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Determinants of Success and Complications in Vaginal Birth After Cesarean Section: A Systematic Literature Review

I Gusti Ngurah Rai Pradipta Wisesa[1]*, Cipta Pramana[2]
Universitas Tarumanagara, Jakarta, Indonesia[1]
Departemen Obstetri dan Ginekologi RSD K.R.M.T Wongsonegoro, Semarang, Indonesia[2]
Email: pradipta.wisesa@gmail.com, pramanacipta@yahoo.com

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Success Factors, Complications, Trial of Labor After Cesarean (TOLAC)

ABSTRACT
Trial of Labor After Cesarean (TOLAC) is the process of attempting a vaginal delivery after a prior cesarean section. TOLAC offers an alternative to repeat cesarean delivery but requires careful assessment of risks and benefits. This research aims to evaluate the factors affecting VBAC success and associated risks, providing guidance for clinical practice in determining VBAC eligibility. Relevant literature on VBAC was sourced from databases such as PubMed and Cochrane Library using the keywords "VBAC," "VBAC success," and "VBAC risks." Literature searches for these articles are conducted through databases of scientific journals such as PubMed and Google Scholar. Analysis was conducted to assess predictive factors for VBAC success, including previous vaginal delivery history, cervical conditions, and other parameters. VBAC success is significantly influenced by previous vaginal delivery history, cervical conditions at admission, and factors such as BMI and interpregnancy interval. The main risk associated with VBAC is uterine rupture, occurring in approximately 0.2–0.9% of cases. Proper management and careful risk assessment can minimize complications. VBAC can be a safe and effective option for women who meet specific criteria. Adequate monitoring and assessment are crucial to minimize risks and enhance success rates. Individual evaluation and thorough planning are essential for achieving optimal delivery outcomes. The decision to implement VBAC should be made with careful consideration of the benefits and risks to ensure safe and optimal outcomes for both mother and baby.

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Corresponding Author: I Gusti Ngurah Rai Pradipta Wisesa*
Email: pradipta.wisesa@gmail.com

INTRODUCTION

Vaginal birth after cesarean section (VBAC) is one option that women who have previously given birth through cesarean section can consider (Davis et al., 2020). VBAC refers to the normal process of vaginal delivery after previously undergoing sectio caesarean section in a previous pregnancy. To achieve VBAC, women must go through a process known as a trial of labour (TOL) or, more specifically, a trial of labour after cesarean section (TOLAC).

The World Health Organization (WHO) has observed a significant increase in the number of cesarean sections in developing countries. The WHO establishes that cesarean sections should ideally only be performed on 10 to 15 percent of total deliveries to maintain a balance between medical benefits

and possible risks (Lee et al., 2016). However, when these figures are exceeded, the risks associated with mortality and morbidity in mothers and babies increase significantly.

This rapid increase is reflected in global data. In 2019, there were 85 million cesarean sections performed worldwide. Although there was a decline in 2020 with 68 million actions, the number jumped sharply in 2021 to 373 million actions.3 In Indonesia, a similar trend is also seen. Based on data from Basic Health Research (Suryati & Suyitno, 2020), there has been a significant increase in the percentage of deliveries through cesarean section. In 2013, about 15.3% of 7,440 deliveries were performed in this way. Five years later, this figure increased to 17.6% from 78,736 births in 2018. This figure shows that more and more Indonesian women are undergoing cesarean sections, both for medical and non-medical reasons (Nurfianto et al., 2024).

The increase in cesarean sections in Indonesia and around the world demands more attention to the factors driving this trend, such as increased access to health facilities, maternal preferences, and medical decisions that may be influenced by technological developments and modern clinical approaches. However, it is important to remember that cesarean section is not without risks, both for mother and baby, especially if it is performed without clear medical indications.

The practice of Vaginal Birth After Cesarean (VBAC) presents an alternative to repeat cesarean delivery, particularly in the context of the rising rates of cesarean sections globally. Data from the World Health Organization (WHO) highlights a significant increase in cesarean deliveries in developing countries, including Indonesia, where the rates have exceeded the recommended threshold of 10-15%.

