

Prediction of Success Rates of Vaginal Birth after Cesarean Delivery According to the Previous Indication for Cesarean Delivery

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Abstract

Background: Trial of labor after cesarean delivery (TOLAC) has long been accepted as a safe option for women with previous cesarean delivery. Previous efforts have been exerted in trials to predict the success rates of TOLAC according to specific parameters related to previous cesarean section and before TOLAC. We aimed to investigate the different indications of previous cesarean delivery as independent predictors for successful vaginal birth. **Methods:** A retrospective study was conducted in Armed Forces Hospitals of the Southern Region between December 15, 2019, and July 1, 2020. The included 566 patients with previous cesarean section who were willing to undergo a trial of labor were divided into two groups according to the success of vaginal birth (VBAC). **Results:** The nonrecurring indications for previous cesarean delivery were higher in the successful group (fetal distress 54.7% vs 41.1%, malpresentation 26% vs 21.4%, multifetal pregnancy 3.8% vs 2.7%). Additionally, the successful VBAC group had a significantly higher percentage of previous successful VBAC (47.7% vs 21.9%) and prior vaginal deliveries (58.5% vs 44.2%) and less coincidence of medical disorders and meconium-stained liquor (18.1% vs 26.3% and 3.2% vs 8.2%, respectively) than the unsuccessful group. **Conclusion:** During counseling regarding trial of labor after cesarean section, indications for previous cesarean section not related to arrest of labor can predict higher success of VBAC. Moreover, previous successful vaginal delivery or VBAC improves the success rates.

Keywords

TOLAC, VBAC, Cesarean Section Indication, Prediction of Success of Vaginal Birth after Cesarean

1. Introduction

Cesarean section is the most common surgical procedure conducted in daily practice worldwide. Over the years, it showed a steadily increasing trend. Despite being lifesaving in specific situations during pregnancy and labor, it remains a major surgery that may be complicated by morbid maternal and perinatal sequelae [1] [2].

In an attempt to reduce cesarean delivery rates, TOLAC has long been accepted as a safe option for women with previous cesarean delivery with a lower risk of morbidities than repeat cesarean delivery and a minimal risk (0.2% - 0.8%) of uterine rupture. The ACOG and RCOG encouraged counseling women with a single cesarean scar for TOLAC with a high-predicted success rate of up to 75% [3] [4].

Previous efforts have been exerted in trials to predict the success rates of TOLAC according to specific parameters related to the previous section and before TOLAC. These parameters included maternal obesity, cervical dilatation at admission, association with specific medical disorders, previous vaginal deliveries, previous successful vaginal birth after cesarean (VBAC) and indication for previous cesarean delivery [5] [6] [7].

The indications for cesarean delivery could be divided into two groups according to the tendency of persistence or recurrence. Indications related to arrest of labor progress and failure of labor induction usually have a higher tendency of recurrence. Fetal distress, malpresentation, multiple pregnancy and antepartum hemorrhage have a lower tendency to recur [6] [7] [8] [9].

In this study, we aimed to investigate the different indications of previous cesarean delivery as independent predictors for successful VBAC.

2. Patients and Methods

2.1. Study Setting

This retrospective study was conducted in the Obstetrics and Gynecology department (140 beds with 7000 - 8000 deliveries per year) of the Armed Forces Hospitals of Southern Region (AFHSR), KSA, during the period between December 15, 2019, and July 1, 2020, after approval of the AFHSR Research Ethics Committee (approval code: AFHSRMREC/2019/OB/GYNAE/421). The study included all eligible patients who accepted TOLAC delivery during the period between January 2017 and the end of December 2019.

The primary outcome was testing the type of indication of previous cesarean section on the prediction of successful vaginal delivery for women willing to undergo trial of previous scar. Secondary outcomes are assessing the other previous and current covariates that could affect the chance of successful vaginal delivery as secondary predictors.

2.2. Inclusion Criteria

- 1) Aged 18 years or more.

- 2) Previous single uncomplicated cesarean delivery.
- 3) Singleton pregnancy.

