

# Incidence of Successful Trial of Normal Vaginal Birth After Previous One Cesarean Delivery

Maha Mahmood Shakir

Department of Obstetrics and Gynecology, Al-Hakeem Hospital, Baghdad, Iraq

Email: [mhaa29245@gmail.com](mailto:mhaa29245@gmail.com)

## Abstract

**Background:** In the last years there is increased incidence in the rate of cesarean section (CS) birth worldwide leading to high number of women with previous cesarean deliveries, which can lead to increased risk of maternal mortality and morbidity. **Objectives:** This study is conducted to evaluate the rate of normal vaginal delivery (NVD) after one CS delivery.

**Method:** The study is conducted on 112 pregnant ladies having previous one CS delivery, admitted to labor ward in state of spontaneous labor. The study is conducted between 1-5-2019 to 1-12-2019. No interference done during labor apart from artificial rupture of membrane, information taken from the patient by direct questionnaire. **Results:** All of the 112 pregnant ladies were having one previous CS delivery admitted to labor ward in state of spontaneous labor, their ages ranging from 15 to 45 years with mean age 25.5 years, their parity was between 2 to 10. Successful trial of labor after cesarean (STOLAC) was 64%. Causes of second CS were due to poor progress of labor in 50%, malpresentation in 25%, fetal distress in 15%, postdate in 5%, breech delivery in 5%. STOLAC was found increasing with the increase in number of NVD after CS, so that it is 58% when it is the first delivery after CS, 87% when it is second labor after CS, 97% when it is third labor after CS and 100% when it is fourth delivery. There was significant relation with gravidity and parity p value (0.035, 0.021) and that most repeated cause for CS was poor progress of labor. **Conclusions:** We concluded that STOLAC was 64%, success rate dependent on proper consulting and proper evaluation of the pregnant ladies with previous CS delivery.

**Key words:** TOLAC, labor, CS, successful, vaginal birth.

**Abbreviations:**

CS: Cesarean section, STOLAC: Successful trial of labor after cesarean, TOLAC: Trial of labor after cesarean, VB: vaginal birth, VBAC: Vaginal birth after cesarean,

## 1. Introduction

Trial of labor is a planned attempt to labor by a woman has had a previous cesarean section (CS) delivery, also known as trial of labor after cesarean (TOLAC), and successful trial of labor is termed as vaginal birth after cesarean delivery (VBAC) [1].

TOLAC has been practiced in our center for along time, but it's effectiveness in our real practice has never evaluated, therefore we conducted this study to determine the effectiveness of TOLAC and the factors associated with its success, the proportion of women attempting VBAC has been declining in many countries [2], and delivery by CS varies internationally from 10-25%, over the last two decades, vaginal birth has experienced considerable decline [3, 4]. Previous CS delivery is the most frequent indication for CS and the stimulus for interest in vaginal birth after CS is probably the solution for the progressive rise in the CS rate [3, 4].

More recently, it is recognized that as the number of CS a patient undergoes increases so does the risk of significant obstetrical complications, these complications include massive postpartum hemorrhage, placenta previa and related placental disorders, adhesions formation, scar dehiscence, surgical injuries, post operative infection, blood transfusion and hysterectomy [5]. Complications in patients undergoing TOLAC could occur; however, appropriate selection of patients can benefit from attempting a vaginal delivery in appropriate setting. When successful, VBAC is associated with a decrease in maternal morbidity and decreased risk of complications in future

pregnancies [6]. VBAC decreases the rate of CS at the population level [7, 8].

STOLAC not only shortens the duration of hospital stay, gives more patient satisfaction but also eliminates the complications associated with the surgical procedures [9]. Current medical evidence indicates that 60-80% of women can achieve vaginal birth after a previous lower segment CS delivery [10, 11]. However, many factors precipitate the failure of TOLAC, which is in turn associated with more maternal and perinatal morbidity including uterine rupture, hysterectomy, blood transfusion, and infections compared with VBAC or elective CS [12-14].

Multiple tools have been developed to predict the likelihood of CS delivery and uterine rupture after previous CS delivery [13], however, because of the extensive number of factors to consider when evaluating maternal risk, none of the current tools have been able to definitely predict patient outcomes [15, 16].

**Factors to consider when deciding on TOLAC [17]:**

**Successful VBAC most likely when:**

1. Previous cesarean incision was low transverse.
2. Clinically adequate pelvis and normal fetal size.
3. No other uterine scar, anomalies or rupture.
4. Previous vaginal birth.
5. Patient enthusiasm and informed consent.
6. Spontaneous labor.
7. Dilated cervix
8. A Doctor is available and able to monitor labor, the fetus and perform a CS.

9. Anesthesia, blood bank and staff are available.
10. Simulation training for emergency cesarean delivery.

## 2. Method

A cross sectional study included 112 pregnant ladies who admitted to labor ward in state of spontaneous labor at Al-Hakeem Hospital, Baghdad-Alkarkh between 1st of May 2019 to the 1<sup>st</sup> of December 2019.

