

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20230674>

Original Research Article

Feto-maternal outcome of second stage cesarean section in B. P. Koirala institute of health sciences: a retrospective study

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Received: 20 February 2023

Accepted: 06 March 2023

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ABSTRACT

Background: Cesarean section (CS) is a common surgical procedure performed in obstetrics. The rate of rise of CS can be attributed to the increase in safety of the procedure, enhanced surgical techniques, improved antibiotics, increase in number of women requesting for CS. In general, caesarean delivery is associated with more severe maternal complications compared to vaginal deliveries. The stage of labour at which CS is undertaken has been shown to influence the rate/risk of complication.

Methods: It was an observational and retrospective study that depended on some clinical records related to more than 37 weeks' gestation. The study was conducted in BP Koirala institute of health sciences, Dharan Nepal from 2021 December to 2022 December. The neonatal as well as maternal outcomes have been evaluated for CS among those who were observing the second stage in their labor period. The test statistics used to analyse the data were descriptive statistics chi-square test.

Results: The total delivery was 16131 out of which there were 6748 cesarean deliveries. Out of 6748 CS 65 patients had cesarean in second stage of labour. The most common cause of CS in second stage of labor was arrest of descent and dilatation (40%), followed by meconium-stained liquor (15.38%), occipito-posterior position (12.30%), and obstructed labour (3.07%) Being the least cause. One patient had to undergo peri-partum hysterectomy and the most common complication of second stage CS was prolong foleys catheterization (15 patients), post-partum febrile illness (20 patients out of 65), followed by wound infection, PPH, blood transfusion. The neonatal admission for NICU were birth asphyxia and respiratory distress were 50% each.

Conclusions: CS in the second stage of labor is correlated with considerably improved neonatal and maternal rate of morbidity along with expanded neonatal mortality. A proper judgment and skilled obstetrician are required to perform a second-stage CS. CS in the second stage of labor is a technically demanding procedure with an increased risk of maternal and neonatal morbidity compared to the CS in the first stage of labor.

Keywords: CS, Second stage, Labour

INTRODUCTION

Cesarean section (CS) is a common surgical procedure performed in obstetrics. Its rate has been increasing over the years. The rate of rise of CS can be attributed to the increase in safety of the procedure, enhanced surgical techniques, improved antibiotics, increase in number of women requesting for CSs, decrease in the rate of

instrumental vaginal deliveries, improved anesthesia amongst others.¹ Despite the improvement of safety of CS over the years, there are still various complications arising from this procedure which may cause maternal/fetal morbidity and mortality. In general, caesarean delivery is associated with more severe maternal complications compared to vaginal deliveries.^{2,3} The stage of labour at which CS is undertaken has been shown to influence the

rate/risk of complication.⁴ As the CS rate is rising everywhere, so is the incidence of second-stage CS. The incidence of second stage CS is on the rise. Second stage CS is associated more chances of maternal and fetal injury. Judicious use of oxytocin and assisted vaginal deliveries may decrease the need for second stage CS.⁵

Second stage CSs are associated with more complications than first stage CSs. CS done at full dilatation of cervix with head deeply engaged in the pelvis is a potential risk factor for maternal and fetal injury. Second stage CS is associated with more genital trauma and perinatal morbidity. Second stage CSs can be related to trauma, bleeding, peripartum hysterectomy.⁶

According to the Royal college of obstetricians and gynaecologists audit figures, about 35% of caesareans for singleton pregnancies are performed because of failure to progress in labour, of which a quarter occur at full cervical dilatation. In 55% of these cases no attempt was made to achieve a vaginal birth with either forceps or ventouse. Despite much discussion of the increase in elective caesarean rates over the past 20 years, with little attention has been paid to the rise in second stage CS rates.⁷

The rising CS rates worldwide are also due to ever widening indications including maternal request for CS for a variety of reasons such as prevention of pelvic floor dysfunction, prevention of mother to child transmission of HIV and the fear of litigation. In addition, there is a decreasing trend in the rate of assisted vaginal deliveries and a concomitant increase in second stage CS in hospitals.⁸

Aim

Aim of the study was to analyse the fetomaternal outcome of second stage CS in pregnancy at term period of gestation.