2.3. Exclusion Criteria

- 1) Current multifetal deliveries.
- 2) More than a single previous uterine scar.
- 3) Malpresentation.

2.4. Data Collection

Electronic files of the legible cases were reviewed. Demographic data, including age, parity, gravidity, weight, height, BMI, indication for the previous cesarean delivery, and associated medical and surgical disorders, were collected. Labor was spontaneous or induced, mode of delivery, indication for repeat cesarean delivery, and stage of labor when cesarean was indicated. Obstetric complications included uterine rupture, postpartum hemorrhage, and extensions.

2.5. Statistical Methods

We used the software package: SPSS© version 25 [IBM© Corp., Armonk, NY]. The Shapiro-Wilk test was used to examine the numerical data for normality of distribution. Skewed data are presented as the median and interquartile range (IQR). Normally distributed data are presented as the mean \pm standard deviation (SD). Categorical data are presented as numbers and percentages (%). Independent t tests were performed to compare continuous variables between the successful VBAC and unsuccessful VBAC groups. The χ^2 test and Fisher's exact test were used to compare categorical variables between both groups as convenient. A P value below 0.05 was considered statistically significant.

We used binary logistic regression to test study parameters (including history of prior successful VBAC, number of prior successful VBAC procedures, interval in years from previous cesarean, prior vaginal delivery, associated medical disorders, different indications for previous cesarean delivery, presence of meconium-stained liquor at time of delivery, patient BMI, and type of onset of labor). All the previous parameters were tested in the model using enter mode. A P value < 0.05 was considered statistically significant. All results are shown in tables.

3. Results

Between the beginning of 2017 and the end of 2019, 566 patients with a previous uncomplicated cesarean delivery attempted TOLAC. The mean age of the participants was 32 years, and 75% of them were overweight to category II obesity. The median parity was para 2, with a history of previous vaginal delivery in 52% of them. The mean duration from the last cesarean section was 4.7 years. Approximately 37% of the cases had at least one successful TOLAC on average. The most frequent indication of previous cesarean delivery was fetal distress (49%),

followed by malpresentation (24%) and failure of labor progress (16%). Only 9% of cases needed mechanical induction of labor, while the remaining 91% entered spontaneous labor pain. Twenty-one percent had premature rupture of membranes before the start of labor. Sixty percent of the study population had successful vaginal delivery, while the remaining 40% needed cesarean delivery (**Table 1**).

Table 1. Demographic and obstetric data for study population.

Variable	Result (n =566)
Age (years)	32.1 ± 5.2
BMI (kg/m ²)	34.1 ± 6.8
Average	41 (7.2%)
Overweight	115 (20.3%)
Category I obesity	171 (30.2%)
Category II obesity	145 (25.6%)
Category III obesity	94 (16.6%)
Parity	2 (1 - 4)
Prior VBAC	210 (37.1%)
Number of prior VBAC	0 (0 - 1)
Prior vaginal delivery	299 (52.8%)
Indication of previous cesarean	
Fetal distress	279 (49.3%)
Failed progress	91 (16.1%)
Failed induction of labour	17 (3%)
Malpresentation	137 (24.2%)
Multifetal pregnancy	19 (3.4%)
Antepartum hemorrhage	23 (4.1%)
Interval from last cesarean (years)	4.7 ± 3.5
Antenatal care visits	4 (2 - 7)
Associated medical disorders	121 (21.4%)
Onset of labour	
Spontaneous	517 (91.3%)
Induced	49 (8.7%)
Premature rupture of membranes	119 (21%)
Meconium stained liquor	31 (5.5%)
Mode of delivery	
Vaginal	342 (60.4%)
Cesarean	224 (39.6%)
Delivery gestational age (weeks)	38.6 ± 1.9
Neonatal birth weight (grams)	2901 ± 512

Data are presented as mean ± standard deviation, number (percentage) and median (interquartile range) as appropriate.

