



OUTCOME OF VAGINAL BIRTH AFTER CESAREAN SECTION IN A TERTIARY CARE HOSPITAL

Obstetrics & Gynaecology

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ABSTRACT

Rising cesarean section (CS) rates worldwide have resulted in an increasing number of women with previous cesarean delivery in subsequent pregnancies. Vaginal birth after cesarean section (VBAC) has emerged as an effective strategy to reduce repeat cesarean deliveries and associated maternal morbidity when conducted in appropriately selected women under adequate obstetric supervision. This prospective observational study was conducted in the Department of Obstetrics and Gynaecology at Shri Bhausaheb Hire Government Medical College from January 2025 to December 2025. During the study period, 6,395 deliveries were conducted, among which 211 women achieved successful VBAC. Majority of women belonged to the age group of 26–30 years (45.50%) and were from rural areas (66.82%). Most women were gravida two (71.56%) and presented at 39–40 weeks gestation (59.72%). Fetal distress (32.70%) and non-progress of labour (24.17%) were the commonest indications for previous cesarean section. Spontaneous vaginal delivery was achieved in 89.10% women, while instrumental vaginal delivery was required in 10.90% cases. Maternal complications were minimal, with postpartum hemorrhage observed in 3.79%, blood transfusion requirement in 2.84%, febrile morbidity in 1.90%, and ICU admission in 0.47% women. No uterine rupture, scar dehiscence, or maternal mortality was observed. Most neonates (79.62%) had birth weight between 2.5–3.5 kg, and 94.79% had APGAR score ≥ 7 at 5 minutes. NICU admission was required in 6.16% neonates. VBAC is a safe and effective option in carefully selected women with one previous LSCS when managed in a well-equipped tertiary care center with continuous intrapartum monitoring. Appropriate patient selection and standardized obstetric care can result in favorable maternal and neonatal outcomes while reducing unnecessary repeat cesarean sections.

KEYWORDS

Vaginal Birth After Cesarean, Vbac, Trial Of Labour After Cesarean, Tolac, Previous Cesarean Section, Maternal Outcome, Neonatal Outcome

INTRODUCTION

The global rise in caesarean section (CS) rates has resulted in an increasing number of women with previous caesarean delivery in subsequent pregnancies. Although caesarean section is an essential life-saving procedure, repeat caesarean deliveries are associated with increased maternal morbidity, prolonged hospital stay, higher healthcare costs, and future obstetric complications. Vaginal birth after caesarean section (VBAC), achieved through a trial of labour after caesarean (TOLAC), has emerged as an effective strategy to reduce unnecessary repeat caesarean sections and associated complications.^{1,2} Successful VBAC is associated with lower maternal morbidity and faster recovery, whereas failed TOLAC may increase maternal and neonatal risks, emphasizing the importance of careful patient selection and close intrapartum monitoring.^{3,4}

In India, the increasing caesarean section rate has become a significant concern, especially in tertiary care institutions. Several Indian studies have demonstrated that TOLAC can be safely attempted in selected women with one previous lower segment caesarean section (LSCS), with acceptable maternal and neonatal outcomes.^{5,6} Factors such as spontaneous onset of labour, previous vaginal delivery, favourable cervical status, and proper institutional protocols have been associated with higher VBAC success rates.⁷ However, concerns regarding uterine rupture, emergency caesarean section, medico-legal issues, and lack of uniform guidelines continue to influence clinical decision-making and limit widespread acceptance of VBAC.^{1,2,8}

Tertiary care hospitals frequently manage high-risk obstetric referrals, making evaluation of VBAC outcomes particularly important in such settings. Institutional data regarding maternal and neonatal outcomes of TOLAC are essential for appropriate counselling, risk assessment, and formulation of evidence-based management protocols. Therefore, the present study was undertaken to evaluate the maternal and neonatal outcomes of vaginal birth after caesarean section in a tertiary care hospital and to assess factors associated with successful TOLAC in women with one previous LSCS.

MATERIAL AND METHODS

This prospective observational study was conducted in the Department of Obstetrics and Gynaecology at Shri Bhausaheb Hire Government Medical College over a period of one year from January 2025 to December 2025. Pregnant women admitted to the labour ward and fulfilling the eligibility criteria for TOLAC were enrolled

consecutively during the study period after obtaining informed written consent.

Inclusion Criteria

- Pregnant women with one previous lower segment caesarean section
- Singleton pregnancy
- Cephalic presentation
- Gestational age ≥ 37 weeks
- Women willing for trial of labour and providing informed consent

Exclusion Criteria

- Previous classical caesarean section or previous uterine scar other than LSCS
- More than one previous caesarean section
- Malpresentation
- Placenta previa or other contraindications for vaginal delivery
- Cephalopelvic disproportion
- Multiple pregnancy
- Scar tenderness or suspected scar dehiscence at admission
- Medical or obstetric complications requiring elective caesarean section

The study population included antenatal women with a history of one previous LSCS presenting with singleton pregnancy in cephalic presentation at term gestation. Detailed obstetric, medical, surgical, and antenatal histories were obtained at admission. General physical examination, systemic examination, and obstetric examination were performed in all patients. Relevant investigations including complete blood count, blood grouping and Rh typing, urine examination, ultrasonography findings, and previous operative records were reviewed. Patients selected for TOLAC were managed according to institutional labour room protocol under continuous maternal and fetal surveillance.

