A (with cord clamp) n=50	GROUP B (with autoclaved thread) n=50	P- value
1. Birth weight (kilograms) Mean (SD)	2.77 (0.340)	2.84(0.344)	0.329
2. Gestation (weeks and days) Mean (SD)	37weeks and 4 days (1 week and 3 days)	38 weeks and 6 days (1 week and 4 days)	0.968
3. Gender(Male/Female) Ratio	31/19	27/13	0.422
4.Mode of delivery(MOD) Normal vaginal delivery/LSCS	19/31	17/33	0.704

Fifty babies in each group with and without cord clamp were enrolled in the study. The birth weight of neonates in both the groups A and group B had mean (SD) birth weight of 2.77 (0.340) kg and 2.84 (0.344) kg and p-value 0.329 is not significant. The mean gestation age of neonates in group A was 37 weeks, 4 days and group B was 38 weeks, 6 days with p-value of 0.968. Male to female ratio was 31:19 in group A and 27:13 in group B, and p-value 0.422 is not significant. Mode of delivery is also comparable in both the groups (19 NVD, 31 LSCS in group A and 17 NVD, 33 LSCS in group B), and p value 0.704 is not significant. See table no.1

TABLE 2: INFORMATION REGARDING BREAST FEEDING FROM GROUP A AND GROUP B

Parameters	GROUP A (cord clamp) n=50	GROUP B (autoclaved thread) n=50
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1. Awareness of exclusive breast feeding	Yes	48	96%	45	90%
	No	2	4%	5	10%
2. Initiation of breast feeding	Within 1 hour	26	52%	22	44%
	After 1 hour	24	48%	28	56%
3. Colostrum feeding	Yes	42	84%	37	74%
	No	8	16%	13	26%
4. Frequency of breast feeding	>8 times a day	27	54%	25	50%
	<8 times a day	23	46%	25	50%

Awareness regarding exclusive breastfeeding was present in 48 (96%) mothers of group A and 45 (90%) mothers of group B out of 50 mothers in each group. In group A, 26 babies were breast fed within 1 hr (52%) and 24 babies after 1 hr (48%). In group B, 22 babies were breast fed within 1 hr (44%) and 28 babies after 1 hr (56%). Out of 50 babies, colostrum was fed to 42 babies (84%) in group A and 37 babies (74%) in group B. Frequency of breast feeding >8 times a day was found in 27 babies (54%) of group A and 25 babies (50%) in group B. Frequency of breast feeding <8 times a day was found in 23 babies (46%) of group A and 25 babies (50%) in group B. See table no. The most preferred breast

TABLE 3: BREAST FEEDING POSITIONING FROM GROUP A AND GROUP B

Parameter	GROUP A (with cord clamp) n=50					GROUP B (with autoclaved thread) n=50				
	Cradle hold	Cross cradle hold	Modified cradle hold	Football position	Lying down position	Cradle hold	Cross cradle hold	Modified cradle hold	Football position	Lying down position
Breast feeding position preferred by mother	6	3	17	3	21	2	10	4	4	30
Percentage (%)	12%	6%	34%	6%	42%	4%	20%	8%	8%	60%

feeding position by mothers in group A was lying down 21(42%) mothers followed by modified cradle hold 17(34%) mothers, and then cradle hold 6(12%) mothers. In group B, the most preferred breast feeding position was laying down position 30(60%) mothers followed by cross cradle hold 10(20%) mothers, and then modified cradle hold 2 (4%) mothers. Lying down position was preferred more, probably because of high number of LSCS mode of delivery in our study population. See table no.3