Given the rapid rise in cesarean deliveries and the associated risks, VBAC emerges as a critical topic in maternal healthcare. It provides an option that might reduce the frequency of repeat cesarean sections, thereby minimizing risks such as uterine rupture or other serious complications. Moreover, with over 85 million cesarean deliveries recorded worldwide in 2019, there is an urgent need for healthcare providers to reassess the criteria for cesarean sections and to promote VBAC when appropriate. The study of predictive factors that influence the success rate of Trial of Labor After Cesarean (TOLAC), such as BMI, cervical condition, and inter-pregnancy intervals, can inform clinical guidelines and potentially reduce the reliance on cesarean sections (Afework et al., 2024).

Numerous studies have explored factors that influence the success of VBAC. A systematic review by Wu et al. (2019) identified factors like previous vaginal deliveries, cervical readiness, and BMI as crucial predictors of VBAC success. Furthermore, research by Lakra et al. (2020) suggested that scoring systems such as the Flamm and Geiger scores could help in predicting the outcomes of TOLAC, with higher scores correlating to better success rates.

The novelty of this research lies in its focus on the unique population and healthcare practices in Indonesia, where the trend of cesarean deliveries has grown significantly. By providing localized data and analysis, this research aims to inform both policy changes and clinical guidelines for managing VBAC cases.

The primary objective of this study is to evaluate the determinants of VBAC success and associated risks in a population that has experienced a previous cesarean section. The findings of this study are expected to have significant implications for both clinical practice and healthcare policy in Indonesia (Handayani et al., 2015). By identifying key predictors for VBAC success, the study will contribute to the development of more refined VBAC eligibility criteria, potentially leading to a reduction in unnecessary repeat cesarean sections.

METHOD

Literature searches for these articles are conducted through databases of scientific journals such as PubMed and Google Scholar, which provide access to a wide range of relevant research and publications in the medical field. The search was conducted using specific keywords and MeSH (Medical et al.) terms related to vaginal birth after cesarean (VBAC), including terms such as "VBAC" (Nilsson et al., 2015), "vaginal delivery after the cesarean section", "risk of VBAC", and "trial of labour after cesarean (TOLAC)". The purpose of this process is to identify and review the latest research and relevant clinical guidance on VBAC so as to provide a comprehensive and based review of Evidence to improve understanding and practice in the selection of delivery methods for women with a history of cesarean section.

Inclusion Criteria

The criteria for inclusion in this study include:

1) Format and Access: Articles must be available in PDF format and fully accessible. Only articles that are available for free or through open access will be considered for information to be accessed at no additional cost.
2) Language: Articles must be written in the United Kingdom or Indonesia to ensure that the content is understandable to readers who use that language.
3) Publication Type: Only articles that have been published or manuscripts that have been accepted for publication will be included. The article must have gone through a peer review process and be declared valid for publication.
4) Research Subjects: Articles should involve human subjects of different genders and ages, to ensure that the results of the research can be widely applied to the human population.
5) Type of Research: Only original articles describing quantitative or qualitative research will be included, including studies that present new data and a clear methodology regarding VBAC

Exclusion Criteria

Articles that use languages other than the United Kingdom or Indonesia will be excluded, as the focus is on sources that can be understood in those two languages. Research involving animals as subjects will also be excluded, given that the main focus is on studies involving humans (Hirst et al., 2014). Literature that is not available in full-text format or that is not freely accessible or open access will also not be included. These criteria ensure that all literature included is relevant, accessible, and appropriate to the purpose of the study.

This data collection aims to provide a thorough understanding of the research being reviewed, including the relevance, methodology, and contributions of each Study (Snyder, 2019). Each article is reviewed in full to determine whether it meets the inclusion and exclusion criteria that have been set. The selection of this article is carried out based on items. PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses).

