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Original Research Article

Upshots of second stage lower segment caesarean section

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ABSTRACT

Background: Second stage caesarean section is done at full dilatation of cervix with head deeply engaged in the pelvis. Indicated in dystocias, unsuccessful trial of instrumental deliveries, non-reassuring fetal CTG, second stage arrest, deep transverse arrest. This study aimed to evaluate the indications, intraoperative and postoperative complications and fetomaternal outcome in second stage lower segment caesarean section (LSCS).
Methods: This was a retrospective study conducted at Gandhi Medical College, Secunderabad from August 2022 to 2023.
Results: Total 180 cases underwent second stage LSCS during this period. Among them majority of the age group belonged to 26-30 years (37.8%), unbooked cases (88.9%) and primi gravida (73.3%). Most common indications were cephalopelvic disproportion (38.8%) and fetal distress (14.6%). The commonly used method was Patwardhan method 33.3% followed by vertex 37.7%. The common complications were PPH (55.8%) and extension of incision site (16.7%). Fetal complications were birth asphyxia (45%), mortality (10%). Postoperative complications were febrile illness (16.1%), prolonged stay (35%) and anemia (20%).
Conclusions: A proper judgement and skilled obstetricians are required to perform a second stage LSCS.

Keywords: extension of incision site, Patwardhan method, Second stage LSCS

INTRODUCTION

Second stage Lower Segment Caesarean Section (LSCS) refers to caesarean delivery performed at full cervical dilatation.[1] The rising incidence of caesarean delivery during this stage, increasing from 0.9% to 2.2%, has become a concern in contemporary obstetric practice.[2] Reports from the Royal College of Obstetricians and Gynecologists (RCOG) indicate that approximately 6% of these procedures may result from inadequate clinical supervision and limited decision-making experience among junior staff.[3-5]

This stage of caesarean delivery is associated with increased maternal morbidity, including postpartum complications and prolonged hospitalization. Moreover, it has been linked to a higher likelihood of preterm birth in subsequent pregnancies.[4] Adverse neonatal outcomes such as birth asphyxia, low APGAR scores, increased neonatal intensive care unit (NICU) admissions, and prolonged NICU stay are also more frequent.[6]

The operation is technically demanding, requiring advanced surgical skills and timely clinical judgment to manage conditions such as a deeply impacted fetal head or deep transverse arrest, which are common indications.[7] Contributing factors including reduced liquor, significant molding, and edema of the lower uterine segment further increase operative difficulty and the risk of intraoperative trauma.[8,9]

Despite the global rise in caesarean rates over the past two decades, intrapartum caesarean delivery at full dilatation has not received equivalent emphasis, particularly regarding emergency decision-making. Frequently, the need for surgical intervention arises unexpectedly after a prolonged second stage of labor, leading to increased physical and emotional stress for the mother.[7,10]

Most available evidence is derived from high-resource settings, while data from low- and middle-income countries (LMICs) remain limited. This lack of context-specific evidence results in a significant knowledge gap and challenges in evaluating trends and comparing outcomes across different healthcare systems. Therefore, the present study was conducted to assess the maternal and neonatal outcomes associated with second stage LSCS.

METHODS

Study setting

This was a retrospective observational study which analysed all the second stage cesarean sections performed during July 2022- July 2023 at our tertiary care centre, Gandhi Hospital, Secunderabad.

During the study period, a total of 8517 deliveries occurred, out of which 4658 were LSCS. Among these, 180 cases underwent second stage caesarean section.

Inclusion criteria

All labouring women with cephalic presentation and term gestation.

Exclusion criteria

Multiple pregnancies and non-vertex presentations.

Statistical analysis

Patient demographics such as age, parity, indications for caesarean section, intraoperative findings, postoperative complications, and neonatal outcomes were thoroughly studied and analyzed. The software used for statistical data analysis was MS Excel and MS Word (2024 version).

RESULTS

During the study period, a total of 8517 deliveries were conducted. Out of these, 4658 (54.69%) were cesarean deliveries (LSCS). Among them, 180 cases (3.86%) underwent second-stage cesarean section. Of these second-stage cesarean deliveries, the majority were primigravidae (73.3%), while multigravidae accounted for 26.7% (Table 1).

In the present study, out of 180 cases of second-stage cesarean section, 157 (87.22%) were booked, while 23 (12.78%) were unbooked cases. This indicates that the majority of women who underwent second-stage cesarean section were booked cases (Table 2).

