

# Fetomaternal Outcome of Pregnant Women at Term Undergoing Cesarean Section

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## ABSTRACT

**Background:** Cesarean section is one of the most common procedures performed in obstetric practice today and is a lifesaving surgery for mother and fetus. Cesarean sections are classified traditionally, as elective cesarean section or emergency cesarean. The purpose of this study is to compare the maternal and neonatal outcomes in elective and emergency cesarean section so that measures can be taken to reduce maternal and neonatal morbidity and mortality.

**Methods:** A descriptive study including 400 pregnant women who underwent caesarean section were included in this study. Patients were subjected to elective or emergency cesarean section as per the indication and protocol of institute. were included in the study.

**Results:** During the study period there were total 1080 deliveries. The average age of the women was  $29.21 \pm 4.07$  years. Of the 400 cesarean section cases, only 2.8% had wound infection, 3.8% had fever, 4.8% urinary tract infection (UTI) whereas no women had observed with post-partum hemorrhages (PPH) and maternal death. Regarding fetal outcome, neonatal intensive care unit (NICU) admission was observed in 16%, birth asphyxia was 2.3% poor Apgar score 2.5% and neonatal death was not observed. Rate of fever, UTI, wound infection, need of resuscitation and poor Apgar score was significantly high in emergency section than elective caesarean section whereas NICU admission was not statistically significant.

The most common indication of emergency cesarean section were fetal distress and for previous LSCS.

**Conclusions:** Emergency cesarean was associated with increased maternal and perinatal complications than in elective cesarean section.

**Keywords:** Cesarean section; elective caesarean section; emergency caesarean section; neonatal morbidity and mortality.

## INTRODUCTION

Cesarean section (CS) is the most common procedure in obstetrics today and is a lifesaving surgery for mother as well as fetus. Cesarean sections are classified, traditionally, as elective cesarean section or emergency cesarean section. There is no justification for any region to have CS rates higher than 10-15%. In Nepal, the caesarean rates among tertiary hospitals ranged from 12% to 25% in 2012.<sup>1</sup> It doubled from 2003 to 2018 to reach 21% and is increasing annually by 4%.<sup>2</sup> In a retrospective cross-sectional study done by Dhakal et al. out of 695 cesarean section cases women who had maternal complications, most of them had postpartum

hemorrhage (30.8%) whereas only (3.8%) had wound infection and its consequences, shock (11.3%), sepsis (15.3%), mastitis (19.2%). Where as it was found that most of the newborn babies had APGAR score of six or more both within one minute (94.5%) and within five minutes (97.9%).<sup>3</sup> In a retrospective analysis done by Pradhan et al at Kirtipur Hospital reported out of 660 cesarean section cases 62.5% cases had emergency c-section and 37.6% cases had elective c-section, where postoperative complications were mainly postoperative fever 39.6%, thrombophlebitis 20.8%, PPH 20.8%, wound infection 14.6%, mastitis 4.2%. Majority of neonates had good APGAR score i.e 7-10 at 5 mins.<sup>4</sup>

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The purpose of this study is to compare the maternal and neonatal outcomes in elective and emergency cesarean section so that measures can be taken to reduce maternal and neonatal morbidity and mortality.

## METHODS

This descriptive study was conducted in the Department of Obstetrics and Gynecology for six months from 1<sup>st</sup> January 2021 to 30<sup>th</sup> June 2021. A sample size of 400 was calculated using formula for single proportions, using the outcome variable puerperal pyrexia, which was 2.29% in patients undergoing emergency caesarean section.<sup>5</sup> Patients aged 20-40 years with parity one or more, singleton full term pregnancy was included in the study group via consecutive non-probability sampling. Patient with classical cesarean section, previous two cesarean section, patients with maternal medical and surgical diseases like pregnancy induced hypertension, eclampsia, gestational diabetes, antepartum hemorrhage, fetal anomalies, were excluded from the study.