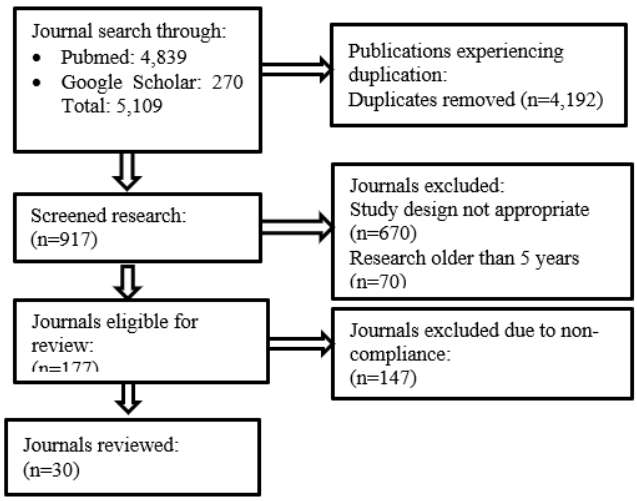

Figure 1. PRISMA

RESULT AND DISCUSSION

A literature search related to vaginal birth after cesarean section (VBAC) was carried out using two main databases, namely PubMed and Google Scholar, which produced a total of 5,109 journals. From the results of this search, a total of 4,192 journals were identified as duplicates that appeared in the two databases. To avoid unnecessary repetition of information, these duplicates were removed from the list, leaving 917 journals that could be further selected (Douzas et al., 2018).

Further screening process is carried out on the remaining 917 journals, taking into account the selection criteria that have been set. As a result, as many as 670 journals were excluded from the review because the study design was not in accordance with the VBAC research focus. In addition, 70 other journals were also excluded because the publication was more than 5 years old, which means that the information may no longer be relevant to the latest developments in the field of VBAC.

Of the remaining journals, as many as 177 journals are considered to meet the criteria for a more in-depth study. However, after going through a more rigorous evaluation process, 147 journals were again excluded because they did not meet the additional requirements set, such as the accuracy of the methodology or the relevance of the topic to the study. Eventually, 30 journals were selected as feasible and relevant sources for further analysis in the discussion of VBAC. As such, these journals provide a solid foundation for understanding current issues, risks, and potential benefits associated with the practice of giving birth normally after a previous cesarean section (Organization, 2018).

DEFINITION

VBAC (Vaginal Birth After Cesarean) is a vaginal birth after undergoing a cesarean section in a previous pregnancy. Childbirth or birth is a period starting from the onset of regular uterine contractions to remove the fetus until the removal of the placenta (Hofmeyr & Singata-Madliki, 2020). The factors that affect childbirth are the 4 P's, namely Power (contractions and uterine strength), Passage, Passenger (position, presentation, and development of the fetus), and Psyche (psychic). If one or more of these factors are not met, delivery with medical procedures will be an option. The measures taken include induction of labour, force or vacuum-assisted delivery, and cesarean section.

1) Power: This refers to the strength and frequency of uterine contractions. Effective and strong contractions are key to pushing the fetus through the birth canal. If the contractions are not strong enough, it is possible that interventions such as induction of labour may be necessary.
2) Passage (Birth Canal): Passage includes the shape and size of the birth canal, including the uterus, cervix, vagina, and exit. Inadequate delivery canals can inhibit birth and require interventions such as the use of forceps or a vacuum.
3) Passenger (Fetus): This includes the position of the fetus, its presentation (the part of the fetus's body that is at the bottom of the uterus), and fetal development. A non-ideal fetal position, such as breech, can make labour more difficult and require special medical measures.
4) Psyche: The emotional and mental state of the mother also affects the delivery process. Stress or emotional discomfort can affect the progress of labour and make the intervention more likely.

If any of these factors are not optimal, medical intervention may be necessary to ensure the safety of the mother and baby (Gülmezoglu et al., 2016). For example, induction of labour is performed if contractions do not occur. Naturally, forceps or vacuum is used to help the baby get out, and a cesarean section is performed if normal delivery is not possible.

ETIOLOGY

The aetiology of VBAC (Vaginal Birth After Cesarean Section) includes a variety of factors that affect the likelihood of vaginal delivery after undergoing a cesarean section. Here are the key factors to look out for:

1) Indications for Previous Caesarean Section: The reasons why a cesarean section was performed in an earlier pregnancy influence the decision of VBAC. If a previous cesarean section was performed due to factors that are not relevant to the current pregnancy, such as improper infant positioning or dystocia (difficulty in labour), then VBAC may be a safer option.8 reviews
2) Types of Incisions in the Uterus: The incisions made in the uterus during a cesarean section affect the risk of subsequent vaginal delivery. Horizontal incisions in the lower part of the uterus (transverse) generally have a lower risk of uterine rupture than deeper vertical incisions.8 reviews
3) Maternal Health Conditions: Maternal health is essential to the success of VBAC. Medical conditions such as hypertension or diabetes should be managed properly. The good general health of the mother without serious complications facilitates the vaginal delivery process.9 reviews
4) Fetal Position and Size: The position of the fetus in the womb and the size of the fetus also affect the likelihood of VBAC. The ideal fetal position for vaginal delivery increases the chances of VBAC success.10 reviews
5) Previous Labor Experience: Experience from previous labour, including whether the previous labour required medical help or lasted without complications, can influence the decision for VBAC.11 reviews

