

ORIGINAL RESEARCH

COMPARATIVE STUDY OF FETOMATERNAL OUTCOME IN PATIENTS UNDERGOING SELECTIVE VS EMERGENCY C SECTION AT A TERTIARY CARE HOSPITAL

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ABSTRACT

Background: Caesarean section or 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 uterus or in case of an abdominal pregnancy. Caesarean section can be considered one the earliest forms of modern birth technology

Aim & Objective: 1.To study the maternal morbidity, mortality, perinatal outcome in patients, undergoing elective and emergency C-section. 2.To compare the maternal morbidity, mortality, perinatal outcome in patients, undergoing elective and emergency C-section.

Method: Study design: Prospective study. Study setting: Department of Obstetrics and Gynecology at tertiary care centre. Study duration:.....Study population: The study population included all the women undergoing elective c-section and emergency c-section.

Sample size:

Results: In Group A: 44% of patients are in the age group of 18-24years and in Group B: 74% of patients are in the age group of 18-24years. A statistically significant value of $P=0.01$, is obtained suggesting most of the patients undergoing C-section (elective/emergency) are in age group of 18-24years. Strongly significant (P value: $P<0.01$). The most common risk factor is Previous LSCS. 14(28%) patients had previous LSCS in Group A (Elective C-Section) and 7(14%) patients had previous LSCS in Group B (Emergency C-Section). From the above graph, it can be observed that the patients with risk factor of Previous LSCS are more common with Elective C-Section group compared to Emergency C-Section group. Post-operative complications in Caesarean section were more in Emergency Caesarean Section when compared to Elective caesarean section. PPH is the most common in Emergency group when compared to Elective group. Wound infection is the 2nd most common complication in Emergency group.

Conclusions: The factors associated with caesarean section are age, parity, multiple pregnancy, maternal weight gain, and birth weight. Including these factors, the caesarean section is justified under certain circumstances such as cephalo pelvic disproportion and contracted pelvis, dystocia due to soft parts, inadequate uterine forces, antepartum hemorrhage, pre- eclamptic toxemia, eclampsia, fetal distress and prolapse of the cord, malpresentation, maternal distresses such as heart problems, bad obstetric history, habitual intrauterine death of the fetus and elderly primigravida.

Keywords: LSCS, Emergency C-Section, Elective C-Section, complication, outcome

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INTRODUCTION

Caesarean section or caesarean delivery is defined as the birth of a fetus through incisions in the abdominal wall (Laparotomy) and the uterine wall (Hysterotomy). (1) This definition does not include removal of the fetus from the abdominal cavity in the case of rupture of uterus or in case of an abdominal pregnancy. Caesarean section can be considered one of the earliest forms of modern birth technology. In the 20th century there have been many new developments in the field of medicine rendering increased safety to all surgical operations, which is mainly due to the availability of antibiotics, safe anesthesia and blood transfusion facilities.

The same applies to caesarean section also, which has become an accepted standard procedure among the modern obstetric procedures reducing maternal morbidity and mortality. (2) In many countries all over the world c-section birth rates are rising. In some countries, like Brazil or Taiwan, caesarean birth rates are skyrocketing up to 60%, because giving birth this way is considered to be fashionable. In the USA more than one million women, 1 in 3, give birth by caesarean every year. This high prevalence represents the culmination of many years of escalating caesarean deliveries in the United States. (3,4)

In 2007 the Belgian medical profession was very 'proud and delighted' because in 2007 the average c-section rates dropped from 17.5% to 17%. For many years, the WHO is warning against the rising caesarean births. The WHO has stated that about 10 to 15% of all births should be c-sections (Wagner, 1994). This raises the question about what factors play a role in rising caesarean section rates and in these differences. (5)

The overall caesarean delivery rate increased progressively in U.S each year between 1965 & 1988, rising from 4.5% of all deliveries to almost 25%. In response to this increase, the United States public Health Service (1991) set a goal of an overall 65% caesarean rate for year 2000. From 1970-2007, the caesarean delivery rate in the United States rose from 4.5% of all deliveries to 31.8%. This increase has been steady. (6) According to WHO, the C-Section should be restricted to 10-15% to have a healthy maternal and infant environment. A study by WHO, which reviewed 110,000 births from nine countries in Asia during 2007-2008, 27% births were by C-section. (7)

Since 1985, WHO recommended a 10-15% of C-Section rate in developing countries. (8)

In India, the incidence of caesarean section is 10-15%. However, the rate of caesarean delivery has increased in the most recent years and in institutional deliveries, the caesarean section rate is as high as 30%. (9)

In developed countries maternal mortality is at the lowest. Now constant efforts are being made to bring down the perinatal mortality. Consequently, many of the indications for caesarean section are solely concerned with the interest of the infant. (10) With the growing emphasis on the antenatal and intrapartum status of the fetus and with the addition of laboratory status of internal fetal monitoring, an increased rate of caesarean section should be expected. However, there must be an optimal rate of caesarean section in which the maternal risks are in balance with the benefits of the fetus. (11)

AIM AND OBJECTIVES

1. To study the maternal morbidity, mortality, perinatal outcome in patients, undergoing elective and emergency C-section.
2. To compare the maternal morbidity, mortality, perinatal outcome in patients, undergoing elective and emergency C-section.

