

# INFLUENCE OF CESAREAN SECTION ON MOTHER-BABY INTERACTION

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## ABSTRACT

Fifty two mother-infant pairs were studied. Twenty six of these were delivered by the normal vaginal route (NVD group) and twenty six by Cesarean section (CS group). The NVD babies were roomed in with their mothers soon after birth whereas the CS babies had a mean separation of  $2.8 \pm 1.0$  days. The mother baby interaction was evaluated by (a) direct observation of the mother's behaviour during feeding, (b) observation of mother's behaviour during BNBAS (Brazelton Neonatal Behaviour Assessment Scale) on her baby, and (c) interview of the mother with attachment questions. Mothers in the NVD group showed significantly greater affectionate behaviour and encompassing compared to mothers in the CS group. They (NVD mothers) were more often involved in the care-taking activities of their babies and scored significantly higher for the interview implying a greater mother-baby attachment in this group.

**Key words:** Normal vaginal delivery (NVD), Cesarean section (CS), Residential elder woman (douella), Separation, Mother-infant interaction.

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In certain animals separation of the mother and infant, even for a short period immediately after birth, results in a distinctly aberrant mothering behaviour like failure to care for the young, butting her own offspring away and feeding her own and other infants indiscriminately. Interestingly, if the separation occurs some days later, the mother is seen to quickly reaccept her young one(1-3).

In human beings Klaus *et al.* published the first report on the beneficial effects of early mother-infant contact(4). Since then several studies have supported the same view(5-11). Most of these studies have, however been done in the western affluent societies, although a few have been reported from developing countries like Guatemala(10) and Jamaica(12). Our's is a very different socio-cultural milieu compared to that of the west. Besides our mothers receive considerable emotional support from their families and the residential elder women who stay with them. These are important factors influencing the mother-infant interaction(13,14).

In many developing countries there is a general tendency to room in normal infants with their mothers soon after birth. However, in many centres, including our own, infants delivered by Cesarean section, even healthy ones, are separated from their mothers for some time. The surgical intervention *per se* and the separation because of it, may again be expected to influence the mother-baby interaction considerably.

## Material and Methods

### Selection Criteria

The criteria for entering a mother into the study protocol were: Primiparous women aged 18-30 years, who had an uncomplicated pregnancy and labor. The

presence of a residential elder woman was an essential feature. In the vaginal delivery group, mothers with episiotomy were chosen, so that an element of pain because of surgical wound, was present in both groups. Babies entering the study protocol had to be term neonates with appropriate weight for gestational age and with normal Apgar Scores (more than 8 at 1 and 5 minutes). Babies with congenital malformation or who subsequently developed an illness were excluded from the study.

Thus, fifty two mother-infant pairs qualified for entry into the final study protocol. They were divided into two groups: (i) *Cesarean Section (CS) Group* ( $n=26$ )—The babies delivered by Cesarean section were transferred to the neonatal special care baby unit (NSCBU). The period of separation of the baby from his mother was on an average two to three days. The baby was then shifted to the mother in her bed, where he stayed until discharge, and (ii) *Normal Vaginal Delivery (NVD) group* ( $n=26$ )—The babies were shown to the mother immediately after delivery and then put in a crib next to her. After this the baby stayed with the mother in her bed until discharge.

### *Method of Evaluation*

#### *A. Direct Observation of Mother and Infant's Behaviour During Feeding*

This was done initially at 24 to 48 hours postpartum for the NVD group and at 24-48 hours after transfer of the baby to the mother for the CS group. The observations were made over a period of fifteen minutes. During this period, observations were made in the first fifteen seconds of each minute. Forty five seconds were used for recording the observations. Periods of observation and recording were identified by pre-recorded signals from a small tape

recorder through an ear piece, so that the beeps were heard only by the observer. The use of this system was explained to the mother at the beginning. To minimize the mother's feeling of being observed herself, it was explained beforehand that the aim was to study the infant's behaviour during feeding.

The choice of items was based on the studies of Richards and Bernel(15), Halls *et al.*(10) and Pedro *et al.*(16). The observations were recorded by hand on a pre-designed proforma.