General objectives

General objectives were to analyse fetomaternal outcome in second stage CS.

Specific objectives

Specific objectives to analyse the indication for CS in second stage of labor, to observe the maternal outcome and to observe the fetal outcome.

B. P Koirala institute of health sciences, Dharan is a tertiary care referral hospital which provides services to different parts of Eastern part of Nepal, where total obstetric patient admitted is around 13,000-16000 in a year. Being an institute that provides quality service to such a large population and provides a very good platform for conducting clinical epidemiological study in the topic of interest which has not been conducted in the past.

METHODS

This is a retrospective study descriptive in nature conducted over a period of one year in patients who has been delivered via CS in second stage of labour in B. P. Koirala institute of health sciences, Dharan Nepal from 2021 to 2022 December.

The study population was those patients who were admitted in antenatal ward of obstetrics and gynecology department for delivery.

Inclusion criteria included-women delivered via CS in second stage of labour at Term period of gestation in BPKIHS and singleton pregnancy with cephalic presentation.

Exclusion criteria excluded patients with multiple pregnancy, malpresentation and preterm deliveries.

Ethical approval

Ethical clearance was obtained by the institutional review committee (IRC/2465/023).

Statistical analysis

Data were processed and analyzed using statistical package for social science (SPSS) version-21. The level of significance was set at 0.05 and p<0.05 was considered significant. The test statistics used to analyze the data were descriptive statistics, chi square test.

RESULTS

The purpose of the current study was to retrospectively analyze the second stage of CS and its relationship to pregnancy outcomes. Total 65 cases were chosen for this study.

In a duration of one year, spontaneous vaginal birth was the most prevalent delivery method (58.16%), while caesarian deliveries (41.83%) were found to be less frequent (Table 2). And out of 6748 CS 65 had undergone CS in second stage of labour.

Table 1: Mode of delivery, (n=16,131).

Total delivery	N	Percentage (%)
SVD	9383	58.16
CS	6748	41.83
Total	16,131	10

Out of 65 case 59 mothers (0.9%) were found to have no issues and delivered babies without any complications, and 0.06% babies were recommended for NICU admission and only 2 babies were found as still birth.

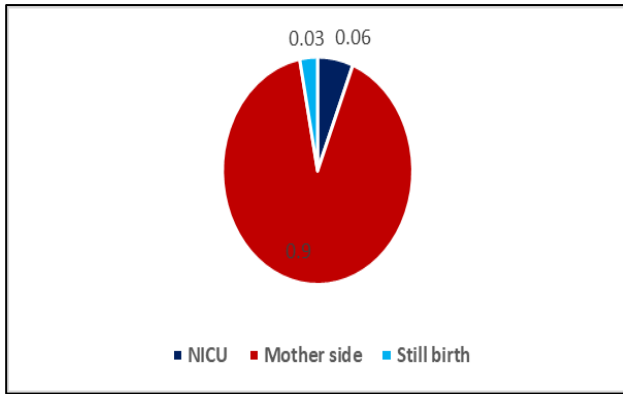


Figure 1: Fetal outcome.

There are 4 NICU admissions and causes were 1. RDS (respiratory distress syndrome). 2. HIE (Hypoxic ischemic encephalopathy). Both causes were found 50% in these 65 cases (Table 2).

Table 2: Level of NICU admission.

NICU admission	N	Percentage (%)
RDS	2	50
HIE	2	50

Table 3 showed the outcome of the delivery. The majority of delivery outcome found in the mothers age ranges from 20-30 (55.38%). The second majority were found in the age ranges from 30-40 (40%).

Table 3: Outcome of delivery.

Mother's age (Years)	N	Percentage (%)
<20	3	4.61
20-30	36	55.38
30-40	26	40
Total	65	100

Figure 2 showed that prolonged catheterization was mostly found as post-operative complications. Wound infections were found as second most post-operative complications in these cases. While PPH and Blood transition both were found as 0.07% (Figure 2).