MATERIAL AND METHODS

Study design: Prospective study

Study setting: Department of OBGY at tertiary care centre

Study duration:

Study population: The study population included all elective and emergency LSCS cases

Inclusion criteria:

1. All elective and emergency LSCS cases

Exclusion criteria:

1. Normal vaginal delivery
2. Vaginal Birth After Caesarean (VBAC)
3. Instrumental deliveries

Approval for the study:

Written approval from Institutional Ethics committee was obtained beforehand. Written approval of OBGY department and related department was obtained. After obtaining informed verbal consent from all Subjects were included in the study

Sample Size: 100

Sampling technique: Using purposive sampling technique a total of 200 Subjects were included in the study.

Methods of Data Collection and Questionnaire:

Detailed histories from the term gestation patients were taken. The procedure of the study was explained and required consent for the study was taken. Examination of the patient was done and all relevant data was obtained. Details of indications for caesarean section, nature of operation, condition of the mother, child and the perinatal outcome were assessed for post-operative period of 7days.

In the antenatal clinic, at the time of the first visit, the patient's identity was obtained with emphasis on age, parity, obstetric history, period of amenorrhoea and presenting complaints, any complaints involving cardiovascular, respiratory and renal system were noted. Symptoms pertaining to the present pregnancy were also noted vaginal bleeding, and vaginal discharge if any.

Relevant past and family history were noted. Menstrual history with emphasis on regularity of cycle and date of last menstrual period was taken. In the obstetric history, history of previous pregnancy and labour was recorded in detail. A detail history of the previous caesarean section was also taken.

The indication for the caesarean recurrent/ non recurrent, whether it was elective/emergency, Place of operation, Period of gestation at which it was done, whether patient was in labour and if so duration of labour, whether labour was induced or spontaneous, history of any blood transfusion, postoperative period with regard to presence or absence of fever or wound infection, total number of days in hospital.

A general examination with emphasis on signs of pallor, pedal oedema, pulse, BP, respiratory rate were noted. Height and weight of the patient were recorded. A detailed obstetrical examination was conducted including fetal presentation. If previous caesarean section was done, then the nature of healing was noted. Scar tenderness was looked for at each antenatal visit. Patient was immunized with 2doses of tetanus toxoid . Investigations were done.

Data entry and analysis:

The data were entered in Microsoft Excel and data analysis was done by using SPSS demo version no 21 for windows. The analysis was performed by using percentages in frequency tables, $p < 0.05$ was considered as level of significance using the Chi-square test.

RESULTS AND OBSERVATIONS**Table 1: Group A: Elective Caesarean section and Group B: Emergency Caesarean section**

Age in years	Elective Caesarean section	Emergency Caesarean section	Total
18-24	22(44%)	37(74%)	59(59%)
25-29	18(36%)	10 (20%)	28(28%)
30-34	9(18%)	2(4%)	11(11%)
35 & above	1(2%)	1(2%)	2(2%)
Total	50(100%)	50(100%)	100(100%)

In Group A: 44% of patients are in the age group of 18-24years and in Group B: 74% of patients are in the age group of 18-24years. A statistically significant value of $P=0.01$, is obtained suggesting most of the patients undergoing C-section (elective/emergency) are in age group of 18-24years. Strongly significant (P value: $P<0.01$)

Table 2. Distribution of cases according to risk factor

Risk Factors	Elective C-S (n=50)	Emergency C-S(n=50)	Total (n=100)	P Value
No	28(56%)	31(62%)	59(59%)	
Yes	22(44%)	19(38%)	41(41%)	
1) Previous LSCS	14(28%)	7(14%)	21(50%)	0.08
2) Known case of Hypothyroidism	3(6%)	2(4%)	5(12.1%)	0.64
3) Twin Fesation	0(0%)	1(2%)	1(2.4%)	1
4) Severe CPD	1(2%)	2(4%)	3(7.3%)	0.55
5) Gestation HTN	2(4%)	1(2%)	3(7.3%)	0.55
6) IUGR	1(2%)	0(0%)	1(2.4%)	0.31
7) Pre-Eciampsia	0(0%)	3(0.1%)	3(7.3%)	0.07
8) Placenta previa	1(2%)	1(2%)	2(4.8%)	1
9) Breech presentation	0(0%)	1(2%)	1.(2.4%)	0.31
10) Transverse lie	0(0%)	1(2%)	1.(2.4%)	0.31
	50(100%)	50(100%)	100(100%)	

The most common risk factor is Previous LSCS. 14(28%) patients had previous LSCS in Group A (Elective C-Section) and 7(14%) patients had previous LSCS in Group B (Emergency C-Section). From the above graph, it can be observed that the patients with risk

factor of Previous LSCS are more common with Elective C-Section group compared to Emergency C-Section group.

