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A Prospective Observational Study to assess the fetomaternal outcome in second stage cesarean section at a Tertiary Care Hospital

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Abstract

Background: Cesarean section is the most commonly performed abdominal operation in women all over the world. Variable rates of LSCS are observed within and between countries. Second stage LSCS with an impacted fetal head is technically difficult and associated with increased trauma to lower uterine segment, as well as increased hemorrhage and infection.

Method: It is a prospective observational study of 200 cases of cesarean section done in second stage of labor in Government Medical College, Bettiah, West Champaran, Bihar from January, 2020 to October, 2021.

Result: There were 7318 deliveries including 876 cesarean section in the study period. The cesarean rate was 12.01%. Out of these, 200 were done in second stage of labor which is 22.83% of all cesarean sections. Most common indication was non descent of head. Second stage cesarean is associated with increased risk of atonic PPH, lower segment tears including angle extension and broad ligament hematoma along with complications like extraction difficulty, post op fever, wound sepsis, prolonged hospital stay and ICU admission.

Conclusion: Second stage cesarean section are associated with increased intra-operative maternal complications and neonatal morbidity.

Keywords: Cesarean section, fetal distress, maternal morbidity, second stage of labor.

Introduction

Cesarean delivery is defined as the birth of the fetus through incision in the abdominal wall and the uterine wall. Cesarean is the most commonly performed major abdominal operation in women all over the world. Variable rates of cesarean sections are reported

between and within the countries. The rate of cesarean delivery continues to increase despite efforts to constrain operative abdominal deliveries. This is a cause of concern because cesarean is associated with higher likelihood of adverse outcome for both mother and fetus as compared to vaginal delivery. Cesarean can be performed before labor, during first and second stages of labor. A decrease in the rates of operative vaginal delivery has been observed with a corresponding increase in the second stage cesarean deliveries.

Second stage of labor begins when cervical dilatation is complete and ends with the fetal delivery. There has been considerable debate in the recent years on the duration of second stage of labor. In the past the second stage was limited to < 2 hours. Recently the duration is extended upto 3 hours with regional anaesthesia. Second stage interventions are the methods to facilitate delivery of the fetus in the form of assisted vaginal delivery or by instrumental delivery. Worldwide, 10-20% of deliveries require some form of intervention which is frequently cesarean section. A second stage cesarean is technically difficult due to engagement of fetal head and is associated with increased maternal and fetal morbidity. The maternal morbidity includes major hemorrhage, uterine incision extension into the broad ligament and prolonged operating time. Neonatal mortality and morbidity is mainly due to hypoxia and fetal trauma.

Methods and Materials

This is a prospective observational study of 200 cases of cesarean section done in second stage of labor in GMC, Bettiah from January, 2020 to October, 2021. This study was approved by local ethics committee. Verbal consent was obtained from the patients. The onset of labor is defined as the initiation of regular painful uterine contractions. Second stage defined as the period of time from full cervical dilatation (10 cm) to delivery.

Inclusion Criteria

- Singleton pregnancy irrespective of parity
- Period of gestation of > 37 weeks
- Cephalic presentation
- With/without previous LSCS

Exclusion Criteria

- Multiple pregnancy
- Preterm deliveries
- Malpresentations
- Medical complications associated with pregnancy

Result

There were total 7318 deliveries during the study period. Out of these 6442 deliveries were normal vaginal deliveries, 876 cesarean sections, 48 were vacuum assisted deliveries and 25 were forceps deliveries. Out of 876 cesarean sections, 200 were performing in the second stage of labor contributing 2.73% of total deliveries and 22.83%. Most common indication for second stage cesarean is non-descent of head and second is deep transverse arrests. Most common fetal position was occipito-posterior position.

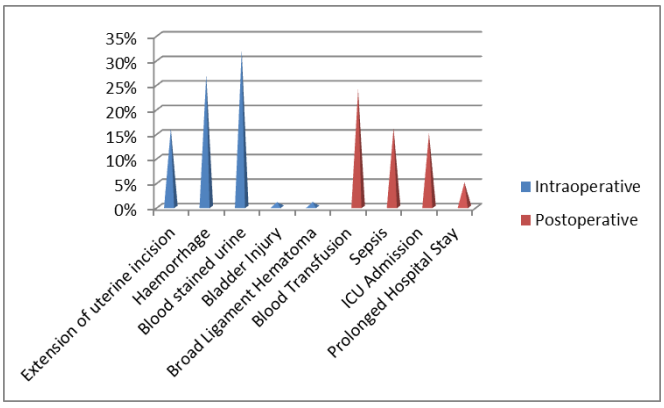
Table-1

Mode of Delivery	Number	Percentage
Normal Vaginal Delivery	6442	88.03%
LSCS	876	11.97%
Vacuum	48	0.66%
Forceps	25	0.34%