The criteria of cases were included were those ladies of gestational age more than 27 week with previous one CS delivery, having spontaneous labor, although cases that have post date didn't have spontaneous labor but we included them sense we gave them chance waiting for spontaneous labor, we excluded those who had clear contraindication for NVB, antepartum hemorrhage and those who have medical causes for the first CS or second CS. Labor is spontaneous in all cases without any interference apart from artificial rupture of membrane.

For all ladies admitted to labor ward, an intravenous canula inserted, cross matching of the blood was done, observation of uterine contractions, fetal heart monitoring and observation of progress of labor done. Data collection by direct questionnaire done by the researcher, follow up for the result of labor. The variables included were age, parity, gravidity, cause of previous CS and its sequence.

Statistical package for social sciences (SPSS) version 23 were used for statistical analysis were most of data were expressed as frequency and percentage. While other parameters were expressed as mean  $\pm$  standard deviation, and comparison done using unpaired ttest. The level of significance (p value) less than 0.05 was considered as significant.

Regarding ethical consideration, a permission from the pregnant ladies to be included in this study were taken, in addition to the permission from the authority of Health Baghdad-Alkarkh and permission of the Hospital where we conducted the study, the ethical clearance certificate granted was of number 58562.

## 3. Results

In this study, a total pregnant ladies of 112 admitted to the labor ward in state of spontaneous labor, all of them have previous one CS delivery, their ages range was 15-45 years with median of 25, their gravidity were between 2 and 10 with median of 3.6, their parity range was 0-8 with median of 2, and abortion range was between 0 and 4 with median of 0 (Table 1), we found that STOLAC was 64% (Figure 1).

Parameter	Median	Mean	SD	Minimum	Maximum
Age (yr)	25.0	25.55	6.03	15	45
Gravidity	3.0	3.85	1.96	2	10
Parity	2.0	2.38	1.66	0	8
Abortion	0	0.47	0.82	0	4

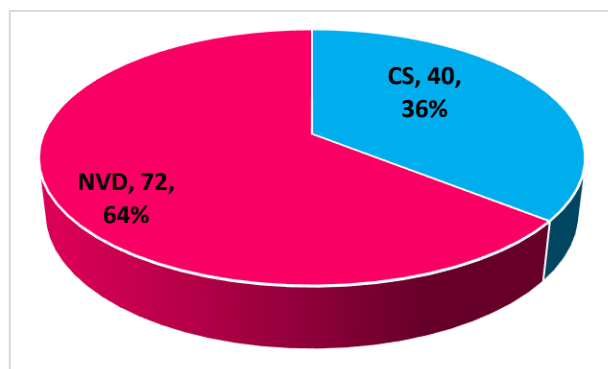


Figure 1. Type of delivery after 1<sup>st</sup> cesarean section

Causes of first CS was breach presentation in 26.8% of cases, poor progress in 20.5%, postdate in 15.2%, malpresentation in 13.4%, fetal distress in 10.7%, and miscellaneous causes in 13.4% (Table 2).

Cause of cesarean section	Frequency	Percent
Breach	30	26.8
Poor progress	23	20.5
Post date	17	15.2
Malpresentation	15	13.4
Fetal distress	12	10.7
Others	15	13.4
Total	112	100.0

Causes of second CS delivery was poor progress of labor in 50%, malpresentation in 25%, fetal distress in 15%, postdate in 5%, breach presentation in 5% (Table 3).

Cause of cesarean section	Frequency	Percent
Poor progress	20	50.0
Malpresentation	10	25.0
Fetal distress	6	15.0
Post date	2	5.0
Breach	2	5.0
Total	40	100.0

Table 4 shows the relation between sequence of labor and CS delivery, it is noticed that as sequence of labor to CS increases, we have more chance for STOLAC, thus, fourth labor after CS has 100% rate of success, third labor has 87.5%, second labor has 62% and first labor after CS has 57.4% chance to have normal vaginal birth (NVB) (Table 4).

Sequence	Total	NVD N (%)	C.S N (%)
1 <sup>st</sup>	68	39 (57.4)	29 (42.6)
2 <sup>nd</sup>	24	15 (62.5)	9 (37.5)
3 <sup>rd</sup>	16	14 (87.5)	2 (12.5)
4 <sup>th</sup>	4	4 (100)	0 (0.0)

For the general characteristics of patients, we found that age and number of abortions has no significant relation to STOLAC (p value 0.840, 0.824), while gravidity and parity has significant relation to STOLAC; p value (0.035, 0.021) respectively (Table 5).