The study population was divided for comparison into an unsuccessful VBAC group and a successful VBAC group. The group that succeeded in accomplishing vaginal delivery was characterized by significantly higher parity (2 vs 1, P value 0.006), a higher percentage of previous successful VBAC (47.7% vs 21.9%, P value 0.000), prior vaginal deliveries before cesarean section (58.5% vs 44.2%), a longer time interval from the last cesarean section (5.1 vs 4 years), and less coincidence of medical disorders and meconium-stained liquor (18.1% vs 26.3% and 3.2% vs 8.2%, respectively) than the unsuccessful group. Regarding the primary outcome, the nonrecurring indications for previous cesarean delivery were higher in the successful group (fetal distress 54.7% vs 41.1%, Malpresentation 26% vs 21.4%, multifetal pregnancy 3.8% vs 2.7%), while the recurring indications were less frequent compared to the unsuccessful group (11.1% vs 23.7% failed progress, 2.3% vs 4% failed labor induction). There was no significant difference regarding the type of labor onset or incidence of premature rupture of membranes (**Table 2**).

To test the previously mentioned parameters as independent predictors of successful vaginal birth after cesarean section, binary logistic regression analysis with enter mode showed multiple significant predictors. The indication for the previous cesarean section (which is the primary outcome for the current study) came on top of these positive predictors. Fetal distress (P value: 0.000, odds ratio: 6.762, 95% CI: 2.434 - 18.781), malpresentation (P value: 0.006, odds ratio: 4.346, 95% CI: 1.512 - 12.491) and multifetal pregnancy (P value: 0.027, odds ratio: 5.155, 95% CI: 1.207 - 22.018) favored successful delivery. However, the recurring indications (failure of progress and failed induction) failed to be predictors of success.

In addition, prior successful VBAC appeared to be a highly significant positive predictor of successful VBAC (P value: 0.000, odds ratio: 3.908, 95% CI: 2.051 - 7.450) and, to a lesser extent, previous vaginal delivery before cesarean section (P value: 0.006, odds ratio: 1.791, 95% CI: 1.186 - 2.706). On the other hand, both coincidence of medical disorders (P value: 0.020, odds ratio: 0.577, 95% CI: 0.364 - 0.916) and meconium-stained liquor (P value: 0.008, odds ratio: 0.355, 95% CI: 0.149 - 0.754) were significant negative predictors for successful vaginal delivery. The number of previous VBAC procedures, interval from the last cesarean section and BMI were not significant predictors for the current model (**Table 3**).

4. Discussion

During the counseling of women with previous cesarean scar regarding TOLAC, the physician should discuss the probabilities of success of VBAC. Usually, we discuss the general stated success rates (60% - 80%). This approach neglects an important item in counseling, which is individual variations between women in characteristic parameters, which in turn could modify the chances of success. Multiple attempts have been made to establish structured models to allow more individualized counseling according to patients' own characteristics [7] [9] [10] [11].

Table 2. Comparison of demographic and obstetric data between cases with successful VBAC versus unsuccessful VBAC:

Variable	Unsuccessful VBAC (n = 224)	Successful VBAC (n = 342)	P-value
Age (years)	32.0 ± 5.4	32.1 ± 5.1	0.974
BMI (kg/m ²)	34.7 ± 7.3	33.5 ± 6.5	0.046*
Average (18.5 to <25)	17 (7.6%)	24 (7%)	
Overweight (25.0 to <30)	47 (21%)	68 (19.9%)	
Category I obesity (30 to <35)	48 (21.4%)	123 (36%)	0.004*
Category II obesity (35 to <40)	63 (28.1%)	82 (24%)	
Category III obesity (40 or higher)	49 (21.9%)	45 (13.2%)	
Parity	1 (1 - 4)	2 (1 - 4)	0.006*
Prior VBAC	47 (21%)	163 (47.7%)	0.000*
Number of prior VBAC	0 (0-0)	0 (0-1)	0.000*
Prior vaginal delivery	99 (44.2%)	200 (58.5%)	0.001*
Indication of previous cesarean			0.000*
Fetal distress	92 (41.1%)	187 (54.7%)	
Failed progress	53 (23.7%)	38 (11.1%)	
Failed induction of labour	9 (4%)	8 (2.3%)	
Malpresentation	48 (21.4%)	89 (26%)	
Multifetal pregnancy	6 (2.7%)	13 (.8%)	
Antepartum hemorrhage	16 (7.1%)	7 (2%)	
Interval from last cesarean (years)	4 ± 3.1	5.1 ± 3.6	0.000*
Antenatal care visits	5 (2 - 7)	5 (2 - 7)	0.652
Associated medical disorders	59 (26.3%)	62 (18.1%)	0.021*
Onset of labour			0.542
Spontaneous	207 (92.4%)	310 (90.6%)	
Induced	17 (7.6%)	32 (9.4%)	
Premature rupture of membranes	45 (20.1%)	74 (21.6%)	0.675
Meconium stained liquor	20 (8.9%)	11 (3.2%)	0.004*
Delivery gestational age (weeks)	38.2 ± 2.3	38.8 ± 1.6	0.842
Neonatal birth weight (grams)	2805 ± 558	2963 ± 470	0.001*

