Original Research Article

Study of Clinical Determinants and Obtetric Outcome in Vaginal Birth after Caesarean Section (VBAC)

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Abstract

Background: Historically, "Once a C-section, always a C-section" was the norm, but advances in surgical techniques have shifted toward encouraging VBAC. Understanding factors for successful VBAC can reduce cesarean rates, improve recovery, and enhance maternal health. Our study aims to support safe VBAC implementation, promoting better outcomes and patient autonomy. *Aim*: To find out the clinical determinants and Obstetric outcome in Vaginal Birth after a Previous Caesarean Section. *Material and Methods*: This study is a descriptive, observational, cross-sectional research conducted over two years at the Department of Obstetrics and Gynaecology of DVVP Pravara Rural Hospital, Loni, with a sample size of 100 participants. The primary aim is to evaluate factors influencing successful Vaginal Birth After Cesarean (VBAC) in women who have a history of a previous single lower segment cesarean section (LSCS) at the same hospital. Data were collected from eligible participants and analyzed using suitable statistical tests to identify trends and correlations. *Results*: Our study aims to assess the safety and feasibility of VBAC in a tertiary care setting, focusing on key factors such as maternal age, BMI, inter-delivery interval, previous obstetric history, and the indication for the initial cesarean. By identifying predictors of successful VBAC, the findings will help improve clinical decision-making and patient counseling. The study was approved by the ethical committee, and participants provided written informed consent. Standard protocols for VBAC management were followed, with senior obstetricians making the decision. Continuous electronic fetal monitoring ensured maternal and fetal wellbeing during labor. *Conclusion*: VBAC can be a safe option for women with a history of a single LSCS, provided there are no contraindications. A multidisciplinary approach, continuous fetal monitoring, and partographs improve safety and timely intervention. Senior obstetricians' involvement enhances success rates. Favorable outcomes indicate VBAC can reduce repeat cesareans, lowering surgical risks and costs.
Keywords: VBAC, fetal, maternal, outcome, previous LSCS.

INTRODUCTION

Historically, the dictum "Once a C-section, always a C-section" prevailed, but this is no longer true. In the UK, the primary cesarean rate is around 16%, but repeat cesarean rates reach 67%, with 10% of the obstetric population having experienced a prior cesarean [1]. Globally, the prevalence of VBAC (Vaginal Birth After Cesarean) varies, with some regions, like India, seeing cesarean rates as high as 50% in urban areas [2-5]. As cesarean rates continue to rise, understanding the factors contributing to successful VBAC is crucial for maternal and neonatal health [6].

Advancements in surgical techniques, anesthesia, and maternal care have shifted the focus toward encouraging VBAC, recognizing its potential benefits, such as shorter recovery times, reduced surgical risks, and better outcomes for future pregnancies [7]. This shift calls for a comprehensive study to identify factors contributing to successful VBAC and mitigate risks [8].

Successful VBACs reduce cesarean rates, improve resource utilization, and offer women more control over their childbirth experience. Understanding the factors that facilitate successful VBAC can also

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86

minimize the risks associated with multiple cesarean deliveries [9, 10]. Our study aims to provide evidence to support VBAC implementation, promoting a balanced approach that prioritizes both patient autonomy and health outcomes while addressing clinical and systemic barriers.

Aim: To find out the clinical determinants and Obstetric outcome in Vaginal Birth after a Previous Caesarean Section.

MATERIAL AND METHODS
VBAC offers benefits like shorter recovery, lower surgical risks, and higher breastfeeding success compared to elective repeat cesarean delivery. However, its success depends on several clinical factors:

Maternal Factors: Age, BMI, comorbidities, uterine incision type, pregnancy interval, and reason for the initial cesarean.

Fetal Factors: Gestational age, fetal weight, and presentation.

Intrapartum Factors: Labor onset, progression, induction, augmentation, and continuous fetal monitoring. These factors must be carefully evaluated to ensure safe and successful VBAC outcomes.

This observational cross-sectional descriptive study was conducted over two years at the Department of Obstetrics and Gynaecology, DVVP Pravara Rural Hospital, Loni, with a sample size of 100. Participants were women aged 18-35 years who gave written informed consent, had a history of a single lower segment cesarean section at Pravara Rural Hospital, and met specific criteria for vaginal delivery. Inclusion criteria included no contraindications for vaginal birth, a singleton cephalic pregnancy, fetal weight between 2 to 3 kg, an inter-conceptional period of more than 2 years, and a recent ultrasound showing scar thickness greater than 3 mm in the third trimester, with no cord around the neck. Data were analyzed using appropriate statistical methods.

RESULTS
The study included 100 patients, with the majority (94%) falling within the 20 to 30 age range. Only 3% of participants were under 20 years, and another 3% were over 30 years. The mean age of the participants was 24.10 years, with a standard deviation of 3.28, indicating a predominantly young population.