RISK FACTORS

Risk factors for Vaginal Birth After Cesarean (VBAC) include a variety of conditions and factors that can affect the success of vaginal delivery after a cesarean section. Here are some of the main risk factors that can affect VBAC:

1) Previous Labor History:
   a) History of VBAC: Having had previous experience with vaginal delivery, either before or after a cesarean section, increases the chances of successful VBAC. Conversely, not having a previous history of VB can be a risk factor.11 reviews
2) Previous CS Indications:

a) Cephalo-Pelvic Disproportion (CPD): A mismatch between the size of the fetal head and the mother's pelvis can increase the risk of VBAC failure.
b) Dystocia: Difficulties in labour that are not well advanced can be an indicator of VBAC failure if a similar condition arises again.
c) Induction Failure: Failure in previous labour induction can affect the success of VBAC.
d) Fetal Macrosomia: A fetus larger than normal size can increase the risk of VBAC failure.

3) Maternal Factors:
   a) Age: Older women, especially those over the age of 40, tend to have a higher risk for failed VBAC and uterine rupture.
   b) Obesity: Being overweight can increase the risk of complications such as macrosomia and vaginal labour failure.
   c) Gestational or Pregestational Diabetes: Diabetes can increase the risk of VBAC failure because it is associated with weight gain, macrosomia, and other labour problems.
   d) Gestational Hypertension and Preeclampsia (HDCP): This condition can affect blood flow to the placenta and cause stunted fetal growth, which can make VBAC difficult.
4) Fetal Factor:
   a) Fetal Size: A fetus larger than the average size can cause difficulties in vaginal delivery and increase the risk of VBAC failure.
5) Obstetric Factors:
   a) Bishop Score: This score assesses the readiness of the cervix for labour. A low score can indicate poor readiness for vaginal delivery and increase the risk of VBAC failure.
6) Induction of Labor:
   a) Induction and Cervical Conditions: Induction of labour can lower the chances of successful VBAC, especially if the cervix is not ready or if it is done too early.
7) Other complications:
   a) Smoking May cause problems with the fetal heartbeat and increase the need for additional intervention.
   b) Epidural Anesthesia: While providing pain relief, epidural anaesthesia can also hide signs of complications such as uterine rupture.
8) Interpartum Interval:
   a) Time Between Delivery: Very short labour intervals (less than 24 months) are not always directly related to the success of VBAC, but very short intervals may be an additional consideration.

CRITERIA FOR VAGINAL BIRTH AFTER CESAREAN

1. Single Pregnancy: Vaginal delivery after a cesarean section is generally safer in single pregnancies. Multiple or more pregnancies increase the risk of complications.
2. Fetal Head Presentation: The fetus should be in a downward head position (vertex) to increase the chances of a successful vaginal delivery. Other presentations, such as breech, can increase the risk and make vaginal delivery more difficult.
3. Previous Caesarean section: Women who have had a cesarean section with a horizontal (transverse) incision in the lower segment of the uterus have a better chance of VBAC compared to those with vertical or classic incisions. Transverse incisions tend to have a lower risk of uterine rupture.20 reviews

4. Number of Previous C-sections: VBAC may be considered for women who have had one or two previous cesarean sections. However, women who have had more than two cesarean sections may face a higher risk and need a more thorough evaluation.
5. Maternal Health Conditions: Mothers must be in good health without medical complications that could affect childbirth, such as hypertension or uncontrolled diabetes. Good maternal health helps reduce the risk of complications during childbirth.
6. No Medical Contraindications: There are several medical conditions that are contraindicated for VBAC, including a history of uterine rupture, a history of large uterine reconstruction, or a classic type of cesarean section. A history of vertical uterine incision is also a contraindication.

