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**Original Research Article**

# Trial of scar in post caesarean pregnancies

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## ABSTRACT

**Background:** The term caesarean delivery used to describe the delivery of a fetus through a surgical incision of the intact anterior uterine wall. The objective of this study was to analyse the maternal and perinatal morbidity between successful VBAC and failed vaginal delivery in cases selected for trial of labour.
**Methods:** Prospective study conducted in Government RSRM Lying In Hospital, Government Stanley Medical College, Chennai over a period of one year from January 2017 to December 2017.
**Results:** Trial of labour in previous caesarean section was more successful when the interval between previous caesarean and present pregnancy was between two to four years 86.40%.
**Conclusions:** Most patients with a prior caesarean birth are candidates for VBAC. In properly selected women, a trial of labour after one previous low transverse caesarean section constitutes the best and safest form of obstetric management.

**Keywords:** Post caesarean pregnancy, Trial of Scar, VBAC

## INTRODUCTION

The term caesarean delivery used to describe the delivery of a fetus through a surgical incision of the intact anterior uterine wall. The rising caesarean section birth rate has become an increasing concern to the obstetric profession and the public.

When compared to vaginal delivery the maternal mortality is 3-7 times greater in caesarean section birth.[1] Both maternal and perinatal morbidity are increased in caesarean birth.

***To reduce the caesarean rates***

- Use interdepartmental audit
- Seeking a second opinion
- Use of standard management protocols
- Imparting appropriate education in obstetrics
- To practice evidence-based medicine
- Training obstetricians to maintain meticulous records and take informed consent.
- Extra incentives for vaginal birth after cesarean.

In the face of a rising rate of primary cesarean births the introduction of VBAC has helped to stabilize the overall cesarean rate.[2] VBAC can be allowed in post term pregnancy also with a success rate of 66%. So patients can be reassured that passing her due date does not alter the efficacy or safety of trial of labour. There is no data to contraindicate a VBAC in a frank breech presentation.[3] Women with two or more previous cesarean section who experience a trial of labour achieved 73.5% successful vaginal delivery.[4] Women with unknown scar were able to undergo trial of labour without increase in maternal of fetal complications.[5] The use of vaginal prostaglandin for induction of labour in patients previously delivered by cesarean section has been justified.[6] Use of epidural

anaesthesia doesn't mask the clinical signs of scar rupture and the signs of impending scar rupture, pain and tenderness are neither sensitive nor specific.[7,8]

All patients should be continuously monitored during trial of labour, maternal vitals to be monitored every 15 mins. Development of suprapubic pain, tenderness, irregularity of fetal heart rate, vaginal bleeding and blood-stained urine. Continuous CTG monitoring is useful in detecting fetal heart rate patterns including prolonged deceleration, variable deceleration and late deceleration.[9] The 'six hours' rule is observed. The trial of labour is terminated after six hours of active labour if delivery is not imminent.[10]

Aim of this study was:

- To study of incidence of post caesarean deliveries in Government RSRM Lying In Hospital, to analyse the factors influencing the success of VBAC and the causes for failed vaginal delivery in cases selected for vaginal delivery after a previous caesarean birth.
- To analyse the maternal morbidity and mortality between successful VBAC and failed vaginal delivery in cases selected for vaginal delivery after a previous caesarean birth.
- To analyse the perinatal morbidity and mortality between successful VBAC and failed vaginal delivery in cases selected
- Acceptance rate of family planning.

## METHODS

This study was carried out in Government RSRM Lying In Hospital, Government Stanley Medical College, Chennai over a period of one year from January 2017 to December 2017.

Time of admission was at 38 weeks of gestation in uncomplicated cases and earlier if they had any high-risk factors. Those who were admitted in labour were examined and selected for trial of scar, if they had fulfilled the selection criteria. Informed consent was got from all the patients selected for VBAC trial of scar.

### *Inclusion criteria*

- Singleton pregnancies
- Longitudinal lie
- Previous one caesarean section
- Clinically adequate pelvis
- No cephalopelvic disproportion
- No other uterine scar or previous rupture

### *Exclusion criteria*

- Gestational age less than 37 weeks
- Obvious cephalon-pelvic disproportion
- Abnormal presentation other than breech
- Multiple scars in uterus.

