



A STUDY OF PREGNANCY OUTCOME IN PREVIOUS CESAREAN SECTION

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ABSTRACT **Background:** The global increase in cesarean section (CS) rates has raised concerns about associated maternal and fetal risks, particularly in pregnancies following a previous CS. This study evaluates the outcomes of pregnancies in women with a history of one prior CS, focusing on demographic factors, indications for primary CS, and maternal and neonatal complications. **Materials And Methods:** This observational study was conducted in the Department of Obstetrics and Gynaecology, Shrimati Heera Kunwar Baa Mahila Hospital, affiliated with Jhalawar Medical College, Rajasthan, from February 2022 to January 2023. A total of 200 pregnant women with a history of one prior CS and beyond 37 weeks of gestation were included. Data on demographic characteristics, primary CS indications, intraoperative complications, and maternal and neonatal outcomes were collected and analyzed using SPSS 20.0. Statistical significance was set at $p < 0.05$. **Results:** Among 4423 deliveries during the study period, 1940 were CS, with 559 due to a previous CS. Significant differences were noted between repeat CS (RS) and vaginal birth groups in indications like failed induction (29.16% vs. 21.02%, $p < 0.05$), fetal distress (20.83% vs. 17.05%, $p < 0.05$), and CPD (14.20% in RS group only, $p < 0.05$). Adhesions (28.41%) and significant blood loss (11.93%) were the most common intraoperative complications. Neonatal outcomes were favorable, with 95% shifted to the mother's side. Wound complications were significantly higher in the RS group (11.36%, $p < 0.05$). **Conclusion:** Pregnancy outcomes after a previous CS depend on careful patient selection and risk assessment. While VBAC is a viable option for reducing CS rates, it requires thorough evaluation and proper clinical management to ensure safety.

KEYWORDS : Cesarean section, VBAC, repeat cesarean section, pregnancy outcomes, maternal complications, neonatal outcomes.

INTRODUCTION:

Cesarean section (CS) represents a critical component of comprehensive intrapartum care, serving as a potentially life-saving intervention for both mother and fetus in various emergency obstetric conditions [1,2]. The global landscape of CS rates shows significant variation, ranging from less than 10% to over 50% across different geographical regions [3]. While low-income countries could prevent approximately 60% of maternal mortality by maintaining CS rates at 10-15% [2], many developing nations, including India, have surpassed the WHO's recommended threshold of 15% [4].

The rising trend in CS rates is attributed to multiple factors, including increased institutional deliveries, proliferation of private healthcare facilities, and growing maternal preference for the procedure [5-6]. This surge has created a new demographic of mothers facing subsequent pregnancies with a scarred uterus, presenting unique challenges for obstetric management.

According to WHO's global survey, CS rates vary significantly by region, with African countries showing the lowest median rate of 8.8%, while Latin American countries report a median rate of 33%, reaching up to 51% in private settings [3]. In Asia, among nine surveyed countries, the overall CS rate was 27.3%, with China leading at 46.2%, followed by Vietnam (35.6%) and Thailand (34.1%) [7].

While CS can significantly reduce maternal and perinatal mortality when medically indicated [1,2], there is no evidence supporting its use without clear medical necessity [7]. Non-indicated CS procedures are associated with increased risks of maternal mortality, ICU admission, blood transfusion, and hysterectomy [8]. Furthermore, CS carries both short-term complications, such as hemorrhage and infections, and long-term risks in subsequent pregnancies, including placenta previa, morbidly adherent placenta, and uterine rupture [9].

Previous CS contributes significantly to overall cesarean rates, with a relative contribution ranging from 15.4% to 67.7% [10]. The high rates among nulliparous women (17.2% to 41.6%) may be linked to non-indicated CS and inappropriate labor induction [11].

The management of subsequent pregnancies after CS presents a significant clinical dilemma. Vaginal birth after cesarean (VBAC) or trial of scar (TOS) offers an alternative to repeat cesarean, though concerns about uterine rupture and associated complications often deter both practitioners and patients from attempting VBAC. Both VBAC and elective repeat cesarean section (ERCS) carry distinct risk profiles [12]. ERCS is associated with increased surgical complications, potential fertility issues, and risks of placental

abnormalities in future pregnancies [13]. Vaginal delivery attempts may result in emergency cesarean section, which carries higher risks of infection and thrombosis compared to planned procedures.

This evolving scenario has created a significant population of high-risk obstetric patients with previous CS, necessitating careful evaluation of subsequent pregnancy outcomes. This study aims to investigate pregnancy outcomes in women with previous cesarean sections, contributing to the growing body of knowledge in this critical area of obstetric care.

