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EXAMINING THE FETO-MATERNAL RESULTS IN THE CENTRAL INDIA SECOND STAGE CAESAREAN SECTION

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ABSTRACT

BACKGROUND: Among poorer nations, second-stage cesarean sections are more common. Full cervical dilatation with an impacted fetal head necessitates complicated cesarean sections that are linked to a higher risk of problems for both the mother and the fetus. A lower uterine segment that is thinner, less fluid, and a deeply engaged head are typically linked to second-stage cesarean sections. As a result, there may be a greater chance of newborn morbidities including birth hypoxia, NICU admission, and meconium aspiration syndrome, as well as maternal morbidities such an extension of the lower uterine segment incision, uterine atony, and bladder damage. Due to the fetal head's involvement, a second-stage cesarean is technically challenging and is linked to higher rates of morbidity in both the mother and the fetus. Prolonged operating time, significant bleeding, and uterine incision extension into the wide ligament are examples of maternal morbidity.

AIM: The aim of the study is to study the fetomaternal outcome of cesarean sections done in the second stage of labor

MATERIAL AND METHOD: The Department of Obstetrics and Gynecology conducted this prospective observational study. Every lower segment cesarean section carried out in the second stage of labor during the study period was included in the analysis. The patient gave their verbal consent. The start of consistent, painful uterine contractions is known as the onset of labor. The information was taken from the hospital's record section, labor room, and birthing center confinement books. Women with a singleton fetus in a cephalic presentation at term (≥37 weeks) who underwent CS at full dilatation were included in the study. The study excluded patients with concomitant illnesses such as preeclampsia and diabetes. The indications, prenatal outcomes, intraoperative problems, and postoperative complications of women who had second-stage cesarean sections were examined.

RESULTS: There were 6520 deliveries made in total during the study period. Of these, 1589 births were caesarean sectioned. 40 (2.51%) of these cesarean sections were carried out in the second phase. The most frequent reason for LSCS in the second stage of labor—16 instances, or 40% of the total—was non-progress of labor accompanied by fetal distress. This was followed by the deflexed head in 7 cases (17.5%) and deep transverse arrest in 6 cases (15%). In 20 cases (or 50%), the Patwardhan method was the most often used technique for delivering a deeply engaged head. This was followed by the vertex approach in 30% of cases and the push method in 4%. The elongation of uterine angles occurred in 6 cases (15%), atonic PPH in 3 cases (7.5%), bladder injuries in 2 cases (5%), and obstetric hysterectomy in 1 case (2.5%). These were the intra-operative complications.

CONCLUSION: Maternal difficulties and newborn morbidities are linked to cesarean sections performed during the second stage of labor. Maternal and neonatal morbidity as well as newborn death are much higher when cesarean sections are performed during the second stage of labor. To execute a second-stage cesarean section, an experienced obstetrician and sound judgment are needed. Second-stage labor cesarean sections are an unfavorable scenario linked to problems for both the mother and the fetus.

KEYWORDS: Cesarean section, Second stage of labor, Maternal morbidity and Complications

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Introduction:

The birth of the fetus through incisions in the uterine and abdominal walls is known as a cesarean delivery. Worldwide, the most common major abdominal surgery performed on women is a cesarean section. There are reports of varying cesarean section rates both within and between the nations.[1,2] Despite efforts to limit operational abdominal deliveries, the rate of cesarean deliveries keeps rising. This is concerning since, in comparison to vaginal delivery, cesarean sections are linked to a higher risk of negative consequences for the mother and the fetus.[3]

When the mother needs to be delivered at full dilation of the cervix, which puts both the mother and the fetus at danger, a second stage cesarean surgery is performed. In contemporary obstetrics, the rising tendency of CS at the second stage is extremely concerning. Second-stage CS is now more common, up from 0.9% to 2.2%.[4] Concerning increases in the second stage of CS have been noted within the rising CS rate. According to a review of the literature, there are likely other factors contributing to this tendency, including junior staff members' lack of training in second-stage decision-making and their inexperience with aided vaginal birth.[5] An increase in primary CS significantly affects the outcome and delivery of subsequent pregnancies. Five percent of patients with primary CS have no attempt at an instrumental vaginal birth, according to the Royal College of Obstetricians and Gynecologists (RCOG). Six percent of these patients experience CS at full dilation.[6] CS at full dilatation is a technically more challenging procedure than CS in early labor.[7]

The time from complete cervical dilation (10 cm) to fetal birth is known as the second stage of labor. The number of cesarean sections performed has skyrocketed in recent years. According to the Royal College of Obstetricians and Gynecologists (RCOG), there is a lack of training and supervision for junior staff in second-stage decision-making, a lack of experience with difficult-assisted vaginal deliveries, and concerns about potential legal issues arising from maternal and neonatal morbidity in about 6% of cesarean sections. It is theoretically more difficult to perform a Caesarean section at full dilation than it is in the early stages of labor.[7] A second-stage cesarean section carries a high risk of maternal morbidities, including tearing of the lower uterine segment, extension of the uterine incision, bladder injury, postpartum pyrexia, prolonged catheterization, and hospitalization. This is because it is linked to a deeply engaged fetal head, less alcohol, and a thinner lower uterine segment.[8,9]

