



NEONATAL APGAR AND BIRTH WEIGHTS IN RELATION TO ELECTIVE AND EMERGENCY CESAREAN SECTION

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ABSTRACT

Background: Poor neonatal outcomes post caesarean delivery has been defined as mortality, low APGAR scores or admission to the neonatal intensive care unit. We conducted a study to compare the Neonatal APGAR and Birth weights in relation to elective and emergency cesarean section in a tertiary care centre. **Material & Methods:** This was a Cross sectional comparative hospital-based study conducted at Kamla Nehru State Hospital for the Mother and Child, Department of Obstetrics and Gynecology, Indira Gandhi Medical College, Shimla from June 1, 2020 to May 31st, 2021). A total of 200 consenting participants (100 participants undergoing elective cesarean section & 100 participants undergoing emergency cesarean section) were enrolled. The analysis was performed using statistical package for social sciences (SPSS) version 21. **Results:** All neonates born by elective cesarean section had APGAR score >8 at 1 & 5 minutes. Whereas 85% neonates born by emergency cesarean section had APGAR score >8, 7% had APGAR score <7 & 8% had APGAR score between 7-8 at one minute. 5 minutes APGAR score was <7 in 3%, between 7-8 in 6% & >8 in 91% in neonates born by emergency cesarean section. Majority (90%) of neonates born by elective cesarean section had birth weight between 2.5-3.5 kg & 84% neonates who were born by emergency cesarean section had birth weight between 2.5-3.5kg. **Conclusion:** Neonates born by elective cesarean section had better APGAR score and Birth weight as compared to neonates born by emergency cesarean section.

KEYWORDS: Neonatal APGAR, Birth weights, elective and emergency cesarean section.

INTRODUCTION

Caesarean delivery is defined as the birth of the foetus through an incision in the abdominal wall (laparotomy) and the uterine wall (hysterotomy). Caesarean section is one of the most commonly performed surgical procedure in today's obstetric practice and it improves the parturition outcome. But the procedure by itself carries inherent risks.^[1,2]

In recent years, however, use of caesarean section has become increasingly controversial, uncertainty exists about relative risk and benefit of the patient. The increased rate of caesarean section in present scenario is due to increasing maternal age, reduced parity, breech presentation, extensive use of electronic fetal monitoring.^[3,4]

The incidence of Caesarean section varies between 10% and 25% in most developed countries. In many countries the frequency of caesarean section is on a rise. In 1985 the World Health Organisation stated: There is no

justification for any region to have caesarean section rates higher than 10-15%. Therefore, many efforts are currently being made to reduce the prevalence rate of C-section in countries within the range of 24-34%. The increased rate of caesarean section in the present scenario is due to increase in maternal age.^[5,6]

Rising rates of Caesarean sections may increase adverse outcomes and place a considerable burden on health services. Caesarean sections are associated with short- and long-term risks and affect the health of the woman, her child, and future pregnancies.^[7-9]

Poor neonatal outcomes post caesarean delivery has been defined as mortality, low APGAR scores or admission to the neonatal intensive care unit. A variety of risk factors for poor neonatal outcomes have previously been identified. Shortage of staff, inadequately skilled staff and limited equipment impede timely availability of caesarean sections for women who need it.^[10-12]

We have conducted a study to compare the Neonatal APGAR and Birth weights in relation to elective and emergency cesarean section in a tertiary care centre.

AIMS AND OBJECTIVES

To compare the Neonatal APGAR and Birth weights in relation to elective and emergency cesarean section in a tertiary care centre.

MATERIAL AND METHODS

Study Design – Cross sectional comparative hospital-based study.

Study Area- Kamla Nehru State Hospital for the Mother and Child, Department of Obstetrics and Gynecology, Indira Gandhi Medical college, Shimla.

Study Duration: 12 months (June 1, 2020 to May 31st, 2021).

Sample size : We calculated the sample size by taking power of study 80 percent , confidence interval 99 percent, and 19 percent difference between two groups in APGAR score more than 8 (taking a reference from the study done by Diana v et al in which the APGAR score of more than 8 was found in 92.7 percent in elective caesarians and 73.23 percent in emergency caesarians). On considering all these factors our sample size came out to be 200 (100 in each group).

Sampling: 100 consenting consecutive participants undergoing elective cesarean section and 100 consenting consecutive participants undergoing emergency cesarean section were enrolled for the study till the completion of sample size during the study period.

Inclusion Criteria

200 participants with singleton pregnancy (irrespective of booking status & parity) at period of gestation 30-40 weeks undergoing caesarean section at our tertiary care centre were enrolled for the study after ruling out the following exclusion criteria.