CONTRAINDICATIONS TO VAGINAL BIRTH AFTER CESAREAN SECTION

Contraindications for Vaginal Birth After Cesarean Surgery (VBAC) include conditions in which the risk of complications for the mother or baby is higher if the delivery is performed vaginally compared to through a cesarean section. Some of the main contraindications of VBAC are as follows:

1) Previous history of uterine rupture: Women who have had a uterine rupture have a high risk of experiencing similar events when trying VBAC.
2) Previous High Vertical Cesarean Incision: An incision in the uterus performed vertically at the top (classic) of a previous cesarean section increases the risk of uterine rupture during vaginal delivery.
3) Abnormally Attached Placenta Previa: This condition can cause heavy bleeding during vaginal delivery, so it is not recommended for VBAC.
4) Abnormal Fetal Presentation: Fetuses that are in a breech or transverse position are not suitable for VBAC, as they increase the risk of complications.
5) Uterine or Pelvic Abnormalities: Women with uterine or pelvic deformities may not be able to give birth vaginally safely.

Considering these contraindications is very important in planning a safe delivery. The decision to try VBAC should be made based on careful judgment by health professionals, taking into account the mother's medical history, fetal condition, and medical facility readiness.

SCORING PREDICTION

Table 1.
FLAMM and GEIGER Scoring System

Parameters	Finding	Points
Woman's age	<40 years	2
	>40 years	0
Vaginal birth history	Before and after first caesarean section	4
	After first caesarean section	2
	Before first caesarean section	1
	None	0
Reason for first CS	Failure to progress	0
	Other reason	1
Cervical effacement on admission	>75%	2
	25-75%	1
	<25%	0
Cervical dilatation on admission	>4cm	1
	≤4cm	0

This scoring system is designed to evaluate the chances of a successful vaginal delivery after a previous cesarean section by assessing several key factors.

1) Female Age:
   a) Less than 40 years old (2 points): Younger women tend to have more elastic body tissues and better response abilities during labour, so they have a higher chance of successfully giving birth vaginally.
   b) Over 40 years (0 points): Older women face more risk during childbirth, which can reduce the likelihood of VBAC success.
2) History of vaginal delivery:
   a) Vaginal delivery before and after the first cesarean section (4 points): Women who have given birth normally before and after a cesarean section demonstrate the body's capacity to give birth vaginally, so they have the highest chance of success.
   b) Vaginal delivery after first cesarean section (2 points): Despite having a vaginal delivery after a cesarean section, the chances are still good but not as optimal if they also have a history of vaginal delivery before a cesarean section.
   c) Vaginal delivery before the first cesarean section (1 point): Despite having given birth normally before a cesarean section, there is still uncertainty because there is no history of vaginal delivery after a cesarean section.
   d) No history of vaginal delivery (0 points): Without a history of normal childbirth, the odds of success of VBAC are lower.
3) Cervical Dilatation On Hospitalization:
   a) Dilatation of more than 4 cm (1 point): A larger cervical opening indicates that labour is sufficiently advanced, which is a good sign for VBAC.
   b) Dilatation of less than 4 cm (0 points): A smaller cervical opening indicates that labour may not be advanced enough, thus reducing the chances of successful VBAC.

Scoring prediction for VBAC is a useful tool to aid in clinical decision-making. While there is no scoring system that can fully predict outcomes with 100% accuracy, these scores provide a helpful guide to assessing whether TOLAC (Trial of Labor After Cesarean) is a safe and viable option. It is important to remember that in addition to the prediction score, a thorough discussion between the physician and patient about the risks and benefits of VBAC, as well as the patient's individual condition, should always be the basis of clinical decision-making (Dixon, 2019).

By using a score system, doctors can be more confident in recommending VBAC or, conversely, suggesting a repeat cesarean section if the risk is too high. This contributes to better labour outcomes and a more positive experience for the mother.

VBAC RISK MANAGEMENT

Risk management in Vaginal Birth After Cesarean (VBAC) is a critical aspect that must be considered to ensure the safety of the mother and baby during labour (Devarajan et al., 2018). VBAC involves certain risks, such as uterine rupture, which, although rare, can have serious consequences. Therefore, it is important for the medical team to conduct a careful risk evaluation and implement effective strategies to manage these risks.