Patients continuing the pregnancy beyond the expected date of delivery were considered for prostaglandin $E_2$ gel, Foley's catheter.

Selective acceleration of labour with ARM and oxytocin were given whenever necessary. Portogram monitoring was done in all cases to assess the progress of labour. The patients were monitored by 15 min. FHR auscultation and 30 minutes maternal pulse chart.

Outlet forceps or vacuum was applied only when indicated and not as a routine. After delivery of the placements by Brandt-Andrews technique, intrauterine palpation of the scar was done only when there was excessive bleeding per vagina, unexplained tachycardia and hypotension.

## RESULTS

The total number of deliveries during the study period from January 2017 to December 2017 in Government RSRM Lying in Hospital was 13080.

The total number of caesarean section were 1842 (14.08%). The total number of primary caesarean sections were 1139 (61.83%). The number of repeat caesarean sections were 703 (38.16%). The total number of post caesarean pregnancies were 931 (7.11%) The total number of elective caesarean section were 213 (22.87%). The total number of emergency repeat caesarean section without VBAC-trial of labour were 433 (46.50%). Total number of cases selected for trial 285. Most of the patients were in the age group of 20-25 years 62.80%, followed by 26-30 years. Teenage pregnancy (<19 years) were the least 1.05%.

**Table 1: Age distribution among cases selected for VBAC-TOL (N = 285).**

| Age group in years | No. of cases | Percentage |
|---|---|---|
| < 19 | 3 | 1.05% |
| 20-25 | 179 | 62.80% |
| 26-30 | 79 | 27.71% |
| 31-35 | 18 | 6.31% |
| Above 35 | 6 | 2.10% |

Most of the patients were Gravida 2 (63.50%) Table 2.

**Table 2: Gravida status in cases selected for VBAC-TOL (N = 285).**

| Gravida | No. of cases | Percentage |
|---|---|---|
| Gravida 2 | 181 | 63.50% |
| Gravida 3 | 83 | 29.12% |
| Gravida 4 and above | 21 | 7.36% |
| Total | 285 | |