Exclusion Criteria

Gestation <30weeks and >40weeks, Multiple pregnancies, Pregnancy with congenital malformations in the fetus, Pregnancy with uterine malformations, Pregnancy with uterine fibroid, Pregnancy with coagulopathy, Pregnancy with jaundice, Pregnancy with ICP, Immunocompromised patients, Past history of scar dehiscence, Past history of abdominal surgeries except previous LSCS and Severe anemia complicating the pregnancy.

Data Collection

A total of 200 consenting participants (100 participants undergoing elective cesarean section & 100 participants undergoing emergency cesarean section) were enrolled for the study after fulfilling the inclusion criteria and excluding the exclusion criteria. An informed written consent was taken from all the participants. The research procedure was in accordance with the approved ethical standards of Indira Gandhi Medical College, Shimla.

Study Tool

Data was collected using a pre tested semi structured questionnaire having socio-demographic variables, obstetrics history and Neonatal outcome variables in terms of APGAR score at 1 & 5 minutes and birth weight.

Statistical Analysis

Both inferential and descriptive statistics have been used. Proportions have been presented as percentages and continuous variables have been described using mean (standard deviation). Proportions were compared using the Chi-square test, while continuous variables were compared using the Mann-Whitney U test or students T-test depending upon normality of distribution. The analysis was performed using statistical package for social sciences (SPSS) version 21. For all tests, a two-sided p value of less than 0.05 was considered significant.

RESULTS

Total of 7544 deliveries took place during the study period. Of these 2255 deliveries were by cesarean section therefore, the cesarean rate in our study was 29.9%.

Table 1: Distribution of new-borns according to APGAR score.

Total Participants	APGAR Score at 1min			APGAR Score at 5min		
	Less than 7	7-8	Above 8	Less than 7	7-8	Above 8
Elective group (n=100)	0	0	100%	0	0	100%
Emergency group(n=100)	7%	8%	85%	3%	6%	91%

The above table (1) depicts that all women who underwent elective cesarean section had neonatal APGAR score >8 whereas in emergency cesarean group, 85% neonates had APGAR score >8, 7% neonates had APGAR score < 7 at 1 min, 8% neonates had APGAR score between 7-8 at 1min. Even the neonates born by emergency cesarean section had better APGAR score at

5min i.e. 91% neonates had APGAR > 8, 6% neonates had APGAR between 7-8 and only 3% neonates had APGAR < 7. The complications associated with low APGAR score in our study were meconium aspiration, fetal growth restriction, Doppler changes and fetal bradycardia.

Table 2: Birth weight in relation to elective and emergency cesarean section.

Total Participants	Birth weight (kg)			
	<1.5	1.5-2.5	2.5-3.5	>3.5
Elective group(n=100)	0	4%	90%	6%
Emergency group(n=100)	4%	6%	84%	6%

The above table (2) depicts that majority (90%) of neonates born by elective cesarean section had birth weight between 2.5-3.5 kg, four percent neonates had birth weight < 2.5 kg and 6% neonates had birth weight > 3.5kg. 84% neonates who were born by emergency cesarean section had birth weight between 2.5-3.5kg, 6% had birth weight between 1.5-2.5 kg and 4% had birth weight below 1.5kg.

DISCUSSION

It was a comparative cross sectional study done at Kamla Nehru State Hospital for Mother and child, to compare the Neonatal APGAR and Birth weights in relation to elective and emergency cesarean section in a tertiary care centre. . A total of 200 participants undergoing cesarean delivery were enrolled for the study which included 100 consenting consecutive elective cesareans and 100 consenting consecutive emergency cesareans.

In our study, APGAR score at 1 min >8 was observed in 92.5% of newborns, which shows the number of healthy babies born in the region. Only 3.5% had APGAR score <7 and 4% had APGAR score between 7 to 8. In a study done by Diana V *et al*^[13], an APGAR score > 8 was recorded in 82.7% of the babies born by emergency and elective cesareans. This study has also found that a significantly higher proportion of the babies born by elective caesarean had good APGAR score compared to those born by emergency cesarean. All neonates born by elective cesarean section had APGAR score >8 at 5min whereas, 91% (91/100) neonates born by emergency cesarean section had APGAR score >8 at 5min.

In our study, 91 (45.5%) neonates had birth weight between 1.5- 2.5 kg, 84 (42%) neonates had birth weight between 2.5-3.5 kg, 19 (9.5%) neonates had birth weight less than 1.5 kg weight and only 10 (3.3%) neonates had birth weight > 3.5 kg. In a study by Renuka P *et al*^[14], 67.3% (206/300) neonates had birth weight between 2.5-3.5kg, 29.4% (90/300) neonates had birth weight between 1.5-2.5kg and only 3.3% (10/300) neonates had birth weight >3.5kg and no neonates had birth weight < 1.5kg. The reason for this discrepancy could be the less percentage (9%) of complicated pregnancies in a study done by Renuka P *et al*.^[14]

CONCLUSION

Neonates born by elective cesarean section had better APGAR score and Birth weight as compared to neonates born by emergency cesarean section.

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