



COMPARATIVE STUDY OF CESAREAN SECTION INDICATIONS: ELECTIVE VERSUS EMERGENCY

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ABSTRACT

Background: Caesarean section has been shown to be a safe operation, and in many countries around the world, there has been dramatic increase in its frequency. We conducted a study to compare the maternal and fetal indications of elective and emergency caesarean sections. **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:** Majority (30%) of women had previous LSCS with refusal for TOLAC as maternal indication. Other maternal indication includes previous two LSCS in 7% cases, placenta praevia in 6.5% cases, NPOL in 4.5% cases and Pre eclampsia with severe features with failed induction in 4% cases. Majority (16.5%) of women had breech presentation as fetal indication of cesarean section while 8% had severe IUGR, mal-presentation other than breech in 3.5% and GDM with big baby in 3% women. Other indication includes cephalo-pelvic disproportion in 4.5%, meconium stained liquor in 3.5, fetal bradycardia in 3%, non reassuring fetal heart rate in 2.5%, placental abruption in 1.5%, deep transverse arrest in 1%, fetal distress with failed forceps in 0.5% and absent/reversal diastolic flow in 0.5% cases. **Conclusion:** Most common maternal and fetal indication for emergency cesarean section was prior cesarean delivery and breech presentation respectively. Therefore, avoiding an un-indicated primary cesarean would be the most important step towards lowering overall cesarean rate.

KEYWORDS: Comparative study, cesarean section indications, Elective versus emergency.

INTRODUCTION

Caesarean delivery is defined as the birth of the foetus through an incision in the abdominal wall (laparotomy) and the uterine wall (hysterotomy).^[1] Caesarean section has been shown to be a safe operation, and in many countries around the world, there has been dramatic increase in its frequency.^[2-4]

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.^[5,6]

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. During the last few decades, caesarean section (CS) rates have risen markedly and now exceed a rate that is assumed to be optimal with respect to the well-being of the newborn and the mother. 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.^[7-12]

The nature of caesarean section performed, elective or emergency, is predicted depending on the indication for caesarean section. A planned caesarean section, arranged ahead of time, is most commonly arranged for medical

indications which have developed before or during pregnancy, and ideally after 39 weeks of gestation. An emergency caesarean section is defined as delivery of baby through mother's abdomen when labour has already begun with complications in mother or foetus. Well recognised indications for elective CS include marked contracted pelvis, mild disproportion associated with complicated factors such as elderly primigravida, preeclampsia, eclampsia, intrauterine growth restriction, central placenta praevia, and other conditions of placental insufficiency.^[11,12]

The commonest indication for emergency caesarean is fetal distress, while the most frequent indication for elective caesarean is previous caesarean delivery. Although usually lifesaving, caesarean delivery increases the maternal and new born risks and this happens more commonly in emergency Caesarean sections.^[13,14]

We have therefore, conducted a study to compare the maternal and fetal indications of elective and emergency caesarean sections.

AIMS AND OBJECTIVES

To compare the maternal and fetal indications of elective and emergency caesarean sections.

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: Based on average (urban and rural) CS rate of 26% in Himachal Pradesh state in last five years, we estimated the minimum sample size of 100 subjects in each study arm.

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 < 30 weeks and > 40 weeks, 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, Immuno-compromised 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 indication for caesarean section.

Statistical Analysis

The data has been presented using tabular and graphical aids. 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 AND OBSERVATIONS

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: Maternal indication of Cesarean section in relation to elective and emergency cesarean section.

Indication of C-section	Elective C-section(n=100)		Emergency C-section(n=100)		Total 'n=200'
	No. of women	Percentage	No. of women	Percentage	
Previous LSCS with refusal forTOLAC	45	75%	15	25%	60
Previous 2LSCS	8	57.1%	6	42.9%	14
Placenta previa	5	38.5%	8	61.5%	13
NPOL	0	0%	9	100%	9
Preeclampsia with severe feature withfailed induction	0	0%	8	100%	8

The above table depicts the maternal indication for cesarean delivery. Majority (30%. i.e. 60/200) of women had previous LSCS with refusal for TOLAC as an indication. Out of these 75% (45/60) women had elective cesarean section and 25% (15/60) women underwent emergency cesarean section because of spontaneous onset of labor before the planned cesarean delivery. Other maternal indication includes previous two LSCS in 7% (14/200). Of these 57.1% (8/14) had elective cesarean section and 42.9% (6/14) underwent emergency cesarean section. Therefore 37% (74/200) women had prior

one/two cesarean deliveries & commonest maternal indication for both elective & emergency cesarean section was previous cesarean section with refusal for TOLAC. 6.5% (13/200) women had placenta praevia, 61.5% (8/13) of these had elective cesarean section and 38.5% (5/13) underwent emergency cesarean section. NPOL and Pre eclampsia with severe features with failed induction were indications for cesarean in 4.5% (9/200) and 4% (8/200) respectively and all of them underwent emergency cesarean section.