VBAC Risk Management Measures:

1) Initial Evaluation and Patient Selection:
   a) Medical History: Before deciding to have a TOLAC (Trial of Labor After Cesarean Section), TOLAC provides an opportunity for women who have previously undergone a cesarean section to try to have a vaginal birth. It can be a better alternative to repeat cesarean section, with several benefits such as faster recovery, lower risk of infection, and a more natural delivery experience.

However, TOLAC also presents significant challenges, especially related to the risk of uterine rupture. The doctor should review the patient's medical history thoroughly, including the type of incision before, the number of cesarean sections that have been performed, and the presence of any complications of previous labour.

b) Patient Counseling: Patients should get counselling about the risks and benefits of VBAC, including possible successes and risks such as uterine rupture. Informed consent must be obtained once the patient fully understands the risks involved.

c) Proper Candidate Selection: Patients with low transverse incisions on previous cesarean sections, no history of uterine rupture, and a history of prior vaginal delivery are generally considered good candidates for VBAC.

2) Monitoring During Pregnancy:
   a) Close Surveillance: Patients who opt for VBAC should be closely monitored during pregnancy. This includes periodic evaluations of the thickness of uterine scarring (if needed), as well as monitoring of fetal weight and the general health condition of the mother.
   b) Monitoring of Scar Thickness: Although there is controversy regarding the accuracy of scar tissue thickness measurements, some doctors may choose to use ultrasound to assess the risk of uterine rupture, although the final decision should still be based on many factors.31 reviews
3) Management During Childbirth:
   a) Safe Delivery Location: VBAC should be performed in a healthcare facility that has quick access to emergency cesarean section services if needed. This includes the availability of operating rooms, surgeons, and anesthesiologists on standby.
   b) Intrapartum Monitoring: During labour, continuous fetal monitoring should be performed to detect early signs of fetal stress or complications that indicate the need for immediate intervention.
   c) Multidisciplinary Medical Team: A medical team consisting of obstetricians, midwives, anesthesiologists, and surgical staff must be ready to respond quickly in case of complications during TOLAC.
4) Preventive Measures and Interventions:
   a) Readiness for Rapid Intervention: If there are signs that indicate a high risk of uterine rupture or if labour is not progressing properly, the doctor should be prepared to switch to an emergency cesarean section.
   b) Complication Management: In the event of uterine rupture or other serious complications, immediate intervention is needed to protect the safety of the mother and baby.
5) Postpartum Evaluation and Follow-up:
   a) Postpartum Assessment: After delivery, the mother should be thoroughly evaluated to ensure no complications are missed. This includes monitoring the condition of the uterus and the overall recovery status.
   b) Follow-up Counseling: Patients should receive counselling regarding the outcome of labour and what steps need to be taken for the next pregnancy, if any.

COMPLICATIONS

1. Risk of Inflammation, Thromboembolism, and Infection: As with any other delivery procedure, VBAC can pose risks such as bleeding, thromboembolism (a blood clot that can travel to the lungs or heart), and infection. Although these risks exist, in general, studies show that the risks are lower compared to those associated with repeated cesarean sections.

Therm, R., & Sokolov, D. (2021). Vaginal birth after Cesarean experience in Romania: A retrospective case-series study and online survey. Experimental and therapeutic medicine, 22(2), 894. https://doi.org/10.3892/etm.2021.10326)

Risk of Uterine Rupture: One of the special risks of VBAC is uterine rupture, which is a tear in the uterus at the site of the cesarean section. This is a serious risk that can affect the success of VBAC and the safety of the mother and baby. However, the risk of uterine rupture is reported to be lower in women who have previously had a cesarean section with a low horizontal incision (transverse) compared to a vertical incision. These horizontal incisions are better in terms of the risk of uterine tears because they involve less of the uterine muscle lining than vertical incisions.