After cervical dilation is finished, the second stage of labor starts and ends with fetal delivery. The length of the second stage of labor has been the subject of much discussion in recent years. In the past, the second stage of labor was limited to < 2 hours.[10,11] Recently the duration of the second stage is extended up to three hours with regional anesthesia. [12,13]

The techniques used to aid in assisted vaginal or instrumental delivery of the fetus are known as second-stage interventions.[14] Around the world, 10–20% of births need some kind of intervention, most often a cesarean section. The involvement of the fetal head during a second-stage cesarean makes the procedure technically challenging and increases the risk of morbidity for both the mother and the fetus.[15] Major bleeding, uterine incision extension into the wide ligament, and extended surgical times are examples of maternal morbidity.[16] Fetal trauma and hypoxia are the leading causes of neonatal mortality and morbidity.[17,18]

Making decisions on CS during the second stage of labor is one of the biggest problems facing modern obstetrics. The management of second-stage CS with the assistance of a qualified obstetrician helps to reduce morbidity and death. The feto-maternal outcomes of cesarean sections performed during the second stage of delivery are the subject of this prospective observational study.

MATERIAL AND METHODS

The Department of Obstetrics and Gynecology conducted this prospective observational

study. All lower segment cesarean sections performed in the second stage of labor during the study period were included in the analysis. The patient gave their verbal consent. The start of consistent, painful uterine contractions is known as the onset of labor. The information was taken from the hospital's record section, labor room, and birthing center confinement books. Women with a singleton fetus in a cephalic presentation at term (≥37 weeks) who underwent CS at full dilatation were included in the study. The study excluded patients with concomitant illnesses such as preeclampsia and diabetes. The indications, prenatal outcomes, intraoperative problems, and postoperative complications of women who had second-stage cesarean sections were examined. Procedure records and patient documents revealed intraoperative problems such as hematuria, uterine incision extension, and atonic postpartum hemorrhage.

Inclusion criteria: -

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

Exclusion criteria:

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

Methodology

The indications for second-stage cervical dislocation (CS), the technique used to deliver the deeply engaged head, the complications that occurred during and after the procedure, and the outcome for the fetus were all examined in relation to forty women who had this procedure. Postoperative complications like postoperative fever (>100.4^{0}F), prolonged catheterization (>24 hours), prolonged hospitalization (>72 hours), and perinatal outcomes were noted in the patient's chart. A second-stage labor Caesarean section involves a technically challenging procedure that distorts the structure of the mother's pelvis and significantly impacts the fetal head inside the mother's pelvis. Due to the fetal head being involved in the pelvis, the uterine muscles being thin and stiff, and the difficulty in identifying the bladder and lower segment, the cesarean section conducted during the second stage of labor was technically challenging. Other than these comparatively heavy infant weights. The start of consistent, painful uterine contractions is known as the onset of labor. The time interval between delivery and complete cervical dilation (10 cm) is known as the second stage of labor. All lower segment cesarean sections performed in the second stage of labor during the study period were included in the analysis.

Prevention of complications:

- The operation should ideally be performed/ supervised by an experienced obstetric surgeon.
- Digital rotation from an occipital posterior position to an occiput anterior position.
- Better training in instrumental delivery - Intrpartum translabial ultrasonography
- Alarming the neonatologist beforehand
- Timely decision for cesarean section especially when the expected fetal weight is more than 3 kg.

STATISTICAL ANALYSIS

All the collected data were recorded and entered in the master chart. Data analysis was done using SPSS version 17.

RESULT: -

Total number of deliveries during the study period was 6520. Among these 1589 were delivered by cesarean section. Out of these 40 (2.51%) caesareans were performed in the second stage. Non-progress of labour associated with fetal distress was the most common indication for LSCS in the second stage of labour accounting for 16 cases (40%) followed by the deflexed head in 7 cases (17.5%) and deep transverse arrest in 6 cases (15%).

Table 1: Intra-operative complications

Intra-operative complications	No. (percentage)
Extension of uterine angles	6 (15%)
Atonic PHH	3 (7.5%)
Bladder injuries	2 (5%)
Obstetric hysterectomy	1 (2.5%)

The most common method of delivery of a deeply engaged head was the Patwardhan method in 20 cases (50%) followed by the vertex method in 30% and the push method in 4%. Intra-operative complications were the extension of uterine angles in 6 cases (15%), atonic PPH in 3 cases (7.5%), bladder injuries in 2 cases (5%), and obstetric hysterectomy in 1 case (2.5%).

Table 2: Post-operative complications

Post-operative complications	No. (percentage)
Paralytic ileus	6 (15%)
Febrile illness	6 (15%)
Wound infection	3 (7.5%)
Hemorrhagic urine	4 (10%)

Post-operative complications were paralytic ileus in 6 cases (15%), febrile illness in 6 cases (15%), and wound infection in 3 cases (7.5%).

Table 3: Fetal and newborn complications.