Table 1: Age Wise Distribution of Patients

Age	No. of Patients	Percentage
<20	3	3.00%
20 to 30	94	94.00%
>30	3	3.00%

The majority of patients (76%) had an inter-delivery interval of more than 3 years, while 23% had an interval between 2 to 3 years. Only 1 patient had an inter-delivery interval of less than 2 years.
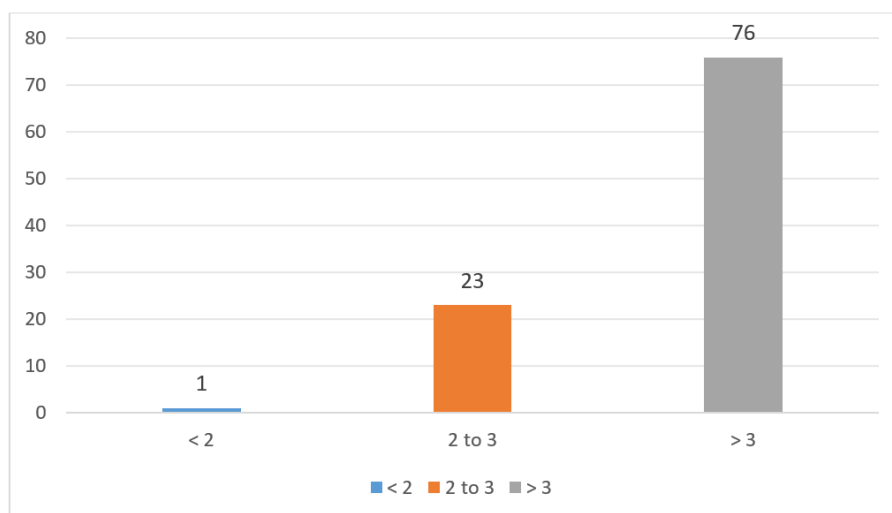

Graph 1: Interval Between Previous LSCS and Present Pregnancy

Table 2: VBAC Success And Bishop Score Association of Patients

Bishop Score	Total	Successful VBAC	Repeat LSCS
>6	79	75	4
<6	21	10	11

Among the 100 patients, 79 had a Bishop score greater than 6, with 75 achieving successful VBAC and 4 undergoing repeat LSCS. In contrast, 21 patients had a Bishop score less than 6, with only 10 having a successful VBAC and 11 requiring repeat LSCS.
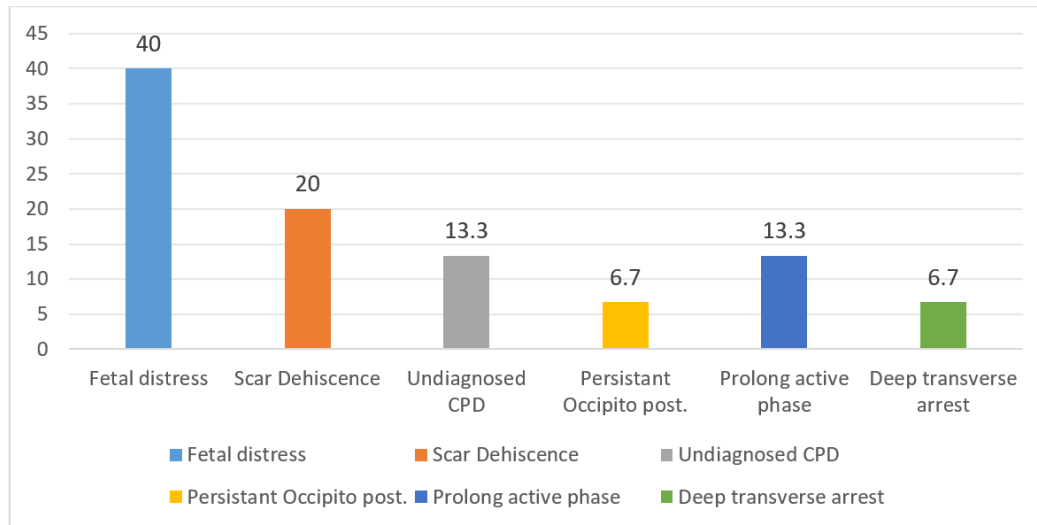
Graph 2: Indication of Repeat LSCS Wise Distribution of Patients

The indications for repeat LSCS were as follows: fetal distress in 40% of cases, scar dehiscence in 20%, undiagnosed cephalopelvic disproportion (CPD) in 13.3%, persistent occipito-posterior position in 6.7%, prolonged active phase in 13.3%, and deep transverse arrest in 6.7%.