Table-2: Fetal indication of Cesarean section in relation to elective and emergency cesarean section.

Indication of C-section	Elective C-section(n=100)		Emergency C-section (n=100)		Total 'n=200'
	No. ofcases	Percentage	No. ofcases	Percentage	
Breech	27	81.8%	6	18.2%	33
Severe IUGR	7	43.8%	9	56.2%	16
Cephalopelvicdisproportion	0	0%	9	100%	9
Malpresentation other than breech	4	57.1%	3	42.9%	7
Meconium-stainedliquor in early labor	0	0%	7	100%	7
Fetal bradycardia	0	0%	6	100%	6
Gdm with big baby(b.wt >4.5)	4	66.7%	2	33.3%	6
Non reassuringfetal heart rate (NRFHR)	0	0%	5	100%	5
Placental abruption	0	0%	3	100%	3
Deep transversearrest	0	0%	2	100%	2
Fetal distress withfailed forceps	0	0%	1	100%	1
Absent/ reversal end diastolic flow in umbilical artery(AEDF/REDF)	0	0%	1	100%	1

The above table depicts that the majority (16.5% i.e. 33/200) of women had breech presentation as fetal indication of cesarean section. Out of them, 81.8% (27/33) had elective cesarean section and 18.2% (6/33) underwent emergency cesarean section. 8% (16/200) women had severe IUGR. Out of them, 43.8% (7/16) had elective cesarean section and 56.2% (9/16) had emergency cesarean section. Malpresentation other than breech is present in 3.5% (7/200) women. Out of these, 57.1% (4/7) had elective cesarean section and 42.9% (3/7) had emergency cesarean section. GDM with big baby was present in 3% (6/200) women. Out of these, 66.7% (4/6) had elective cesarean section and 33.3% (2/200) underwent emergency cesarean section. Other indication includes cephalopelvic disproportion in 4.5% (9/200), meconium stained liquor in 3.5% (7/200), fetal bradycardia in 3% (6/200), non reassuring fetal heart rate in 2.5% (5/200), placental abruption in 1.5% (3/200), deep transverse arrest in 1% (2/200), fetal distress with failed forceps in 0.5% (1/200) and absent/reversal diastolic flow in 0.5% (1/200) respectively and all of them had emergency cesarean section.

DISCUSSION

Cesarean delivery is the birth of foetus via laparotomy or hysterectomy. Depending upon the mode of operation, it is divided into elective and emergency cesarean section (cs). Cesarean section is associated with increased risk of maternal and perinatal morbidity and mortality in

comparison to vaginal delivery. Various studies show that increasing trends on this mode of delivery worldwide is leading to an increase in its associated risks and cost to the mothers. It is well documented that emergency cesarean section carries a high much higher maternal morbidity as compared to elective cesarean section. In our centre, the cesarean rate is around 30% from the annual records and no studies have been done in the past to evaluate the maternal and perinatal outcome. So this study aimed to compare the maternal and fetal indications of elective and emergency caesarean sections in our 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. The observations made were tabulated, analysed and compared with earlier studies.

According to WHO, the cesarean rate should be in between 10-15% as rate above this has not shown any improvement in the maternal and perinatal outcome. Total 7544 deliveries took place during the study period. Of these 2255 were cesarean deliveries. Therefore, the cesarean rate was 29.9% which was comparable to cesarean rate observed by Darnal N et al.^[15] (30.7%). Similarly, in a study by WHO, which reviewed 110,000 births from nine countries in Asia during 2007-2008,

27% births were by C- section.^[16]

The high rate of cesarean rate in present study was due to the fact that ours is tertiary care hospital which receives referrals from the far-flung areas of our state. Despite of getting most of the obstetric emergencies from the entire state, we have observed a lower cesarean rate as compared to the studies conducted at tertiary centres in other parts of India. For example, the cesarean rate was 42.8% in a study conducted by Patel B et al.^[17] The high cesarean rate observed by Patel B et al.^[17] was due to the higher number of post cesarean pregnancies. They had enrolled 8843 births, out of these total cesarean deliveries were 3785 which included 1043 (27.5%) women with previous cesarean section. In the present study there were only 75 of 200 (37.5%) women with previous cesarean section which included women with prior one cesarean (61/75) and prior two (14/75) cesarean sections. Although the percentage of women with prior cesarean was 37.5% (75/200) in the present study but the sample size (n=3785) was much higher as compared to the present study (n=200). Recent studies all over the world have shown repeat cesarean pregnancy as the main factor leading to rise in cesarean rate. Therefore, the most important step towards lowering cesarean rate would be avoiding a primary cesarean section.