Complications	No. (percentage)
NICU admission	18 (45%)
Fresh stillbirth	4 (10%)
Neonatal death	8 (20%)

There were 18 babies (45%) who required NICU admissions, fresh stillbirths were 4 (10%), and out of the 18 NICU admissions, neonatal death occurred in 8 cases (20%). Neonatal Intensive Care Unit for management of respiratory distress due to meconium aspiration syndrome. The least women only one (2.5%) had a fresh stillbirth baby whose fetal heart rate before general anesthesia was less than 60 beats/ min.

Discussion

During the one-year study period, 1589 babies were delivered by C-Section; of these (n=40) 2.65% C-Sections were performed at full dilatation. The most common indications for 2nd stage C-section were non-progress of labor with fetal distress followed by deflexed head and deep transverse arrest (DTA). The oedematous lower segment, which is overstretched and thinning out, and the increased impaction of the presenting section in the pelvis would cause additional difficulties as the second stage's duration increased. Because it was hard to deliver deeply engaged heads, the operation time was also extended. Obstetricians face difficulties when delivering a deeply engaged head. Several techniques can be used, including the Vertex approach, the push method (also known as Patwardhan's approach), and the pull method, in which the head is pulled vaginally before being delivered through a uterine incision. Deeply engaged heads were provided via the push method (6%), the vertex method (36%), and the Patwardhan method (50%) in the study group.

The study conducted by **Jonna Malathi and Venigalla Sunita 2012**[19] had a rate of second-stage cesarean section at 4.1%. According to the same study, the second most frequent reason (22%) for a second-stage cesarean delivery was a deep transverse arrest. In a

study on the frequency of second-stage interventions and their outcome in relation to instrumental vaginal delivery by **Shahla Baloch et al.2008**[20], most of the women who need second-stage intervention were between 21 to 30 years. Primigravida also contributed 45%. In the study by Malathi and Sunita2012[19], 61% of women were in the age group of 21 to 30 years and primigravida contributed to 74%. The increased frequency of second-stage cesareans in primigravida could be cephalopelvic disproportion, rigid perineum, and lack of experience of previous labor.

the study conducted by **Unterscheider J et al.2011**[5] The most common indication of the second stage caesarean section was non-descent of the head (93%) in this study. In a study by **Belay et al 2014**[21], the most common indication of the second stage caesarean section was cephalopelvic disproportion (48.5%). According to a Canadian retrospective study, the risk of intraoperative trauma was 2.6 times higher in women who had full dilation of the cervix during cesarean delivery.[22] The study conducted by **Baloch S et al. 2008**[23] observed 12.5% PPH and 5.4% extension of the wound. protracted second stage of labor is associated with an increased risk of atonic postpartum hemorrhage.

Regarding the fetal fate of cesarean sections performed during the second stage of labor, there have been disagreements. Research by Asicioglu, Malati, and Ayhan Sucak has demonstrated negative predictive effects on fetal outcomes. However, other research, including the current study, Alexander, Selo-Ojeme, Allen et al., and others, were unable to show that the reason for the head's non-descent during the second stage of labor was a heightened fetal problem. The most common fetal complication was meconium-stained amniotic fluid, seen in 27.77% of cases which is comparable to a study by **Jayaram J et al. 2016**[24] (30.75%).

In the study group, there were higher rates of post-operative complications such as wound infection in 7.5% of cases, paralytic ileus in 15% of cases, and feverish illness in 15% of cases. Because second stage C-sections are associated with maternal morbidity, there is also a decreased possibility of a future VBAC. In the research group, birth asphyxia was a substantial cause of NICU admissions and newborn fatalities.

Wood et al 2017[25] add to the current understanding of risk factors for SPTB and confirm the fact that women with a prior SPTB are a heterogeneous group because so many different variables and pathophysiological mechanisms can lead to SPTB. Due to the fetal head being involved in the pelvis, the uterine muscles being thin and stiff, and the difficulty in identifying the bladder and lower segment, the cesarean section conducted during the second stage of labor was technically challenging. Other than these comparatively heavy infant weights.

It is obvious that much more research is required to determine the best location for the uterine incision during a second-stage CD. It is reasonable to speculate that the location of a prior uterine incision may have an impact on other perinatal consequences that have not yet been thoroughly investigated, such as accurate risk, subsequent adhesion formation, blood loss, peripartum hysterectomy, miscarriage, SPTB, and stillbirth in a subsequent pregnancy. It is well-established that the location of a prior uterine incision significantly influences the likelihood of uterine rupture during the trial of labor following CD.

Conclusion:

Maternal difficulties and newborn morbidities are linked to cesarean sections performed during the second stage of labor. A caesarean section performed during the second stage of labor is linked to a markedly higher risk of morbidity and mortality for both the mother and the newborn. A second-stage caesarean section requires good judgment and a trained physician. Undertaking a Caesarean section during the second stage of labor is an unfavorable circumstance linked to problems for both the mother and the fetus. The use of partographs, sensible oxytocin use, appropriate and selected instrumental delivery, and—

above all—the inclusion of senior and knowledgeable obstetricians in the decision-making process can all help prevent second stage CS. To have a healthy baby and mother, the second stage of CS needs to be handled and carried out by a proficient team of medical professionals and other staff members.

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