Table 3: Fetal Complication Wise Distribution of Patient

FETAL Complication	Successful VBAC (N=85)	Repeat LSCS (N=15)
Birth Asphyxia	2	2
Birth trauma	2	0
FSB	1	1
Meconium stained	8	5
Neonatal death	1	1
Total	**14(16.47%)**	**9(60.00%)**

Among the 85 successful VBAC cases, 16.47% experienced fetal complications, including birth asphyxia (2 cases), birth trauma (2 cases), and meconium-stained amniotic fluid (8 cases). In the 15 repeat LSCS cases, 60% had fetal complications, with similar occurrences of birth asphyxia (2 cases) and neonatal death (1 case).

Table 4: Maternal Complication Wise Distribution of Patients

Maternal Complication	Successful VBAC (N=85)	Repeat LSCS (N=15)
Blood transfusion	4	1
Cervical laceration	2	0
Perineal tear	1	0
PPH	5	0
Scar dehiscence	0	2
Total	**12 (14.11%)**	**3 (20.00 %)**

In the 85 successful VBAC cases, 14.11% experienced maternal complications, including blood transfusions (4 cases), cervical lacerations (2 cases), perineal tears (1 case), and postpartum hemorrhage (5 cases). In the 15 repeat LSCS cases, 20% had complications, with scar dehiscence occurring in 2 cases, and 1 case required a blood transfusion.

DISCUSSION

In present study it was seen that:

Age Distribution: The majority of patients (94%) were aged 20-30, with a mean age of 24.10 years and a standard deviation of 3.28, indicating a young population.

Inter-Delivery Interval: 76% of patients had an inter-delivery interval of more than 3 years, 23% had 2-3

years, and 1 patient had less than 2 years.

Bishop Score: 79 patients had a Bishop score >6, with 75 achieving successful VBAC and 4 requiring repeat LSCS; 21 patients had a score <6, with 10 successful VBAC and 11 repeat LSCS.

Indications for Repeat LSCS: Indications included fetal distress (40%), scar dehiscence (20%), undiagnosed CPD (13.3%), persistent occipito-posterior (6.7%), prolonged active phase (13.3%), and deep transverse arrest (6.7%).

Fetal Complications: In successful VBAC cases, 16.47% had fetal complications; in repeat LSCS, 60% had fetal complications, including birth asphyxia, birth trauma, and neonatal death.

Maternal Complications: 14.11% of successful VBAC cases had maternal complications (blood transfusion, cervical laceration, perineal tear, PPH); 20% of repeat LSCS cases had complications, including scar dehiscence and blood transfusion.

Comparison of our Study Results with Other Studies

Study Parameter	Our Study	Birara *et al.,* [11]	Senturk MB *et al.,* [12]	Juhasz G *et al.,* [13]
Sample Size	100	204 (101 cases, 103 controls)	127 (70 attempted TOL)	1213
Success Rate of VBAC	0.85	0.495	0.55	0.772
Key Success Factors	Younger age, lower BMI, previous successful VBAC	History of successful VBAC, rupture of membranes	Advanced cervical dilation, gravidity, parity	Lower BMI, less weight gain during pregnancy
Influence of Maternal	Significant (younger age favoured)	Not significant	Not assessed	Not significant
Influence of BMI	Significant (lower BMI favoured)	Not assessed	Not assessed	Significant (lower BMI favoured)
Previous VBAC	Higher success with prior VBAC	Significant predictor of success	Higher success with prior vaginal delivery	Significant predictor of success
Indications for Previous C-Section	Significant (fetal distress,Cephalopelvic disproportion,Malpresentation etc.)	Fetal distress and failed induction associated with lower success	Not assessed	Not significant determinants
Maternal Complicati ons	Successful VBAC (14.11%), Repeat LSCS (20.00%)	Not detailed	More complications in VBAC group (minor)	Not detailed
Fetal Complications	Successful VBAC (16.47%), Repeat LSCS (60.00%)	Presence of meconium associated with failed VBAC	Not detailed	Not detailed
Statistical Analysis used	Chi-square, unpaired t-test	Casecontrol analysis	Retrospective evaluation	Chart review and comparison

In comparing sample sizes and success rates:

Our study had a sample size of 100, achieving a high VBAC success rate of 85%. Birara *et al.,* [11] included 204 women and reported a VBAC success rate of 49.5%. Senturk MB *et al.,* [12] had 127 patients with a success rate of 55%, Juhasz G *et al.,* [13] observed a success rate of 77.2% among 1,213 patients.

CONCLUSION

Our study demonstrates that VBAC can be a safe and viable option for women with a history of a single LSCS, provided there are no contraindications. A multidisciplinary approach, involving obstetricians, anesthesiologists, and pediatricians, along with continuous electronic fetal monitoring and partographs, ensures timely interventions and improves safety. Senior obstetricians' involvement in decision-making further enhances VBAC success rates. The favorable maternal and fetal outcomes in this study highlight VBAC's potential to reduce repeat cesarean sections, lowering surgical risks and healthcare costs. With proper selection criteria and vigilant monitoring, VBAC can be safely implemented in rural healthcare settings.

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