



The Development of Cesarean Baby is Different than Normally Delivered Baby: Nurses Concern towards Changing Scenario.

Pratibha Khosla^{*1}, Pravati Tripathy², Debjani Nayak³, Chandrama Sarkar⁴

¹Asst Prof, Faculty of Nursing, SOA University, Bhubaneswar, Odisha, India.

²Prof & HOD, Faculty of Nursing, SOA University, Bhubaneswar, Odisha, India.

³Asst Prof, Faculty of Nursing, SOA University, Bhubaneswar, Odisha, India.

⁴Lecturer, Tripura College of Nursing, Tripura, India.

***Corresponding author's E-mail:** pratibhakhosla@soauniversity.ac.in

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ABSTRACT

The trends of rising in rate of caesarean section is now world wise well evident. The study aimed to identify the difference in neurobehavioral development between CS and normally delivered babies. With use of Ballard chart for neuromuscular and physical maturity and reflex score were measured from sample of 30 from each group on 1st and 5th neonatal day. Both the group had excellent score in neuromuscular and physical maturity score on both days, but in reflex few (23%) C-section babies only had excellent score. The nurses required to recognize the difference exist among them to act promptly and minimize the risk.

Keywords: Neurobehavioral assessment, neuromuscular maturity, physical maturity, vaginally delivered babies, cesarean section babies.

INTRODUCTION

The neonates are soft and tender and they require special care to get adjusted with the external environment, as they undergo various transitional processes and get accustomed to the environment.

There has been growing interest now days in the rates of caesarean delivery, and its relative benefits and harms to the mother and neonate.

When delivery occurred through C-section, babies are not fully prepared for the birth and hence they are more stressed soon after delivery than before and this does not happen in case of normal vaginal delivery.

When baby delivered by vaginal route the stress gradually builds up and helps to initiate breathing and stimulate all reflexes in order to adapt quickly to the new environment.¹ The Apgar scores and oxygenation levels of healthy infants born by means of caesarean section & those delivered vaginally were compared and it was seen that difference was not significant.² Respiratory morbidity is an important complication after a caesarean section. When a normal labour process starts but ended with caesarean section that also reduces the risk of neonatal respiratory morbidity³. Infants born by elective caesarean delivery at term are at increased risk for developing respiratory disorders compared with those born by vaginal delivery.⁴

Respiratory support in case of Caesarean babies is required more & they are more likely to develop pulmonary hypertension.⁵

The glutathione an enzymatic antioxidants that act as first line of defence against free radicals found more in the plasma and erythrocyte compartments of mothers with

vaginal delivery and also in child than in CS mothers.⁶

When association of catecholamine levels and neurobehavioral outcome was examined in two modes of delivery at 1,2 and 5th day it was found mean noradrenalin value to be lowered in caesarean babies as compared to vaginally delivered babies evidenced by more hypotonic babies in the first two days than normal babies with significant differences in reflexes.^{7,13,14} Plasma catecholamine which is responsible for respiratory frequency is higher in vaginal delivered babies than CS babies.⁸

When two were compared, the caesarean cases showed increased transfer rates to NICU with increased risk for pulmonary disorders without any significant differences in Apgar score and neurologic symptoms.⁹

During vaginal delivery, the first contact with the maternal vaginal and intestinal flora is an important source for developing immune system which is absent in a caesarean delivery.¹⁰

Enamel hyperplasia, metabolic syndrome, asthma, diabetes, and myeloid leukaemia are certain complications seen more in caesarean babies than vaginally delivered babies.¹¹ Most common complications associated with caesarean babies are respiratory morbidities, poor temperature regulation, low blood sugar and slower neurological adaptation after birth.¹²

Though neonatal death is more among elective caesarean babies, but overall perinatal mortality have reduced due to prevention of ante partum stillbirths.¹⁵

Approximately 0.37% newborn delivered by elective caesarean suffered with persistent pulmonary hypertension which is five times higher than those



delivered vaginally.¹⁶ It also carries an increased risk of morbidity for the newborn such as respiratory difficulties, bonding and feeding delays and higher risk of requiring neonatal intensive care. These complications may be due to increased fluid in the infant's lungs after a c-section birth⁹.