MATERIALS AND METHODS

This observational analytical study was conducted in the Department of Obstetrics and Gynaecology at Shrimati Heera Kunwar Baa Mahila Hospital, affiliated with Jhalawar Medical College, Jhalawar, Rajasthan. The study spanned one year from February 2022 to January 2023, divided into two phases: data collection (February-July 2022) and data compilation with analysis (August 2022-January 2023).

Prior to commencement, the study received approval from the Institutional Ethics Committee, and informed written consent was obtained from all participants. The study was conducted without external funding and declared no conflicts of interest.

The sample population comprised pregnant women with previous cesarean section beyond 37 weeks of gestation. The inclusion criteria encompassed women with singleton pregnancies who had undergone one previous cesarean section and were beyond 37 weeks of gestation. Exclusion criteria were multiple pregnancies, gestational age less than 37 weeks, and women with more than one previous cesarean section.

The sample size was calculated using the formula $N = z^2 pq / d^2$, where $z = 1.96$ (corresponding to a 95% confidence interval), $p =$ expected proportion in the population, $q = 1 - p$, and $d =$ absolute precision of 0.04. Based on a previous cesarean section prevalence of 8.5%, the calculated sample size was 195 cases, which was rounded to 200 for this study.

Data analysis was performed using SPSS 20.0 (trial version) software. All data was initially entered into MS Excel spreadsheets. Appropriate statistical tests were applied, with a p -value < 0.05 considered statistically significant.

RESULTS:

Between February 2022 and July 2022, a total of 4423 deliveries were recorded at the hospital, comprising 2483 normal vaginal deliveries and 1940 cesarean sections. Among these, 559 cesarean sections were

performed due to a history of a previous cesarean section. From this cohort, 200 women who met the inclusion and exclusion criteria were selected using a simple random sampling method.

Table 1 presents the baseline demographic and clinical characteristics of the study population, divided into the repeat cesarean section (RS) and vaginal delivery groups. Both groups showed no significant differences in age, gravidity, or booking status. However, a statistically significant difference was observed in the rate of vertex presentation, which was higher in the vaginal group (100%) compared to the RS group (91.48%; $p=0.001$).

Table 2 summarizes the main reasons for the prior cesarean deliveries in the RS and vaginal groups. Significant differences were noted in indications such as failed induction, fetal distress, CPD, and other causes. Conditions like failed induction (29.16% vs. 21.02%) and fetal distress (20.83% vs. 17.05%) were more common in the vaginal group, while CPD was only present in the RS group (14.20%). Malpresentation showed no significant difference.

Table 3 highlights the intraoperative complications observed in the RS group. Adhesions were the most frequent complication, affecting 28.41% of patients, followed by significant blood loss (>1000cc) in 11.93%. Less common but notable complications included bladder high-up (11.36%), scar dehiscence (7.95%), and scar rupture (2.84%).

Table 4 outlines the maternal and neonatal outcomes for both groups. Most neonates in both groups were healthy and shifted to the mother's side, with no significant differences. FBNC admissions and mean baby weights were comparable between groups. However, IUD was reported only in the RS group (2.27%; $p<0.05$), and wound complications were significantly higher in the RS group (11.36%; $p<0.05$).

Table 1: Demographic And Clinical Characteristics Of Study Population (n=200)

Characteristics	RS Group (n=176)	Vaginal Group (n=24)	p-value
Age (Mean $\pm$ SD)	24.7 $\pm$ 2.8	23.7 $\pm$ 2.5	>0.05
Multigravida	111 (63.07%)	17 (70.83%)	>0.05
Booked Cases	154 (87.50%)	21 (87.50%)	>0.05
Vertex Presentation	161 (91.48%)	24 (100%)	0.001*

Table 2: Primary Indications For Previous Cesarean Section

Indication	RS Group (n=176)	Vaginal Group (n=24)	p-value
Failed Induction	37 (21.02%)	7 (29.16%)	<0.05*
Fetal Distress	30 (17.05%)	5 (20.83%)	<0.05*
CPD	25 (14.20%)	0	<0.05*
Malpresentation	15 (8.52%)	2 (8.33%)	>0.05
Others†	69 (39.21%)	10 (41.68%)	<0.05*

†Others include APH, AUA, BOH, MSL, NPOL, Eclampsia, Obstructed Labor, PIH, Placenta previa, Postdated

Table 3: Intraoperative Complications In Repeat Cesarean Section (n=176)

