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## Comparison of maternal and neonatal outcomes in elective LSCS done at 38 weeks vs 40 weeks of gestation: A randomised trial

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### Abstract

Timing of elective caesarean deliveries at term has become an important issue nowadays due to the progressive increase in caesarean delivery rates in recent years all over the world. A study was undertaken to compare the maternal and neonatal outcomes in 400 women undergoing elective caesarean section at 38 and 40 weeks of gestation each at a tertiary centre in Delhi over a period of one year. The maternal outcome parameters were PPH, scar dehiscence, wound infection and need for transfusion of any blood products. The neonatal outcome was assessed on the basis of APGAR score and NICU admissions. No significant maternal or neonatal complication of elective LSCS at 38 or 40 weeks were observed. It was thus concluded that scheduling elective LSCS at 38 weeks may be an acceptable option in women with good maternal and perinatal outcome.

**Keywords:** Elective caesarean section, Gestational Age, Maternal outcome, Neonatal outcome, APGAR, NICU

### Introduction

A caesarean section (CS) is a life-saving surgical procedure when certain complications arise during pregnancy and labour. However, it is a major surgery and is associated with immediate maternal and perinatal risks and may have implications for future pregnancies as well as long-term effects that are still being investigated [1-4]. According to ACOG elective caesarean section after 39 + 0 weeks is recommended [5]. Today, C-section is perceived as an escape from labor pain, and the false assumption that C-section is painless, safer, and healthier than vaginal delivery has become prevalent among women [6].

In a setup like ours, due to large patient load, lot of unbooked, referral cases, ignorance and inability of women to comply with the instructions, the exact schedule for caesarean section is not always possible.

Literature suggests that large number of women will land up in labour before 39 weeks and require emergency caesarean section. The incidence of maternal morbidity and mortality is higher among women undergoing non-elective caesarean deliveries than among those undergoing elective ones.

Elective caesarean sections frequently performed at term, because neonatal respiratory and other morbidities at term are thought to be low.

It has nonetheless been clearly demonstrated in the literature that caesarean section increases the risk of respiratory distress syndrome & other neonatal adverse outcomes. There is a growing opinion that elective caesarean section should not be done before 38 weeks unless there is evidence of fetal lung maturity to avoid adverse neonatal outcomes.

### Materials and methods

The study was conducted at a Tertiary care centre in New Delhi over a period of one year. It was conducted on 800 pregnant women who got admitted for Elective LSCS. The patients were divided into two groups.

IN GROUP 'A' (n=400): Elective caesarean section conducted at 38 weeks of gestation and respective neonatal outcomes.

IN GROUP 'B' (n=400): Elective caesarean section conducted at 40 weeks of gestation and respective neonatal outcomes.

**Inclusion Criteria** for this study was all singleton pregnant women undergoing elective caesarean section.

**Exclusion Criteria** for this study was:

- Gestational age <38 weeks
- Pregnancy with medical disorders
- Period of gestation is not confirmed
- Placenta Praevia and placental abruption
- Multiple gestations
- Labour or Attempted induction
- Spontaneous rupture of membrane
- Chorioamnionitis before delivery
- Fetal distress and IUGR
- Polyhydromnios and Oligohydromnios

A detailed history and examination of the patient was done and the patients were admitted for Elective LSCS after all routine blood investigations and PAC. After the surgery, the patient was monitored during the post-operative period. The LSCS was attended by a pediatrician to receive and monitor the baby.

**Maternal outcome was assessed by**

- Gestational age
- Relative increase in TLC count
- UTI
- Scar Dehiscence
- Post-partum haemorrhage
- Need for any blood products
- Wound Infection

**Neonatal outcome to assessed by**

- Birth weight
- APGAR score at 1 and 5 minutes
- Respiratory complications in new born
- Episodes of Hypothermia in Newborns
- NICU admissions

**Results and observations**

Our study showed that the maternal outcomes in both the groups were more or less comparable. The maternal outcome parameters were PPH, scar Dehiscence, Wound Infection and need for transfusion of any blood products. The neonatal outcome was assessed on the basis of APGAR score and NICU admissions which also showed similar results in both groups.

