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Original Research Article

A prospective observational study of maternal and perinatal outcome in previous one lower segment caesarean section in District Hospital, Karnataka

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ABSTRACT

Background: Lower segment caesarean section (LSCS) is defined as extraction of baby through an incision made in lower segment through trans peritoneal approach. CS is performed only when circumstances demand it, as it is not a simple procedure and may be associated with various complications. It has been found that maternal mortality associated with CS can be three times that of normal vaginal delivery.

Methods: A prospective observational study which considered pregnant women admitted in MCH, District Hospital, Vijayapura who underwent one LSCS who were further assessed by taking history and clinical examination. Maternal and perinatal outcomes were observed.

Results: A total of 150 pregnant women were taken into study who came for admission in District Hospital for further management. Maternal and perinatal outcomes were considered in the study. Of the pregnant women who had repeat caesarean deliveries, 68.7% had emergency deliveries (51.5%) and elective caesarean deliveries (48.5%). Of these, the majority (54.7%) had no intraoperative problems, while 14.6% developed adhesions. Additionally, 52% of babies were born weighing between 2.5 and 3 kg, and 78% of them showed no symptoms.

Conclusions: The prevalence of CS has increased in recent years due to the development of new methods for assessing fetal well-being. However, it's important to carefully consider the decision to perform a primary CS, as there is always a risk of uterine scar rupture in future pregnancies if a vaginal birth is attempted after a previous caesarean.

Keywords: Caesarean delivery, Vaginal birth after caesarean section, Maternal complication, Perinatal complications

INTRODUCTION

Caesarean delivery is defined as an operative procedure where fetus or fetuses are delivered after 28 weeks of gestation via an incision on abdominal wall followed by uterine wall in an intact uterus.¹ Studies from India have highlighted that several demographic factors-such as advanced maternal age, higher socioeconomic status,

higher literacy levels, access to better healthcare facilities, care in the private sector, and residence in southern regions-contribute to the increasing rates of CS in the country. Additionally, the rise in primary CS is being driven by emerging indications like IVF pregnancies, maternal request for caesarean delivery, and concerns over legal liability.²⁻⁴ As per world health organisation (WHO) 2015 study, the rate of CS among women with a previous

CS ranged from 78.1% to 79.4% in high-income countries, 85.2% to 87.5% in middle-income countries, and 63.2% to 72.1% in low-income countries.⁵ In early 1970's, Cragin introduced a term- "once a caesarean, always a caesarean" which was widely practiced, lately which got rephrased by invention of Kerr's incision over the uterus which carried more scar strength. Henceforth, doctors started accepting- 'Once a CS, always hospital delivery'.^{6,7} Since the rate of CS is increasing, decision for mode of delivery has also been influenced simultaneously.⁸⁻¹⁰ It has been found that maternal mortality associated with CS is three times that of normal vaginal delivery.¹¹

Although numerous studies have examined factors influencing the outcome of a vaginal birth after caesarean (VBAC)-such as the interval between the previous caesarean and the current pregnancy, the reason for the initial caesarean, a history of full-term normal delivery after a caesarean (FTND following LSCS), and postoperative surgical site infections-there are still no standardized guidelines for managing these cases or deciding between attempting a VBAC and opting for an elective repeat caesarean. However, recent research suggests that VBAC is a safer option compared to a repeat elective CS.^{12,13} Despite the success rates of VBAC, its use in the recent world is declined due to fear of risks and complications.¹⁴⁻¹⁶ Various complications associated with VBAC are rupture of uterus, increased risk of perinatal morbidity and mortality.¹⁷ Of the above complications, uterine rupture incidence appears to be high with nearly 0.15-2.3%.¹⁸ Also, complications associated with previous LSCS are uterine dehiscence, rupture, placenta previa, placenta accreta, placenta increta operative complications like abdominal wall adhesions, bladder and bowel adhesions or injuries and post-partum hemorrhage, post-operative morbidity.¹⁹ Hence, our study aimed to observe maternal and perinatal outcomes in previous one CS.

METHODS

This prospective observational study was carried out among the antenatal women with singleton pregnancy belonging to gestation age between 37 weeks to 42 weeks with history of previous one CS came for further management to District Hospital, Vijayapura. The study was conducted during a period from June 2022-February 2023 after approval from the ethical committee. After taking proper consent from the patient, proper history taking and clinical examination was done. Patient eligible for the study included singleton pregnancy with term gestation (37 weeks to 42 weeks) with previous one LSCS.

Patients who were previous two or more LSCS or with history of previous classical CS, myomectomy, trauma in the current pregnancy, malpresentations, medical disorders, oligohydramnios, meconium-stained liquor, placenta previa and abruption.

Maternal and the perinatal outcomes were observed in them.