TABLE 4: RESPONSES OF THE MOTHERS TO THE QUESTIONNAIRE REGARDING BREAST FEEDING POSITIONING FROM GROUP A AND GROUP B 2

Parameters	GROUP A (with cord clamp)				GROUP B (with autoclaved thread)				Statistical analysis (Chi - Square)	p- value
	YES		NO		YES		NO			
	n	%	n	%	n	%	n	%		
1. Is baby's head and body straight?	36	72%	14	28%	46	92%	4	8%	0.004	
2. Is baby's body turned towards mother and nose opposite to nipple?	40	80%	10	20%	48	96%	2	4%	0.065	
3. Is baby's body touching mother's abdomen?	15	30%	35	70%	47	94%	3	6%	<0.001	
4. Is baby's whole body well supported?	28	56%	22	44%	45	90%	5	10%	<0.001	

Regarding parameters of breast feeding positioning, baby's head and body straight were observed in 36 babies (72%) in group A and 46 babies (92%) in group B with p value of 0.004. Baby's body turned towards mother and nose opposite to nipple was observed in 40 babies (80%) in group A and 48 babies (96%) in group B with p-value of 0.065. Babies in group B 47(94%) babies were able to touch mother's abdomen better than babies in group A 15 (30%) babies with p-value of less than 0.001. Baby's whole body was well supported better in group B 45 (90%) babies than in group A 28 (56%) babies with p-value of <0.001. These results signify that group B babies i.e. those whose umbilical cord were tied with autoclave thread were found to have better breast feeding positioning as compared to group A i.e. those whose umbilical cord were clamped with commercially available plastic cord clamp. See table no.4

TABLE 5: MOTHER'S SATISFACTION SCORE FROM GROUP A AND GROUP B

Parameters	GROUP A (with cord clamp)		GROUP B (with autoclaved thread)		Statistical analysis (t-test)	P value
	Mean	Std. Deviation	Mean	Std. Deviation		
1. Fear that cord clamp interferes with breast feeding	1.94	0.424	2.06	0.512	0.204	
2. Concern about care of cord clamp	1.54	0.645	1.20	0.534	0.005	
3. Fear that cord clamp interferes in routine care of baby	2.42	0.991	2.56	0.993	0.482	
4. Does the cord clamp affect baby's skin?	3.02	1.115	3.10	1.035	0.710	
5. Does cord clamp affect daily clothing or unclothing of baby?	3.16	0.841	3.62	0.779	0.005	
6. Does cord clamp affect KMC prone positioning?	2.82	0.896	2.54	0.761	0.095	

Responses on five point Likert scale; 1=strongly disagree, 2= disagree, 3=neutral; 4=agree; 5=strongly agree.

Mother's satisfaction score in the two groups with mean (SD) for fear that cord clamp interferes with breast feeding was found to be 1.94 (0.424) for group A and 2.06 (0.512) for group B with p-value of 0.204. It was recorded that concern about care of cord clamp (1.54) group A was more as compared to autoclave thread (1.20) group B with a significant p-value of 0.005. Fear that cord clamp interferes in routine care of baby was recorded as 2.42 in group A and 2.56 in group B with p-value of 0.482. Cord clamp affecting baby's skin was recorded as 3.02 in group A and 3.10 in group B with p-value of 0.710. It was also recorded that cord clamp affected daily clothing or unclothing of baby (3.16) more than autoclave thread (3.62) with a significant p-value of 0.005. KMC prone positioning was also affected by cord clamping (2.82) rather than autoclave thread (2.54) with a significant p-value of 0.095. So it was found in this study that commercially available plastic cord clamp was affecting the daily clothing and unclothing activities of the baby with more maternal concern about plastic cord clamp as compared to autoclave thread. See table no.5

TABLE 6: MOTHER'S KNOWLEDGE TOWARDS BREAST FEEDING FROM GROUP A AND GROUP B

Parameters	GROUP A (with cord clamp)		GROUP B (with autoclaved thread)		Group A and Group B
	n	%	n	%	
Colostrum's is first breast milk	50	100%	49	98%	99(99%)
Exclusive breast milk during first 6 months	47	94%	42	84%	89(89%)
Breastfeeding continued up to 2 years	3	6%	8	16%	11(11%)