After each observation, the number of times a particular behaviour occurred for a specific item was totalled up. The score for each group of items was obtained by adding the scores of individual items in that group. Behaviour not included in our observation sheet did sometimes occur and was recorded, but none could be used for data analysis.

At this juncture, the mother was asked to objectively record the number of crying episodes, the number of feeds and the handling of the baby besides caretaking in the next 24 hours. As some of the mother's were illiterate, columns were made for these three items and the mother asked to indicate with a stroke the number of times a particular behaviour occurred.

All the observations were repeated at the follow up visit at the age of four weeks.

#### *B. Observation of Mother During the Brazelton Neonatal Behaviour Assessment Scale (Follow-up Assessment)*

While the infant's behaviour was assessed by the Brazelton Neonatal Behaviour Assessment Scale, a note was made of the mother's attention, curiosity and the attempts she made to soothe her baby if he cried during the assessment. These were recorded and scored in such a manner that

a higher score indicated a greater involvement of the mother with her baby.

### C. Interview

The mother was interviewed at the follow-up visit at four weeks postpartum. The questions and their answers were recorded in a pre-designed proforma. The answers were recorded in a manner such that a higher score indicated a more positive mother-infant interaction and may be greater attachment. The scores of individual questions were added up to obtain a total score.

The data was analyzed by Chi square test.

### Results

The 2 groups were comparable with respect to maternal and paternal age and education, socio-economic status, social support by the husband and residential elder woman, family size, babies birth weight, Apgar Score at 1 and 5 minutes, gestational age and sex.

#### Mother's Behaviour During Feeding

The NVD mothers showed a significantly greater affectionate behaviour at

both the initial ( $p < 0.05$ ) and follow-up assessments ( $p < 0.01$ ). They smiled and vocalised to their babies more often. They also encompassed their babies significantly more than the CS mothers (Table I).

Babies in the CS group had significantly more crying episodes at both the initial and follow-up assessments than the NVD group.

#### Maternal Behaviour During BNBAS

The NVD mothers were significantly more attentive and soothed their babies significantly more often than the CS mothers. Mothers in both groups showed very little curiosity (Table II).

#### Maternal Interview

The mother was significantly more often involved in the caretaking activities of her baby in the NVD group compared to the CS group.

The total score of the interview was significantly ( $p < 0.001$ ) higher in the NVD group compared to the CS group. Since the questions had been scored in such a manner that a higher score indicated a more positive mother-infant interaction, it implied that the mother-baby interaction was

TABLE I—Direct Observation of Mother's During Feeding

Mother's behaviour	Initial assessment		p value	Follow-up assessment		p value
	Mean $\pm$ SD			Mean $\pm$ SD		
	NVD(n=26)	CS(n=26)		NVD(n=26)	CS(n=26)	
<i>Affectionate behaviour</i>						
Smiles at baby	2.6 $\pm$ 2.3	1.1 $\pm$ 1.8	<0.01	3.9 $\pm$ 1.4	2.2 $\pm$ 2.0	<0.001
Vocalises to baby	3.6 $\pm$ 3.0	2.1 $\pm$ 2.5	<0.05	3.5 $\pm$ 2.2	2.4 $\pm$ 1.5	<0.05
Looks at baby	12.7 $\pm$ 2.7	12.0 $\pm$ 0.8	>0.05	12.8 $\pm$ 2.6	10.7 $\pm$ 2.2	<0.01
<i>Proximity</i>						
Encompassing	3.0 $\pm$ 2.9	1.4 $\pm$ 2.7	<0.05	2.1 $\pm$ 2.8	0.4 $\pm$ 0.9	<0.01

TABLE II—*Observation of Mother During BNBAS (4 weeks)*

Observation of mother	Mean $\pm$ SD		p value
	NVD group (n=26)	CS group (n=26)	
Mother's attention	2.7 $\pm$ 0.5	2.3 $\pm$ 0.5	<0.01
Mother's reaction to baby's crying	2.2 $\pm$ 1.0	1.1 $\pm$ 1.0	<0.001
Mother's curiosity	0.3 $\pm$ 1.6	0.4 $\pm$ 0.5	>0.05
Total score	5.2 $\pm$ 1.6	3.8 $\pm$ 1.7	<0.01

more positive and stimulatory in the NVD group.