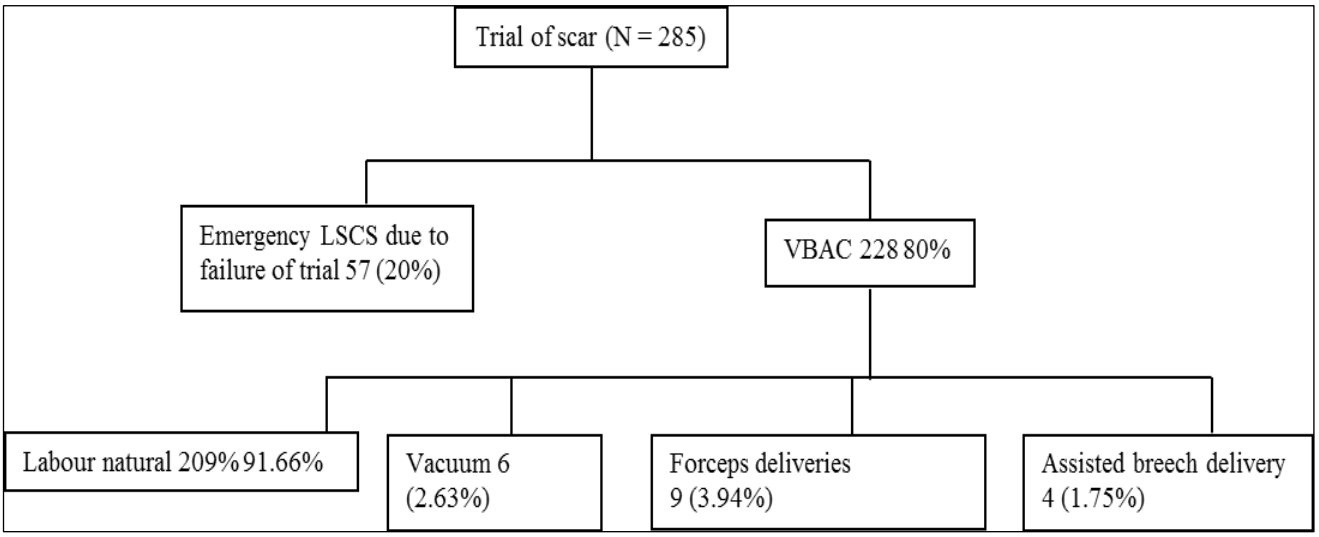


**Figure 1: Outcome of VBAC trial of scar.**

**Table 3: Indication for previous LSCS among cases selected for VBAC-TOL (N = 285).**

| Previous indication | No. of cases | Percentage |
|---|---|---|
| Fetal distress | 61 | 21.40 |
| Breech | 51 | 17.89 |
| Postdatism with failed induction | 30 | 11.63 |
| PROM with failed induction | 28 | 9.82 |
| Cephalo-pelvic disproportion | 21 | 7.36 |
| PIH with failed induction | 17 | 5.93 |
| Transverse lie | 11 | 3.82 |
| Cervical dystocia | 10 | 3.50 |
| Antepartum eclampsia | 9 | 3.15 |
| Persistant ROP | 8 | 2.80 |
| Long period of primary infertility | 7 | 2.45 |
| Abruptio placentae | 7 | 2.45 |
| Placenta praevia | 5 | 2.10 |
| Cord prolapse | 5 | 1.75 |
| IUGR-Oligohydramnios | 4 | 1.40 |
| Twins | 3 | 1.05 |
| Postdatism with uterine inertia | 2 | 0.70 |
| Macrosomia | 2 | 0.70 |
| Face Prsentation | 1 | 0.35 |
| Gestational diabetes mellitus | 1 | 0.35 |
| Bad obstetric history | 1 | 0.35 |
| Total | 285 | |

Commonest indication for previous LSCS was fetal distress (21.40%), breech (17.89%), postdatism with failed induction (11.63%).

ARM and syntocinon augmentation were used in patients in whom the uterine contractions were inadequate. Acceleration was required in 32 patients out of which 22 patients delivered vaginally.

**Table 4: Induction of labour in patients selected for VBAC-trial of scar.**

| Induction | No. of cases | % | Success rate | |
|---|---|---|---|---|
| | | | No. of cases | % |
| Cerviprime gel | 11 | 1.75 | 4 | 36.36 |
| Foley's catheter | 3 | 1.05 | 1 | 33.33 |
| Total | 14 | | | |

**Table 5: Outcome of VBAC-trial of scar in selected patients (N = 285).**

| | No. of cases | Percentage |
|---|---|---|
| VBAC | 228 | 80 |
| Failed trial of scar | 57 | 20 |
| Total | 285 | |

The success rate was found to be 80%.

**Table 6: Mode of delivery in VBAC (N = 285).**

| Mode of delivery | No. of cases | Percentage |
|---|---|---|
| Labour natural | 209 | 91.66 |
| Forceps | 9 | 3.94 |
| Vacuum | 6 | 2.63 |
| Assisted breech | 4 | 1.75 |
| Total | 228 | |

91.66% women delivered by labour natural

The commonest cause of failed trial of scar was fetal distress (40%) followed by failure of labour to progress (14.03%).

***Trial of labour in relation to past obstetric outcome.***

The rate of successful vaginal delivery was higher amount women who had a prior vaginal delivery compared to those who had been delivered only by LSCS.

**Table 7: Causes for failed trial of scar (N = 57).**

| | No. of cases | Percentage |
|---|---|---|
| Fetal distress | 23 | 40 |
| Failure to progress | 8 | 14.03 |
| Threatened rupture | 6 | 10.52 |
| Cervical dystocia | 6 | 10.52 |
| Failed induction | 5 | 8.77 |
| Cephalo pelvic disproportion | 3 | 5.26 |
| Uterine inertia | 3 | 5.26 |
| Total | 57 | |

**Table 8: Previous vaginal delivery either before or after LSCS.**

| Previous vaginal | LSCS Group | | VBAC Group | |
|---|---|---|---|---|
| | No. | Percentage | No. | Percentage |
| Present | 9 | 15.7% | 63 | 27.63% |

The interval between previous section present delivery was less than two years in 10.52% of failed trial of labour patients. Women with an interval of more than 2 years but less than 4 years were better candidates for VBAC.