Statistical analysis

By referring an extensive review of literature related to maternal and neonatal outcome after previous one LSCS required sample size for my study was calculated by considering 65.89% successful rate of VBAC with 95 allowed error with 5% level of significance and 10% drop out in mind.

$$\text{Sample size} = (Z\alpha^2/2 \times p \times q)/2$$

Where, $p=65.89\%$, $q=34.1\%$, $E=\text{allowable error}$ and sample size-150

RESULTS

Our study considered 150 pregnant women who had history of previous one LSCS came at term gestation (37 weeks to 42 weeks) and were assessed for maternal and perinatal outcome and mode of delivery in present pregnancy. Here, majority of females (62%) belonged to age group of 19-24 years followed by age category of 25-30 years (28.7%). Also, most of them were second gravida (80%) and only 2.7% were four gravida (Table 1).

In our study, on assessment of mode of delivery, 100 patients were given trial of labour (TOL), in which more than half underwent CS than vaginal delivery (Figure 1-3).

Maternal complications were assessed based on the mode of delivery and the age of the patient. The majority of patients did not experience any complications. Among those who did, urinary tract infections (UTIs) were the most common complication (20.6%) in cases of repeat CS. In contrast, vaginal deliveries were more frequently associated with postpartum haemorrhage (6.4%) and the need for blood transfusions (6.4%). When considering complications in relation to maternal age, UTIs and the requirement for blood transfusions were the most commonly observed issues (Table 2).

In our study, we also looked for fetal outcomes following mode of delivery with minimal observable effects in fetus following repeat LSCS or vaginal delivery and less than 50% were shifted to NICU for observation (Table 3).

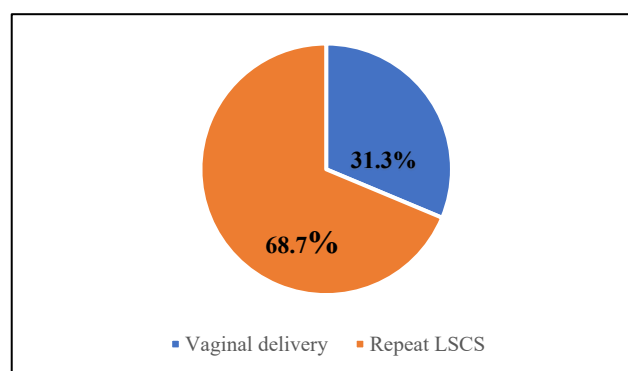


Figure 1: Modes of delivery.

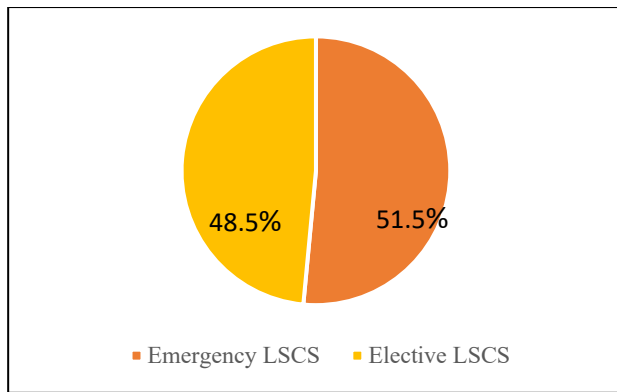


Figure 2: Type of LSCS.

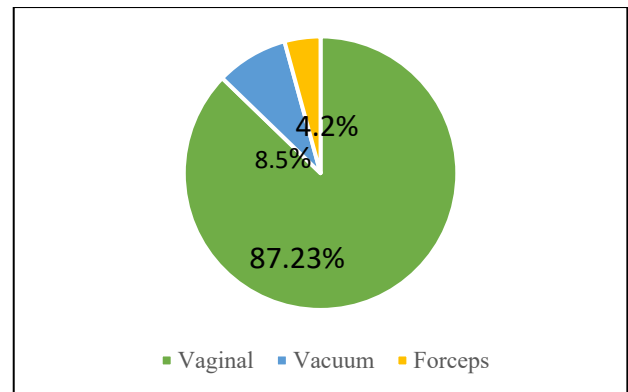


Figure 3: Types of vaginal delivery.

Table 1: Demographic status of the pregnant women.

Parameters	N	Percentage (%)
Age (in years)		
19-24	93	62
25-30	43	28.7
31-36	14	9.3
Gravida score		
G2	120	80
G3	26	17.3
G4	04	2.7

Table 2: Association between maternal complications with age and mode of delivery.

