

## ORIGINAL ARTICLE

## STUDY OF MATERNAL OUTCOME OF EMERGENCY AND ELECTIVE CAESAREAN SECTION IN A SEMI-RURAL TERTIARY HOSPITAL

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## ABSTRACT

**Introduction:** Caesarean section is one of the most performed surgical procedures all over the world. It is associated with high morbidity, although, the morbidity has come down over the years(1)Morbidity and mortality are seen to be more with emergency procedures than elective procedure.

**Aim:** To study the maternal morbidity of elective and emergency caesarean sections in a tertiary care teaching hospital in semirural area

**Methodology:** It is a comparative study on the maternal outcomes in elective and emergency caesarean sections. Total 165 patients undergoing caesarean section in the tertiary teaching hospital in semi- rural area were studied. Data was collected and analyzed

**Conclusion:** Maternal morbidity was found to be more in emergency caesarean section than in elective caesarean section.

**Keywords:** Caesarean Section, Maternal outcome, Diabetes

## Abbreviations

CS-Caesarean section

GDM-Gestational Diabetes Mellitus

GHT-Gestational Hypertension

CPD-Cephalopelvic disproportion\

IUGR-Intrauterine growth retardation

UTI- Urinary tract infection

PPH- post- partum hemorrhage

APH –antepartum hemorrhage

## INTRODUCTION

Caesarean delivery is defined as the birth of a fetus through incisions in the abdominal wall (laparotomy) and the uterine wall (hysterotomy). This definition does not include removal of the fetus from the abdominal cavity in the case of rupture of the uterus or in the case of an abdominal pregnancy.

Caesarean section is a lifesaving procedures that is firmly ensconced in obstetric practice. Today, it is one of the most commonly performed surgical procedures, but unfortunately caesarean sections are associated with a great deal of maternal morbidity.

Before the availability of wide spectrum antibiotics, blood transfusion facilities and good anesthetic techniques, caesarean section was used only to save the life of the mother and was met with the mortality of 50-70%. With the immense advances in anesthetic services

and improved surgical techniques, the morbidity and mortality of this procedure has come down considerably. In a previous study it was found that maternal mortality due to caesarean delivery was 2.2 per 1,000,000 in the United States(1).Elective caesarean is a term used when the procedure is done at a pre-arranged time during pregnancy to ensure the best quality of obstetrics, anesthesia, neonatal resuscitation and nursing services. The procedure is termed as emergency caesarean section when it is performed due to unforeseen or acute obstetric emergencies(2) .It is seen that morbidity and mortality are associated more with emergency procedures than with elective procedures (3)(10)

With this background the study was conducted to Study maternal morbidity of elective and emergency caesarean sections in a tertiary care teaching hospital in semirural area.

## METHODOLOGY

This was a Observational study conducted in a tertiary care teaching hospital in a semi-rural area during one year period.

**Inclusion criteria:** All caesarean sections performed at the hospital during the one year period was included. There are no exclusion criteria.

The patients were divided into those undergoing elective caesarean section and those undergoing emergency caesarean section. Detailed history and examination was done and the indications for caesarean section, the per-operative findings and complications noted in detail with the help of a proforma. Information regarding post-operative morbidity was also collected. Consent from the subject was obtained, prior to collection of any data No interventions were made in this study

The outcomes studied were-Incidence of elective and emergency caesarean sections, indications, age distribution, gravida, antenatal complications, intra-operative and post-operative complications Duration of hospital stay of more than 6 days was considered as an indicator for post-operative morbidity.

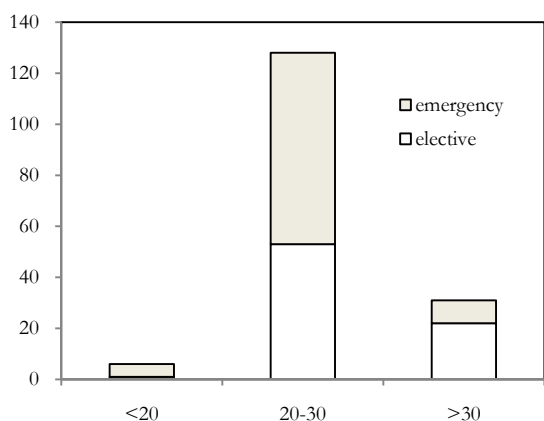
The data collected, were coded and fed into the computer using MS Excel and analyzed using SPSS V 19 with the assistance of a statistician. Descriptive statistics such as mean, standard deviation and percentage was used and to find association chi square test was used.

