# Vaginal Birth After Trial of Uterine Scar

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*ABSTRACT*

*Objective* — *To determine the frequency of vaginal birth after trial of uterine scar and its associated maternal and perinatal complications.*

*Study design* — *Cross-sectional study.*

*Place & Duration of study* — *Department of Obstetrics and Gynaecology, Baqai Medical University Karachi, from January 2016 to December 2018.*

*Methodology* — *All admitted patients, booked or unbooked, with previous one cesarean section after 28 weeks were included in this study for the trial of labour after cesarean section (TOLAC). Demographic features like age, parity, gestational age, previous history of vaginal birth after cesarean section (VBAC) and previous history of assisted vaginal deliveries were recorded. Patients with previous one cesarean section, associated medical disorders and obstetric complications in previous pregnancies were excluded. Patients with BMI > 30 kg/m$^2$ and expected fetal weight (EFW) =3.5 kg were also excluded. Data was analyzed through SPSS version 22.*

*Results* — *In 135 (64.9%) women successful VBAC occurred while 73 ( 35.1%) had emergency cesarean section after TOLAC. 165 (79.3%) women belonged to age group <35 years. Multigravidas had lower success rate for TOLAC (n= 98 - 47.1%) as compared to (n=120 - 57%) women with low parity. Majority of women (n= 192 - 92.30%) were at term selected for TOLAC with the duration of >2 years since last delivery. There were 6 (3.4%) perinatal mortalities in this study. Only 2 (1.4%) patients had postpartum haemorrhage due to scar dehiscence and placenta accreta which was an incidental diagnosis.*

*Conclusions* — *Despite the known complications of pregnancies with previous scar to be delivered vaginally TOLAC was appropriate for many pregnant women at term, leading to a successful outcome in high proportion of cases.*

*Key words* — *Trial of labour after cesarean section, Perinatal and maternal mortality, Elective repeat cesarean delivery, Vaginal birth after cesarean section.*

**INTRODUCTION:**

Cesarean section is a life saving obstetrical procedure for both mother and fetus, but the decision for this mode of delivery should be made by an experienced obstetrician.[1] This may result in decrease frequency of future cesarean sections in subsequent deliveries. In United States, the overall cesarean section rate has risen dramatically from 5% in early 1970's to 25% in 1998.[2] Similarly cesarean section accounts for 18.6% of all births worldwide.[3]

Vaginal delivery after cesarean section was considered as an impossible task however, studies have shown that vaginal delivery can be achieved with consequent reduction in the morbidity associated

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with elective repeat section.[4] Several systemic reviews considered the trial of labor relatively quite safe after previous one cesarean section and has subsequently reduced the rate of cesarean deliveries in future with low incidence of associated morbidity such as uterine rupture, postpartum hemorrhage and obstetrical hysterectomies.[5] Similarly VBAC is also associated with cost effectiveness as there are fewer maternal complications, reduced hospital stay and early return to routine work.[6] In contrary, in VBAC, risk of mask ventilation and intubation is higher due to meconium stained liquor and neonatal sepsis, where as in elective repeat cesarean delivery (ERCD) the risk for transient respiratory distress is increased.[7]

Pregnancy with previous scar if added with non-repetitive causes like breech presentation, placenta abruptio and low lying placenta or multiple gestation, IUGR, macrosomia, then repeat cesarean section is always preferred over VBAC.[1] In Pakistan 80% of pregnancies are unplanned and unfortunately many patients reported in tertiary care government hospitals within 9-12 months of previous cesarean delivery. Measurement of uterine scar thickness is not a good predictor of scar integrity in these patients, although incidence of scar rapture for LSCS is 1-1.5% at term.[8] The facilitation of informed decision making for pregnant women for VBAC requires a holistic approach and understanding of the factors helpful in VBAC over elective repeat cesarean delivery.

**METHODOLOGY:**

This cross sectional study was conducted in the Department of Obstetrics & Gynaecology, Baqai Medical University Karachi, from January 2016 to December 2018. There were total of 441 pregnant women with previous scar who were admitted. Only 208 pregnant women, either booked as well unbooked status of more than 28 weeks pregnancy with previous scar or previous cesarean section done at least two year back, were included in this study for TOLAC. Booked cases were followed by proper antenatal care (ANC) and serial ultrasound including ultrasound pelvis for scar thickness at 36 weeks. A value of (>3.5mm) was taken into consideration. In non booked cases scar thickness was assessed in non laboured cases only at 36 weeks of gestation, followed by TOLAC. Trial of labour were given after taking history, examination and detailed evaluation including baseline investigations, ultrasound pelvis and CTG. An informed consent was also taken.