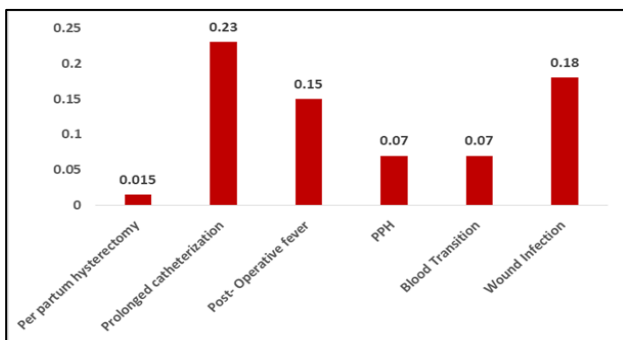


Figure 2: Outcome of delivery.

The fetal outcome of the infants is displayed in Table 4. Approximately 33.84% of the results were in the 2.5-3 kg weight range. The babies' highest weight recorded is 4 kg which is about 6.15%. A total of 30.76% of live newborns were detected in the <2.5 kg.

Table 4: Birth weight of delivered baby.

Fetal outcome (Birth weight) (kg)	N	Percentage (%)
<4	4	6.15
3-4g	19	29.23
2.5-3	22	33.84
<2.5	20	30.76
Total	65	100

The CS indications were shown in Figure 3. Most of these cases (40%) involved arrest of descent and dilatation. Meconium-stained Liquor was also shown to be the study's second-most significant indicators, while obstructed labor was determined to be its least significant indicator.

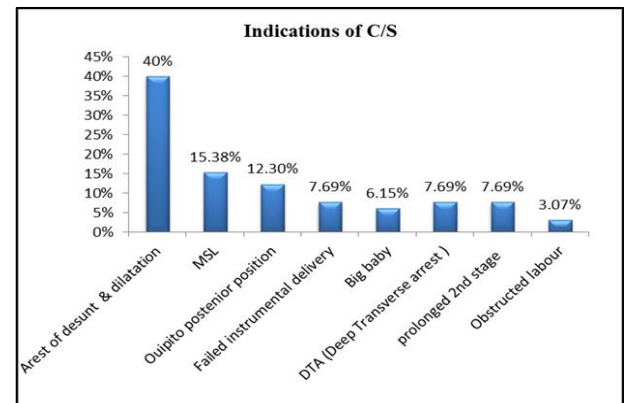


Figure 3: Indication of CS.

DISCUSSION

When the mother needs to deliver the baby at complete cervical dilation, CS at second stage occurs, endangering both the mother and the fetus. Regarding the recent obstetric procedure, making a choice for CS during the second stage of labor has been extremely difficult. The WHO states that the Robson classification of CS helps with CS use optimization, evaluation of methods intended to reduce the CS rate, and ultimately improvement of clinical practices and care quality in various healthcare settings. The purpose of the current study was to retrospectively analyze the second stage of CS and its relationship to pregnancy outcomes.

In a study done by Dahiya et al the most common indications for the cesarean category were arrest in the second stage of their labor (56.1%), and the most common technique of delivery of engaged head was modified Patwardhan method (28.3%). The most common intraoperative complications reported was extension of uterine incision (16.0%), and postoperative complications

were febrile illness (14.1%). The neonatal complications that required NICU admission were birth asphyxia (16%), meconium aspiration (14.1%), neonatal jaundice (4.7%), respiratory distress syndrome (11.3%), and fresh stillbirth (5.6%).⁹ Similarly in my study the most common indication was arrest of descent and dilatation in second stage of labour (40%). The most common intra-operative complication was prolonged foley catheterization (0.23%) followed by post-partum febrile illness (0.15%). The neonatal admission required was for respiratory distress (50%) and for hypoxic ischemic encephalopathy (50%) and two babies were found to be still birth.

One of the study done by Rahim et al in London showed that out of 28,867 deliveries included in the analysis, 493 of these were second-stage CSs. This represented an incidence of 1.7% of all deliveries, 2% of all women in labor, and 2.5% of all women who reach full dilatation. Second-stage CSs continue to be common. Safe delivery of a deeply impacted fetal vertex is essential in modern obstetric practice.¹ Likewise my study showed there were 16131 deliveries during one year of study period in which total CSs were 6748, out of which 65 patients have undergone 2nd stage CS.