Table-2 Indications for Second Stage LSCS

	Indication	Total n = 200	%	Referred cases n = 124 (62%)
I	Non descent of head	152	76	92 (62.53%)
IA	With foetal distress	98	49	50 (51.02%)
i	Non reassuring foetal heart rate	46	23	38 (82.60%)
ii	Thick meconium stained liquor	52	26	27 (51.92%)
IB	With caput succedaneum	78	39	50 (64.10%)
II	Unsuccessful ventouse/forceps	6	3	5 (83.33%)
III	Deep transverse arrest	41	20.50	20 (48.78%)
IV	Retained second twin	1	0.50	1 (100%)

Figure 1: Intraoperative and Postoperative Complications



The mean age of patients who underwent LSCS in second stage was 22.8 years. Among these 122 (61%) patients were primigravida and 78 (39%) patients multigravida. Our hospital is a tertiary care referral centre where high-risk patients are referred, mostly for operative deliveries from the peripheral healthcare units or private centres (often due to patient's financial constraint).

Second stage cesarean section is a challenging operation. There is distortion of pelvic anatomy, thinned out oedematous lower uterine segment and deeply impacted foetal head in the maternal pelvis. The most common indication for cesarean section in the second stage in our study was non-descent of head (associated with either foetal distress or caput succedaneum), 62% of whom were referred cases (Table-2).

Delivery of the deeply engaged head (found in 30%) depended on the ease of the surgeon. Patwardhan technique was applied in 72% of these.

Most common intraoperative complication was blood-stained which was due to advanced bladder during second stage of labor. Similar to Jayaram et al. [5], (26%) major obstetric haemorrhage of > 1000 ml due to atonic uterus and extension of uterine incision leading to increase in blood component transfusions was observed in 27% patients. Increased duration of stay further increased the burden of the hospital, though only 6.25% of our patients stayed for more than 7 days at hospital postoperatively as against 25.5% in another study [6] (Fig. 1).

Table 3: Neonatal morbidity and mortality

	Neonatal Condition	No.	%
1	Intrapartum stillbirth	5	2.5
2	Neonatal intensive care unit admission	86	43
a	Birth asphxia	48	24
b	Meconium aspiration syndrome	28	14
c	Neonatal sepsis	8	4
d	Intracranial haemorrhage	4	2
e	Neonatal death	10	5

The most common foetal complications were brith asphyxia and meconium aspiration syndrome. This might be due to intraoperative foetal hypoxia caused by strong uterine contraction and deeply impacted foetal head. 43% of newborns were admitted in NICU. 43% of newborns were admitted in neonatal intensive care unit. 27% of these were of referred mothers as were also the 5 intrapartum stillbirths and the 8 neonatal mortalities (Table 3).

Discussion

This was a prospective observational study conducted at Govt. Medical College, Bettiah, Bihar from January, 2020 to October, 2021. Out of total 7318 deliveries and 876 cesarean sections, 200 were performed in the second stage of labour which contributes to 2.73% of total deliveries and 22.83% of all cesarean sections. Non descent of head was the most common indication (76%) which is almost similar to the study conducted by Jonna Malathi and Venigalla Seenitha, which had non descent of head in 76.7%.

In this study 122 (61%) women were primigravida and in study by Malathi et al. and Vanigalla Seenitha et al. primigravidas contributed to 74% of patients undergoing second stage cesarean sections. Increased frequency of second stage cesarean in primigravidas could be because of cephalo-pelvic disproportion, rigid perineum and lack of experience of previous labor.

In our study maternal morbidity was observed in the form of PPH, 24 (44.4%) cases of these required surgical management i.e. B Lynch sutures,rest 30 (55.6%) were managed medically. In the study by Malathi and Seenitha PPH was observed in 8% and out of these 2% were managed medically. Other medical complications were LUS tear and angle extension 16%, febrile morbidity 16%, blood stained urine 32% and wound sepsis 7%.

The second stage cesarean section was technically difficult because fetal head was deeply engaged in the pelvis, uterine muscles were thin and tense, identification of the bladder and lower segment was difficult and relatively large baby size.

In this study fetal complications were in the form of birth asphyxia and Meconium aspiration syndrome contributing upto 38% of total neonatal morbidity. There are many controversies regarding fetal outcome. Study by Ayhan Sucak, Asicioglu, Malathi et al. had proved adverse prognostic impact on fetal outcome like our study, but many studies like Allen et al., Alexander Selo-Ofime etc. failed to demonstrate increased fetal complications.

Conclusion

Second stage cesarean section are associated with increased maternal psychological and physical morbidity and increased neonatal morbidities. Technical difficulty is due to deep fetal head impaction and thin and tense maternal uterine muscles. Additionally, identification of bladder and LUS is difficult. These factors contribute to increased duration of surgery and intra-operative complications.

Hence it is recommended that second stage cesarean should ideally be performed and supervised by experienced obstetricians. Timely decision should be taken especially when there is failure to progress of labor and descent of head. There should be advanced and adequate neonatology support.

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee.

Informed consent: Informed consent was obtained from all individual participants included in the study.

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