



## Comparison of Feto-Maternal Outcome after Caesarean Section Done In First Stage of Labour versus Second Stage of Labour

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### Abstract

**Introduction:** Caesarean Section is the most commonly performed abdominal operation in women all over the world. Caesarean section during the second stage of labor carry higher maternal morbidity due to major haemorrhage, uterine atonia, wound infection and prolonged operation time. Neonatal mortality and morbidity due to hypoxia and fetal trauma, remains to be one of the major issues regarding the caesarean section performed in the second stage of labour.

**Methods:** This observational study was conducted at department of Obstetrics and Gynecology, SMS Medical College, Jaipur from March 2021 to July 2022. 2 groups named group A (stage 1 labor caesarean section) and group B (stage 2 labor caesarean section) each contains 48 subjects, were allocated.

**Results:** A hospital based observational study was conducted with 92 patients to compare caesarean section in first stage and second stage of labour. The maternal complications like uterine atonia and Wound infection higher in second stage of labour. The fetal complications like NICU admission require more and APGAR scoreless in second stage of labour

**Conclusions:** Women undergoing caesarean section in the second stage of labour have increased maternal and fetal morbidity and required special care and should be handled and operated by experienced obstetricians and the neonatologists should be present.

**Keywords:** Caesarean section, uterine atonia, APGAR score, wound infection.

## INTRODUCTION

Caesarean Section is the most commonly performed abdominal operation in women all over the world.<sup>[1-3]</sup> The use of caesarean section (CS) has increased dramatically worldwide in the last decades.<sup>[4]</sup>

In Medical colleges and teaching hospitals in India the overall rate of caesarean deliveries is 24.4%. One fourth (25%) of the primary caesarean section are reported to be performed in the second stage of labour and are more complicated compared to those performed in the first stage<sup>[5]</sup> Maternal and infant outcomes may be affected by the timing of caesarean delivery.

Caesarean section during the second stage of labor with an engaged head is generally thought to carry higher maternal morbidity due to major haemorrhage, tearing of the lower uterine segment, extension of the uterine incision and incision of the urinary bladder and prolonged operation time. Caesarean section at full dilatation of cervix with an impacted fetal head can be technically difficult. Mechanical obstruction and deeply impacted and jammed fetal head after a prolonged second stage are common indications for second-stage caesarean delivery where epidural analgesia is almost never used. In addition, a large bulk of referred cases arrives relatively late in labor with features of obstruction.<sup>[6,7].</sup>

Neonatal mortality and morbidity due to hypoxia and fetal trauma, remains to be one of the major issues regarding the caesarean section performed in the second stage of labour. [7-9]. Delaying caesarean delivery until the second stage of labor also puts the fetus at an increased risk of hypoxia.<sup>[9]</sup>

This study was done at our tertiary care centre to compare fetomaternal complications of caesarean section in first stage and second stage of labour and the strategy to reduce maternal and neonatal complications.

### Aims and objectives

To study fetomaternal outcomes of the caesarean sections performed in first stage versus second stage of labour and to find out difference in proportion of fetomaternal complications (maternal complications like major hemorrhage, tearing of the lower uterine segment, extension of the uterine incision and incision of the urinary bladder and prolonged operation time, Fetal complications like hypoxia and fetal trauma) in two study groups.

### Material and methods

This observational study was conducted at department of Obstetrics and Gynecology, SMS Medical College, Jaipur from March 2021 to July 2022. 2 groups named group A (stage 1 labor caesarean section) and group B (stage 2 labor caesarean section) each contains 48 subjects, were allocated.

### Inclusion Criteria

1. Pregnant women with singleton fetus.
2. Pregnant women with vertex presentation.
3. Pregnant women have gestational age older than 37 weeks of gestation.
4. Pregnant women giving consent to participate in the study.

### Exclusion Criteria

1. Pregnant women with maternal co-morbid diseases.
2. Pregnant women associated obstetric complications such as preeclampsia and gestational diabetes mellitus.
3. Pregnant women with major fetal structural or chromosomal abnormalities.
4. Pregnancies with placenta previa, premature rupture of membranes, abruption placentae.
5. Pregnant women who had undergone a previous caesarean operation.

Pregnant women undergoing caesarean section in second stage of labour and consecutive this one caesarean section in first stage of labour at Obstetrics and Gynecology Department were recruited for the study. The outcome variable maternal (major hemorrhage, tearing of the lower uterine segment, extension of the uterine incision and incision of the urinary bladder and prolonged operation time) and fetal (hypoxia and fetal trauma) were observed in two groups and analysed.

## RESULTS

A hospital based observational study was conducted with 92 patients to compare caesarean section in first stage and second stage of labour. The patients were allocated into the following two groups having 46 patients in each group:

Group A- Caesarean section conducted in the first stage of labour

Group B - Caesarean section conducted in the second stage of labour

**Table 1: Distribution of study populations according to different parameters**

Parameter	Group A	Group B	P value
Mean age(years)	35.30±3.39	36.47±3.16	0.09
BMI	25.36±3.03	24.22±2.92	0.068
Primigravida(N)	30	26	0.392
Multigravida(N)	16	20	
Gestational age at delivery(weeks)	38.15±1.21	38.54±1.39	0.154
Dilatation of cervix at time of delivery(cm)	5.19-1.57	9.86-0.34	<0.0001
Duration of labor(hours)	9.65±1.10	11.56±2.13	<0.0001
Duration of surgery(minutes)	35.6±7.84	46.28±14.24	<0.0001

Table 1 shows that both groups are comparable on the basis of mean age, BMI, parity, gestational age at the time of delivery ( $p>0.05$ ). Dilatation of cervix at the time of delivery is significantly higher in group B ( $p<0.0001$ ). Duration of labor and duration surgery are significantly high in group B ( $P<0.0001$ ).