**Table 1:** Maternal Outcome

	Group A (n= 400)	Group B (n= 400)	Total = 800
PPH	12 (3%)	17 (4.25%)	29 (3.62 %)
Scar dehiscence	3 (0.75%)	2 (0.5%)	5 (0.62%)
Wound infection	0 (0%)	5 (1.25%)	5 (0.62%)
Need for transfusion	6 (1.5%)	8 (2%)	10 (1.25%)

**Table 2:** Age Distribution

		Group		Total (800)	P value
		A (n=400)	B (n=400)		
Age Distribution (in years)	1. ≤20	48 (12%)	38 (9.5%)	86 (10.75%)	
	2. 21-30	352 (88%)	360 (90%)	712 (89%)	
	3. >30	0 (0%)	2 (0.5%)	2 (0.5%)	

**Table 3:** Obstetric score

		Group		Total (800)
		A (n=400)	B (n=400)	
OBS H/O	Primi	56 (14%)	34 (8.5%)	90 (11.25%)
	G2	224 (56%)	278 (69.5%)	502 (62.75%)
	G3	100 (25%)	82 (20.5%)	182 (22.75%)
	G4	16 (4%)	6 (1.5%)	22 (2.75%)
	G5	2 (0.5%)	0 (0%)	2 (0.25%)
	G6	2 (0.5%)	0 (0%)	2 (0.25%)

**Table 4:** APGAR at 1 min

		Group		Total (800)	P value
		A (n=400)	B (n=400)		
APGAR score at 1 min	≥7	366 (91.5%)	370 (92.5%)	736 (92%)	
	<7	34 (8.5%)	30 (7.5%)	64 (8%)	

**Table 5:** NICU admission

		Group		Total (800)	P value
		A (n=400)	B (n=400)		
NICU admission	Yes	39 (9.75%)	45 (11.25%)	84 (10.5%)	
	No	361 (90.25%)	355(88.75%)	716 (89.5%)	

**Discussion**

The rate of caesarean section over a period of time has increased globally in developed and developing countries. American College of Obstetrician and Gynaecologists states that for performing elective LSCS at 39 weeks or more, the date has to be confirmed with last menstrual period and 1st trimester ultrasound [7]. There are some studies which shows that even if we wait till 39 weeks for performing elective LSCS, it will not decrease the chance of adverse maternal and neonatal outcome.

Therefore, the ideal time for performing a caesarean section is still debatable. Thus, this study was conducted to find out appropriate gestational age at which elective LSCS can be performed without adverse maternal and neonatal outcome.

The main maternal complications of elective LSCS are post-partum hemorrhage, need for hysterectomy due to PPH, increased hospital stay for >5 days, surgical site complications (endometriosis, wound complications) etc. It is more common with elective LSCS <38 weeks [7, 8, 9]. But elective LSCS at 40 weeks also has adverse effects like sudden unexplained fetal death, which increases after 37 weeks [10].

Our study was performed on 800 pregnant women who were divided into two groups. Group A comprised of 400 women whose elective LSCS was done at 38 weeks of gestation and Group B women were operated upon at 40 weeks of gestation. TITA et al reported in their study 29.5% underwent elective LSCS at 38 weeks and 49.1% at 39weeks whereas Glavind et al showed that 635 patients at 38 weeks and 637 patients at 39 weeks were taken up for Elective LSCS [8, 10]. The period of gestation in this study was comparable to our study.

In our study 12% in Group A and 9.5% in Group B were found to be of less than 21 years of age. 352 out of 400 and 360 out of 400 were in the age group of 21 to 30 years of age in groups A and B respectively. Only 2 women in Group B were above 30 years of age while Group A had no such participants.

Most of these women in both groups were second gravida. 56% in Group A and 69.5% in group B were found to be pregnant for the second time. The least number was found to be of the fifth and sixth Gravida with 2 women of falling in each category in Group B and none in Group A. According to a study by Glavind et al., only 20 % were primigravida and rest were multigravida,

whereas, study done by Emily Doan and Wilmlink et al observed that in their study there were 30% primigravida and 70% multigravida [10, 11, 12].

As per our study done over a period of one year, the maternal outcomes were comparable in both groups. A total of 3.62% of women had an episode of PPH. The figures of both the groups were comparable. 12 out of 400 in Group A and 17 out of 400 women in Group B had PPH. 0.75% of women in Group A and 0.5% women in Group B had Scar dehiscence. None of the 400 participants in Group A showed wound infection whereas 5% of women from Group B had stitch line infections.

1.5% women in Group A and 2% in Group B required blood product transfusions. In a study by Glavind *et al.*, 1.4% patients needed blood transfusion who underwent elective LSCS at 38 weeks than 1.9% at 39+ weeks [10]. Another study by Tita *et al.* and Chiossi *et al.* concluded differently, that those patients underwent elective LSCS at 38 weeks needed more blood transfusion than 39 weeks, but it was not statistically significant [8, 9]. The increased rate of blood transfusion in our study was due to pre-existing low haemoglobin.

The Neonatal outcome was assessed on the basis of Birth Weight, APGAR at 1 minute and 5 minutes, sepsis, hypoglycemia, hypothermia, respiratory complications, NICU admission and total duration of hospital stay.

In Group A B, 4.5% and 5.5% respectively were born less than 1 kg. 83.5% and 82% in both groups had a birth weight between 2.35 kg and 3 kg while 4% newborns in group A and 12.5% in group B weighed more than 3 kgs.