Table 1: Distribution of deliveries according to type and parity.

Parameter	Number of cases	Percentage (%)
Total deliveries	8517	100.00
Total Cesarean Deliveries (LSCS)	4658	54.69
Second stage cesarean deliveries	180	3.86
Primi	132	73.30
Multi	48	26.70

Table 2: Distribution of cases according to booking status.

Booking status	Number of cases	Percentage (%)
Booked	157	87.22
Unbooked	23	12.78
Total	180	100.00

In the present study, the majority of patients who underwent second-stage cesarean section belonged to the age group of 26-30 years (37.78%), followed by 21-25 years (32.22%). Cases aged 31-35 years constituted 17.78%, while those above 35 years accounted for 12.22% (Table 3).

Table 3: Distribution of cases according to age group.

Age group (in years)	Number of cases	Percentage (%)
21-25 years	58	32.22
26-30 years	68	37.78
31-35 years	32	17.78
>35 years	22	12.22
Total	180	100.00

Table 4: Distribution of cases according to method of delivery.

Method of delivery	Number of cases	Percentage (%)
Push	13	7.22
Modified Patwardhan	38	21.11
Patwardhan	38	21.11
Vertex	76	42.22
Reverse breech	15	8.33
Total	180	100.00

In the present study, the most common method of delivery during second-stage cesarean section was the vertex method, observed in 42.22% of cases. The Patwardhan and

modified Patwardhan techniques were used in 21.11% of cases each. The reverse breech method was employed in 8.33% of cases, while the push method was used in 7.22% of cases (Table 4).

In the present study, the most common intra-operative complication observed during second-stage cesarean section was atonic postpartum hemorrhage (PPH), seen in 53.30% of cases. Uterine angle extension occurred in 18.90% of cases, while blood transfusion and colporrhexis were required in 8.90% of cases each. Hematuria was noted in 5.60% and bladder injury in 4.40% of cases (Table 5).

Table 5: Distribution of intra-operative complications.

Intra-operative complication	Number of cases	Percentage (%)
Atonic PPH	96	53.30
Uterine angle extension	34	18.90
Blood transfusion	16	8.90
Colporrhexis	16	8.90
Hematuria	10	5.60
Bladder injury	8	4.40
Total	180	100

In the present study, the most common neonatal complication observed was birth asphyxia, seen in 56.10% of cases. Respiratory distress syndrome (RDS) was noted in 18.90% of cases, while meconium aspiration and fresh stillbirth were observed in 8.90% of cases each. Neonatal jaundice was reported in 7.20% of cases (Table 6).

Table 6: Distribution of neonatal complications.

Neonatal complication	Number of cases	Percentage (%)
Birth asphyxia	101	56.10
Respiratory Distress Syndrome (RDS)	34	18.90
Meconium aspiration	16	8.90
Fresh stillbirth	16	8.90
Neonatal jaundice	13	7.20
Total	180	100

DISCUSSION

According to the National Family Health Survey (NFHS-5, 2019-2021), the cesarean section rate in India is 21.5%, with higher rates in urban (34.4%) than rural areas (15.2%), and the highest reported in Telangana (44.8%).[11] Our tertiary care centre receives a high volume of complicated and delayed referrals from peripheral hospitals, resulting in a greater number of second-stage cesarean sections. Prolonged inductions and failed instrumental deliveries further contribute to this trend. When ventouse attempts fail, a trial of forceps may still be considered due to differences in mechanism and efficacy, underscoring the need for clear, evidence-based protocols for managing high-risk labour cases.

In the present study, out of 8,517 total deliveries, 4,658 (54.69%) were LSCS, and 180 (3.86%) were performed in the second stage of labour. Most patients were primigravidae (73.3%), consistent with Babre et al (74%) and Khanam et al, who found 1.24% of cesareans were second-stage, with 53 primigravidae and 14 multigravidae.[12,13] Zewdu et al reported 85.1% of cesarean sections in the first stage and 14.9% in the second stage, reflecting a similar trend.[14] This shift toward second-stage cesareans may result from reduced proficiency in assisted vaginal delivery, limited supervision during residency training, and concerns about maternal-neonatal morbidity and medico-legal implications.[13]

The majority of patients in our study were aged 26-30 years (37.78%), followed by 21-25 years (32.22%), aligning with Vashi et al, who reported a mean age of 26 years, and Bhattacharya et al, who found a mean age of 23 years.[9,15] Gurashi et al observed 46.5% of cases in the 20-29-year group, 25.2% in 30–39 years, and 9.7% above 39 years.[7] The predominance of younger age groups suggests second-stage cesarean sections are more common among primigravidae, who are predisposed to arrest disorders and malrotation in the second stage.

