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ORIGINAL ARTICLE

Safety and success of Vaginal Birth after Cesarean Section (VBAC) in low socio-economic countries.

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ABSTRACT… Objective: To assess the safety and success rate of VBAC in women from low socio-economic backgrounds. **Study Design:** Prospective Observational Design. **Setting:** Gynecology and Obstetrics Unit of Hayatabad Medical, Complex. **Period:** October 2024 to March 2025. **Methods:** A total of 149 women with a history of one previous cesarean section were observed. A non-probability purposive sampling technique was used to recruit participants for this study. Demographic data, gestational age, and delivery outcomes were analyzed. The primary outcome was the success rate of VBAC, while secondary outcomes included fetal health indicators and complications. **Results:** The majority of participants were aged between 20–30 years (n=109, 73.2%), with most at a gestational age of 37–39 weeks (n=107, 71.8%). Out of 149 women, 93 (62.4%) achieved a successful VBAC. Fetal outcomes were generally favorable: 82 newborns (88%) had uneventful postnatal periods. Adverse outcomes included 2 cases of low birth weight, 3 cases each of APGAR scores <7 at 1 and 5 minutes, and 3 intrauterine deaths. **Conclusion:** VBAC can be a safe and effective option in low socio-economic settings, particularly among well-selected candidates. Despite some adverse fetal outcomes, the majority of births were successful and uneventful, suggesting the feasibility of promoting VBAC to reduce surgical burden in resource-limited healthcare systems.

Key words: Birth Weight, Cesarean Section (CS), Vaginal Birth after Cesarean Section (VBAC).

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INTRODUCTION

The global rise in cesarean section (CS) rates has become a significant concern in maternal health, particularly in low- and middle-income countries (LMICs), where access to safe surgical care is often limited.[1] Between 2010–2018, 21.1% of global births were by caesarean section (CS), with regional rates from 5% in sub-Saharan Africa to 42.8% in Latin America. CS rates have increased globally since 1990, with the highest rises in Eastern Asia, Western Asia, and Northern Africa. By 2030, 28.5% of births are projected to be by CS, with stark regional differences—from 7.1% in sub-Saharan Africa to 63.4% in Eastern Asia. Vaginal Birth After Cesarean Section (VBAC) has emerged as a clinically viable and cost-effective alternative to repeat cesarean deliveries.[2] When carefully selected, women with a previous cesarean delivery can successfully undergo a trial of labor after cesarean (TOLAC), reducing both maternal morbidity and healthcare burden.[3,4] In Pakistan, the success rate of Vaginal Birth After Cesarean (VBAC) varies widely, typically ranging from 60% to 84% depending on patient selection and hospital protocols. A study at Bahria University, Karachi reported a high VBAC success rate of 83.8%, linked to favorable maternal factors (Yousuf et al., 2023).[5] Another study at Civil Hospital Karachi showed a 68.3% success rate, with prior vaginal delivery and adequate birth spacing as key predictors (Shaikh et al., 2021).[6]

In low socio-economic settings, where healthcare resources, surgical infrastructure, and access to emergency obstetric care may be constrained, promoting VBAC can alleviate pressure on overburdened systems.[7] Additionally, VBAC minimizes risks associated with multiple cesarean deliveries, such as placenta accreta spectrum, uterine rupture, and surgical complications.[8] Despite these potential benefits, VBAC remains underutilized due to provider hesitancy, lack of standardized protocols, and limited awareness among patients.

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This research aims to explore the success rate, safety profile of VBAC in resource-limited settings. By evaluating VBAC outcomes, this study seeks to support evidence-based guidelines that encourage the safe adoption of VBAC, ultimately contributing to improved maternal and neonatal outcomes in low socio-economic countries.

METHODS

This study employed a prospective observational design to evaluate the safety and success of Vaginal Birth after Cesarean Section (VBAC) in low socio-economic settings. It was conducted in the Gynecology and Obstetrics Unit of Hayatabad Medical Complex from October 2024 to March 2025 after taking approval from ethical committee (2853) Dated: 01/09/2025. The duration of data collection was six months. Cochran's Formula was used to calculate sample Size. Women with a history of one previous lower-segment cesarean section, singleton pregnancy, cephalic presentation, and no contraindications for vaginal delivery were included. Patients having history of more than one previous cesarean section, previous classical (vertical) uterine incision or any other incision type associated with a higher risk of uterine rupture or having contraindications to vaginal delivery, such as placenta previa, transverse lie, or obstructed labor were excluded. Data were collected using structured forms and medical records, covering maternal demographics, labor details, delivery outcomes, and neonatal health. The primary outcome was the rate of successful VBAC, while secondary outcomes included maternal and neonatal complications. Statistical analysis was done using SPSS version 23, with significance set at $p<0.05$. Ethical approval was obtained, and informed consent was secured from all participants. The study aimed to generate context-specific evidence to support safe VBAC practices in resource-limited environments.