Data are presented as mean ± standard deviation, number (percentage) and median (interquartile range) as appropriate. * Significant result.

Table 3. Binary logistic regression model showing different parameters as independent predictors for successful vaginal birth after cesarean section.

Covariate	B	SE	P-value	OR	95% CI
Prior successful VBAC	1.363	0.329	0.000*	3.908	2.051 - 7.450
Number of previous VBAC	-0.035	0.168	0.836	0.966	0.696 - 1.341
Interval from last cesarean	-0.019	0.044	0.676	0.982	0.900 - 1.071
Prior vaginal delivery	0.583	0.211	0.006*	1.791	1.186 - 2.706
Associated medical disorders	-0.549	0.236	0.020*	0.577	0.364 - 0.916
Indication of previous cesarean					
Fetal distress	1.911	0.521	0.000*	6.762	2.434 - 18.781
Failure of labour progress	0.710	0.549	0.196	2.035	0.693 - 5.972
Failed induction of labour	0.784	0.738	0.288	2.190	0.515 - 9.308
Malpresentation	1.469	0.539	0.006*	4.346	1.512 - 12.491
Multifetal pregnancy	1.640	0.741	0.027*	5.155	1.207 - 22.018
Meconium stained liquor	-1.093	0.414	0.008*	0.355	0.149 - 0.754
BMI	0.003	0.045	0.955	1.003	0.917 - 1.096

B; regression coefficient, SE; standard error, OR; odds ratio, 95% CI; 95% confidence interval. Hosmer and Lemeshow goodness of fit test was insignificant for all. χ^2 (19, N = 566) = 110.95, P < 0.001. 18% to 24.1% of the variance in the dependent variable can be explained by independent variables in the model. Percentage of accuracy (PAC) of the model is 72.6%. * Significant predictor for successful VBAC.

In this study, we investigated the indications for previous cesarean delivery as significant independent predictors for success during counseling for TOLAC. The indications with a lower chance for recurrence were significantly reassuring parameters for successful delivery. This included, in order of significance, fetal distress (odds ratio: 6.76), pregnancy (odds ratio: 5.16) and malpresentation (odds ratio: 4.35). However, indications related to the arrest of labor with a higher tendency to be recurrent, such as failure of labor progress and failed labor induction, were nonreassuring. This finding seems logical and in concordance with the findings of similar previous studies [6] [9] [10]. This could allow the responsible physician to reassure the patient when the previous indication is one of the nonrecurring indications. On the other hand, we should be conservative in our counseling with recurring indications. Perhaps they have a lower chance but still may deserve trial [12] [13] [14].

In addition, more detailed parameters were studied and proved to also be significant independent modifiers of the success rates of VBAC during the trial of labor. On top of these variables comes the prior successful VBAC. According to the regression model, prior successful VBAC carries fourfold chances for repeat successful VBAC compared to women who did not have this chance. The number of previous VBACs did not appear to be a significant modifier of risk. This is in concordance with the findings of several previous studies [9] [15] [16] [17].