The emergence of c-sections is always higher when previous history of cesarean is there. The commonest indication for cesarean delivery in our study was previous one LSCS with refusal for TOLAC which was an indication in 53.5% women in a study by Thakur V et al.^[18], 32.7% women in a study by Gurunule A et al.^[19], 17.5% women in a study by Nag G et al.^[20], 20.4% women in a study by Subedi A et al.^[21] & 30% women in present study. Alarming rise in cesarean delivery is due the rise in repeat cesarean deliveries and prevention of a primary cesarean delivery would be an important step towards lowering overall cesarean rate. Previous two cesarean section was an indication for cesarean delivery in only 7% in present study. Other maternal indications were placenta praevia (6.5%), NPOL (4.5%) & pre-eclampsia with severe features with failed induction (4%).

In our study, the commonest fetal indication for cesarean delivery in present study was breech presentation in 16.5% followed by severe IUGR in 8%. Cephalopelvic disproportion was an indication in 4.5% cesarean deliveries. Other less common fetal indications were meconium staining of amniotic fluid (3.5%), fetal bradycardia (3%), fetal macrosomia (3%), NRFHR status (2.5%), placental abruption (1.5%), deep transverse arrest (1%), absent/ reversal of end diastolic flow (0.5%) and failed forceps with fetal distress (0.5%). On the contrary, in a study done by Gurunule A et al.^[19] the most common fetal indication for cesarean delivery was cephalopelvic disproportion (28.3%) followed by breech presentation (25.7%) & meconium staining of amniotic fluid in 20% women.

On comparing maternal indications in relation to elective and emergency cesarean section, majority (75%) of women with prior one cesarean delivered by elective cesarean section in view of refusal for TOLAC & 25% of such patients underwent emergency cesarean section while waiting for elective cesarean section and the indication was either spontaneous of labour or PROM. Similarly, 78.87% cesarean sections done in women with prior cesarean were elective cesarean sections in a study done by Thakur V et al.^[18] This explains the higher percentage of elective cesarean sections as a whole in multiparous women in present study. Similarly, Gurunule A et al.^[19] observed that most of cesareans in women with prior cesarean were elective but they had a higher percentage of women with prior two cesareans (10.1% i.e. 61/600) as compared to the present study (7% i.e. 14/200) and most (86.8%) of women with previous two cesareans delivered by elective cesarean section in their study as compared to 57.1% (8/14) elective cesareans in women with prior two cesareans in the present study. 61.5% (8/13) women with placenta praevia landed up in emergency cesarean section while waiting for elective cesarean section. On the contrary, all women with placenta praevia underwent elective cesarean section in a study by Nag G et al.^[20] Of all 33 women with pre-eclampsia who underwent cesarean section, only 24.2% (8/33) cesareans were done in emergency for failed induction of labour. Rest 74.7% i.e. 25/33 cesarean section done in women with pre-eclampsia were done electively because of other obstetric indication for elective cesarean section.

In the present study, majority (74% i.e. 27/33) of women with breech presentation in present study underwent elective cesarean section & rest 25.8% women underwent emergency cesarean section because of spontaneous onset of labor prior to planned cesarean section. Similarly, 58 out of 77 (75.3%) cesarean section done for breech presentation in a study by Gurunule A et al.^[19] were elective & the rest 24.7% cesarean section were done in emergency. Most (55.5% i.e. 9/16) of cesareans in women with IUGR were done in emergency cesarean section for acute fetal distress & 44.4% (7/16) cesareans were done electively in the present study. All cesareans done in emergency in women with IUGR were done for acute fetal distress. In present study, 4.5% (9/200) cesarean section were done for cephalopelvic disproportion & all were done in emergency as the patients came in advanced labor. On the contrary, in a study by Gurunule A et al.^[19] 52.9% (47/85) cesareans done for CPD were elective & 44.7% (38/85) were done in emergency. In present study, 57.1% (4/7) women with malpresentation other than breech underwent elective cesarean section as compared to 80% (4/5) in a study by Gurunule A et al.^[19] & 70.1% (54/77) in a study by Nag G et al.^[20] The percentage of emergency cesarean section can differ due to late diagnosis of malpresentation or delay in reaching the healthcare facility.

CONCLUSION

Most common maternal and fetal indication for emergency cesarean section was prior cesarean delivery and breech presentation respectively. Therefore, avoiding an un-indicated primary cesarean would be the most important step towards lowering overall cesarean rate.

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