

PREGNANCY OUTCOME OF ELECTIVE AND EMERGENCY CAESAREAN SECTION IN UNCOMPLICATED TERM PREGNANCIES: AN OBSERVATIONAL COMPARATIVE STUDY

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Received : 30/09/2022
Received in revised form : 01/11/2022
Accepted : 12/11/2022

Keywords:

Elective Cesarean Section, Emergency Cesarean Section, Maternal Outcome, Neonatal Outcome.

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DOI: 10.47009/jamp.2022.4.5.90

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2022; 4 (5); 436-441



Abstract

Background: The most performed surgical procedure in obstetrics is cesarean section. Purpose of this study is to establish the maternal and neonatal outcome after emergency and elective cesarean section, and identifying preventable risk factors wherever possible. **Materials and Methods:** This is n observational comparative study done at Al Azhar medical college Thodupuzha, Kerala, India on 185 pregnant women who underwent cesarean section and who fulfilled the inclusion criteria in the department of obstetrics and gynecology. After taking consent patients were identified into two groups based on type of cesarean section that is elective or emergency. In elective cesarean section group 79 women were studied whereas emergency cesarean section group 106 women were studied. Maternal parameters like indication of cesarean section, intra operative and post-operative complications were analyzed. neonatal parameters like respiratory distress syndrome, NICU admissions, APGAR score were analyzed. **Result:** Most number of cases in elective cesarean section group underwent cesarean section for prior cesarean section for maternal request (89%) and for emergency cesarean section for fetal distress (32%). Intraoperative, post-operative complications and adverse neonatal outcome were more with emergency CS group. **Conclusion:** Adverse maternal and neonatal outcome was found to be more in emergency cesarean section compared to elective cesarean section. Inducing labor with proper indication, assessment of cephalopelvic disproportion and intrapartum monitoring using partogram are some of the preventable factors identified to reduce adverse outcome.

INTRODUCTION

The most performed major surgical procedure in obstetrics is caesarean section. The common indications are prior caesarean section, uterine dystocia, abnormal presentation and foetal distress. On the basis of timing and urgency of performing, caesarean section can be classified into emergency and elective. elective caesarean section is planned procedure whereas emergency caesarean section is when it is done in an obstetric emergency where complication of pregnancy suddenly arises during the process of labor.^[1] most of the caesarean sections are being performed for the indications of prior caesarean section.^[2] These women are more likely to undergo caesarean section in subsequent pregnancies for which risks are even greater. The acceptable rate of caesarean section is 5-15% according to WHO but in most of the countries this threshold has been crossed.^[3] The indications for

rise in caesarean section is anxiety of mother about the delivery, family's request for baby's delivery at particular time, mothers wish to have a caesarean section on account of precious pregnancy,^[4] rise in average maternal age, decrease in vaginal breech delivery, decrease in instrumental delivery, increase in labour induction, fear of litigation by the obstetrician etc.

In India the highest rate is in Telangana (58%) followed by Andhra Pradesh (40.1%) and Kerala (35.8%). The lowest rate of caesarean section is seen in Nagaland (5.8%) followed by Bihar (6.2%).^[5] Caesarean section is a surgical procedure with numerous complications for both mother and baby such as postpartum haemorrhage, surgical site infections, need for blood transfusion, endometritis, trauma to viscera, prolonged hospital stay etc. for the mother and respiratory distress syndrome, TTN (transient tachypnea of new born), hypothermia, foetal injury like skin laceration, cephalhematoma,

requirement of ventilator support etc. for the neonate.

This study aims at comparing the maternal and neonatal outcome following elective and emergency caesarean section and also assessing the risk factors of adverse maternal and neonatal outcome.

MATERIALS AND METHODS

It is an observational comparative study carried out at Al Azhar medical college, Thodupuzha, Kerala, India from march 2021 to march 2022. Study population comprised 185 pregnant women who underwent cesarean section. This study was started with human ethical committee approval. After taking consent patients were identified into two groups based on type of cesarean section they underwent that is elective or emergency. In elective cesarean section group 79 women were studied whereas emergency cesarean section group 106 women were studied.

Inclusion Criteria

Singleton pregnancies with gestational age > 37 weeks

Exclusion Criteria

Gestational diabetes mellitus, Pregnancy induced hypertension, Preeclampsia, Hypothyroidism, Heart disease, Antepartum hemorrhage, Anaemia, IUGR.

Study Parameters

Maternal: age, parity, method of delivery (emergency/elective cesarean section) indications for cesarean section, intraoperative complications like hemorrhage, trauma, need for blood transfusion. Post-operative complications like PPH, surgical site infection, endometritis, urinary tract infection. Neonatal: APGAR score, NICU admissions, indications for NICU admissions.