Maternal complications	Age of mother						Mode of delivery			
	19-24		25-30		31-36		Repeat LSCS		Vaginal	
	N	%	N	%	N	%	N	%	N	%
Nil	55	59.1	27	64.3	12	85.7	55	53.9	39	83
Wound sepsis	6	6.5	4	9.5	0	0	9	8.8	1	2.1
Breast abscess	2	2.2	1	2.4	0	0	2	2	1	2.1
Postpartum haemorrhage	2	2.2	1	2.4	0	0	0	0	3	6.4
UTI	16	17.2	3	7.1	2	14.3	21	20.6	0	0
Thrombophlebitis	2	2.2	0	0	0	0	2	2	0	0
Blood transfusion	8	8.6	6	14.3	0	0	11	10.8	3	6.4
Mastitis	2	2.2	0	0	0	0	2	2	0	0

Table 3: Association between fetal outcomes and mode of delivery.

Fetal complications	Mode of delivery			
	Repeat LSCS		Vaginal	
	N	%	N	%
NIL	81	78.7	36	76.6
NICU observation	16	15.5	7	14.9
NICU admission	6	5.8	4	8.5

DISCUSSION

In our study involving 150 women, 62% were aged between 19-24 years, 28.7% were between 25-30 years, and the remaining 9.3% were over 30 years old. Among these, 80% were gravida 2, 17.3% were gravida 3, and 2.4% were gravida 4, all of whom had undergone a primary LSCS. A total of 103 women (68.7%) delivered via repeat

LSCS, while 47 (31.3%) had a vaginal delivery, indicating that the majority underwent repeat LSCS.

Among the 103 repeat LSCS cases, more than half were performed as emergency procedures. Of the 47 vaginal deliveries, 87.3% were spontaneous, 8.5% required vacuum assistance, and 4.2% involved forceps.

The study found no association between maternal age and maternal complications. However, complications were significantly more common in the repeat LSCS group compared to those who delivered vaginally (p value significant). The most frequent maternal complication was UTI, followed by the need for blood transfusion and wound sepsis.

Regarding neonatal outcomes, most babies (52%) weighed between 2.5 kg and 3 kg, 32% weighed over 3 kg, and 16% were under 2 kg. A majority of the newborns (117, or 78%) had no complications and were placed with their mothers immediately after birth. Meanwhile, 23 babies (15.3%) required observation in the NICU, and 10 (6.7%) needed NICU admission.

On comparing various studies following observations were noted. In study conducted by Jinturkar et al the outcomes of TOL versus LSCS were assessed. Among 320 term patients who underwent LSCS, 182 were given a TOL, with a success rate of 46.7%, while 138 underwent elective CS. Perinatal morbidity was significantly higher in women who had a repeat CS (12.12%) compared to those who achieved a successful VBAC, which had no cases of perinatal morbidity (0%). Maternal complications were also more frequent in the repeat LSCS group (12.76%) compared to those who delivered successfully via VBAC (2.74%). Additionally, scar dehiscence occurred in only 2.72% of the VBAC group. These findings suggest that TOL is a safer alternative to elective repeat LSCS for appropriately selected patients.²⁰

Another prospective study by Jyoke et al evaluated the risks associated with subsequent pregnancies in women with one previous CS. The study found that women with a prior caesarean had a 75.8% absolute likelihood (95% confidence interval [CI]: 72.0-80.0) of undergoing another caesarean delivery. Additionally, women with one prior Caesarean experienced higher rate of placenta praevia, labour dystocia, intrapartum haemorrhage, major postpartum haemorrhage, the need for blood transfusion, and neonatal intensive care unit (NICU) admissions compared to those with previous vaginal births.²¹

In Yadav et al study on maternal and perinatal outcomes following one or two previous CS, observed that women who delivered via VBAC were benefited from a shorter hospital stay, reduced morbidity, and lower healthcare costs. However, when a TOL failed and resulted in an emergency LSCS, the risk of maternal and fetal morbidity increased. Elective repeat CS also carried the inherent risks associated with major intra-abdominal surgery.²²

CONCLUSION

The prevalence of CS has increased in recent years, largely due to the development of advanced techniques for assessing fetal well-being. As a result, the incidence of pregnancies following a Caesarean has also risen, making it one of the most commonly encountered high-risk

obstetric scenarios. TOL though safest route, should be avoided in complicated cases like women in prolonged labour with a previous LSCS.

Furthermore, our study showed reduced association between the mode of delivery and maternal or perinatal complications in cases with previous one LSCS. Also, post CS, women should be classified as high-risk, receive consistent prenatal monitoring, and be admitted to the hospital at least two weeks before the expected date of delivery. Since prematurity is a leading cause of perinatal mortality, it is essential to ensure that arrangements for LSCS are readily available in the event of a failed TOL in patients with a history of one previous LSCS.

Although numerous studies have explored this topic over the years, further research is necessary to evaluate post- CS changes and to establish the optimal timing for management.

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