

A STUDY ON THE SECOND STAGE CESAREAN SECTION-MATERNAL AND FETAL OUTCOME

V.H.Vanitha Rukmani¹, Buvaneshwari², Muthu Vadhana³, Rajapreethi⁴

Received : 02/01/2023
Received in revised form : 19/02/2023
Accepted : 05/03/2023

Keywords:

Cesarean section, maternal mortality,
fetal morbidity, short-term outcomes.

Corresponding Author:

Dr. M. Rajapreethi,
Email: dr.rajabpreethi@gmail.com.

DOI: 10.47009/jamp.2023.5.6.307

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

Int J Acad Med Pharm
2023; 5 (6); 1494-1497



¹Senior Assistant Professor, Department of Obstetrics and Gynaecology, Government Theni Medical College, Tamilnadu, India.

²Assistant Professor, Department of Obstetrics and Gynaecology, Government Theni Medical College, Tamilnadu, India.

³Assistant Professor, Department of Obstetrics and Gynaecology, Government Theni Medical College, Tamilnadu, India.

⁴Assistant Professor, Department of Obstetrics and Gynaecology, Government Theni Medical College, Tamilnadu, India.

Abstract

Background: Caesarean sections performed during the second stage of labour, when the cervix is fully dilated, are increasing. This study examined the reasons for and outcomes of these procedures, which can be risky for both mothers and babies. It focuses on women with uncomplicated pregnancies after 37 weeks who underwent second-stage caesarean sections and analyses maternal and fetal health. Healthcare professionals can improve maternal and fetal outcomes by understanding the factors influencing this increasing trend. **Material and Methods:** This study was conducted at Theni Medical College Hospital and included women with singleton pregnancies after 37 completed weeks of gestation who underwent a second-stage caesarean section. **Results:** The most common complications were PPH (31%), blood-stained urine (10%), and LUS tear/angle extension (5%). To date, no hysterectomies have been reported. Perinatal asphyxia occurred in 32% of the patients, followed by respiratory distress (12%) and minor trauma (9%). Primigravidas accounted for 60% of cases. Deep transverse arrest (49%) and fetal distress (37%) were the most common reasons for caesarean section. Increased operating time is common because of delivery challenges, uterine issues, and bleeding. Paralytic ileus and blood-stained urine were the main complications, which usually resolved within a day. Most women were 23-27 years old, delivered at 38 weeks, and stayed in the hospital for an average of 5.45 days. The mean weight was 2.8 kg. **Conclusion:** The study concludes that Second-stage caesarean section is associated with increased maternal and fetal morbidity, and efforts should be made to prevent prolonged second-stage labour and minimise the need for caesarean section.

INTRODUCTION

Caesarean delivery, characterised by the extrusion of the fetus through incisions in both the abdominal and uterine walls, is a widely performed major abdominal surgical procedure among women globally. Despite efforts to curb the number of caesarean deliveries, the rate of this procedure continues to rise, which is a cause for concern as it has been linked to a greater likelihood of adverse outcomes for both the mother and the fetus when compared to vaginal delivery.^[1] caesarean delivery may be performed before labour, during the first or second stages. The second stage of labour commences once cervical dilation is complete, and concludes with fetal delivery. There has been considerable discourse in recent times regarding the appropriate duration of the second stage of labour. In the past, the second stage of labour was limited to less

than two hours. However, with the advent of regional anaesthesia, the second stage of labour has been extended up to three hours.^[2]

The risk factors for an extended second stage of labour include epidural analgesia, posterior occipital position, the longer first stage of labour, nulliparity, short maternal stature, high birth weight, and high head station at complete cervical dilatation. Second-stage interventions, such as assisted vaginal delivery or instrumental delivery.^[3] Worldwide, 10-20% of deliveries require some form of intervention, which is often a caesarean section. According to the Royal College of Obstetricians and Gynaecologists (RCOG), 6% of primary caesarean sections occur at full dilatation, and in 50% of these cases, instrumental vaginal delivery was not attempted. A caesarean section at full dilatation is performed when the mother requires delivery in the second stage of

labour, which may pose a risk to herself or the fetus and cannot be addressed through assisted vaginal delivery, as in cases of a prolonged second stage of labour, deep, transverse arrest, and fetal compromise.^[4]