Approval from Institutional Review Committee (IRC) of pfect-Nepal was obtained and study was conducted at Kathmandu Model Hospital. Patients meeting the inclusion criteria was selected for the study and enrolled from labor room. Informed consent was taken after explaining about the purpose, risk and benefit of the study. Brief history taking and relevant examination was done. The expected date of delivery and gestational age was calculated from her last menstrual period. Patients was subjected to elective or emergency cesarean section as per the indication and protocol of institute. All required data of maternal and fetal outcome including demographic status was filled in Proforma. Maternal outcome in terms of post-partum hemorrhage (PPH), post-operative fever, urinary tract infection, wound infection, maternal mortality, was recorded. Fetal outcome in two groups of emergency and elective cesarean sections in terms of APGAR score at 5 min, good Apgar score >7/10, poor Apgar score <7/10, need of neonatal intensive care unit admission, birth asphyxia and neonatal death. All cases under study were followed up till up to 1 week following discharge for any maternal and fetal complications following CS. The maternal and fetal outcomes of each case were entered in the predesigned Proforma.

All Data collected entered in Microsoft Office Excel worksheet and statistical Analysis was done using Statistical Package for social science (SPSS) version 25.

Statistical analysis was done with appropriate method. Quantitative variables like age of women, gestational

age, body mass index (BMI), parity, and Apgar score were computed for mean and standard deviation. Qualitative variables like types of cesarean section, post-partum hemorrhage, wound infection, urinary tract infection, maternal death, birth asphyxia, NICU admission, was presented as frequency and percentage.

Feto-maternal outcome was compared between emergency and elective cesarean section and chi-square test was applied. P value less than 0.05 was considered as significant.

Furthermore, effect modifiers like age, parity, BMI, occupation, educational status was dealt through stratification. Post stratification, Chi Square test was applied and significance level was calculated to see the strength of association between elective and emergency cesarean section.

## RESULTS

A total of 400 pregnant women who underwent caesarean section were included in this study. The average age of the women was 29.21±4.07 years. Mean gestational age, weight, height, BMI, parity and Apgar score of the women are also reported in Table 1.

**Table 1. Demographic characteristics of the patients (n=400).**

Variables	Mean	Std. Deviation
Age (Years)	29.21	4.07
Gestational Age (Weeks)	38.51	0.95
Weight (kg)	71.65	12.03
Height (cm)	154.89	3.93
BMI (kg/m <sup>2</sup> )	21.90	3.51
Parity	1	0.53
Apgar Score	8.3	1.12

There were 7.25% women illiterate, 56% primary educated and 36.75% were secondary educated. Almost 95% were housewife. Out of 400, 200 (50%) were elective and 200 (50%) were emergency caesarean section. Fetal and maternal outcomes in patients undergoing cesarean section are presented in table 2. Of the 400 cesarean section cases, only 2.8% had wound infection, 3.8% had fever, 4.8% UTI whereas no women had observed with PPH and maternal death. Regarding fetal outcome, NICU admission was observed in 16%, birth asphyxia was 2.3% poor Apgar score 2.5% and neonatal death was also not observed. Comparison of fetal and maternal outcome between elective and emergency caesarean section is shown in table 3. Rate of fever, UTI, wound

infection, need resuscitation and poor Apgar score was significantly high in emergency cesarean section than in elective cesarean section whereas NICU admission was not statistically significant.