All patients who had TOLAC and progressed into spontaneous labour were monitored by intrapartum CTG and partogram.

Previous scar having history of instrumental delivery or postpartum hemorrhage and low lying placenta and breech presentation were excluded. Similarly expected fetal weight (EFW) of > 3.5kg at term pregnancy or patients with other co-morbid like anemia, hypertension and diabetes mellitus, were also excluded. Any patient who had a history of prolonged labour followed by cesarean section and neonatal birth asphyxia were also excluded. All the demographic features including age, parity, booked or unbooked status, gestational age, previous history of VBAC, etc were recorded in 1st stage of labour in ward on a specialized designed form. The data of maternal and perinatal outcome were recorded and analyzed by using SPSS version 22.

**RESULTS:**

A total of 441 patients were admitted with previous one scar at >28 weeks. Out of it 233 (52.8%) were planned for elective cesarean section (ERCS) and 135 (47.1%) were offered TOLAC. Out of these 135 (64.9%) women had successful VBAC and 73 (35.1%) underwent emergency cesarean section after TOLAC (table I). Only nine (4.3%) patients had previous history of vaginal birth and all of them were multigravida (P>5). Considering TOLAC, majority 165 (79.3%) of women were <35 year of age. Similarly women having parity<5 were found to be more favorable for TOLAC as compared to multigravida (P>5) who never had VBAC (table II). Majority of women who were subjected to TOLAC were at term ( >37 weeks of gestation n=192 - 92.3%) and less number of women who had established preterm labour or PROM in between 28-32 weeks (n = 7 - 3%) and = 28-32 weeks of gestation (n= 9 - 4.36%) had trial of scar. All preterm < 32 weeks were booked cases with successful VBAC where as only 5 women out of 9 (55.5%) at 32-36 weeks of gestation had successful VBAC. Considering term pregnancies >37 weeks with TOLAC, 113 (58.8%) had successful VBAC. All women selected for TOLAC had last delivery with minimum duration of 2 years.

Regarding the maternal complications, 1 (0.7%) patient with scar dehiscence was reported. Similarly 1 (0.7%) patient had morbidly adhered placenta. Both patients had postpartum hemorrhage followed by obstetrical hysterectomies. The overall perinatal morbidity and mortality was 3.4% (table III). All of them were preterm births. The intra uterine deaths were 4.4%, out of which two were due to intrapartum asphyxia and four were diagnosed cases of

**Table I: Frequency of Previous One LSCS After 28 Weeks Gestation with ERCD and TOLAC**

| Total Number of Deliveries | Total Previous One LSCS n=4564 | | ERCD n=441 | | TOLAC n=441 | | VBAC n=208 | | EmLSCS n=208 | |
|---|---|---|---|---|---|---|---|---|---|---|
| 4564 | 441 | 9.6% | 233 | 52.8% | 208 | 47.1% | 135 | 64.9% | 73 | 35% |

**Table II: Women Selected For Trial of Labour After Cesarean Section With Associated Obstetrical Factors (n= 208)**

| S. No. | Obstetrical Factors | Frequency (n) | Percentage (%) |
|---|---|---|---|
| 1.a | Maternal Age < 35 years | 165 | 79.33 |
| 1.b | Maternal Age > 35 years | 43 | 20.67 |
| 2.a | Parity (1-4) | 120 | 57.69 |
| 2.b | Parity > 5 | 98 | 47.12 |
| 3.a | Gestation Age (>28-32 Weeks) | 7 | 3.37 |
| 3.b | Gestation Age (32-36 Weeks) | 9 | 4.33 |
| 3.c | Gestation Age (>36-40 Weeks) | 192 | 92.31 |
| 4 | Previous VBAC | 9 | 4.33 |
| 5 | Previous history of vaginal instrumental deliveries | 4 | 1.92 |

**Table III: Maternal and Fetal Complications of VBAC**

| S. No. | Maternal Complications | n= 135 | % age | S. No. | Fetal Outcome | n= 135 | % age |
|---|---|---|---|---|---|---|---|
| 1 | Scar Dehiscence | 1 | 0.7% | 1 | IUD | 6 | 4.4% |
| 2 | Postpartum Hemorrhage | 2 | 1.4% | 2 | ENND | 0 | 0% |
| 3 | Uterine Rupture | 0 | 0% | 3 | Preterm (SGA) (32-36 weeks) | 6 | 4.4% |
| 4 | Obstetrical Hysterectomy | 2 | 1.4% | 4 | IUGR at term (=37 weeks) | 0 | 0% |
| 5 | Morbidly Adherent Placenta | 1 | 0.7% | 5 | Meconium Aspiration | 2 | 1.4% |

of intrauterine deaths during antenatal period (32 – 36 weeks of gestation).