Successful vaginal birth after caesarean section (VBAC) was defined as vaginal delivery achieved following a successful trial of labour in women with one previous caesarean section. Failed TOLAC was defined as requirement of emergency repeat caesarean section after initiation of labour trial. Maternal outcome measures included mode of delivery, duration of labour, postpartum hemorrhage, scar dehiscence, uterine rupture, need for blood transfusion, puerperal pyrexia, wound infection, and maternal intensive care unit admission. Neonatal

outcome measures included birth weight, APGAR score at 1 and 5 minutes, neonatal intensive care unit (NICU) admission, respiratory distress, birth asphyxia, and perinatal mortality.

Data collected during the study were entered in a predesigned case record proforma and subsequently compiled in Microsoft Excel spreadsheet. Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) software version 26.0. Categorical variables were expressed as frequency and percentage, while continuous variables were expressed as mean and standard deviation.

RESULTS

During the study period from January 2025 to December 2025, a total of 6,395 deliveries were conducted at Shri Bhausaheb Hire Government Medical College. A total of 211 women (3.3 % of total deliveries) with one previous lower segment caesarean section (LSCS) achieved successful vaginal birth after caesarean section (VBAC) during the study period. Majority of women belonged to the age group of 26–30 years (45.5 %), representing the predominant reproductive age group in the study population. Most patients were from rural areas (66.82 %) and belonged to middle and lower socioeconomic classes (83.84 %).

Table 1: Demographic Profile of Women with Successful VBAC

Variables	Number (n=211)	Percentage (%)
Age Group (years)		
21–25	82	38.86
26–30	96	45.50
31–35	28	13.27
>35	5	2.37
Residence		
Rural	141	66.82
Urban	70	33.18
Socioeconomic Status		
Lower	92	43.60
Middle	106	50.24
Upper	13	6.16

Majority of women were gravida two (71.56 %) and presented at 39-40 weeks gestation (59.72 %). All women underwent spontaneous onset of labour.

Table 2: Obstetric Characteristics of Study Population

Obstetric Variables	Number (n=211)	Percentage (%)
Parity		
Gravida 2	151	71.56
Gravida 3	47	22.27
Gravida ≥4	13	6.17
Gestational Age		
37–38+6 weeks	72	34.12
39–40 weeks	126	59.72
>40 weeks	13	6.16
Onset of Labour		
Spontaneous labour	211	100
Inter-delivery Interval		
24–36 months	129	61.14
>36 months	82	38.86

The common indications for previous caesarean section included fetal distress (32.7 %), non-progress of labour (24.17 %), breech presentation (14.69 %), and meconium-stained liquor (9.48 %). Non-recurrent indications constituted the majority of previous caesarean deliveries.

Table 3: Indications of Previous Caesarean Section

Indication of Previous LSCS	Number (n=211)	Percentage (%)
Fetal distress	69	32.70
Non-progress of labour	51	24.17
Breech presentation	31	14.69
Meconium-stained liquor	20	9.48
Pregnancy-induced hypertension	15	7.11
Oligohydramnios	12	5.69
Cephalopelvic disproportion	7	3.32
Others	6	2.84

Majority of women delivered vaginally without instrumentation (89.1 %). Maternal complications were minimal, and no maternal mortality was observed in the study population. Maternal complications among successful VBAC cases were postpartum hemorrhage (3.79%), followed by requirement of blood transfusion (2.84%) & febrile morbidity (1.90%).

Table 4: Maternal Outcome Among Successful VBAC Cases

Maternal Outcome Variables	Number (n=211)	Percentage (%)
Mode of Vaginal Delivery		
Spontaneous vaginal delivery	188	89.10
Instrumental vaginal delivery	23	10.90
Maternal Complications		
Postpartum hemorrhage	8	3.79
Blood transfusion required	6	2.84
Febrile morbidity	4	1.90
Maternal ICU admission	1	0.47

Neonatal outcomes among successful VBAC cases were satisfactory in the majority of patients. Most neonates, 168 (79.62%), had a birth weight between 2.5–3.5 kg, while 43 neonates (20.38%) had birth weight less than 2.5 kg. APGAR score at 5 minutes was ≥7 in 200 neonates (94.79%), whereas 11 neonates (5.21%) had APGAR score <7. A total of 13 neonates (6.16%) required NICU admission. Respiratory distress was observed in 7 neonates (3.32%), while birth asphyxia was noted in 3 cases (1.42%). No perinatal mortality was observed in the present study.