### Comparison of maternal complications

**Table 2: Distribution of patients according to Maternal Complications**

Maternal outcome	Group A		Group B	
	N	%	N	%
Atonic PPH	4	8.70	4	8.70
Blood transfusion	2	4.35	6	13.04
Uterine artery ligation	1	2.17	2	4.35
Uterine atonia	1	2.17	9	19.57
Wound infection	1	2.17	11	23.91

The number of patients that had uterine atonia (2.17% vs. 19.57%) and Wound infection (2.17% vs. 23.91%) was significantly lesser in Group A compared to Group B according to Chi-Square test ( $p<0.05$ ).

The incidence of atonic PPH (8.70% vs. 8.70%), uterine artery ligation (2.17% vs. 4.35%) and requirement of blood transfusion were comparable between the two groups ( $p>0.05$ ) and were non-significant.

### Comparison of neonatal outcome following delivery

**TABLE 3: Distribution of neonates according to Neonatal Outcomes**

Neonatal outcome	Group 1		Group 2	
	N	%	N	%
Seizure	2	4.35	4	8.70
Septicemia	3	6.52	5	10.87
NICU admission	4	8.70	21	45.65
APGAR at 1 min	8.00±0.59		6.86±0.83	
APGAR at 5 min	9.08±0.78		7.37 ± 0.77	

There requirement of NICU admission (8.70% vs. 45.65%) was significantly lesser in Group A compared to Group B ( $p<0.05$ ).

The incidence of neonatal septicemia (6.52% vs. 10.87%) and neonatal seizure (4.35% vs. 8.70%) was comparable between the two groups ( $p>0.05$ ).

The mean APGAR score at 1 min was 8.00±0.59 and 6.86±0.83 in Group A and Group B respectively. The mean APGAR score at 5 mins was 9.08±0.78 and 7.37 ± 0.77 in Group A and Group B respectively. According to Student t-test there was a statistically significant difference between the two groups ( $p<0.05$ ).

## DISCUSSION

A hospital based observational study was conducted with 92 patients to compare caesarean section in first stage and second stage of labour. The patients were allocated into the following two groups having 46 patients in each group:

**Group A** - Caesarean delivery in the first stage of labour

**Group B** - Caesarean delivery in the second stage of labour

Mean duration of labour was significantly lesser in Group A compared to Group B (9.65±1.10 hours vs. 11.56±2.13 hours;  $p<0.05$ ). Das S et al<sup>[14]</sup> noted similar observations in their study [13.98±1.26 Vs 11.43±2.12,  $P<0.05$ ]. Mean duration of operation was significantly lesser in Group A compared to Group B (35.6±7.84 mins vs. 46.28±14.24 mins;  $p<0.05$ ). Sinha S et al<sup>[15]</sup> also observed that operative duration was significantly greater in group B (43.33±6.46 min, 11.87±5.25days) than group A (34.23±5.84 min, 8.11±1.83days). In the present study, the number of patients that had uterine atonia (2.17% vs. 19.57%) and required blood transfusion (4.35% vs. 13.04%) was significantly lesser in Group A compared to Group B ( $p<0.05$ ). The incidence of atonic PPH (8.70% vs. 8.70%) and uterine artery ligation (2.17% vs.

4.35%) was comparable between the groups ( $p>0.05$ ) while the incidence of wound infection (2.17% vs. 23.91%) was significantly lesser in Group A compared to Group B ( $p<0.05$ ). This is in concordance to the studies of Das S et al<sup>[14]</sup>, Jayaram J et al<sup>[13]</sup>, Sinha S et al<sup>[15]</sup>, Gupta N et al<sup>[12]</sup>, Gurung P et al<sup>[11]</sup> and Sucak A et al<sup>[10]</sup>

It was observed in the present study that the mean APGAR Score at 1 min was  $8.00\pm 0.59$  and  $6.86\pm 0.83$  in Group A and Group B respectively. The mean APGAR Score at 5 mins was  $9.08\pm 0.78$  and  $7.37 + 0.77$  in Group A and Group B respectively. Requirement of NICU admission (8.70% vs. 45.65%) was significantly lesser in Group A compared to Group B. The incidence of neonatal septicemia (6.52% vs. 10.87%) and neonatal seizure (4.35% vs. 8.70%) was comparable between the two groups ( $p>0.05$ ). These findings are similar to the studies of Das S et al<sup>[14]</sup>, Sinha S et al<sup>[15]</sup>, Gupta N et al<sup>[12]</sup>, and Jayaram J et al<sup>[13]</sup>

## CONCLUSION

Women undergoing caesarean section in the second stage of labour have increased maternal and fetal morbidity and required special care and should be handled and operated by experienced obstetricians. The neonatologists should be present in every case of caesarean section performed in the second stage of labour. The rate of complications can be avoided by an improvement of antenatal care, pelvic assessment in early labour, and timely intervention.

In fact, anticipation about the possibility of LSCS in second stage of labour should be done like macrosomia, borderline CPD where one can prevent the complications by taking an early decision with counseling of the patient and relatives.

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