Table 2.
Summary of Study Results

It	AUTHOR AND YEAR	COUNTRY	STUDY DESIGN	RESULT
1.	Monalisa Sahu *et al*, 201833	India	Prospective observational study	The analysis showed that women with a history of vaginal delivery before and after
				Operation faults first have
				TOLAC's success rate is 100%.
				Instead, women who only
				Have history Labor
				vagina after or before
				The first cesarean section shows
				variation in success rate,
				With some experience
				TOLAC failure. Cervical factor,
				Like Dilation very
				Affect the results of TOLAC. Woman
				with cervical dilation of more than 3
				Cm show level
				TOLAC success of 100%,
				While women with ≤3 dilatation
				CM only have the level
				Success is 43.59%.
2.	(Sahu et al., 2018)	India	Prospective observational study	Discussion of Research Results In this study, of the 75 patients, 40% successfully underwent VBAC (*Vaginal Birth After Cesarean Section*), while 60% required emergency cesarean section. Among patients who successfully performed VBAC, the distribution was as follows: 70% gave birth spontaneously, 23.3% with the help of vacuum, and 6.7% with the help of forceps.
				An analysis of Flamm and Geiger scores shows that:
				• Patients with a total score of < 3 at the time of admission to the hospital tend to require emergency cesarean section.

				• In contrast, patients with a score of > 4 showed a higher success rate of VBAC. The average score for VBAC success was 5 ± 1.66, while for emergency cesarean section was 2.97 ± 0.83.
3.	Moysiadou S., 202310	Greek	Quantitative study	As 473 women Involved Deep research Inc. Result Research shows that During pregnancy and childbirth, More than 50% of women feel Very happy and satisfied While 35% to 40% Feel level fear Which is or is not the same Very. In addition, 96.48% of They will consider To try VBAC delivery Again 97,36% will Recommend method To another woman. Level success VBAC Reaching 78.85%.
4.	Tsai HT and Wu CH, 20179	Taiwan	Retrospective E study	In this study, 400 women who are pregnant again and Choosing Between Caesarean Deliveries Repeat elective or TOLAC (experiment Labor after Caesar). Of these, 112 Women not included in deep Analysis ends and 11 woman Undergo VBAC (childbirth Vaginal after caesarean section). From 400 Women, 204 chose childbirth Caesar repeat Elective (73,65%), while 73 women choose TOLAC (26,35%). At between Women who chose TOLAC, United States

				84.93% successfully underwent VBAC
5.	(Tesfahun et al., 2023)	Ethiopia	retrospective cross-sectional	In this study, of 75 patients, 69.5% try Labor vagina
				After a cesarean section, 35,07% succeed. Factors that support success include maternal age 21–30 years, history of vaginal labour, an indication of non-recurrence, rupture of membranes, Dilation cervix ≥ 4 cm, cervical effacement≥ 50%, and low fetal position at home entry sick. Score Flamm and Geiger that higher (more than 5) related to a chance of success which is larger in childbirth trials.
6.	(Lakra et al., 2020)	India	Prospective observational study	In this study, of the 150 cases of Trial of Labor After Cesarean (TOLAC), as many as 78% successfully underwent Vaginal Birth After Cesarean (VBAC),
				While 22% experience
				VBAC failure.Probability
				The success of VBAC varies
				based on VBAC score: 34%
				To Score 0-3, 68% to
				score 4-6, 90% for score 7-9,
				and 97% for a score of ≥10. Type
				Predictions that Used
				Show performance that
				Good with the area at the bottom curve Receiver Operating characteristic (ROC) by 0.77 (95% CI: 0.68 to 0.85), indicating a fairly high accuracy in predicting VBAC success based on score.
7.	(Kiwan & Al Qahtani, 2018)	Africa	Retrospective study	This study compares the success rate Vaginal Birth After Cesarean (VBAC) between women undergoing induced labour (IOL) and those experiencing spontaneous labour. The results showed that the success rate of VBAC was 50.0% in the group of women who underwent IOL, while in the group of women who had given birth spontaneously, The success rate was higher at 66.6%.
				The study also found an increase in Significant deep
				The rate of cesarean section due to fetal distress in the group undergoing IOL (P = 0.016) suggests that induction of labour may increase