A prospective study done by Pillai et al in Tamil Nadu, India showed that the majority of (n=15, 41.67%) cases and controls (n=162, 53.46%) were in the age group of 21-25 years. There was no significant difference in age between cases and controls. The results were statistically significant between cases and controls (p<0.05). Apgar score <7 at five minutes was observed in very less proportion of cases (n=1, 2.78%) and controls (n=2, 0.66%). No statistically significant difference was seen in Apgar score at five minutes and fetal injury between the two study groups.¹⁰ The study conducted at BPKIHS showed majority of the cases were between 20-30 years of age group i.e. 55.38% whereas 0.06% required NICU admission and 0.03% were still birth.

A study conducted by Jones et al in UK conducted in 194 hospitals second stage caesarean births reported. The surgeon used a dis-impaction technique or reported 'difficulty' in 564 (16%) of these. Thirteen babies (2%) died or sustained severe injury. Four babies died (two directly attributable to the impacted fetal head).¹¹ Likewise out of 6748 CS 65 cases were reported to undergo CS in second stage out of which 4 babies required NICU admission and two babies had still birth.

A study conducted by Thirukumar stated that blood-stained urine was the major complication observed in 60% of patients. PPH and Broad ligament hematoma were noted in one in each patient. Mean duration of hospital stay is 2.28 days. Longer duration was 5 days as she underwent total abdominal hysterectomy. All the babies had APGAR score of more than 7 at 5 minutes. Nearly 20% (n=5) of the babies were admitted.¹² Similarly my study showed that prolonged catheterization was there in 0.23% and PPH and blood transfusion were in 0.07% cases and one patient had

to undergo peripartum hysterectomy. Out of 65 case 59 mothers (0.9%) were found to have no issues and delivered babies without any complications, and 0.06% babies were recommended for NICU admission and only 2 babies were found as still birth.

In a study conducted Moodley et al at Durban here were 4 654 deliveries, including 1257 CSs, in the study period. The CS rate was 27.2%. Of 617 (8.5%) emergency CS, 53 were performed in the second stage of labour.¹³ Likewise there were total of 16,131 delivery over a period of one year out of which CS was in 6748 patients and out of 6748 65 patients had undergone CS in second stage of labour.

In study conducted by Balasaheb et al the most common indication for emergency second stage CS was non-progression of labour (41.70%) followed by obstructed labour (32.22%). Least common indication was found to be fetal distress (2.84%).¹⁴ Similarly the present study shows the most common indication for CS is arrest of descent and dilatation (40%) followed by meconium-stained liquor (15.38%), occipito posterios position (12.3%). Least common was for obstructed labor (3.07%).

In a study conducted by Patra et al CPD was the most common indication of LSCS (53.3%). During the post-operative period, 24.4% had PPH, 15.6% had sepsis and 10% required hospitalization for more than 5 days. Among the babies born, 52.2% of the baby required NICU admission. Among the babies admitted in NICU, 29.8% had birth asphyxia, 25.5% had meconium aspiration syndrome, neonatal jaundice (23.4%) and neonatal sepsis (10.6%).¹⁵ Likewise present study shows the most common indication for CS is arrest of descent and dilatation (40%) followed by meconium-stained liquor (15.38%), occipito-posterios position (12.3%). Least common was for obstructed labor (3.07%). The 0.9% babies had no complications and were 0.06% recommended for NICU admission and two babies were still birth.

The present study is a retrospective study. Data might be missing. Small sample size. Study is done only in one center with small sample size.

CONCLUSION

CS in the second stage of labor is correlated with considerably improved neonatal and maternal rate of morbidity along with expanded neonatal mortality. A proper judgment and skilled obstetrician are required to perform a second-stage CS. CS in the second stage of labor is a technically demanding procedure with an increased risk of maternal and neonatal morbidity compared to the CS in the first stage of labor.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Yadav J, Shrestha R, Sah A, Bhagat R. Feto-maternal outcome of second stage cesarean section in B. P. Koirala institute of health sciences: a retrospective study. *Int J Reprod Contracept Obstet Gynecol* 2023;12:801-5.