METHODS

This exploratory perspective study selected two groups of babies with 30 samples in each conveniently. The babies in their 1st and 5th neonatal day, delivered without any complications (either in mother or in foetus) born within 37th weeks to 40th weeks of pregnancy were selected to be included in study.

The Ballard chart was used as standardized scale for assessing neuromuscular and physical maturity with 5 point rating scale and having score from -10 to 50. The score was divided like absent, poor, average, good and excellent. For reflex 3 point rating scale poor, average, good was adopted. The reliability of the tool confirmed at 0.87 through cronbach co-efficient estimation. Data was collected on 1st and 5th day of neonatal life in both the

group. The data was analyzed by using SPSS version 17. The baseline characteristics were analyzed by percentage, mean and SD. The independent 't' test showed the difference in mean score among the groups.

RESULTS

The maternal characteristics as analyzed demonstrated mean age of mothers in normal delivered group is 32.93 & in caesarean mothers it was 36.31. About 70% of mothers in CS group were age of ≥ 35 yrs. The mean weight was 56.16 ± 2.15 & 54.68 ± 1.94 in respective group.

Maximum (77%) mothers in vaginal and 77% in C-section groups were between 51kg to 70kg. 93% mothers delivered between 38weeks to 40weeks both in vaginal (39.09 ± 0.08) and C-section group (39.5 ± 0.76). Majority (63%) in vaginal and 57% in CS group were multipara. 87% Vs 83% pregnancies were not eventful in respective group. The mean weight of the babies was 2.95 (SD=0.82) in vaginal & 2, 17 (SD=0.64) in caesarean babies. Apgar at 5min was 7-10 in all cases (100%) in both the group (mean 8.29 vs. 8.36).

Table 1: Comparing mean neurobehavioral score among both the groups

Observation	Normal (n=30)				C-Section (n=30)				't' on 1 st day	'p' value	't' on 5 th day	'p' value
	1 st Day		5 th Day		1 st Day		5 th Day					
	M	SD	M	SD	M	SD	M	SD				
Neurobehavioral & Physical maturity	49.9	0.4	49.9	0.4	49.93	0.3	49.93	0.3	0.03	0.9	0.03	0.9
Reflexes	27.47	0.94	27.77	0.94	24.63	1.27	27.47	1.1	94.7	0.0001*	0.35	0.73

*Significant

On both the days, both the group showed 100% that is excellent in neuromuscular and physical maturity score & in reflex 77% of the C-section babies had very well and 23% had excellent score. No one had poor score on day-1. Likewise among normal delivered babies 100% had excellent reflex score on 5th day. 100% babies in normal and 77% of CS babies had excellent reflex score.

While comparing them on day-1 and day-5, the 't' value found 0.03 on both days in neuromuscular & physical maturity which is not significantly different. In reflex criteria 't' value of 94.7 on 1st day shows significant difference and value of 0.35 on 5th day indicate no significant difference among the groups. No significant association between age and neurobehavioral and parity with neurobehavioral outcome was seen.

DISCUSSION

The main aim of the study was to explore whether caesarean babies differ in their neurobehavioral maturity than normal delivered babies. Newborn period is the time where transition occurs from a full dependant fetal life to a physiologically independent newborn with massive

physiological adaptation. The present research outcomes have shown the variation among caesarean section and vaginally delivered babies for their neurobehavioral maturation in terms of neuromuscular maturity, physical maturity, respiratory maturity and reflexes.

Most of the study samples in both the groups are above 25 years of age and they are multipara. Most of the mothers in caesarean group are elderly mothers with age more than 35 years. It is also evident that the birth weight of most of the babies are within normal range in both the groups but the mean weight of the babies in vaginal is higher than the caesarean group.