**DISCUSSION:**

Vaginal birth is recommended as best practice for majority of women as it is associated with lower maternal mortality and shortened hospital stay than elective repeat cesarean section.[9] VBAC is mainly described by health care professionals in relation to the risk involved. Women are well informed about these risks, along with positive aspects of VBAC. Furthermore successful vaginal deliveries after previous 1 LSCS also improve the future mode of vaginal deliveries. The criteria for the selection of pregnant women to allow the TOLAC must be in favour of more successful vaginal deliveries with less maternal and perinatal mortality. This approach will eliminate the risk associated with emergency cesarean section when faced with failed VBAC.[10] Pregnant women with one previous cesarean section have two options for mode of delivery, either vaginal birth elective repeat cesarean delivery. Rate of successful VBAC vary from one study to another. A study in USA showed 73% successful VBAC, [11] whereas our study showed 64.9% success following VBAC. The data is also compatible with the local study conducted at tertiary care hospital in Karachi.[6] An important prognostic factor was an age =35, predicting successful VBAC.[11] Our study also reflected the same because VBAC was more often noted in younger age group as compared to women >35 year of age. In a study, VBAC in women age <35 year was found to be more successful with fewer complications.[12] Similarly low parity women with successful VBAC in our study also matches with the international data reported from Ethiopia.[13] The most important predictor for any successful VBAC is prior successful vaginal delivery.[14] Similarly our study group showed 9 (4.33%) patients selected for TOLAC had successful VBAC. Many authors reported history of prior spontaneous vaginal delivery as significant determinant for successful VBAC.[15]

Considering the maternal complications in our study, only one case was reported with scar dehiscence followed by VBAC in whom postpartum hemorrhage occurred and the ultimate outcome was obstetrical hysterectomy. The overall rate of uterine rupture reported in another study was 0.5%.[16] This is quite comparable with our study. It is because the risk associated with TOLAC and the complication like uterine rupture may be unpredictable. ACOG recommended that TOLAC can be undertaken in facilities with capable staff along with obstetrician and anesthesiologist who can perform emergency cesarean section delivery throughout the active phase of labour.[17]

In a small fraction of of women with VBAC preterm birth occurred. This include patients more that 28 weeks gestation but less than <36 weeks. The overall perinatal outcome that was associated with preterm deliveries having weight (2 kg – 2.5 kg) was low. Fewer successful VBAC in our study required instrumental vaginal deliveries due to fetal distress, who were ultimately shifted to NICU due to meconium aspiration but no perinatal death reported in these two babies. These were unbooked cases, admitted with established laour (higher Bishop score) between 32-36 weeks of gestation. The perinatal mortality and morbidity increases due to higher uterine rupture rate as shown in one of the systematic reviews in patients with attempted VBAC.[18] On the contrary, no rupture was reported in our study, nor any perinatal mortality due to uterine rupture. Hence the frequency of perinatal mortality was quite low in our study whereas it was 28.6 per 1000 live birth in another study that contributed to 25% of all intrapartum still births.[19]

**CONCLUSIONS:**

Trial of vaginal birth after C-section delivery is still considered to be a better option for majority of pregnant women leading to a successful maternal and perinatal outcome, with the low frequency incidence of uterine scar dehiscence and postpartum hemorrhage**.**

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Received for publication: 19-09-2019

Accepted after revision: 31-10-2019

Author's Contributions:
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Conflict of Interest:
The authors declare that they have no conflict of interest.

Source of Funding:
None

How to cite this article:
Naheed F, Ahsan N, Qayuum A, Liaquat F, Akram S, Sheikh F. Vaginal birth after trial of uterine scar. J Surg Pakistan. 2019;24 (3):131-35. Doi:10.21699/jsp.24.3.6.