Mother's knowledge towards breastfeeding. The majority of the mothers agreed that colostrum's is first breast milk (99%) and is important to maintain the immunity of the baby. While, 89% felt that exclusive breast milk to be given during first 6 months, only 11% stated that breastfeeding should be continued up to 2 years. Similarly most of the mothers were aware of the importance of burping after each feed, importance of taking healthy food and breast feeding helps in mother and child bonding. See table no.6

TABLE 7: MOTHER'S ATTITUDE TOWARDS BREAST FEEDING FROM GROUP A AND GROUP B

Parameters	GROUP A (with cord clamp)				GROUP B (with autoclaved thread)				Statistic p- value
	YES		NO		YES		NO		
	n	%	n	%	n	%	n	%	
Positive Attitude towards Breastfeeding	48	96	2	4	47	94	3	6	0.004

Mothers from group A and group had higher positive scores, indicating more favorable attitudes towards breastfeeding. There was no significant difference with group A and group B ($p < .004$). Mothers those who were currently breastfeeding (48(96%) in group A and 47(94%) in group B) had more positive attitudes than non-breastfeeding mothers (2(4%) in group A and 3(6%) in group B). Although there were no significant differences found. See table no.7

DISCUSSION:

A total of 100 infants were enrolled in this study after taking informed parental consent. They were randomly divided into 2 groups, each with 50 neonates. The Group A constitute neonates with umbilical cord clamped with commercially available plastic cord clamp and group B tied with autoclaved thread. The main objective of this study was to determine the appropriateness of breast feeding position in presence of commercially available plastic umbilical cord clamp in healthy term neonates. In our study, we found that group A was comparable with group B as far as their birth weight, gestation, mode of delivery, gender and Apgar scores were concerned. However, the only difference being the method of umbilical cord clamping.

In our study, out of 50 babies, colostrum was not fed to 6 babies (12%) in group A and 14 babies (28%) in group B. Legesse M, Demena M, Mesfin F, Haile D. 2015 study conducted in North-eastern Ethiopia shows that around 13.5% of women discard colostrum. In our study, 27 babies (54%) of group A and 25 babies (50%) in group B were breastfed more than 8 times a day. The most preferred breast feeding position by mothers in group A was lying down (42% mothers) followed by modified cradle hold (34% mothers) and then cradle hold (12% mothers). In group B, the most preferred breast feeding position was lying down position (60% mothers) followed by cross cradle hold (10% mothers) and then modified cradle hold (8% mothers). Lying down position was preferred more, probably because of high number of LSCS mode of delivery in our study population.

In our study we found that babies whose umbilical cord tied with autoclave thread were found to have better breast feeding positioning as compared to those whose umbilical cord were clamped with commercially available plastic cord clamp. Similar results were obtained in a study conducted by Jain et al. 2013 at Delhi.

On evaluation of mother's satisfaction score, it was also found that commercially available plastic cord clamp was affecting the daily

clothing and unclothing activities of the baby ($p=0.005$) with more maternal concern about this plastic cord clamp ($p=0.005$) as compared to autoclave thread. In one of the study conducted by Jain et al. 2013 at Delhi there was no significant difference in other parameters except in the mothers concern about care of cord clamp ($p < 0.001$).

CONCLUSION:

The present study concludes that the mothers have a very good knowledge and neutral attitudes toward breast feeding. Our findings also show that the level of exclusive breast feeding was low among Indian mothers. Thus, it is important to provide prenatal education to mothers and fathers on breast feeding. We also recommend strengthening the public health education campaigns to promote breast feeding. Breastfeeding is of prime importance for survival and optimal neurodevelopment of the new-born.

It's important to provide prenatal education to mothers and fathers on breast feeding. Also recommend strengthening the public health education campaigns to promote importance of breast feeding.

Limitations and Scope for future research

First it's an area based research, second limited sample size, third future research is required to further delineate and characterize the prevalence, frequency, and breastfeeding. Future prospect study should be developed in cooperating large sample size and mass study with appropriate methodology to capture the frequency and prevalence of mother attitude and knowledge of breastfeeding parenting.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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