Studies revealed that the labor plays a major role towards neural, physiological and behavioral changes as occurs during the birth process, like pulmonary and respiratory variables.^{3,4,17}

This physiological changes is perhaps absent during a cesarean section delivery, which lacks, the mechanism of expulsion of pulmonary fluid and mucus from the nose and mouth by pressure of birth canal and there by stimulation of reflex centers and respiratory centers.²¹



The sudden expulsion or absence of exposure to a catecholamine surge during labor endangers the baby to remain proactive for initiation of pulmonary and cerebral function.^{21,23}

But the present study revealed equal score in Apgar at 1st min and 5th min in both the cases. This is supported by the previous study where respiratory morbidity was found decreased by cesarean section when performed after onset of labor and without any differences in the risks for low Apgar score when compared with planned vaginal deliveries.⁹ In contrast, other studies show a higher rate of respiratory morbidity among elective cesarean delivered babies than babies delivered vaginally.^{18,19,20}

Again the study concludes equal score in neurological and physical maturity in both the cases. They are not different from each other in the way they demonstrated neurological development like maintaining various body postures and physical maturity like skin, plantar surface, breast, genitalia, eye and ear as described in Ballard chart. Similar consistent result was found while comparing vaginal breech and cesarean section babies on their first day, where there was delayed neurological adaptation for their first two days but at 6 months, no differences in neurological outcome was found between them and again that didn't affected the physical well-being of the infants, which showed normal growth, neurology and development at later age.¹⁴

Newborn reflex is the outcome of neural function & maturity. The study found a significant difference in reflex on 1st day between the groups. The finding is consistent with previous studies that indicate cesarean babies are more hypotonic, less excitable for first 2 days.^{7,13}

It is concluded that the cesarean babies are not different from vaginally delivered babies as they both have similar rate of neuromuscular and physical maturity except in the part of reflexes on 1st day which might be the result of suppressed neural sensation in cesarean babies. The sudden extraction of babies by c-section may not be sufficient to trigger the neural function.

The neuromuscular and physical maturity of both the group have excellent score on day 1 & 5. They did not differ at all. At two years of age when they were compared, equal aging and neurological status was evident in both the group.²⁴

Another similar study revealed no difference in Apgar and neurologic symptoms among planned cesarean and planned vaginal delivered babies.⁹ The present study shows significant difference in reflex score on 1st day, which is highly supported by the result of similar study where they found these babies as less excitable with reduced optimal responses as compared to vaginally delivered babies.¹⁰ Although cesarean section births are medically indicated for some individuals but information's regarding the effect of c-section birth may be essential for those mothers who are considering c-section for non-

medical reasons. They need to consider and aware of available data on potential risks and benefits of cesarean section and its' effect on the fetus and neonate.

CONCLUSION

The trends of rising in rate of cesarean section is now world wise well evident. The fact that all know is that cesarean babies do not undergo the stress that adopted by babies delivered by vaginally. This is the belief among all that they are different in quickly adopting the environment.

We must be careful & concerned towards CS delivered babies to make themselves to adapt to external environment. Though present study shows, CS babies presents a normal picture of physiological development, still these babies need continuous assessment till they are found that their neurobehavioral respond is well. Nurses should use up-to-date information to reassure women when a c-section is necessary due to failure in progress, breeched position of the baby, placenta preavia, or other complications as mother remains anxious for the baby.

But there should not be much hue & cry on issue of c-section in cases where mother is helpless in terms of inability to deliver vaginally. She must be counselled accordingly. Also the responsibility lies on nurses who need to have increased surveillance of neonates after cesarean delivery.

Limitation

The study result is limited for generalization due to few samples in a restricted set up.

Ethical Approval

The study proposal was duly approved by the Hospital Ethical Research committee before commencement of the main study. The permission was accorded priorly from the medical superintendent of the hospital. The mothers were explained about the purpose of the study & mothers those were not willing to participate were excluded.

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