Ethical clearance was obtained from the hospital ethical committee.

**RESULTS**

During the study period the total number of deliveries was 575. There were 165 cases of caesarean section (28.7%), out of which 76 cases were elective (46.06%)and 89 cases were emergency caesarean sections (53.9%).

The mean age in elective and emergency group was 28yrs and 25yrs respectively.



**Fig 1 Distribution according to the age**

In Elective caesarean section group 19.7% were primigravida and 80.3% multigravida whereas in the emergency caesarean section group it was 70.8% and 29.2% respectively

**Table 1: Distribution of Study Participants according to Gravida**

Obstetric	Elective CS (%)	Emergency CS (%)
Primi	15(19.7%)	63(70.8%)
Multi	61(80.3%)	26(29.2%)

In elective caesarean group 1.3% were early preterm, 1.3% late pre term and the rest 97.4% term CS. In the emergency caesarean group 1.1% was early pre-term 16.9% late pre-term and the rest 82% term. Mean period of gestation in which caesarean section was done was similar in both groups, i.e. 38 weeks

Occurrences of antenatal complications were found similar in both groups i.e. 48%.

In the emergency caesarean group, incidence of GDM, Gestational Hypertension and malpresentation was less than that in the elective caesarean group.

**Table 2: Distribution of Study Participants according to Antenatal complication**

Antenatal complications	Elective (%)	Emergency (%)
GDM	16(21.1)	15(16.9)
GHT	9 (11.8)	4 (4.5)
Malpresentation	10(13.2)	6(6.7)
Twin gestation	0	5(5.6)
IUGR	4(5.3)	9(10.1)
Oligamnios	3(3.9)	5(5.6)
Obstetric cholestasis	0	4(4.5)
Heart disease	1(1.3)	0
APH	1(1.3)	3(3.4)

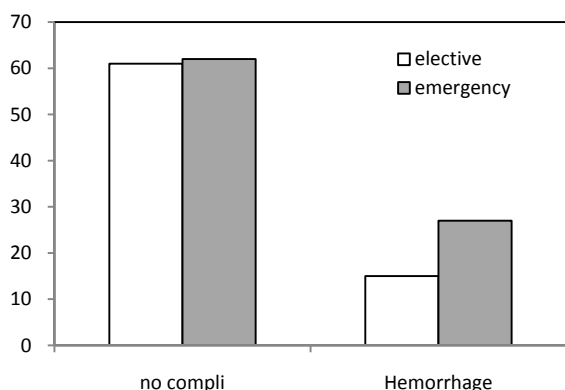
Most of the elective caesarean sections were done for previous caesarean section (78.9%) and malpresentation (14.5%). In emergency caesarean section group, fetal distress (30.3%), previous caesarean section (18%) and failed induction (18%) were the main indications.

**Table 3: Distribution of Study Participants according to Indications of Caesarean section**

Indications	Elective (%)	Emergency CS (%)
Previous caesarean section	60(78%)	16(18)
Dystocia	0	8(9)
Mal presentation	11(14.5)	4(4.5)
Fetal distress	0	27(30.3)
Failed induction	0	16(18)
CPD	1(1.3)	8(9)
Abruption	0	3(3.4)
Placenta praevia	1(1.3)	1(1.1)
Twins	0	4(4.5)
Maternal request	0	1(1.1)
IUGR	3(3.9)	1(1.1)

Emergency caesarean section was found to be associated more with intra operative complications than elective caesarean section. The difference found was not significant. Excessive bleeding was the complication present in both groups. No cases of bladder injury was seen in both the groups.

Post-operative complications were found to be significantly higher (47.2%) in emergency caesarean sections when compared to elective caesarean section (17.1%).