Respiratory complications were seen in 4% and 3.5% babies in Group A and B respectively. Zanardo *et al.* concluded that there is 12.9% chance of respiratory distress syndrome at  $\leq 38$  weeks and at  $\geq 39$  weeks it was 1.12% [13]. Similar observation was made by Tita *et al.*, Emily Doan, Hourani *et al.*, Wilmlink *et al.*, Chiossi *et al.* [7, 8, 9, 10, 12]. They all showed that the rate of respiratory distress decreases with increased gestational age. Zanardo *et al.*, Robinson *et al.*, Wilmlink *et al.*, Gharthey *et al.*, Chiossi *et al.* observed that the rate of chance of transient tachypnoea of newborn decreases with increase in gestation [11, 12, 13, 14, 15].

27 and 19 newborns out of 400 each in Group A and B developed Hypothermia. No studies could be found that compared the onset of hypothermia in babies born at different gestational ages. 1.25% in Group A and 0.5% in Group B had Hypoglycemia. Eman A. Hussein Aly reported in their study that 2.19% babies born at 38 weeks and 2.04% babies born at 39+ weeks showed signs of Hypoglycemia [14].

Signs of Sepsis were seen in 1.25% of babies in Group A and only 1 % of babies in Group B. 9.75% of Group A babies and 11% of Group B babies required NICU admission which led to a hospital stay of more than 5 days in 8.25% babies of Group A and 5% newborns of Group B mothers. Glavind *et al.*, and Robinson *et al.*, concluded that there is 2% increased chance of NICU admission for baby who delivered at 38 weeks [10, 14]. According to Okeke *et al.*, 22.6%, babies needed NICU admission  $\leq 38$  weeks, whereas at 40 weeks only 1.8% babies needed NICU admission and according to Wilmlink *et al.*, there is only 1% increase in chance of NICU admission at 38-39+ weeks who undergo elective LSCS [12, 15].

An APGAR score of  $\geq 7$  was observed in 91.5% newborns at 1 minute and 95.5% babies at 5 minutes. Glavind *et al.*, observed that there is increased chance of less APGAR with increased gestational age [10]. In this study he showed that 3.1% at 38 weeks had less Apgar score and 3.8% at 39 weeks. Chiossi *et al.*, observed that the chance of low Apgar score was more with

decreasing gestational age [9]. That is 0.1% and 0.09% in 38 weeks and 39 weeks respectively. Hourani *et al.*, Bakr *et al.* and Okeke *et al.* in their study concluded that the risk of low APGAR score decrease with increase in gestational age [15, 16, 17]. Wilmlink *et al.* states that only after 40 weeks the APGAR score is 100% good <40 weeks babies had minor risk of low APGAR score [12].

## Conclusion

Timing of elective caesarean deliveries at term has become an important issue nowadays due to the progressive increase in caesarean delivery rates in recent years all over the world. Advanced maternal age at conception, cardiotocogram usage, legal considerations, assisted reproductive techniques and maternal request play an important role in the increased rates of elective repeated caesarean delivery. However the most important cause is the increased number of cases with repeated caesarean sections.

There was no significant maternal or neonatal complication of Elective LSCS at 38 or 40 weeks. So scheduling elective LSCS at 38 weeks may be an acceptable option in women with good maternal and perinatal outcome. From the present study it can be concluded that elective caesarean section scheduled at 38 and 40 weeks of gestation carried a similar risk of neonatal outcomes like apgar score at 1 min and 5 min, hypothermia, hypoglycemia, feeding difficulties, respiratory complications and sepsis. Elective caesarean section at 38 weeks does not increase the risk of the fetal morbidity. So elective caesarean section can be done in between 38 to 40 weeks depending upon the resources available in a setup.

A few pot holes faced during the study were lack of proper infrastructure, over-crowding and non-compliance of the patients.

Greatest emphasis attached to fetal welfare in today's small family norm has changed the delivery practices in favour of C-Section. There is no empirical evidence for an optimum percentage. What matters most is that all women who need caesarean sections receive them (WHO Statement 2010).

The study was undertaken with the aim to find correlation between gestational age of elective caesarean section performed at 38 weeks and 40 weeks and neonatal outcome. In developing countries like India where there is large load of elective caesarean sections in government sectors, most of the times the patients are unbooked, uninvestigated, illiterates and don't come for weekly follow ups, they usually land up in emergency caesarean sections, so in those cases elective caesarean sections can be performed at 38 weeks also, as the neonatal outcomes at 38 weeks are similar to 40 weeks.

## Following conclusion was drawn from the study:

1. Neonatal outcomes are similar in elective caesarean sections done at 38 and 40 weeks of gestation
2. Elective caesarean section is safe for both mother and the neonate if conducted at 38 weeks.

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