

Fetal Outcome in Elective versus Emergency Caesarean Section at a Tertiary Care CenterAarti Narula¹, Shalini Garg², Satinder Pal Kaur³, Nancy Grover⁴, Tarvinderjit Khurana⁵¹Assistant Professor, Department of Obstetrics and Gynaecology, GMC, Patiala, Punjab- 147001²Senior Resident, Department of Obstetrics and Gynaecology, GMC, Patiala, Punjab-147001³Associate Professor, Department of Obstetrics and Gynaecology, GMC, Patiala, Punjab - 147001⁴Junior Resident, Department of Obstetrics and Gynaecology, GMC, Patiala, Punjab - 147001⁵Associate Professor, Department of Medicine, Adesh Medical college and hospital, Mohri, Shahbad, Haryana

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Conflict of interest: Nil

Abstract:**Objective:** To study the fetal outcome in Elective versus Emergency Caesarean section at a tertiary care center.**Material and Method:** The study spanned one year and included patients undergoing caesarean sections at our tertiary referral center, regardless of their gestation age. The study was conducted after the approval of institutional ethics committee. In this study two groups of pregnant females were studied.

Group 1: Women who underwent elective caesarean section.

Group 2: Women who underwent emergency caesarean section.

Results: There was total 3296 deliveries during the study period. Among all deliveries, 1306 women with singleton pregnancies underwent LSCS. There were 917(70.2%) emergency LSCS and 389(29.8%) elective LSCS. Fetal outcomes were recorded and compared between elective and emergency LSCS group. In the present study, Fetal complications like respiratory distress, meconium aspiration syndrome and NICU admissions >24 hours were significantly more in emergency group as compared to elective group. Mean birth weight in elective group was 2.58±0.47 kg and 2.43±0.56 kg in emergency group, which was statistically significant. 1 minute APGAR score was <6 in 2.1% subjects in elective group as compared to 6.8% subjects in emergency group. 5 minutes APGAR score was <6 in 0.8% subjects in elective group as compared to 3.3% subjects in emergency group. It was found to be statistically significant.**Conclusion:** Fetal complications like respiratory distress, meconium aspiration syndrome and NICU admissions >24 hours were significantly more in emergency group as compared to elective group. There was no statistically significant difference in the occurrence of transient tachypnea of newborn in the two groups.**Keywords:** Elective Caesarean Section, Emergency Caesarean Section, LSCS, Caesarean Delivery, Fetal Outcome.

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Introduction

Caesarean delivery is defined as birth of the fetus through an incision in the abdominal wall and the uterine wall. [1] The removal of fetus from the abdominal cavity as abdominal ectopic pregnancy or rupture of uterus is excluded. [2] Most common obstetric major surgical procedure performed now days is Caesarean section. Its rate varies internationally from 10 to 25%. [3]

World Health Organization suggested that caesarean rate should not exceed 15%, but the rate is rising. Caesarean sections lead to short-term and long-term risks and affect the health of the mother, her child and also future pregnancies. [4] Mortality rate in caesarean section is about 5.8 per 100,000

deliveries and the caesarean section morbidity accounts for 27.3 per 1,000 deliveries compared to normal delivery, which has a morbidity of 9 per 1,000 deliveries. [5]

Caesarean section (CS) used to be carried out primarily for obstetric indication. However now a days, other factors such as reduced risk to the mother as a result of improved anesthetic procedures and surgical techniques, elective caesarean section in view of breech presentation or previous caesarean section have contributed to change in obstetric practice. [6] The major causes of mortality in 19th century were hemorrhage and infections. Aseptic and antiseptic methods with

antibiotic therapy, use of blood transfusion as well as improved anesthetic measures have all contributed to the dramatic decline in mortality seen during that century. [7]

The disadvantages of caesarean section are much more as compared to normal vaginal delivery. This is not only due to pain and trauma associated with an abdominal operation, but also because of the other complications that may be associated with it. [8] It is expensive in terms of cost of the procedure and also the duration of postpartum stay in the hospital. [9]

The nature of the caesarean section performed is generally predicted depending upon the indication of caesarean section. [10] Caesarean deliveries are classified as elective if the operation is decided before the onset of labor. Caesarean deliveries are classified as an emergency when the patients are admitted in labor or the CS is not scheduled/pre-planned and there is a concern of impending fetomaternal compromise. [11]

The complications that arise from elective caesarean sections are much less as compared to emergency caesarean sections. [12]

Increasing number and rate of caesarean deliveries are known to be associated with fetal risks such as prematurity, low APGAR (appearance, pulse, grimace, activity, respiration) score, stillbirth and early neonatal death. [13]

Neonatal morbidity may include any of the following: Respiratory morbidity such as transient tachypnea of the newborn (TTN) or respiratory distress syndrome (RDS), NICU admission of more than 24 hours and APGAR score at 5 minutes of < 6. [11]

Low APGAR score and asphyxia is a bigger problem in case of emergency CS as compared to elective group. [14]

Aims and Objectives

Aim of the study was to compare the fetal outcome of emergency and elective LSCS at a tertiary care center. **Materials and Methods**

A prospective comparative study of one year was conducted in the department of Obstetrics and Gynaecology at Rajindra Hospital, Patiala from June 2020 to May 2021. Patients irrespective of gestation age undergoing caesarean sections at our

tertiary referral center were enrolled. The study was conducted after the approval of institutional ethics committee. In this study two groups of pregnant females were studied.