Mother in the NVD groups checked frequently if the baby was wet and changed his napkins as soon as he had wetted, significantly more often than mothers in the CS group. They also spent time with their babies beyond the usual caretaking activities, significantly more often than the CS mother (*Table III*).

### Discussion

The NVD mothers showed a significantly more affectionate behaviour and

encompassing than the CS mothers at both the initial and follow-up assessments. This was so probably because mothers in the CS group had undergone a major surgical intervention and were more apprehensive regarding their own and the baby's well being. This could account for their being less demonstrative and showing a lesser affectionate behaviour. Also because of the presence of the painful abdominal wound these mothers tended to not hold the baby very close and therefore showed lesser encompassing (at the initial assessment).

Brazelton(17) observed that there is a

TABLE III—*Interview (Follow-up Assessment)*

Questions	Mean $\pm$ SD		p value
	NVD group (n=26)	CS group (n=26)	
Who is the main caretaker of the baby?—only mother-3, mostly mother-2, mostly residential elder woman-1, only residential elder woman-0.	1.8 $\pm$ 0.6	1.4 $\pm$ 0.5	<0.01
When baby has been fed, napkins are dry and baby cries—what do you do? Always let baby cry it out-0, tend to let baby cry it out-1, tend to pick up the baby-2, always pick up the baby-3.	2.6 $\pm$ 0.4	3.0 $\pm$ 0.0	<0.001
Diapering: checks frequently and changes as soon as wet-3, changes if baby cries when wet-2, takes her time to change even if baby crying-1, changes at fixed timing only-0.	2.7 $\pm$ 0.4	2.2 $\pm$ 0.4	<0.001
Do you spend time with your baby beyond the usual care taking? Yes, frequently-3, yes, sometimes-2, yes but rarely-1, No never-0.	2.8 $\pm$ 0.3	2.3 $\pm$ 0.4	<0.001

short period (1 to 3 hours) of relative alertness and responsiveness immediately after birth. Association of the mother and her baby at this time, because of relative alertness and responsiveness in the baby, would work to bring about a more positive interactive behaviour from the mother. This in turn would reinforce the babies interactive processes. One may therefore expect a better interactive behaviour in these babies and a better interactive and more affectionate behaviour in their mothers too. These were the findings of the present study too.

The babies in the CS group cried significantly more than the babies in the NVD group at the time of the first assessment. This must, however be interpreted with caution since the initial assessment was made at the age of 4-5 days for the CS babies (24-28 hours after transfer of the baby to the mother; mean separation  $2.8 \pm 1.0$  days) and at 24-48 hours after birth for the NVD babies. Surprisingly however, the CS babies continued to cry significantly more even at the follow-up assessment. Infant crying has been suggested as a sign of less well developed mother-infant synchrony(7) which possibly resulted from the lesser involvement of these (CS) mothers in the caretaking activities of their babies (*vide infra*). Pedro *et al.*(16) reported findings similar to those of the present study.

Observation of maternal behaviour during BNBAS assessment of their babies at 4 weeks revealed that NVD mothers were significantly more attentive and soothed their babies more often than the CS mothers. The interview conducted at the follow-up assessment revealed that the mother was more frequently the sole caretaker of her baby in the NVD group compared to the CS group ( $p < 0.01$ ). The total score was higher for the NVD group. A

higher score implied a more positive mother-infant interaction and may be greater attachment. The NVD mothers checked frequently to see if the baby was wet and changed him as soon he was wet. They also spent more time just talking and playing with their infants. For the question "When the baby has been fed, the napkins are dry and still the baby cries—what do you do?"—mothers in the NVD group surprisingly scored lower than those in the CS group. This was because some of these (NVD) mothers believed that a little crying was good for the baby and, therefore, let him cry a little before picking him up and hence, scored less. Only three mothers in the NVD group and two in the CS group had been out without their babies in the four weeks after delivery because of a custom that a mother should not go out in the first few weeks after delivery.

Since most of the background factors likely to influence mother-baby interaction are comparable in the two groups studied (*vide supra*), the reality of observed differences becomes even more striking. But this is a preliminary study and probably the first in India. These aspects need to be replicated in larger groups, but those caring for mothers and babies must know of the possible factors influencing the mother-baby interaction.

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