Table 3. Distribution of cases according to intraoperative complication

Intra-operative complications	Elective C-S (n=50)	Emergency C-S(n=50)	Total (n=100)
No	30(60%)	22(44%)	52(52%)
Yes	20(40%)	28(56%)	48(48%)
1) Uterine angle extended with bleeding	1(2%)	7(14%)	8(8% %)
2) PPH	2(4%)	8(16%)	10(10%)
3) Dense adhesion	7(14%)	0(0%)	7(7%)
4) Bladder injury	1(2%)	6(12%)	7(7%)
5) Adhesions between rectus sheath and muscie	4(8%)	0(0%)	4(4%)
6) Injury to Ascending branch of uterine artery	1(2%)	7(14%)	8(8%)
7) Adherent placenta	4(8%)	0(0%)	4(4%)
Inferences	Incidence of Intra-operative complications were significantly more associated with emergency C-S with $P<0.000048^{**}$		

PPH is the most frequent intra-operative complication in Emergency C-Section when compared to Elective C-Section. Uterine angle extended with bleeding is the 2nd common complication in Emergency C-Section.

Table 4: Distribution of cases according to Post operative complication

Post- operative complications	Elective C-S (n=50)	Emergency C-S(n=50)	Total (n=100)	P Value
No	30(60%)	10(20%)	40(40%)	
Yes	20(40%)	40(80%)	60(60%)	
1) PPH	3(6%)	10(25%)	13(21.6%)	0.06
2) Wound Infection	2(4%)	8(20%)	10(16.6%)	0.02
3) UTI	1(2%)	8(20%)	9(15%)	0.07
4) Breast Engorgement	0(0%)	7(17%)	7(11.6%)	0.01
5) Puerperal Pyrexia	5(10%)	0(0%)	5(8%)	0.02

6) Respiratory tract infection	1(2%)	7(17%)	8(13.3)	0.04
7) Anemia	4(8%)	0(0%)	4(6%)	0.04
8) Mastitis	4(8%)	0(0%)	4(6%)	0.04
9) Wound gaping	0(0%)	0(0%)	0(0%)	
Inferences	Incidence of post-operative complications were significantly more associated with emergency C-S with $P < 0.000014^{**}$			

Post-operative complications in Caesarean section were more in Emergency Caesarean Section when compared to Elective caesarean section. PPH is the most common in Emergency group when compared to Elective group. Wound infection is the 2nd most common complication in Emergency group.

Table 5: Distribution of cases according to birth weight of newborn after LSCS

Birth weight	Elective section	Caesarean	Emergency Caesarean section	Total
<1.5	0(0%)		0(0%)	0(0%)
1.5-2.5	9(18%)		20 (40%)	29(29%)
2.5-3.5	38(76%)		28(56%)	66(66%)
>3.5	3(6%)		2(4%)	5(5%)
Total	50(100%)		50(100%)	100(100%)

Babies weighing 2.5kg or more in the Group A (Elective C-Section) were 38(76%), whereas in Group B (Emergency C-Section) were 28 (56%) with P value of $<0.03^{**}$.

This indicates better Antenatal care in the Elective Group. Low birth weight babies (<2.5kg) were 18% and 40% in Group A and Group B respectively ($P \leq 0.03^{**}$).

DISCUSSION

The present study is a comparative study of maternal morbidity, mortality and neonatal morbidity, mortality in patients who underwent caesarean section (elective/ emergency).

The estimate of Caesarean section rates in India is 7.1% in the year 1998 and 16.7% to 18% in the year 2015-16.

Caesarean section rates were 18-23 % in the United States and in United Kingdom.(12)

Maternal age at the time of caesarean section:

Caesarean delivery rates increased with advancing maternal age (< 25years-11.6% and ≥ 40 years - 43.1%).

In the present study, the emergency C-section rates (74%) were more common in the age group of 18-24years than the elective C-section (44%) but in the age group of 25-29years the elective C-section rates (36%) were common than the emergency C-section rates (20%). In the age group of 30-34years the elective C-section rates (18%) were common than the emergency C-section rates (4%) but in the age group of 35 and above both elective C-section and emergency C-section rates were same (2%).