Data Collection

All data were entered into excel (MS excel 2011), privacy and confidentiality was maintained. all patient identifiable numbers and information was stripped and replaced by anonymous numbers.

Statistical Analysis

Statistical analysis was performed by using IBM statistical package for social science (SPSS) statistics software (version 24; IBM, New York, USA). The comparisons of counting data were evaluated using chi-square test. A p-value of less than 0.05 was considered as significant.

RESULTS

During the study period total number of patients was 185 in that 106 patients underwent emergency caesarean section and 79 patients underwent elective caesarean section. The mean age of women

undergoing elective caesarean section was 26.9 ± 2.8 years and for women undergoing emergency caesarean section was 26.2 ± 3.4 years. Among emergency caesarean section group, out of 106 women 54 (50.9%) were primigravida whereas 52 (49.1%) were multigravida. Out of 79 women in elective caesarean section group 10(12.7%) were primigravida and 69(87.3%) were multigravida [Table 1]. The difference between two groups is statistically significant as p value <0.001.

In our study out of 106 women who underwent emergency caesarean section 32% underwent caesarean section for foetal distress followed by 31% for impending scar rupture. [Figure 1] whereas in elective caesarean section group major proportion underwent caesarean section for maternal request (89%) followed by Malpresentation (11%). [Figure 2]

Among the study participants about 22 of women had at least one intraoperative complication in emergency CS group and 5 in elective CS group. Incidence of intraoperative complications was significantly more in emergency CS group as p value <0.001 [Table 2]. There were no patients with anaesthesia complications in both groups. The incidence of haemorrhage in emergency CS is 10 where as in elective CS was 4. In both group atonic PPH was more common than traumatic PPH. Although occurrence of haemorrhage in emergency CS group is greater than elective CS group, it is not statistically significant. [Table 3] among study participants about 15(14.1%) in emergency CS group had trauma to uterine artery whereas in elective CS group only 1 (1.3%) had uterine artery injury. The difference between two groups is statistically significant as p value <0.001. [Table 3] the requirement of blood transfusion in emergency CS group was 16(15.1%) while in elective CS group it was 2 (2.53%). The requirement was more in emergency CS group and it was statistically significant p value < 0.001. [Table 3]

Among the study participants the incidence of post-operative complications in emergency CS group was 36(33.9%) and in elective CS group was 11 (13.9%). The difference between two groups was statistically significant a p value <0.001. [Table 4] The incidence of PPH in emergency CS group was 9(8.5%) and in elective CS group was 2(2.5%). The incidence of PPH was significantly more in emergency CS group. [Table 5] among the study participants about 18(16.9%) had SSI in emergency CS group whereas 3(3.8%) had SSI in elective CS group. The difference in the incidence of SSI between the two groups is significant. (Table 5) The incidence of endometritis in emergency CS group was 3(2.8%) whereas only 1(1.3%) had endometritis in elective CS group. In emergency CS group about 14(13.2%) had UTI while only 2 (2.5%) in elective CS group. And it was statistically significant. [Table 5]

The mean APGAR score at 1 minute and 5 minute was comparatively more in elective caesarean

section. And it was statistically significant. [Table 6] Among the total NICU admissions about 20 (18.9%) were born by emergency CS and 5(6.3%) babies born by elective CS. The difference between two groups for NICU admissions was statistically significant. [Table 7] common indications for NICU admissions were respiratory distress, TTN (transient tachypnea of new born), meconium aspiration, tachypnea, hypoglycaemia. Maximum proportion of NICU admissions were due to respiratory distress 14(13.2%) in emergency CS group whereas TTN 3(3.8%) in elective CS group. The difference was statistically significant for respiratory distress as an indication for NICU admission between two groups as $p < 0.001$. other causes for NICU admissions were not significant among both the group [Figure 3].