RESULTS

Among the participants, 109 (73.2%) were aged between 20 and 30 years. Additionally, 107 women (71.8%) were at a gestational age of 37 to 39 weeks. (Table-I) The mean duration of VBAC was 8.95 hours with a standard deviation of 7.2. The average birth weight was 3.4 kg, with a standard deviation of 0.3 kg. APGAR scores had a mean of 7.8 at 1 minute (SD 1.1) and 9.8 at 5 minutes (SD 1.4), while the mean hospital stay was 1.8 days with a standard deviation of 1.2. (Table-II) Out of 149 patients, 93 underwent successful VBAC. (Figure 1) Among these, 82 (88%) had uneventful fetal outcomes, while 2 had low birth weight, 3 had APGAR scores below 7 at 1 minute, 3 had APGAR scores below 7 at 5 minutes, and 3 experienced intrauterine deaths. (Table-III)

TABLE-I

Distribution of Participants by Age and Gestational Age at the Time of VBAC (Frequencies and Percentages)

Parameter	Reference	Frequency (n=149)	Percentage
Age (Years)	20-30	109	73.2
	31-40	40	26.8
Gestational age(weeks)	32-36	9	6
	37-39	107	71.8
	40-41	33	22.1

TABLE-II

Quantitative variables (n=149)

Parameter	Mean	SD
Duration of VBAC (Hours)	8.95	7.2
Birth weight (kg)	3.4	0.3
APGAR 1	7.8	1.1
APGAR 5	9.8	1.4
Hospital stay (Days)	1.8	1.2

FIGURE-1

Rate of vaginal deliveries following a prior cesarean section

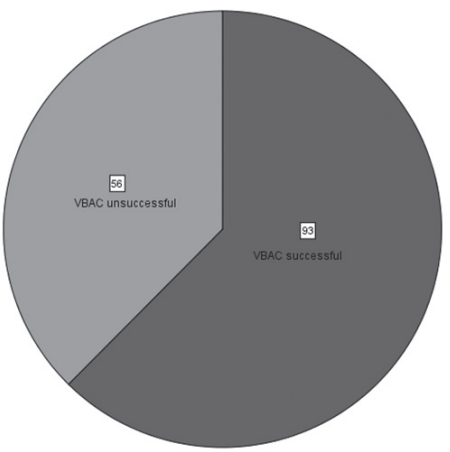

TABLE-III		
Fetal outcomes in successful cases of VBAC (n=93)		
Fetal Outcome	**Frequency (93)**	**Percentage**
Uneventful	82	88
Low birth weight	2	2.1
APGAR <7 in 1 minute	3	3.2
APGAR <7 in 5 minute	3	3.2
Intrauterine Death	3	3.2

DISCUSSION

In this study, a total of 149 women with previous cesarean sections were given the option for a Trial of Labor after Cesarean (TOLAC), of which 93 (62.4%) successfully delivered vaginally. This success rate aligns with global findings, where successful VBAC rates range between 60–80% depending on selection criteria and availability of emergency obstetric care (Landon et al., 2004; Guise et al., 2010).[9,10] Factors contributing to higher VBAC success in this cohort include maternal age, gestational age, and possibly favorable obstetric history. The majority of women were aged 20–30 years (73.2%), a demographic commonly associated with higher VBAC success due to lower obstetric complications compared to older age groups (Cheng et al., 2011).[11] Most women (71.8%) were between 37–39 weeks gestation at the time of delivery. Delivering at term is generally considered optimal for VBAC, reducing risks associated with prematurity or post-term labor. A gestational age of 37–39 weeks is associated with both improved maternal outcomes and fetal well-being (American College of Obstetricians and Gynecologists [ACOG], 2019).[12]

Fetal outcomes were predominantly uneventful in this cohort, with 82 of 93 successful VBAC deliveries (88%) showing no complications. Low birth weight was reported in only 2 cases, and APGAR scores below 7 at 1 and 5 minutes were recorded in 3 cases each. Importantly, 3 intrauterine deaths (IUDs) were reported, which requires scrutiny. These findings underscore the importance of careful intrapartum monitoring. In low-resource settings, the lack of continuous electronic fetal monitoring and timely access to emergency cesarean delivery may contribute to such adverse outcomes (Vogel et al., 2015).[13]

While VBAC can reduce the risks associated with multiple cesarean sections, such as adhesions, abnormal placentation, and surgical complications, its safety heavily depends on facility readiness. Low socio-economic countries often face challenges such as: Limited availability of trained obstetricians and anesthetists, Delayed access to emergency operative delivery, Inadequate neonatal intensive care. Despite these constraints, the relatively high success rate and generally favorable neonatal outcomes in this study suggest that with appropriate candidate selection and preparedness, VBAC is a viable and safe option even in resource-limited settings.[14]

CONCLUSION

VBAC can be safely and effectively implemented in low-resource communities when candidates are carefully chosen. Although some negative fetal outcomes were noted, most deliveries proceeded smoothly and without complications. This indicates that encouraging VBAC could help lessen the reliance on surgical interventions in healthcare settings with limited resources.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHORSHIP AND CONTRIBUTION DECLARATION	
1	**Sumayya Asif:** Writing.
2	**Mah Rukh:** Concept and design.
3	**Spogmay Wali:** Data collection.
4	**Shumaila Sardar:** Data analysis.
5	**Madeeha Hahbaz:** Data entry.
6	**Laiba Bukhari:** Revision.