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Intersecting Journeys: Evaluating Primary Cesarean Sections among Multiparous Women in Tertiary Care

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Abstract

Background: Cesarean section has become the most prevalent surgical procedure involving the delivery of a fetus through an incision in the uterus. Unnecessary labor induction can result in prolonged first-stage labor, increasing the risk of cesarean section, maternal fever, and postpartum hemorrhage. ***Objectives:*** Cesarean section rates have been increased thanks to safety in modern trends in anesthesia, blood transfusion facilities and higher antibiotics. The indications for Cesarean section are liberalized to include dystocia, placenta previa, fetal distress and bad obstetric history. ***Methods:*** An observational study of primary cesarean section performed in 400 multiparous women who had previous normal vaginal delivery in tertiary care hospital in Kerala. ***Results:*** In this study, 20.6% underwent LSCS including elective (4.3%) and emergency (16.3%). The most common indication was Fetal distress 24.3%, followed by cephalopelvic disproportion in 23.1%, malpresentation 12.1%, severe maternal PIH 6%. Percentage of Second stage arrest, maternal request, fetal Doppler changes and preterm labor was 4.8% each. ***Conclusion:*** A multipara who had previous vaginal deliveries should not be regarded as diagnostic-criteria for spontaneous delivery for the present pregnancy. Appropriate care is essential in intra and postpartum period to reduce both maternal and fetal mortality and morbidity.

Keywords: ***primary, cesarean section, multipara, incidence, indication.***

Introduction

Cesarean section has become the most prevalent surgical procedure involving the delivery of a fetus through an incision in the uterus [1].

For first-time mothers, cesarean sections are most commonly performed due to dystocia with suspected cephalopelvic disproportion [2].

The population-level cesarean rate in India is approximately 17.2% [3].

In the United States, the primary cesarean delivery rate among women who had previously given birth decreased slightly from 7.1% in 1990 to 6.6% in 1996, but then steadily increased to 9.3% in 2003 [4].

Delayed childbearing, multiple pregnancies, increasing maternal obesity and physicians' concerns about litigation were common factors for increased cesarean section [5]. During labor, issues like cephalopelvic disproportion, malpresentation and other issues are encountered [6]. Cesarean delivery performance risks must be considered as an alternative approach in females with prolonged first stage of labor [7]. Caesarean delivery decreases overall risk in breech presentations [8]. The anesthesia related complications associated with cesarean section are reported as low. However, it still remains a major concern [9]. Unnecessary labor induction can result in prolonged first-stage labor, increasing the risk of cesarean section, maternal fever, and postpartum hemorrhage [10]. Cesarean deliveries are associated with twice the maternal morbidity rate compared to vaginal births [11]. Anesthetic complications occur more frequently with cesarean deliveries than with vaginal births [12,13].

Methodology

This was an observational study conducted in tertiary care hospital in Kerala from August 2023 to July 2024. The study included multiparous women who underwent caesarean section for the first time who had delivered vaginally. The exclusion criteria were those who had a preterm delivery less than 28 weeks of gestation, history of previous cesarean section, uterine surgery and hysterotomy.

Data collection

A detailed history taking, general physical examination, systemic examination, obstetric examination and investigations were done.

Statistical data analysis

The data on categorical variables was presented as n (% of cases) and the values on continuous variables was presented as Mean ± Standard deviation (SD). The significance of difference of distribution of incidence of outcome measures across various groups of interest (such as gestational age, birth weight groups etc) was tested using Chi-Square test. The inter-group statistical significance of difference in the distribution of means of continuous variables was tested using analysis of co-variance (ANCOVA) technique with gestational age and sex as the confounder variables. Partial correlation analysis was used for studying the statistical linear relationship between two or more variables by adjusting for the linear effect of confounder variables such as gestational age. P-values less than 0.05 was considered to be statistically significant. All the hypotheses were formulated using two tailed alternatives against each null hypothesis (hypothesis of no difference). The entire

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data was statistically analyzed using Statistical Package for Social Sciences (SPSS version 21.0, IBM Corporation; NY, USA) for MS Windows.

Results

The majority of participants in the study were between 31 and 35 years old (54%) or 26 to 30 years old (34%). All were booked cases. Among the 400 parous individuals, 64% (256) were in their second pregnancy, 27% (108) in their third, 8.3% (33) in their fourth, and 0.8% (3) in their fifth. Most had given birth once before (98.3%), while only 1.8% (7) had given birth twice. Of the participants, 1% (4) had no living children, 98.5% had one, and 0.5% (2) had two.

The gestational age for 92% of the participants exceeded 37 weeks. Singleton pregnancies accounted for 5%, while 0.5% were carrying DCDA twins. Previous deliveries were predominantly full-term (96.5%), with 2.8% having delivered between 34 and 37 weeks, and 0.6% (3) between 30 and 34 weeks. Regarding previous birth weights, 53% of babies weighed between 3 and 3.5 kg, while 38.8% were between 2.6 and 3 kg.