				the risk of cesarean section in certain situations. In addition, no cases of uterine rupture were reported in the control group, while one case occurred in the group undergoing IOL.
8.	(Sakiyeva et al., 2018)	Kazakhsta n	Prospective study	Analysis logistics Identify some factors that are Significantly related to success. Vaginal Birth After Cesarean (VBAC). Factors aforementioned Include Index Body Mass (BMI) ≤25 kg/m² with odds ratio (OR) of 1.7 and value P 0.0004, tall body ≥150 cm (OR 1,7; P = 0.002), gestational age ≤40 weeks (OR 2,3; P = 0.0001), and distance between births ≥2 years (OR 1,6; P = 0,008). Besides that, fetal head that feels lacking from 2/5 in the abdomen (OR 1,7; P = 0.0009), Dilation cervix ≥4 cm (OR 1,7; P = 0.003), and phase duration active Labor ≤7 hours (OR 1,6; P = 0.01) is also related to Significant with success VBAC. Factor- This factor indicates that BMI lower, higher larger body, shorter gestational age, and the distance between births elder Increase the likelihood of success VBAC,
9.	Anonymous S., and Nilanjana21	United Arab	Observational cohort study	This study reveals that there are clear cultural differences in the acceptance and success of Vaginal Birth After Cesarean (VBAC). Among Emirati/Omani women, 86% chose the Trial of Labor After Cesarean (TOLAC), with a success rate of 83%. In contrast, women from other nationalities, such as Egypt and other Arabs, show lower rates of acceptance and success of TOLAC. VBAC Success
				also higher in women with previous experience of vaginal labour and those who have experienced spontaneous labour. In addition, the TOLAC group showed a lower NICU admission rate compared to the elective cesarean section.
10.	KalburgiP., AND Sanjaykumar P., 2024	India	Prospective interventional study	The study involved 90 women in each of the LSCS (Cesarean section) and VBAC groups. The duration of the active phase of labour was longer in the LSCS group than in the VBAC group ($p<0.05$). There was no significant association between blood transfusions and premature membrane rupture in either group ($p>0.05$). The average APGAR score at 1 minute and 5 minutes was higher in the VBAC group compared to the LSCS group ($p<0.01$). The average length of hospital stay was also longer in the LSCS group than in the VBAC group ($p<0.01$).

The main risk of Trial of Labor After Cesarean (TOLAC) is uterine rupture, which occurs in 0.2–0.9% of women who have had one previous cesarean section. Uterine ruptures can be associated with maternal mortality in less than 1% and perinatal mortality in 3 to 6% of cases. The main risk factors for uterine rupture during TOLAC include unknown previous uterine incisions, intervals between pregnancies of less than 12 months, poor healing of uterine wounds, and prior preterm cesarean sections.

Uterine rupture is an obstetric emergency that can increase the risk of fetal death as well as serious complications in the mother such as injuries to the bladder and ureters, especially if the patient is not properly selected for VBAC (Uçar et al., 2023). Ultrasound evaluation of the antepartum of a uterine wound is not enough to predict uterine rupture. Some studies report that the distance of 3.1 to 5.1 mm from the bladder wall to the amnion has a sensitivity of 96% and a specificity of 63% for the occurrence of uterine defects. The advantages of a successful TOLAC include avoidance of complications associated with a cesarean section, such as immediate risks such as wound complications, pelvic organ injuries, and long-term risks such as abnormal placenta, uterine rupture, pregnancy with a cesarean section, incisional endometriosis, or adhesions.

CONCLUSION

The Trial of Labor After Cesarean (TOLAC) is an attempt to give birth vaginally after one previous cesarean section. The success of VBAC depends on a variety of factors, including a history of previous labours, the condition of the cervix at the time of hospitalization, and other factors such as body mass index (BMI) and the interval between pregnancies. Studies show that women who have a history of previous vaginal delivery, BMI ≤25 kg/m2, height ≥150 cm, and pregnancy interval ≥2 years have a higher chance of succeeding in VBAC. However, TOLAC also carries a risk, especially uterine rupture, which occurs in 0.2–0.9% of women with one previous cesarean section. Uterine ruptures can lead to serious complications, including injury to the bladder and ureters, as well as poor perinatal outcomes. Although the use of ultrasound to assess the integrity of uterine wounds has not been shown to be fully effective, the thickness of the lower uterine segment of less than 2.3 mm may increase the risk of rupture. The advantages of VBAC include avoiding long-term complications from a cesarean section, such as abnormal placenta and adhesions. TOLAC can reduce the risk of urological complications and provide benefits for both mother and baby if done with proper risk assessment. Overall, the success of VBAC is influenced by a variety of individual factors and medical conditions. The decision to implement VBAC should be made with careful consideration of the benefits and risks to ensure safe and optimal outcomes for both mother and baby.

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