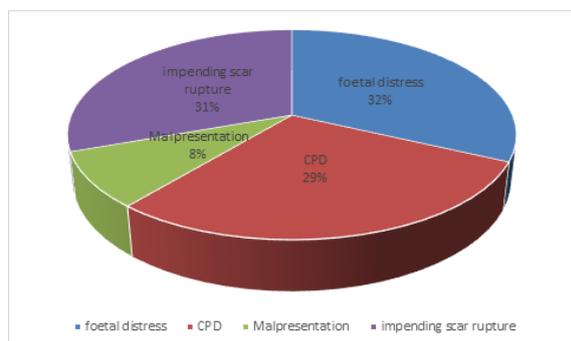


Figure 1: Indications for cesarean section in emergency CS group

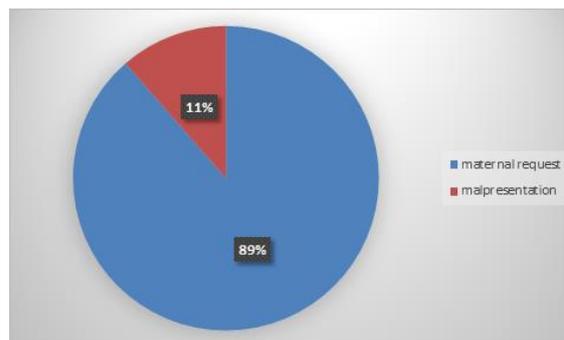


Figure 2: Indications for cesarean section in elective CS groups

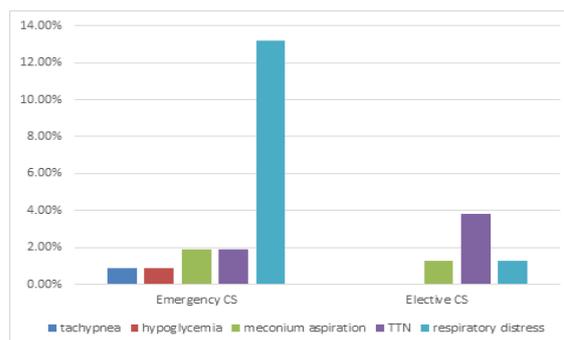


Figure 3: Indications for NICU admissions

Table 1: Parity of study participants

	Emergency CS		Elective CS		Total		P value
	N	%	N	%	N	%	
Primi	54	50.9	10	12.7	64	34.6	<0.001*
Multi	52	49.1	69	87.3	121	65.4	
Total	106	100	79	100	185	100	

Table 2: Total incidence of intra-operative complications

Intra-operative complications	Emergency CS		Elective CS		Total		P value
	N	%	N	%	N	%	
Present	22	20.8	5	6.3	27	14.6	<0.001*
Absent	84	79.2	74	93.7	158	85.4	
Total	106	100	79	100	185	100	

Table 3: Intraoperative complications

	Emergency CS		Elective CS		Total		P value
	N	%	N	%	N	%	
Hemorrhage							
Traumatic PPH	4	3.8	1	1.3	5	2.7	0.48
Atonic PPH	6	5.7	3	3.8	9	4.9	
None	96	90.6	75	94.9	171	92.4	
Total	106	100	79	100	185	100	
Trauma							
Bowel injury	2	1.8	1	1.3	3	1.6	0.0077*
Uterine artery injury	15	14.1	1	1.3	16	8.6	
None	89	84	77	97.5	166	89.7	
Total	106	100	79	100	185	100	
Need for blood transfusion							
1 unit transfused	16	15.1	2	2.53	18	9.7	0.004*
No transfusion required	90	84.9	77	97.5	167	90.3	
Total	106	100	79	100	185	100	

Table 4: Incidence of post-operative complications

Post-operative	Emergency CS	Elective CS	Total	P value
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complications	N	%	N	%	N	%	0.0019*
Present	36	33.9	11	13.9	47	25.4	
Absent	70	66.03	68	86.1	138	74.6	
Total	106	100	79	100	185	100	

Table 5: Post-operative complications

	Emergency CS		Elective CS		Total		P value
	N	%	N	%	N	%	
Post-partum hemorrhage							
Present	9	8.5	2	2.5	11	5.9	0.90
Absent	97	91.5	77	97.5	174	94.1	
Total	106	100	79	100	185	100	
Surgical site infection							
Present	18	16.9	3	3.8	21	11.35	0.005*
Absent	88	83.02	76	96.2	164	88.64	
Total	106	100	79	100	185	100	
Endometritis							
Present	3	2.8	1	1.3	4	2.2	0.47
Absent	103	97.2	78	98.7	181	97.8	
Total	106	100	79	100	185	100	
Urinary tract infection							
Present	14	13.2	2	2.5	16	8.65	0.010*
Absent	92	86.8	77	97.5	169	91.4	
Total	106	100	79	100	185	100	

Table 6: Neonatal complications

APGAR score at 1 minute			P value
	Mean		
Emergency CS	7.58±0.99		0.0011*
Elective CS	7.86±0.41		
APGAR score at 5 minutes			0.0012*
Emergency CS	8.88±0.47		
Elective CS	8.98±0.31		

Table 7: NICU admissions

	Emergency CS		Elective CS		P value
	N	%	N	%	
Admitted	20	18.9	5	6.3	0.014*
Not admitted	86	81.1	74	93.7	
Total	106	100	79	100	

DISCUSSION

The present study was conducted in the department of obstetrics and gynecology, Al Azhar medical college, Thodupuzha. this study was done to evaluate the pregnancy outcome in emergency and elective cesarean section in uncomplicated term pregnancies. This study included 185 pregnant women who underwent either elective or emergency CS. The incidence of emergency CS was 57.3% and of elective CS was 42.7%. similar observation was reported by Benzouina et al (2016) and Soren et al (2016).^[6,7] although CS is considered as a major procedure, the incidence of CS is on rising trend 3.as advances in medical field have reduced incidence of maternal complications, fetal morbidity still remains high. whatever few advantages CS has, can be considered only when it is done electively rather than an emergency procedure.^[8]