Gestational diabetes mellitus (GDM) was the most prevalent maternal complication, affecting 14% (56) of participants. This was followed by hypothyroidism at 6.5% and pregnancy-induced hypertension (PIH) or gestational hypertension at 3.25% (13). Additionally, 2.25% were Rh-negative, and 0.3% (1) experienced anemia during pregnancy.

The study revealed that the most prevalent fetal complications were oligohydramnios (4.75%) and FGR (3%). The majority of cases presented with vertex positioning (95%), while the remaining 5% consisted of breech (3.25%), transverse lie (1.25%), and oblique (0.5%) presentations.

The delivery methods in this study were distributed as follows: 77.8% underwent normal vaginal delivery, 16.3% required emergency LSCS, 4.3% had elective LSCS, and the rest experienced operative vaginal delivery, including forceps delivery (1.8%) and vacuum-assisted delivery (0.3%) (**Figure 1**).

In the study group of 82 individuals (20.6%) who underwent LSCS, including both elective and emergency procedures, the primary reason was fetal distress at 24.3% (20 cases). This was followed by cephalopelvic disproportion at 23.1% (19 cases), malpresentation at 12.1% (10 cases), and severe maternal PIH at 6% (five cases). Second stage arrest, maternal request, fetal doppler changes, and preterm labor each accounted for 4.8% of cases. Other causes included antepartum hemorrhage (3.6%), cervical dystocia (2.4%), placenta previa (2.4%), fetal diaphragmatic hernia (2.4%), and deep transverse arrest (1.2%) (**Table 1 and Figure 1**).

The majority of newborns weighed between 3.1 to 3.5 kg (52.3%) or 2.6 to 3 kg (32.8%). Babies weighing over 3.6 kg comprised 9.5% of the group. Sterilization was performed on 222 (55.5%) of the study participants. Postpartum hemorrhage occurred as a post-operative complication in only 2 cases (0.5%).

NICU admission was required for 7.2% of the newborns. Among the 311 participants who had normal vaginal deliveries, none experienced post-partum complications, which was statistically significant (P value of 0.028). Of the 65 individuals who underwent emergency LSCS, 2 experienced PPH as an intra-operative complication, showing statistical significance with a P value of 0.001 (**Table 2**). No post-operative complications were observed in the 8 participants who had instrumental deliveries or the 17 who underwent elective LSCS, though this finding was not statistically significant.

Table 1: Indications for Primary Cesarean Section in Multiparous Women

Indication	Percentage (%)	Number of Cases
Fetal distress	20	24.3
Cephalopelvic disproportion	23.1	19
Malpresentation	12.1	10
Severe maternal PIH	6	5
Second stage arrest	4.8	4
Maternal request	4.8	4
Fetal Doppler changes	4.8	4
Preterm labor	4.8	4
Antepartum Haemorrhage	3.6	3
Cervical dystocia	2.4	2
Placenta previa	2.4	2
Fetal diaphragmatic hernia	2.4	2
Deep transverse arrest	1.2	1
Total	100	82

Table 2: Maternal and Fetal Outcomes Post-Cesarean Section

Outcome	Total Cases (n)	Percentage (%)
Normal vaginal delivery	311	77.8
Elective LSCS	17	4.3
Emergency LSCS	65	16.3
Postpartum hemorrhage	2	0.5
NICU admissions	29	7.2
Sterilization after delivery	222	55.5
Total	400	100