Group 1: Women who underwent elective caesarean section.

Group 2: Women who underwent emergency caesarean section.

Patients fulfilling inclusion criteria were enrolled in the study. Complete history of the patient was taken. Examination along with relevant investigations was carried out.

Inclusion criteria: All pregnant women with singleton pregnancy, irrespective of parity status, with or without pregnancy associated complications, with or without medical or surgical high risk, with any gestational age undergoing lower segment caesarean sections at our tertiary referral center, irrespective of their registration status (patients who are referred at the time of delivery and those registered in the antenatal period) were included.

Exclusion criteria: Vaginal deliveries, multiple pregnancies and classical caesarean section were excluded from the study. Caesarean sections in covid positive subjects were also excluded from the study.

Data relating to socio-demographic information, previous obstetric history, associated medical conditions were collected for each case. Maternal age, parity, presence of maternal risk factors, history of previous CS, indication of CS in current pregnancy, fetal presentation (cephalic or non-cephalic), gestational age at delivery, type of anesthesia was recorded.

Fetal outcomes were documented

Observations and Results

There was total 3296 deliveries during the study period. Among all deliveries, 1306 women with singleton pregnancies underwent LSCS. There were 917(70.2%) emergency LSCS and 389(29.8%) elective LSCS. Fetal outcomes were recorded and compared between elective and emergency LSCS group. The data obtained was compiled and analyzed statistically using Chi-square test and T-test. Significant P-value was taken as <0.05.

Table 1: Distribution of Subjects According to Fetal Outcome (Alive/ Stillbirth)

Fetal outcome		Mode of delivery				Total	Chi-square value	P-value
		Elective (n=389)	LSCS	Emergency (n=917)	LSCS			
Alive	No	2	0.5%	22	2.4%	24	5.380	0.022
	Yes	387	99.5%	895	97.6%	1282		
Stillbirth	No	387	99.5%	895	97.6%	1282	5.380	0.022
	Yes	2	0.5%	22	2.4%	24		

The above table shows that 99.5% subjects in elective group delivered an alive baby as compared to 97.6% in emergency group, which was statistically significant (P value - 0.022).

Table 2: Distribution of Subjects According to Birth Weight of Fetus

Fetal outcome	Elective LSCS		Emergency LSCS		T	P-value
	Mean	SD	Mean	SD		
Birth weight (kg)	2.58	0.47	2.43	0.56	22.400	0.000

The above table shows that mean birth weight in elective group was 2.58±0.47 kg and 2.43±0.56 kg in emergency group, which was statistically significant (P value – 0.000).

Table 3 (A): Distribution of Subjects According to APGAR score of Fetuses

Fetal outcome		Mode of delivery				Total	Chi-square value	P-value
		Elective LSCS (n=389)		Emergency LSCS (n=917)				
APGAR (1min)	< 6	8	2.1%	62	6.8%	70	11.917	0.0005
	≥ 6	381	97.9%	855	93.2%	1236		
Total		389	100%	917	100%	1306		

Fetal outcome		Mode of delivery				Total	Chi-square value	P-value
		Elective LSCS (n=389)		Emergency LSCS (n=917)				
APGAR (5min)	< 6	3	0.8%	30	3.3%	33	6.933	0.008
	≥ 6	386	99.2%	887	96.7%	1273		
Total		389	100%	917	100%	1306		

The above table shows APGAR score of fetus at 1 minute was <6 in 2.1% subjects in elective group as compared to 6.8% in emergency group. APGAR score at 5 minutes was <6 in 0.8% subjects in elective group as compared to 3.3% in emergency

group. It was statistically significant at both 1 minute (P value – 0.0005) and 5 minutes (P value – 0.008). Further, mean Apgar score was calculated at 1 minute and 5 minutes and was found to be statistically significant between the two groups.