Table 5: Neonatal Outcome Among Successful VBAC Cases

Neonatal Variables	Number (n=211)	Percentage (%)
Birth Weight		
<2.5 kg	43	20.38
2.5–3.5 kg	168	79.62
APGAR Score at 5 Minutes		
<7	11	5.21
≥7	200	94.79
NICU Admission	13	6.16
Respiratory distress	7	3.32
Birth asphyxia	3	1.42

DISCUSSION

The increasing global caesarean section rate has led to growing concern regarding repeat caesarean deliveries and their associated maternal and neonatal complications. International guidelines by the American College of Obstetricians and Gynecologists (ACOG) and Royal College of Obstetricians and Gynaecologists (RCOG) recommend that appropriately selected women with one previous LSCS should be offered TOLAC in adequately equipped institutions.^{1,2} In the present study, the majority of women belonged to the age group of 21–30 years, which is comparable with studies conducted by Tambe and Mulay,⁵ Singh et al.,⁶ and Sahu et al.⁹ This observation reflects the common reproductive age group encountered in obstetric practice in India. Most women in the present study had spontaneous onset of labour, which has been consistently associated with higher VBAC success rates in previous literature.^{7,9} Singh et al.,⁷ reported significantly better maternal and neonatal outcomes in women undergoing spontaneous labour compared to induced labour after previous caesarean section. In the current study, all successful VBAC cases occurred following spontaneous labour, which may have contributed to the lower maternal morbidity and favourable neonatal outcomes observed.

The present study demonstrated that non-recurrent indications such as fetal distress, breech presentation, and non-progress of labour constituted the majority of previous caesarean indications among successful VBAC cases. Similar observations have been reported by Dhillon et al.,¹⁰ Devkare et al.,¹¹ and Tambe and Mulay⁵ who found higher VBAC success rates in women with previous caesarean sections performed for non-recurrent causes. This finding is clinically important because recurrent indications such as cephalopelvic disproportion are generally associated with lower likelihood of successful vaginal delivery.

Maternal outcomes in the present study were favourable, with the majority of women delivering vaginally without instrumentation. Similar low maternal complication rates have been reported in Indian tertiary care studies by Sahu et al.,⁹ Bhatia et al.,¹² and Kharat et al.¹³

The absence of uterine rupture and scar dehiscence in the present study may be explained by strict selection criteria, spontaneous onset of labour, continuous intrapartum monitoring, and immediate availability of emergency operative facilities. Kalyankar et al.,⁸ emphasized the importance of scar assessment and proper case selection in improving maternal outcomes in women with previous caesarean section.

Neonatal outcomes observed in the present study were also satisfactory. The majority of neonates had APGAR scores ≥ 7 at 5 minutes, and only a small proportion required NICU admission. No perinatal mortality was observed. These findings are comparable with those reported by Tambe and Mulay,⁵ Sahu et al.,⁹ and Kumari et al.,¹⁴ who demonstrated favourable neonatal outcomes among successful VBAC cases in Indian institutions. Lower NICU admission rates and satisfactory neonatal adaptation in the present study may be attributed to proper intrapartum fetal surveillance and timely obstetric intervention whenever required.

The findings of the present study have important clinical implications in the Indian healthcare setting, where rising caesarean section rates continue to pose significant public health challenges. Successful VBAC reduces operative morbidity, postoperative recovery time, hospital stay, and economic burden associated with repeat caesarean section. In resource-limited tertiary care centers catering to large obstetric populations, promoting evidence-based TOLAC practices in eligible women may contribute significantly toward reducing unnecessary repeat caesarean deliveries without compromising maternal or neonatal safety.

The major strength of the present study is its prospective observational design conducted in a tertiary care teaching hospital with standardized intrapartum monitoring and management protocols. However, certain limitations should be acknowledged. The study was conducted at a single tertiary care center, which may limit generalizability of findings to peripheral healthcare settings. Failed TOLAC cases were not comparatively analysed in detail, and long-term maternal and neonatal follow-up was not included. Additionally, ultrasonographic scar thickness assessment and validated VBAC prediction scoring systems were not routinely incorporated into patient selection.

Future multicentric studies with larger sample sizes are required to further evaluate predictors of successful VBAC and maternal-neonatal outcomes in diverse Indian populations. Integration of validated prediction models, standardized clinical pathways, and scar assessment protocols may further improve patient selection and optimize outcomes. Further research evaluating long-term maternal reproductive outcomes and cost-effectiveness of TOLAC in Indian healthcare systems would also be valuable.

CONCLUSION

The present study demonstrates that vaginal birth after caesarean section (VBAC) is a safe and effective option in carefully selected women with one previous lower segment caesarean section when managed in a well-equipped tertiary care center with appropriate intrapartum monitoring and immediate emergency obstetric facilities. Successful VBAC was associated with favourable maternal and neonatal outcomes, low maternal morbidity, satisfactory neonatal adaptation, and absence of major scar-related complications or maternal mortality.

Women with spontaneous onset of labour and previous caesarean section for non-recurrent indications showed better outcomes, emphasizing the importance of proper patient selection and individualized counselling. The findings of the present study support the promotion of evidence-based trial of labour after caesarean (TOLAC) practices as an important strategy to reduce unnecessary repeat caesarean sections and their associated operative risks in the Indian obstetric population.

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