Sequence	NVD N=72 Mean± SD	CS N=40 Mean±SD	P value
Age (yr)	25.46±6.26	25.7±5.67	0.840
Gravida	4.14±1.98	3.33±1.83	<b>0.035</b>
Parity	2.65±1.69	1.9±1.52	<b>0.021</b>
Abortion	0.49±0.84	0.45±0.78	0.824

The frequency of causes of second CS in relation to the cause of first CS was noted that those who were postdate in the first CS had second CS because of (poor progress in 45%, malpresentation in 27.3%, fetal distress in 9.1%, breach presentation in 9.1%. For those who were having their first CS because of breach presentation has their second CS because of (poor progress in 50%, fetal distress in 20%, breach presentation in 10%. For those who were having their first CS because of poor progress, they have their second CS because of (poor progress in 88% and 12% because of malpresentation. For those who have their first CS because of malpresentation, they have their second CS because of (malpresentation in 50% and fetal distress in 50%). For those who have their first CS because of fetal distress, they have their second CS because of (malpresentation in 50% and fetal distress in 50%). The remaining 4 ladies who have infrequent causes of CS has their second CS because of (poor progress in 50%, 25% postdate, and malpresentation in 25%) (Table 6).

**Table 6. Frequency of causes of second cesarian section in relation to the causes of 1st cesarian section**

cause of 1st CS	cause of 2nd CS	N (%)
Post date N=11	Poor progress	5 (45.5)
	Malpresentation	3 (27.3)
	Fetal distress	1 (9.1)
	Post date	1 (9.1)
	Breach presentation	1 (9.1)
Breach presentation N=10	Poor progress	5 (50.0)
	Fetal distress	2 (20.0)
	Malpresentation	2 (20.0)
	Breach presentation	1 (10.0)
Poor progress N=9	Poor progress	8 (88.9)
	Malpresentation	1 (11.1)
Malpresentation N=4	Malpresentation	2 (50.0)
	Fetal distress	2 (50.0)
Fetal distress N=2	Malpresentation	1 (50.0)
	Fetal distress	1 (50.0)
Others N=4	Poor progress	2 (50.0)
	Post date	1 (25.0)
	Malpresentation	1 (25.0)

## 4. Discussion

In this study we found that STOLAC was 64%, this was similar to study done in many developing countries where STOLAC was shown to be 60-80% ie. 42.2% in South Africa van Bogaert [18], 57% in Bloemfontein Van der Walt et al. [19], 41.7% in Saudi Arabia Mesleh et al. [20], 60% in India George et al. [21], In similar studies done in Iraq a study done by Aqeela in Misan, Iraq that had STOLAC of 55% [22], while in Al-Wazzan study in Mosul, 82.15% have STOLAC [23], Fattah et al. [24] in Sulimania 63.4% STOLAC [24]. In other developing countries, in Pakistan, A study done by Islam et al. [25] showed that 77.1% had STOLAC in those who had spontaneous labor [25].

In this study, we found that the most common cause for the first CS was breach presentation 26.8%, this is similar

to Bais et al. [11], where they found 26.8% of cases had first CS because of breach presentation [11], in this study the most common cause for the second CS was poor progress 50%, while in Thapsamuthdechakorn et al. [26] found that 29.53% of the second CS were due to poor progress and the most common cause of second CS was patient changing mind and give up trial of labor in 43.04% [26].

For those who had 1<sup>st</sup> CS due to breach presentation we have 10 patients out of 30 had second CS ie., 33%, this similar to Madaan et al. [27], where he found that out of 70 patient with first CS due to breach, 23 had second CS so it is 33%.

Although more than half cases that have 1<sup>st</sup> CS due to poor progress had NVB, we notice that poor progress tend to be a repeated cause for CS for those that have second CS. We found that 88% of those that had second CS due to poor progress, had their first CS also due to poor progress, so poor progress tend to be repeated cause for CS, this is also found by Madaan et al. [27] where out of 100 pregnant ladies with first CS due to poor progress, 61 ladies delivered by CS also due to poor progress so that it is 61% [27].

Fetal distress was forming 15% of causes of second CS, this didn't appear to be a repeated cause for CS that out of 12 case that had first CS due to fetal distress only 1 had second CS, so it recurs in 8.3% of cases, while in Madaan et al. [27], total of 96 that had first CS due to fetal distress, 37 has second CS so it is repeated in 38% of cases [27].

We also noticed significant relation between gravidity and parity with STOLAC with p value (0.035,0.021), which is also noticed by Majeed et al. [22], p value (0.007).

For the age of the pregnant ladies we didn't found a significant relation with STOLAC p value (0.8410), in Majeed et al. [22] noted that STOLAC was mostly at age groups (15-24) at (25-34), although of no significant statistical value p value (0.113).

## 5. Conclusion

We concluded that STOLAC was 64%, success rate depends on proper consulting and proper evaluation of the pregnant ladies with previous CS delivery, we also concluded that favorable vaginal examination, previous vaginal birth after CS, spontaneous labor are important factors for STOLAC, the evaluation should be done by a specialist doctor.

VBAC, should be encouraged in all well-established obstetrical units, careful observation through aut labor in well equipped unit with ability to do emergency CS when it is necessary.

### Acknowledgement:

Great thanks to all ladies that participated in this study, Dr Majid H. Ahmed, College of Medicine, Al-Nahrain University that arranged the stathistical study and to all staff that assisted in this study.

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