**Fig 2: Intra-operative Complications**

Infections contributed to 43.9% in emergency caesarean section whereas it was 11.7% in elective caesarean section.

Infections seen were UTI, respiratory infection, wound infection. Respiratory infection contributed to 4.5% in emergency as compared to 3.9% in elective caesarean section (p=0.862). Wound infection contributed to 12.4% in emergency as compared to 3.9% in elective caesarean section. (p=0.053).UTI contributed to 27% in emergency caesarean section as compared to 3.9% in elective caesarean section (p=0.001).

The only anesthetic complication seen in both the groups was spinal headache which contributed to 3.4% in emergency and 3.9% in elective groups. This difference was not statistically significant (p=0.084%). There was no case of thromboembolism in both the groups. One case of secondary PPH was reported in emergency caesarean section and one case of caesarean hysterectomy was done for atonic PPH in one of the elective caesarean section case. Re-hospitalization was required in one case each of elective and emergency caesarean section.

Extended hospital stay is found more in emergency caesarean section group when compared to elective caesarean section group; this is due to the increased post-operative morbidity associated with emergency caesarean section. In the elective CS group 96.1% had hospital stay for 6 days and 92.1% of the emergency group, had hospital stay of 6 days. When the chi square test was applied  $\chi^2=1.11$ , with p value of 0.293 which was found to be significant.

**Table 4: Distribution of Study Participants according to Post-operative complications**

Post OP complications	Elective CS (%)	Emergency CS (%)	$\chi^2$	P
Spinal headache	3(3.9)	3(3.4)	0.04	0.844
UTI	3(3.9)	24(27)	15.87**	0.001
Respiratory Infection	3(3.9)	4(4.5)	0.03	0.862
Wound Infection	3(3.9)	11(12.4)	3.74	0.053
Thrombo- embolism	0	0	-	-
Secondary PPH	0	1(1.1)	0.86	0.354
Re- Hospitalization	1(1.3)	1(1.1)	0.01	0.910
Vesico Vaginal Fistula	0	0	-	-
Caesarean hysterectomy	1(1.3)	0	1.18	0.278

\*\* significant at 0.01

**Table 5: Distribution of Study Participants according to Neonatal complications**

Neonatal complications	Elective CS (%)	Emergency CS (%)	$\chi^2$	P
Present	7(9.2)	38(40.4)	21.04**	0.001
Absent	69(90.8)	56(59.6)		

In the present study, 40.4% of babies delivered by emergency caesarean section developed neonatal complications whereas only 9.2% of babies delivered by elective caesarean section developed neonatal complications. The difference was significantly higher.

**DISCUSSION**

Caesarean sections have been long practiced as a lifesaving procedure for the mother and fetus. The incidence

of caesarean section has risen considerably over the years and is done for even trivial indications. The advances in the field have reduced maternal mortality considerably. But the problem of maternal and fetal morbidity after caesarean section is high. In the index study the rate of caesarean section was 28.7% out of which elective caesarean section was 46.06% and emergency caesarean section was 53.9%.This is comparable to the caesarean section rate in tertiary hospitals in Raipur, India (26.2%)(3)

The mean age in elective and emergency group was 28 years and 25years. respectively. In a previous study the mean age was 28 years in both the groups(4)In another study 77.7%patients were in the age group of 20-30 yrs.(4).There is regional differences in the age group as evidenced by different studies

In the elective caesarean section group 19.7% were primigravida and 80.3% multigravida whereas in the emergency caesarean section group it was 70.8% and 29.2% respectively in our study. In elective caesarean section group the percentage of multi gravida was high because 78% of elective caesarean sections were done for previous caesarean section cases. In a study reported primigravida was 22%, multigravida were 78% in emergency caesarean section group and 8% primi gravida and 92% in elective caesarean section group(11). In our study more multigravida underwent elective caesarean sections and major indication was previous caesarean section

In the index study 97.4% had term elective caesarean sections and 82% had term emergency caesarean section

In elective caesarean section group 48.7% had antenatal complications, those complications being 21.1% GDM, 11.8% Gestational Hypertension, 13.2% Malpresentation, 5.3% IUGR, 3.9% Oligamnios, 1.3% Heart disease and 1.3% Antepartum hemorrhage.