In this study, the vertex method was most frequently used for delivering deeply engaged heads (42.22%), followed by the Patwardhan and modified Patwardhan techniques (21.11% each). Shivadarshan et al reported cephalic extraction without the push method in 62.5%, Patwardhan in 18.75%, push in 15.63%, and modified Patwardhan in 3.13%.[6] Similarly, Goswami et al and Vashi et al observed a higher use of these specialized extraction methods in their series.[1,9] Although technically demanding, the Patwardhan variants are often preferred for their ability to minimize uterine extensions and fetal trauma. The variation in technique across studies underscores the need for standardized training and appropriate method selection based on fetal position and surgeon expertise.

The most common intraoperative complication in the present study was atonic postpartum hemorrhage (53.30%), followed by uterine angle extension (18.90%), blood transfusion and colporrhexis (8.90% each), hematuria (5.60%), and bladder injury (4.40%). Babre et al reported lower rates PPH 11.5% and uterine extension 3.3% while Gurung et al noted atonic PPH in 12.5%, postpartum pyrexia in 18.8%, and wound infection in 4.8%.[12,16] Vashi et al observed PPH in 13%, uterine extension in 20.4%, vessel injury in 5.6%, transfusion in 16.7%, bladder injury in 1.9%, and hematuria in 11.1%.[9] Khaniya et al reported intraoperative complications in 55.5% of patients, with blood-stained urine (33.88%) being most common, followed by uterine incision extension (13.88%) and B-Lynch suture for atonic PPH (2.77%).[8] The higher complication rates in the present study may be due to prolonged second stage, deeply

impacted heads, and increased uterine manipulation, emphasizing the need for refined surgical technique, prompt uterotonic administration, and adequate blood support to reduce morbidity. Neonatal complications were also significant, with birth asphyxia being most frequent (56.10%), followed by respiratory distress syndrome (18.90%), meconium aspiration and fresh stillbirth (8.90% each), and neonatal jaundice (7.20%). Goswami et al reported 44% NICU admissions, 10% fresh stillbirths, and 18% neonatal deaths.[1] Umbeli et al found 4.9% fresh stillbirths and 1.5% perinatal deaths, while Khaniya et al noted one fresh stillbirth (2.77%).[17,8] The high asphyxia rate in our study may relate to prolonged labour, failed instrumental attempts, and difficult extraction of an impacted head. Bhattacharya et al and Mukhopadhyay et al reported increased maternal and neonatal complications with second-stage LSCS, especially using the push method, while Saha et al demonstrated significantly worse neonatal outcomes birth asphyxia and respiratory distress than first-stage cesareans.[15,18,19] These findings are consistent with the pathophysiology of prolonged head compression, fetal hypoxia, and delayed extraction.[20] Overall, second-stage cesarean sections pose increased maternal and neonatal risks due to technical difficulty and prolonged labour. Early recognition of labour dystocia, timely decision-making, enhanced intrapartum monitoring, and skill-based training in assisted vaginal and second-stage cesarean techniques are essential to improve outcomes in these high-risk cases.

This study has few limitations. Cases in which vaginal delivery occurred prior to caesarean section could not be evaluated for intraoperative or postoperative complications. Patients with non-vertex presentations were also excluded from the assessment of intraoperative complications. Additionally, the unavailability of advanced technical resources such as the C-snorkel and Murless head extractor limited the evaluation and management process.

CONCLUSION

A proper judgment and skilled obstetricians are required to perform a second-stage LSCS, as it is associated with maternal and neonatal morbidity and mortality. Prompt referral to higher centers after assessing the condition of the patient is a crucial step to prevent second-stage cesarean section. Instrumentation is underutilized in many cases; instrumental delivery should be attempted at least once before proceeding to cesarean section. The C-Snorkel is a soft, malleable tube with holes that can be placed between the vagina and the fetal head. Aeration through the tube helps to disengage the fetal head and can be used to prevent colporrhexis.

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