The performance of a second-stage caesarean section is technically challenging because of the engagement of the fetal head and is associated with increased maternal and fetal morbidity. Maternal morbidity is characterised by major haemorrhage, extension of the uterine incision into the broad ligament, prolonged operating time, bladder injury, and fever. Neonatal mortality and morbidity are primarily attributable to hypoxia and fetal trauma. Given the critical nature of childbirth, healthcare providers need to identify factors affecting the second stage of labour and implement appropriate interventions to improve maternal and fetal outcomes. Considering these factors, I believe that studying the maternal and fetal outcomes of second-stage caesarean sections is of utmost importance, as this procedure is becoming increasingly common.^[5] This study will include all women with singleton pregnancies who undergo caesarean section at the second stage and who have no medical or obstetrical complications. This study assessed the maternal and perinatal outcomes.

Aim

This study aimed to determine the indications for second-stage caesarean section, including complications during delivery. Intraoperative and postoperative risks are associated with this procedure, and studying maternal and fetal outcomes helps to understand its overall impact.

MATERIAL AND METHODS

This prospective observational study was conducted from September 2020 to September 2021 in women with singleton low-risk pregnancies, after 37 completed weeks of gestation, admitted under obstetrics and gynaecology in Theni Medical College Hospital, who underwent a second-stage caesarean section, and maternal and fetal outcomes. The institutional ethics committee approved the study before its initiation.

Inclusion Criteria

A second-stage caesarean section is indicated for singleton live pregnancies regardless of parity when the period of gestation is beyond 37 weeks, there is a cephalic presentation, and there is no history of previous lower-segment caesarean section (LSCS).

Exclusion Criteria

This applies to both multiple pregnancies and intrauterine death (IUDs); cases involving preterm births or medical complications associated with pregnancy were excluded.

After 37 weeks, all women with singleton pregnancies without any antenatal/medical complications were observed during the second stage of labour. Patient selection is based on the inclusion and exclusion criteria. The analysis was confined to participants who reached the second stage of labour. The duration of the second stage was calculated from cervical examination, which revealed full dilatation until delivery. The decision regarding ARM/IOL/synto acceleration/was made according to the labour room protocol. Continuous monitoring of FHR/contractions was performed every 5 min during 2nd stage. The second stage of labour was analysed based on the duration, i.e., 2 hours for nulliparas and one hour for multiparas. Patients who underwent caesarean section in the second stage of labour were studied for maternal and fetal outcomes.

RESULTS

In our study, maternal morbidity was observed as PPH in 31 patients. Of these 8 cases, compression sutures and uterine artery ligation were required. The remaining 23 patients were medically managed. The next most common finding was blood-stained urine (10%) due to bladder congestion. Other maternal complications included LUS tear and angle extension (5%), bladder injury (3%), febrile morbidity (7%), and wound sepsis (3%). Obstetric hysterectomy was reported to be nil.

In the second-stage LSCS cases, 60% were primigravida, and 40% were multigravida. The most common reason for the procedure was deep transverse arrest (49 cases), followed by fetal distress (37 cases). Perinatal asphyxia was observed in 32% of the cases, respiratory distress in 12%, and minor trauma in 9%. Increased operating time was noted in most cases due to challenges in baby delivery, uterine incision extension, and postpartum haemorrhage. Common postoperative complications included paralytic ileus and blood-stained urine, which typically resolved within 24 hours. [Table 1]

Most cases (49%) were in the 23–27 age group, with the second-highest representation in the 27-age group. The most common gestational age at delivery was 38 weeks (43%), and 29 patients had a postoperative hospital stay of > 5 days. The average hospital stay was 5.45 days, and the mean birth weight of the babies in the study was 2.8 kg. [Table 2]

Table 1: Various distributions in the study population

		No of cases
Parity	Primi	60
	Multi	40
Indications	Deep Transverse Arrest	49
	Deflexed Head	10
	Fetal Distress	37
	Non-progress of labor	4
Maternal Complications	Angle Extension	5
	Bladder Injury	3
	Bloodstained urine	10