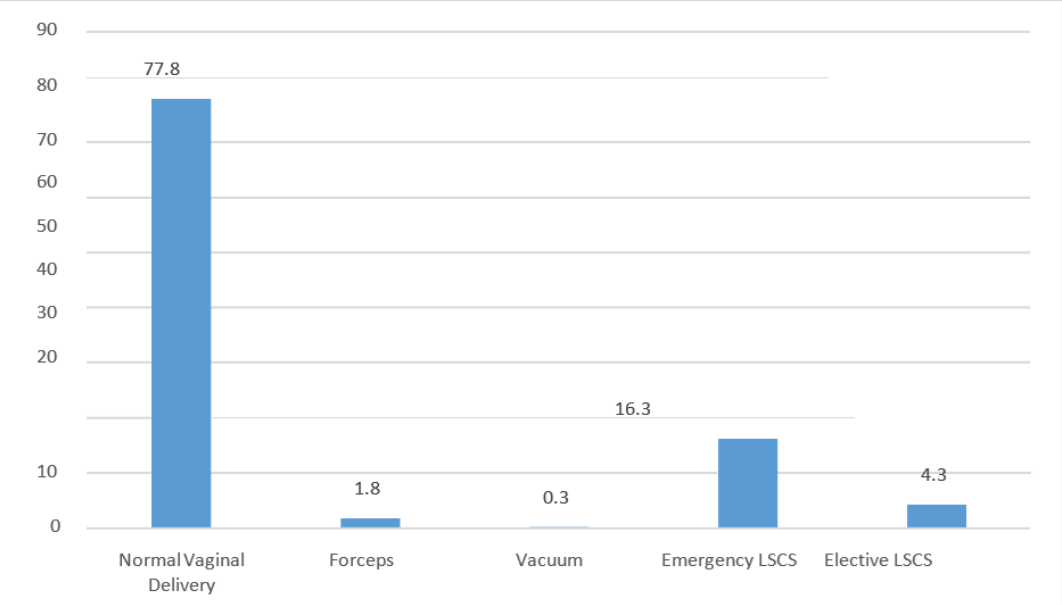

Figure 1. Maternal and Fetal Outcomes After Primary Cesarean Section in Multiparous Women

Discussion

This observational study, conducted at Karuna Medical College Hospital, examined 400 multiparous women with previous vaginal deliveries. The research, spanning from August 2023 to July 2024, analyzed the incidence and reasons for cesarean sections among these participants, considering specific inclusion and exclusion criteria.

The study revealed that 64% of participants were in their second pregnancy, with 98.3% having one living child, mostly delivered at full term. Only two participants had DCDA twins, while the rest had singleton pregnancies. The majority of the study population (54%) fell within the 31-35 age range. Notably, 53% of the participants' previous babies weighed between 3 to 3.5kg, suggesting a favorable outlook for normal delivery in subsequent pregnancies. Most of the previous newborns did not require NICU admission.

Gestational diabetes mellitus (GDM) emerged as the primary maternal complication, increasing the likelihood of macrosomia and cephalopelvic disproportion (CPD). Oligohydramnios and fetal growth restriction (FGR) were the most prevalent fetal complications, contributing to fetal distress and emergency cesarean sections.

The study found that 16.3% of participants underwent emergency cesarean sections, while 4.3% had elective procedures, totaling 20.6%. This incidence aligns with findings by an author at 29.05%, but is higher compared to other studies [14].

Fetal distress and CPD were the leading indications for primary cesarean sections in multigravida, followed by malpresentation, severe pregnancy-induced hypertension (PIH), second-stage arrest, maternal request, fetal Doppler changes, preterm labor, antepartum hemorrhage (APH), placenta previa, fetal diaphragmatic hernia, and deep transverse arrest. These findings are consistent with studies by three authors [15,16,2].

Maternal request accounted for 4.8% of cesarean sections, raising concerns as it represents an avoidable procedure with potentially less morbidity if vaginal delivery is encouraged. Most newborns weighed between 3.1 to 3.5 kg (52.3%) or 2.6 to 3 kg (32.8%), similar to findings by an author 16. Only 2% of cases experienced intraoperative complications, specifically postpartum hemorrhage. A comparable investigation by another author found that the most frequent intraoperative complication was Atonic PPH (6%), with extension of uterine incision following at 3.4% (Surekha S. Mohan et al, 2017). Maternal morbidity was observed in 20 cases (13.3%). Unlike other similar studies, this one did not report complications such as febrile morbidity. Despite fetal distress being the primary reason for cesarean sections, only 7.2% of newborns required NICU admission. A majority of participants (55.5%) underwent sterilization immediately after delivery. The study, conducted in a tertiary care facility, involved only booked cases with regular prenatal check-ups and a low threshold for high-risk classification, thus preventing catastrophic events.

Conclusion

This study clearly demonstrates that a previous normal vaginal delivery does not guarantee the same outcome in subsequent pregnancies. Unexpected complications, both maternal and fetal, can arise. A multipara with one or more prior vaginal deliveries should be viewed as an encouraging historical fact, rather than a diagnostic criterion for spontaneous delivery in the current pregnancy. Undetected cephalopelvic disproportion may result in obstructed labor, fetal distress, and other maternal and fetal morbidity and mortality. Therefore, multiparous women in labor require the same level of attention as primigravidas. In this study, appropriate intrapartum and postpartum care has led to a reduction in both maternal and fetal mortality and morbidity.

Declaration

Ethical Approval

Although ethical clearance was obtained in June 2021 (Ref. 069/2021), the study was initiated in August 2023 due to institutional protocols, resource alignment, and prioritization of COVID-19-related clinical activities during that period. All ethical principles were upheld, and participants gave informed consent before enrollment.

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Conflict of Interest

The authors declare that no funds, grants or support were received during the preparation of this manuscript. There was no conflict of interest.

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Abbreviations

CPD: Cephalopelvic disproportion
LSCS: Lower section cesarean section
GDM: Gestational diabetes mellitus
PIH: Pregnancy induced hypertension
PPH: Postpartum hemorrhage
FGR: Fetal growth retardation
DCDA: Dichorionic diamniotic
NICU: Neonatal intensive care unit

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