**Table 2. Fetal and maternal outcome in patient undergoing cesarean section.**

Fetal and Maternal Outcome	Frequency	Percentage
Postpartum hemorrhage	0	0%
Fever	15	3.8%
Wound infection	10	2.5%
urinary tract infection	19	4.8%
Maternal death	0	0%
Birth asphyxia	9	2.3%
NICU admission	64	16%
Apgar		
Good	390	97.5%
Poor	10	2.5%
Neonatal Death	0	0%

**Table 3. Comparison of feto-maternal outcome between elective and emergency cesarean section.**

Fetal and maternal Outcome	Type of Caesarean Section		P-Value
	Elective n=200	Emergency n=200	
PPH	0	0	NA
Fever	3(1.5%)	12(6%)	0.018
UTI	3(1.5%)	16(8%)	0.002
Wound Infection	2(1%)	8(4%)	0.05
Maternal Death	0	0	NA
Need Resuscitation	1(0.5%)	8(4%)	0.037
NICU Admission	27(13.5%)	37(18.5%)	0.173
Apgar Score	199		
Good	(99.5%)	191(95.5%)	0.020
Poor	1(0.5%)	9(4.5%)	
Neonatal Death	0	0	NA

## DISCUSSION

Cesarean section is associated with increased risk of maternal and perinatal morbidity and mortality in comparison to vaginal delivery.<sup>6</sup> It is seen that morbidity and mortality are associated more with emergency cesarean sections than with elective ones.<sup>7,8</sup> According to WHO, the CS rate should be in between 10-15% as rate above this has not shown any improvement in the

maternal and perinatal outcomes.<sup>9</sup> Based on the data from 121 countries, the trend analysis showed that between 1990 and 2014, the global average CS rate increased 12.4% (from 6.7% to 19.1%) with an average annual rate of increase of 4.4%.<sup>10</sup> In this study the average age of the women was 29.21±4.07 years. Out of 400, 200(50%) were elective and 200(50%) were emergency caesarean section. In Subedi et al study, the mean age in elective cs was 27.98±4.083 and emergency cs was 25.71±4.809.<sup>11</sup> Among 461 cesarean section, 399 (86.5%) were emergency and 62 (13.5%) were elective cs. Wound infection and dehiscence 2.8%, fever 3.8%, UTI 4.8% were found as minor maternal complications, which is consistent with the studies done in Al Qassimi hospital, UAE ·Shalamar hospital, Lahore Pakistan·Jimma hospital, Ethiopia.<sup>12-14</sup> Despite the full coverage of antibiotics, surgical site infection was common this might be due to patient factor, surgeon factor, and environmental factors.

NICU admission was observed in 16%, birth asphyxia was 2.3% and poor Apgar score 2.5% were reported as fetal complications after cesarean delivery. This finding is in line with findings found in northwest Nigeria study Jimma, south west Ethiopia, Atat Hospital, Gurage zone Ethiopia.<sup>15-17</sup> This might be due to a lot of mothers with obstetric and medical conditions undergo caesarean delivery without checking fetal lung maturity to save the life of mother.

In this study rate of fever, UTI, wound infection, need resuscitation and poor apgar score was significantly high in emergency section than elective caesarean section whereas NICU admission was not statistically significant. Burshan et al. also stated that emergency CS was associated with increased maternal morbidities and it was statistically significant in their study.<sup>18</sup>

Another study from Nepal compared outcomes across 254 CS; however, the number of emergency CS was much lower than our study.<sup>19</sup> Similar to Najam et al they found higher morbidity in emergency CS group reflected by a higher incidence of the length of stay, fever, UTI and wound infection rates.<sup>20</sup>

Suwal et al in their study from Nepal reported a significantly higher incidence of Apgar scores ≤6 in the emergency CS group.<sup>5</sup> Similar to our study, they did not find an association between intraoperative complication and type of CS. Although wound infection rates were similar, the incidence of fever and UTI was higher in the emergency CS group. They postulated that this may be more reflective of poor antenatal care in these patients.

## CONCLUSIONS

Finding of this study showed that wound infection, fever, UTI were the unfavorable maternal outcomes whereas NICU admission, asphyxia and poor Apgar score were Unfavorable fetal outcomes. The rate of cesarean section is high in a tertiary care centre. Emergency cesarean is always associated with increased maternal and perinatal complications than the elective cesarean ones. Robson's ten classification system should be implemented in every tertiary care center to improve maternal and perinatal outcome as well as to decrease the cesarean section rate.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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