	Febrile morbidity	7
	Hysterectomy	Nil
	LUS Tear	8
	PPH (medical management)	23
	PPH (surgical management)	8
	Wound sepsis	3
	Nil	33
Fetal Morbidity	Perinatal asphyxia	32
	Respiratory Distress	12
	Trauma	9
	Nil	47
Operative Time	Increased	90
	Not Increased	10
Intra Operative Complications	PPH	31
	Bladder injuries	3
	Extension of uterine angles	5
	Obstetric hysterectomy	Nil
	Nil	61
Post-Operative Complications	Bloodstained urine	10
	Febrile Illness	7
	Paralytic Ileus	16
	Wound Infection	3
	Nil	54

Table 2: Mean of Age, gestational age, hospital stays in days, birth weight in Kgs in the study population

Distribution	Mean±SD
Age	25.08±2.967
Gestational Age	37.93±0.756
Hospital Stay in days	5.45
Birth weight in Kgs	2.88±0.265

DISCUSSION

This is a prospective observational study of 100 women with singleton low-risk pregnancy, after 37 completed weeks of gestation, admitted to Theni Medical College Hospital inclusive of referral cases between September 2020 and September 2021 who underwent an indicated second-stage caesarean section and various maternal and perinatal outcomes. In our study, deep transverse arrest was the most common indication (49 %) for caesarean section in the second stage of labour, followed by fetal distress (37 %). In a study conducted by Malathi et al.⁶ deep transverse arrest was the second most common indication (22%) for caesarean section in the second stage. In our study, the mean patient age was 25 years. Among these, 60 % were primigravida, and 40 % were multigravida. In a study on the frequency of second-stage interventions and its outcome about instrumental vaginal delivery by Baloch et al.⁷ most of the women who needed a second-stage intervention were aged between 21 and 30 years. Primigravida accounted for 45% of the total. In the study by Malathi et al.⁶ 61% of women were in the age group of 21 to 30 years, and primigravida contributed 74%. The increased frequency of second-stage caesareans in primigravidas could be due to cephalopelvic disproportion and rigid perineum. Risks of both maternal and perinatal adverse outcomes increase with increased duration of the second stage, particularly for durations longer than 30 minutes to 2 hours. Caesarean section intervention at this stage may lead to significant maternal complications, such as PPH, lower uterine segment tear, angle extension, bladder injury, and

postoperative sepsis. There was a significant relationship between PPH and the duration of the second stage. Neonatal complications included low Apgar scores, respiratory distress, and NICU care >48 hours. Dan selo-ojeme et al.⁸ studied that when compared with caesarean delivery in the first stage of labour, women undergoing cesarean delivery at full cervical dilatation were 4.6 times more likely to have composite intraoperative complications (95% CI 2.7–7.9, $P < 0.001$), 3.1 times more likely to have blood loss greater than 1,000 ml (95% CI 1.3–7.4, $P = 0.01$), and 2.9 times more likely to have a blood transfusion (95% CI 1.5– 5.6, $P < 0.001$). The risk of neonatal morbidity was higher in first-stage caesareans when they were performed for presumed fetal compromise (66.3 vs. 26.3%, $P = 0.002$) and lower when they were performed for failure to progress (18.4 vs. 42%, $P = 0.02$

In our study, maternal morbidity was observed as PPH in 31 patients. Of these 8 cases, surgical management was required. B-Lynch sutures. The remaining 23 patients were medically managed. Other maternal complications included LUS tear and angle extension (5%), blood-stained urine (10%), bladder injury (3 %), febrile morbidity (7%), and wound sepsis (3%). Obstetric hysterectomy was reported to be nil. In the study by Malathi et al.⁶ PPH was observed in 8% of patients, of whom 2% were managed medically. Surgical management was performed in 6% of cases. Other maternal morbidities were similar to those observed in our study. Similarly, in a study by Baloch et al.⁷ PPH was present in 12.5% of cases, wound infection in 8.33%, and angle extension in 5.41% of cases. In the study by Gurung et al.⁹ atonic postpartum haemorrhage