Risk factors:

Most of the textbooks describe that - Repeat caesarean section was the commonest risk factor for subsequent caesarean section.(13)

In the present study, the most common risk factor is previous LSCS. 14(28%) patients had previous LSCS in Elective C-section and 7(14%) patients had previous LSCS in Emergency

C-section. The second most common risk factor in Elective C-Section (6%) and Emergency C-Section (4%) was known case of Hypothyroidism.

The rate of Elective caesarean section was more compared to Emergency caesarean section in patients with history of previous LSCS.

Intra-operative and post-operative complications:

High emergency caesarean delivery rates were associated with increased fresh stillbirths, neonatal deaths, and severe neonatal morbidity, which remained significant even after adjusting for other factors. High elective caesarean delivery rates were associated with fewer fresh stillbirths and neonatal deaths. Since the majority of emergency caesarean deliveries were performed for dystocia and fetal distress, it is likely that a significant proportion of the perinatal deaths and severe newborn morbidity was related to birth asphyxia secondary to prolonged labor and that the interventions may have been performed too late. Close monitoring of labor, early detection of complications and timely decision for caesarean delivery are crucial.(14)

It was noticed that there were more maternal complications in emergency caesarean section group than in elective caesarean section.

The commonest complication was hemorrhage > 1000ml in majority of **emergency** caesarean section cases, which occurred due to uterine atony and abnormal adherence of placenta(15)

In a study, overall incidences of complications were significantly higher in emergency caesarean section (28.5%) than that of Electives section (16.7%). Atonic PPH was the major intra partum complication in both Elective (6.7%) and Emergency (17.9%) caesarean section

In the present study, Out of 50 Emergency C-sections, Postpartum Hemorrhage - 8(16%) was the most frequent intra-operative complication in Emergency C-Section when compared to Elective C-Section. Uterine angle extended with bleeding- 7(14%) is the 2nd common complication in Emergency C-Section. Out of 50 Elective C- sections, the most common intra-operative complications were dense adhesions- 7(14%).

In the present study, out of 50 Emergency C-sections, Postpartum Hemorrhage -13(26%) was the most common post-operative complication in Emergency C-Section when compared to Elective group. Wound infection-7(14%) is the 2nd most common post-operative complication in Emergency C-Section. Out of 50 Elective C- sections, the most common post-operative complications were PPH- 3(6%) and Puerperal pyrexia- 5(10%).

The birth weight of the newborns delivered by caesarean section:

C-section babies weigh less than babies born vaginally. On average, children born via C-section were 0.125 pounds lighter than those vaginally born.

LBW is closely associated with fetal and perinatal mortality and morbidity, inhibited growth and cognitive development, and chronic diseases later in life.

The American College of Obstetricians and Gynecologists and medical policy makers-reviewed research studies and found an increased incidence of sepsis, RDS, Hypoglycemia, need for respiratory support, need for NICU admission, and need for hospitalization >5 days.

In the case of caesarean sections, rates of respiratory death were 14times higher in 37weeks gestation compared with 40 weeks gestation, and 8.2times higher for caesarean at 38 weeks.

In this review, no studies found decreased neonatal morbidity due to non-medically indicated (elective) delivery prior to 39 weeks.(16)

In the present study, Low birth weight was more common in emergency caesarean section - 20(40%) than elective caesarean section - 9(18%). 38(76%) newborns had the birth weight ranging between 2.5-3.5kgs in elective caesarean section, while only 28(56%) had the birth weight ranging between 2.5-3.5kgs in emergency caesarean section.

In elective caesarean section, the birth weight of 38(76%) newborns which were ranging between 2.5-3.5kgs, while 28(56%) newborns had the similar birth weight in emergency

caesarean section. This indicates better Ante-Natal Care in the Elective Caesarean Section. From this, it can be reported that the Mean Birth weight is statistically significant in the new born delivered through Elective C-section ($P=0.03^{**}$).

CONCLUSION

The factors associated with caesarean section are age, parity, multiple pregnancy, maternal weight gain, and birth weight. Including these factors, the caesarean section is justified under certain circumstances such as cephalo pelvic disproportion and contracted pelvis, dystocia due to soft parts, inadequate uterine forces, antepartum hemorrhage, pre-eclamptic toxemia, eclampsia, fetal distress and prolapse of the cord, malpresentation, maternal distresses such as heart problems, bad obstetric history, habitual intrauterine death of the fetus and elderly primigravida.

Except these demographic and medical reasons, the maternal request and the obstetrician factor are playing a major role in increasing caesarean section rates

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