The mean age was more in women who underwent elective CS when compared to emergency CS. But it is difficult to decipher the relation between age and type of CS. However, this can be explained as most of the women who underwent elective CS were multigravidas and they were having higher age group. This supported by Al Nuaim et al (1996).^[9]

In this study 50.9% were primigravida in emergency CS group, while in elective CS group only 12.7% were primigravida.in 2014 Daniel et al and Ghanzi et al in (2012) had similar observation and said that about 87.3% of patients were multigravida in elective CS. The reason for this can be that all the previous CS women were planned for an elective CS.^[6,10]

Maternal and fetal outcome is dependent on the indication for which CS was performed 10. Among emergency CS group 32% underwent CS for fetal distress followed by 31% impending scar rupture. In elective CS group common indication was previous CS at maternal request. Similar finding was observed by Soren et al in 2016, Lurie et al in 2016 and Mac Kenzie et al in 2003.^[7,11,12] fetal distress as an indication is over used due to increased unjudicial use of intrapartum electronic fetal heart monitoring. Proper use of intrapartum electronic fetal heart monitoring and use of fetal scalp pH together to confirm fetal distress can reduce the unnecessary CS.^[13]

In our study intraoperative complications were observed more in emergency CS group compared to elective CS group. Similarly, Nuaim et al, Ghazi et al, Daniel et al also found the same result.^[9,10,14] The

major complication was trauma to uterine artery, 14.1% in emergency CS group and 1.3% in elective CS group. CPD was the major risk factor for trauma to uterine artery. Proper use of partogram and pelvic assessment early in labor can reduce this complication. The incidence of atonic PPH and need for blood transfusion was more in emergency CS group. similar observation was found by Al Nuaim et al and Daniel et al in their studies.^[9,14]

All the post-operative complications that is PPH, SSI, endometriosis and UTI were significantly higher in emergency CS group when compared to elective CS group. Similarly, Nuaim et al, Ghazi et al, Daniel et al, Zahid et al, Soren et al also stated that post-operative complications like PPH, SSI, endometriosis and UTI are more seen in emergency CS.^[7,9,10,14,15] SSI was seen more in emergency CS group. Major portion of them are superficial incisional infections. Wloch et al in his study concluded that majority of SSI after CS were superficial infections and also showed that BMI and type of CS contributed for SSI 23. And in case of UTI its incidence was more with emergency CS group. Similarly, Daniel et al and Schwartz et al concluded that incidence of UTI was more after emergency CS.^[14,16] There were cases of endometritis reported after emergency CS whereas only 1 case reported after elective CS. Oslen et al observed that incidence of endometritis was more in emergency CS group (75.3%) when compared to elective CS group (29.7%).^[17]

In the present study overall neonatal complications were higher in emergency CS group. Benzouina et al (2016) made a similar observation where foetal morbidity was 28.3%, of which 90.3% cases were contributed by emergency CS group. De Luca et al (2009) also made a similar observation where foetal morbidity was less in elective CS group.^[6,18] In this study mean APGAR score was better after elective CS group. This shows that the resuscitative measures taken were more effective on babies born by elective CS. similarly Atonosova et al, Sowmya et al and Al Nuaim et al also concluded that all infants with low APGAR score was delivered by elective CS.^[9,19,20] In our study the requirement of NICU admissions were more for babies born by emergency CS. maximum admissions were due to RDS and TTN. RDS was more with emergency CS group and TTN was more with elective CS group. Kamath et al showed that respiratory morbidity due to TTN was significantly high in babies born by elective CS.^[21] Morrison et al stated that neonatal respiratory morbidity can be reduced if elective CS is performed during the 39th week of pregnancy.^[22] The incidence of RDS in our study was 13.2% in emergency CS group similarly Suja Daniel et al in her study concluded that overall neonatal complications were higher in emergency CS group.^[23]

This study showed significant increase in maternal and neonatal morbidity after emergency CS.

CONCLUSION

Based on results, this study conclude that adverse maternal and neonatal outcome is more in emergency CS when compared to elective CS. Intraoperative and post-operative complications and adverse neonatal outcome were significantly higher in emergency CS group. Inducing labor with proper indication, assessment of cephalo pelvic disproportion early in labor, intrapartum monitoring using partogram and prior identification of Malpresentation and correction accordingly are some of the preventable factors identified to reduce adverse outcome and incidence of emergency CS.

Limitation

The limitation of the study is that two group were not matched in terms of parity. Multiparous women with scarred uterus might be more prone for intraoperative complications which can be a confounding factor.

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