uterine incision extension was observed in 18 (12.5 %), postoperative fever in 27 (18.8 %), and wound infection in 7 (4.8 %) patients. Caesarean section performed in the second stage of labour was technically difficult because the fetal head was engaged in the pelvis, the uterine muscles were thin and tense, and identification of the bladder and lower segment was difficult in addition to these relatively high baby weights. Caesarean section in the second stage of labour had a significantly longer duration in the study by Cebekulu et al,^[10] study (median 45 vs. 30 min; $P < 0.001$). The mean birth weight of these babies was 2.8 kg. Perinatal asphyxia was seen in 32 % of cases, respiratory distress in 12 %, and minor trauma in 9%, which included cephalohematoma. There are controversies regarding fetal outcomes in cases of caesarean sections in the second stage of labour. In a study by Murphy et al,^[11] delivery by CS at full dilatation has been shown to result in more admissions to the NICU due to reduced Apgar score and umbilical artery pH compared with babies born by successful operative vaginal delivery. Babies born by CS at full dilatation were 1.5 times more likely to have perinatal asphyxia than those born by CS during the first stage of labour (11% of 549 deliveries versus 8% of 1074 deliveries; 95% CI 1.06–2.14, $P < 0.05$). However, this is likely to result from increasing fetal compromise with prolonged delivery duration and not a result of the procedure.

CONCLUSION

The incidence of second-stage caesarean section is higher in developing countries. Caesarean section with full cervical dilation is a critical situation associated with increased maternal and fetal morbidity. This can be avoided by early assessment and diagnosis of cephalopelvic disproportion in labour, assessment of the position of the fetal head by ultrasound, and attendance of skilled healthcare providers during labour. Implementing safe and effective instrumental delivery in skilled personnel can also lead to better maternal outcomes. The focus should be on ensuring normal progress of labour,

proper use of the partogram, oxytocin augmentation if contractions are inadequate, avoidance of premature bearing down, alerting the neonatologist beforehand, proper intrapartum fetal surveillance, and timely decision for caesarean section, especially when the expected fetal weight is more than 3 kg

REFERENCES

1. Johnson CT, Johnson TRB, Adanu RMK. Obstetric Surgery. In: Disease Control Priorities, Third Edition (Volume 1): Essential Surgery. The World Bank; 2015. p. 77–94.
2. Hutchison J, Mahdy H, Hutchison J. Stages of Labor. StatPearls Publishing; 2023.
3. Bahmaei H, Mousavi P, Haghhighizadeh MH, Iravani M. The impact of maternal position in labour on the occiput-posterior position of fetus and pregnancy outcomes in pregnant women without epidural analgesia. *J Family Reprod Health* [Internet]. 2023; Available from: <http://dx.doi.org/10.18502/jfrh.v17i2.12871>
4. Torloni MR, Betran AP, Souza JP, Widmer M, Allen T, Gulmezoglu M, et al. Classifications for caesarean section: A systematic review. *PLoS One* [Internet]. 2011;6(1):e14566. Available from: <http://dx.doi.org/10.1371/journal.pone.0014566>
5. Vashi CA, Vijay N, Bhalerao A, Shetty A. Obstetrics outcomes in women undergoing second-stage cesarean section: A cross-sectional study. *Cureus* [Internet]. 2023; Available from: <http://dx.doi.org/10.7759/cureus.39911>
6. Malathi J, Sunita V. Comparison of obstetric outcome between first and second stage cesarean sections in rural tertiary hospital. *Int J Pharm Biomed Reas*. 2012;222–5.
7. Baloch S, Khaskheli M, Khushk IA, Sheeba A. Frequency of second stage intervention and its outcome in relation with instrumental vaginal delivery versus caesarean section. *J Ayub Med Coll Abbottabad*. 2008;20(1):87–90.
8. Selo-Ojeme D, Sathiyathasan S, Fayyaz M. Caesarean delivery at full cervical dilatation versus caesarean delivery in the first stage of labour: comparison of maternal and perinatal morbidity. *Arch Gynecol Obstet* [Internet]. 2008;278(3):245–9. Available from: <http://dx.doi.org/10.1007/s00404-007-0548-5>
9. Gurung P, Malla S, Lama S, Malla A, Singh A. Caesarean section during second stage of labour in a tertiary centre. *J Nepal Health Res Counc* [Internet]. 2017;15(2):178–81. Available from: <http://dx.doi.org/10.3126/jnhrc.v15i2.18210>
10. Cebekulu L, Buchmann EJ. Complications associated with cesarean section in the second stage of labour. *Int J Gynaecol Obstet* [Internet]. 2006;95(2):110–4. Available from: <http://dx.doi.org/10.1016/j.ijgo.2006.06.026>
11. Murphy D. Early maternal and neonatal morbidity associated with operative delivery in the second stage of labor: a cohort study. *Lancet*. 2001;358:1203–7.