Complication	Number of Patients	Percentage
Adhesions	50	28.41%
Blood loss >1000cc	21	11.93%
Bladder high up	20	11.36%
Scar dehiscence	14	7.95%
Scar rupture	5	2.84%

Table 4: Maternal And Fetal Outcomes

Outcome	RS Group (n=176)	Vaginal Group (n=24)	p-value
Baby Mother Side	167 (94.89%)	23 (95.83%)	0.431
FBNC Admission	5 (2.84%)	1 (4.17%)	0.243
IUD	4 (2.27%)	0	<0.05*
Mean Baby Weight (kg)	2.5 $\pm$ 0.3	2.6 $\pm$ 0.3	>0.05
Wound Complications‡	20 (11.36%)	0	<0.05*
UTI	15 (8.52%)	2 (8.33%)	>0.05*

‡Includes wound gaping and infection *Statistically significant ($p<0.05$)

DISCUSSION

The rising rate of cesarean sections (CS) globally has led to an

increased proportion of women with prior CS histories. Previous CS remains the most common indication for repeat procedures, carrying elevated risks of complications including scar dehiscence, adhesions, uterine rupture, and significant hemorrhage [14]. However, vaginal birth after cesarean section (VBAC) has emerged as a safe alternative, with success rates ranging from 50% to 80% in over 20,000 studied cases [15].

In our study, demographic analysis revealed that most patients in both repeat CS (RS) and vaginal delivery groups were between 18-25 years, with mean ages of 24.7 and 23.7 years respectively. The majority were second gravidas (RS: 63.07%, Vaginal: 70.8%) and primiparas (RS: 71.5%, Vaginal: 70.8%). These findings align with Balachandran et al.'s study [16], though their population had a higher mean age of 30.26 years.

Failed induction emerged as the most common indication for primary CS (RS: 21.02%, Vaginal: 29.16%), followed by fetal distress (RS: 17.05%, Vaginal: 20.83%). This correlates with Manish et al.'s findings [17], where non-recurrent indications like fetal distress and malpresentation showed higher successful vaginal delivery rates compared to recurrent indications such as cephalopelvic disproportion (CPD).

Anemia was the predominant antenatal complication in the third trimester (RS: 10.8%, Vaginal: 8.33%), followed by pregnancy-induced hypertension. The study noted significant differences in complications like low-lying placenta and placenta previa between groups. This aligns with previous research showing increased placenta previa frequency with rising CS rates [18-19].

Intraoperative complications in the RS group primarily included adhesions (28.4%), elevated bladder position (11.36%), and significant blood loss >1000cc (11.9%). Scar rupture was observed in 2.5% of cases. These findings are comparable to Nazaneen et al.'s study [20], which reported adhesions in 34.76% of cases. The relatively low uterine rupture rate supports Balachandran et al.'s findings [16], who reported similar rates worldwide.

Regarding fetal outcomes, 95% of babies were healthy and shifted to mother's side, with only 3% requiring FBNC admission and 2% declared IUFD. Mean birth weights were similar between groups (RS: 2.5kg, Vaginal: 2.6kg). These outcomes support Elkousy et al. [21] observations that average-sized babies have better VBAC success rates compared to those weighing more than 4 kg.

The American College of Obstetricians and Gynecologists has updated their guidelines to encourage VBAC attempts in women with one previous low transverse incision CS, provided there are no contraindications [22]. This approach, supported by our findings, suggests that careful patient selection and monitoring can make VBAC a safe and viable option for reducing overall cesarean rates.

Current evidence indicates that while repeat CS remains common, VBAC can be successfully attempted in carefully selected cases, particularly those with non-recurrent indications for their primary CS. However, comprehensive antenatal care, careful monitoring, and preparedness for emergency situations remain crucial for optimal outcomes in both delivery approaches.

CONCLUSION

The increasing prevalence of cesarean sections has led to a rising incidence of post-cesarean pregnancies, making them one of the most common high-risk scenarios in modern obstetrics. While the old dictum "once a cesarean, always a cesarean" has evolved to "once a cesarean, always a hospital delivery," success in managing these cases depends on careful risk assessment and monitoring. Our study demonstrates that various obstetric factors, including previous vaginal delivery history, Bishop Score, estimated fetal birth weight, and labor onset type, significantly influence the success of trial of labor (TOL). Through proper identification and evaluation of these factors, healthcare providers can better predict successful vaginal birth after cesarean (VBAC) outcomes. This emphasizes the importance of informed decision-making, regular antenatal checkups, and timely hospital admission for optimal management. While extensive research exists on this topic, continued investigation is needed to fully understand post-cesarean changes and establish standardized management protocols that ensure the best outcomes for both mother and child.

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