In the emergency caesarean section group 48.3% had antenatal complications, the complications being 16.9% GDM, 4.5% Gestational hypertension, 6.7% Malpresentation, 10.1% IUGR, 5.6% twin gestation, 5.6% Oligamnios, 4.5% Obstetric cholestasis and 3.4% antepartum hemorrhage.

In elective caesarean section group, previous caesarean section was the main reason for caesarean section accounting for 78%, others being malpresentation 14.9%, IUGR 3.9%, CPD 1.3% and placenta previa 1.3%. This is comparable to other reported studies where repeat caesarean section was 30.7% and malpresentation 17.1%(5). The increased incidence of repeat caesarean section is due to the absence of patients opting for vaginal birth after caesarean section.

In emergency caesarean section group fetal distress was the main reason for caesarean section, accounting for 30.3%. Others were 18% each for previous caesarean section and failed induction, 9% each for dystocia & CPD, 4.5% each for malpresentation and twins, 3.4% for abruption, 1.1% each for placenta previa, IUGR and caesarean delivery on maternal request. In a previously reported study the leading indication for emergency caesarean section was cephalopelvic disproportion (39.3%), while antepartum hemorrhage and fetal distress followed in that order(6). Fetal distress is by far a major indication for emergency caesarean section

In the index study, intraoperative complications were more for emergency group (30.3%) when compared to elective group (19.7%). The major complication that developed in both groups was excessive bleeding 30.3% and 19.7%. The difference was of no statistical significance ( $p=0.119$ ). There were no cases of bladder injury in both the groups. In studies reported previously also intra operative complications were associated more with emergency caesarean section than with elective caesarean section. Massive hemorrhage was the most common complication seen (4).

In our study postoperative complications were significantly more in emergency group (47.2%) when compared to elective group (17.1%). Similar conclusions were obtained in previous studies done (38.67% vs 22.28%)(7).

Infections contributed to 43.9% in emergency caesarean section whereas it was 11.7% in elective caesarean section. Infections seen in our study included UTI, respiratory infection and wound infection. Respiratory infection contributed to 4.5% in emergency as compared to 3.9% in elective caesarean section ( $p=0.862$ ). Wound infection contributed to 12.4% in emergency as compared to 3.9% in elective caesarean section ( $p=0.053$ ). UTI contributed to 27% in emergency caesarean section as compared to 3.9% in elective caesarean section ( $p=0.001$ ).

The results obtained are comparable to various studies reported in the literature(8)(6).

In one study, postoperative complications were more in patients who had emergency CS compared with patients undergoing elective CS such as fever (26.0% and 16.1%), wound infection (12.7% and 6.5%) and urinary tract infection (14.3% and 5.4%)(8).

In our study, the only anesthetic complication seen in both groups was spinal headache which contributed to 3.4% in emergency and 3.9% in elective groups which was not statistically significant.

There was no case of thromboembolism in both groups. One case of secondary PPH was reported in the emergency caesarean section and one case of caesarean hysterectomy for atonic PPH reported in the elective caesarean section. Re-hospitalization was required in one case each of elective and emergency caesarean section. In both cases it was for wound infections.

There were no maternal deaths during the period of study in both cases.

In the present study only 3.9% patients in elective caesarean section group required more days of hospital stay whereas in emergency caesarean section group 7.9% required more days of hospital stay. This was significant as duration of hospital stay was one of our study criteria to assess the maternal morbidity. In a previous study also it was found that postoperative hospital stay was significantly prolonged in patients who had undergone emergency caesarean section when compared to elective caesarean section (12)

## CONCLUSION

Maternal morbidity was found to be more in emergency caesarean sections than in elective caesarean sections. Emergency caesarean sections are unavoidable. But we can definitely bring down the rates of emergency caesarean section by proper selection of cases for induction of labor and by initiating active management of labor. This study is to highlight the fact that caesarean sections done as an emergency for any indication has its share of

problems to the mother and hence caution must be exerted in proper planning of the cases. Further audits are mandatory to study the present indications for emergency caesarean sections and avoid any unplanned interventions.

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