Table 3 (B): Comparison of APGAR score between Elective LSCS and Emergency LSCS

Fetal outcome	Elective LSCS		Emergency LSCS		t	P-value
	Mean	SD	Mean	SD		
APGAR (1min)	8.82	0.99	8.46	1.77	14.437	0.000
APGAR (5min)	8.93	0.77	8.69	1.48	8.558	0.003

Table 4: Distribution of Subjects According to Fetal Complications

Fetal outcome		Mode of delivery				Total	Chi-square value	P-value
		Elective LSCS (n=389)		Emergency LSCS (n=917)				
Respiratory distress	No	376	96.7%	814	88.8%	1190	21.011	0.000
	Yes	13	3.3%	103	11.2%	116		
MAS	No	389	100%	899	98%	1288	7.742	0.003
	Yes	0	0%	18	2%	18		
TTN	No	389	100%	912	99.5%	1301	2.219	0.330
	Yes	0	0%	5	0.5%	5		
NICU admission >24hrs	No	359	92.3%	761	83%	1120	19.341	0.000
	Yes	30	7.7%	156	17%	186		

The above table shows that fetal complications like respiratory distress, meconium aspiration syndrome and NICU admissions >24 hours were significantly more in emergency group as compared to elective group.

There was no statistically significant difference in the occurrence of transient tachypnea of newborn in the two groups.

Discussion

The present study was a one-year prospective study conducted in the Department of Obstetrics and

Gynecology Government Medical College and Rajindra hospital Patiala.

The study aimed to compare fetal outcome in elective and emergency LSCS. Before starting the study, permission was taken from ethical/ research committee of the institution. There was total 3296 deliveries during the study period. Out of total deliveries, 1306 singleton women underwent LSCS. There were 917(70.2%) emergency LSCS and 389(29.8%) elective LSCS. In our study, alive births in emergency group were 97.6% as

compared to 99.5% in elective group (P value - 0.022).

It was statistically significant.

Table 5: Comparison of Mean Apgar score in Elective and Emergency Group

	Mean APGAR score at 1 min			Mean APGAR score at 5 min		
	Elective	Emergency	P value	Elective	Emergency	P value
Elvedi-Gasparovic V et al.(2006) [16]	9.36±2.42	8.44±2.05	0.0012	9.75±0.70	9.31±1.38	0.02
Present Study (2022)	8.82±0.99	8.46±1.77	0.000	8.93±0.77	8.69±1.48	0.003

The difference between the two groups in mean APGAR at 1 min (P value – 0.000) and 5 min (P value – 0.003) was statistically significant in present study and study done by Elvedi-Gasparovic V et al. (2006) [15]. In the present study, 3.3% fetus in emergency group had APGAR < 6 at 5

minutes as compared to 0.8% in elective group. This difference was statistically significant (P value 0.008). It was comparable to the study done by Suwal A et al. (2013) [16] in which 5.38% fetus in emergency group and no fetus in elective group had APGAR < 6 at 5 minutes (P value 0.000).

Table 6 (A): Comparison of Fetal Complications in Elective and Emergency Group

Study	Respiratory distress		P value
	Elective	Emergency	
Elvedi-Gasparovic V et al. (2006) [16]	8.9%	23.40%	0.0085
Darnal N et al. (2020) [18]	12.3%	40.5%	0.02
Present Study	3.3%	11.2%	0.000

The above table shows statistically significant difference in the incidence of Respiratory distress (P value – 0.000) in the present study which was comparable to study done by Elvedi-Gasparovic V et al. (2006) [15] and Darnal N et al. (2020) [17].

Table 6 (B): Comparison of Fetal Complications in Elective and Emergency Group

Study	MAS		P value
	Elective	Emergency	
Soren R et al. (2016) [19]	0.48%	5.08%	0.0001
Darnal N et al. (2020) [18]	3.5%	45.8%	0.01
Present Study	0%	2%	0.003

In our study, MAS was significantly more in emergency group as compared to elective group (P value – 0.003) and was comparable to study done by Soren R et al. (2016) [18] and Darnal N et al. (2020) [19].

Table 6 (C): Comparison of Fetal Complications in Elective and Emergency Group

Study	NICU admissions>24 hrs.		P value
	Elective	Emergency	
Soren R et al. (2016) [19]	8.17%	14.97%	0.0001
Darnal N et al. (2020) [18]	11.7%	37%	0.03
Present study	7.7%	17%	0.000

In the present study, NICU admission>24 hours was significantly more in emergency group as compared to elective group (P value – 0.000) which was comparable to study done by Soren R et al. (2016) [18] and Darnal N et al. (2020) [17]

Table 6 (D): Comparison of Fetal Complications in Elective and Emergency Group

Study	TTN		P value
	Elective	Emergency	
Soren R et al. (2016) [19]	3.69%	4.46%	0.49
Present study	0%	0.5%	0.330

In the present study, there was no statistically significant difference in the incidence of TTN in emergency and elective groups (P value – 0.330) which was comparable to study done by Soren R et al. (2016) [18].

admissions >24 hours were significantly more in emergency group as compared to elective group. There was no statistically significant difference in the occurrence of transient tachypnea of newborn in the two groups.

Conclusion

Fetal complications like respiratory distress, meconium aspiration syndrome and NICU

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