Similarly, a history of precesarean vaginal delivery appeared to be reassuring for successful VBAC. According to our model, it increases the chances of success 1.8-fold compared to women who did not deliver vaginally before. RCOG stated that previous vaginal delivery, in particular previous VBAC, is considered the best predictor of successful TOLAC, with a success rate of 85% - 90% [3].

The presence of medical disorders with pregnancy and meconium-stained liquor during labor were also significant negative predictors of VBAC success. They were associated with a reduction in chances to 0.57 and 0.36 compared to women without such risk factors. Some other parameters failed to be significant predictors in our model but were proven to be significant in other studies. These included body mass index (BMI), interval from last cesarean delivery and neonatal birth weight. Some of these findings might be due to relatively comparable parameters between both groups.

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This study succeeded in providing solid parameters in the obstetric history and the current condition of women with previous cesarean scar that could help for better prediction and counseling regarding their chances for successful vaginal delivery. We have extracted our findings depending on a suitable number of participants in both arms that empowers the results. All data were available through detailed reporting on an electronic hospital information system, which reduces recall bias.

The retrospective nature is a limitation that exposes the findings despite all efforts to selection and recall bias. Additionally, this work could not guide counseling for women willing to undergo scar trial with more than one previous cesarean delivery. Prospective well powered studies regarding this concern are recommended.

5. Conclusion

During counseling regarding TOLAC, indications for the previous cesarean delivery not related to arrest of labor can predict higher success of VBAC. Moreover, previous vaginal delivery or VBAC improves the success rates.

Contributions of Authorship

HA: concept generation, design of the study, analysis, and interpretation of the data, drafting of the manuscript, and critical revision. **AK:** selecting participants, gathering data, and writing the manuscript. **NM:** concept generation, study de-

sign, writing of the manuscript, and critical revision.

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The Study Setting

Armed Forces Hospitals Southern Region, KSA.

Consent to Participate

The requirement for informed consent was waived. Due to the retrospective nature of the study, the data collected did not breach patient confidentiality or welfare, and the study was non practicably applicable without waiving. The ethics committee approved that waiver for the same reasons.

Each approach was carried out in accordance with the rules and regulations outlined in the Declaration of Helsinki.

Availability of Data and Material

Authors can afford raw dataset on reasonable request.

All authors have reviewed and approved the final version of the manuscript for publication.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] Thapsamuthdechakorn, A., Sekararithi, R. and Tongsong, T. (2018) Factors Associated with Successful Trial of Labor after Cesarean Section: A Retrospective Cohort Study. *Journal of Pregnancy*, **2018**, Article ID: 6140982. <https://www.hindawi.com/journals/jp/2018/6140982>
<https://doi.org/10.1155/2018/6140982>
- [2] Betrán, A.P., Ye, J., Moller, A.B., *et al.* (2016) The Increasing Trend in Caesarean Section Rates: Global, Regional and National Estimates: 1990-2014. *PLOS ONE*, **11**, e0148343. <https://doi.org/10.1371/journal.pone.0148343>
- [3] Gupta, J., Smith, G. and Chondankar, R. (2015) Birth after Previous Caesarean Birth (Green-Top Guideline No. 45). https://www.rcog.org.uk/globalassets/documents/guidelines/gtg_45.pdf
- [4] The American College of Obstetricians and Gynecologist (2019) Vaginal Birth after Cesarean Delivery, Clinical Management Guidelines for Obstetricians-Gynecologists. ACOG: Practice Bulletins, No. 205, No. 184, 1-25. https://journals.lww.com/greenjournal/fulltext/2019/02000/ACOG_Practice_Bulletin_No_205_Vaginal_Birth.40.aspx#pdf-link

- [5] Grobman, W., Lai, Y., Landon, M.B. and Spong, C.Y. (2007) Development of a Nomogram for Prediction. *Obstetrics & Gynecology*, **109**, 806-812. <https://doi.org/10.1097/01.AOG.0000259312.36053.02>
- [6] Costantine, M.M., Fox, K.A., Pacheco, L.D., et al. (2011) Does Information Available at Delivery Improve the Accuracy of Predicting Vaginal Birth after Cesarean? Validation of the Published Models in an Independent Patient Cohort. *American Journal of Perinatology*, **28**, 293-298. <https://doi.org/10.1055/s-0030-1271214>
- [7] Fagerberg, M.C., Maršál, K. and Källén, K. (2015) Predicting the Chance of Vaginal Delivery after One Cesarean Section: Validation and Elaboration of a Published Prediction Model. *The European Journal of Obstetrics & Gynecology and Reproductive Biology*, **188**, 88-94. <https://doi.org/10.1016/j.ejogrb.2015.02.031>
- [8] Thapsamuthdechakorn, A., Sekararithi, R., Tongsong, T., et al. (2013) Predicting the Success of Vaginal Birth after Cesarean Delivery: A Retrospective Cohort Study in China. *BMC Pregnancy Childbirth*, **15**, 1-9.
- [9] Tessmer-Tuck, J.A., El-Nashar, S.A., Racek, A.R., et al. (2014) Predicting Vaginal Birth after Cesarean Section: A Cohort Study. *Gynecologic and Obstetric Investigation*, **77**, 121-126. <https://doi.org/10.1159/000357757>
- [10] Yokoi, A., Ishikawa, K., Miyazaki, K., et al. (2012) Validation of the Prediction Model for Success of Vaginal Birth after Cesarean Delivery in Japanese Women. *International Journal of Medical Sciences*, **9**, 488-491. <https://doi.org/10.7150/ijms.4682>
- [11] Baranov, A., Salvesen, K. and Vikhareva, O. (2018) Validation of Prediction Model for Successful Vaginal Birth after Cesarean Delivery Based on Sonographic Assessment of Hysterotomy Scar. *Ultrasound in Obstetrics & Gynecology*, **51**, 189-193. <https://doi.org/10.1002/uog.17439>
- [12] Grivell, R.M., Barreto, M.P. and Dodd, J.M. (2011) The Influence of Intrapartum Factors on Risk of Uterine Rupture and Successful Vaginal Birth after Cesarean Delivery. *Clinics in Perinatology*, **38**, 265-275. <https://doi.org/10.1016/j.clp.2011.03.006> <https://linkinghub.elsevier.com/retrieve/pii/S0095510811000273>
- [13] Landon, M.B. and Grobman, W.A. (2016) What We Have Learned about Trial of Labor after Cesarean Delivery from the Maternal-Fetal Medicine Units Cesarean Registry. *Seminars in Perinatology*, **40**, 281-286. <https://linkinghub.elsevier.com/retrieve/pii/S0146000516000112> <https://doi.org/10.1053/j.semperi.2016.03.003>
- [14] Place, K., Kruit, H., Tekay, A., et al. (2019) Success of Trial of Labor in Women with a History of Previous Cesarean Section for Failed Labor Induction or Labor Dystocia: A Retrospective Cohort Study. *BMC Pregnancy Childbirth*, **19**, Article No. 176. <https://doi.org/10.1186/s12884-019-2334-3>
- [15] Wyckoff, E.T., Cua, G.M., Gibson, D.J. and Egerman, R.S. (2020) Efficacy of the NICHD Vaginal Birth after Cesarean Delivery Calculator: A Single Center Experience. *The Journal of Maternal-Fetal & Neonatal Medicine*, **33**, 553-557. <https://doi.org/10.1080/14767058.2018.1497597>
- [16] Li, Y.X., Bai, Z., Long, D.J., et al. (2019) Predicting the Success of Vaginal Birth after Cesarean Delivery: A Retrospective Cohort Study in China. *BMJ Open*, **9**, e027807. <https://doi.org/10.1136/bmjopen-2018-027807>
- [17] Grobman, W.A., Lai, Y., Landon, M.B., et al. (2009) Does Information Available at Admission for Delivery Improve Prediction of Vaginal Birth after Cesarean? *American Journal of Perinatology*, **26**, 693-701. <https://doi.org/10.1055/s-0029-1239494>