**Table 9: Interval between previous caesarean section and present delivery.**

| Intervel between previous caesarean section and present delivery | LSCS Group | | VBAC Group | |
|---|---|---|---|---|
| | No. | % | No. | % |
| < 2 years | 6 | 10.52 | 16 | 7.01 |
| 2-4 years | 47 | 82.45 | 197 | 86.40 |
| 5 years and above | 4 | 7.01 | 15 | 6.57 |

Most of the babies in the successful VBAC Group weighed between 2-3 kg. Babies with birth weight above 3.5 kg were mostly delivered by caesarean section.

**Table 10: Birth weight of babies in successful VBAC group and failed trial of labour.**

| Birth weight | LSCS Group (n=57) | | VBAC Group (n=228) | |
|---|---|---|---|---|
| | No. | Percentage | No. | Percentage |
| <2 kg | 1 | 1.75 | 5 | 2.19 |
| 2-3 kg | 42 | 73.68 | 185 | 81.14 |
| 3.1-3.5 kg | 11 | 19.29 | 36 | 15.78 |
| Above 3.5 kg | 3 | 5.26 | 2 | 0.87 |

Subtotal hysterectomy was done in the patient who had adherent placenta. Maternal morbidity was significantly lower in patients who had successful vaginal delivery. P <0.001 (by Chi-square test). Scar dehiscense, postpartum haemorrhage, urinary tract infection was more common in the LSCS group than in the VBAC group.

**Table 11: Comparison of maternal mortality statistics between failed trial (LSCS) and VBAC patients.**

| Complications | LSCS Group (n=57) | | VBAC Group (n=228) | |
|---|---|---|---|---|
| | No. | % | No. | % |
| Scar dehiscense | 3 | 5.26 | 1 | 0.43 |
| Adherent placenta | | | 1 | 0.43 |
| Postpartum haemorrhage | 3 | 5.26 | 2 | 0.87 |
| Urinary tract infection | 3 | 5.26 | | |
| Post Spinal head-ache | 2 | 3.50 | | |
| Lower respiratory tract infection | 1 | 1.75 | | |
| Wound gaping and resuturing | 1 | 1.75 | | |
| Total | 13 | 22.78 | 4 | 1.73% |

**Table 12: Comparison of neonatal mortality statistics between LSCS (failed trial) and VBAC patients.**

| Cause of Death | LSCS n=57 | | VBAC n=228 | |
|---|---|---|---|---|
| | No. of cases | % | No. of cases | % |
| Birth asphyxia | 1 | 1.75 | | |
| Low birth weight | | | 1 | 0.43 |
| Congenital anomalies | 1 | 1.75 | | |
| Total | 2 | 3.50 | 1 | 0.43 |

One baby had lumbar meningomyelocele and died on the fith postnatal day. The congenital anomaly was not detected by sonar earlier. National mortality rate was higher in the failed trial of labour LSCS group than in the VBAC group.

**Table 13: comparison of neonatal morbidity statistics between LSCS (failed trial) and VBAC patients.**

| Morbidity | LSCS n=57 | | VBAC n=228 | |
|---|---|---|---|---|
| | No. of cases | % | No. of cases | % |
| Birth asphyxia APGAR <7 | 4 | 7.01 | 1 | 0.43 |
| Sepsis | 2 | 3.50 | 1 | 0.43 |
| Respiratory distress syndrome | 1 | 1.75 | | |
| Low birth weight | 1 | 1.75 | | |
| Congenital Anomalies | 1 | 1.75 | 1 | 0.43 |
| Total | 9 | 15.76 | | 19 |

Neonatal Morbidity was significantly higher in the patients who underwent emergency LSCS (Failed trial of labour) $P < 0.001$ (by Chi-Squaretest).

## DISCUSSION

### *Induction of labour*

In the present study, the successful VBAC rate in those patients who had cervical ripening and induction with $PGE_2$ was 36.36%.

Following are the vaginal delivery rates in women with previous caesarean deliveries who underwent cervical ripening with $PGE_2$ in various studies. CMC Vellore 1998: 66.6%, Ravasia 2000: 60.5%, Luis Sanchez: 2002: 68.8% (12), present study: 36.36%.

### *Causes of failed vaginal delivery*

In the present study 57 (20%) cases failed to delivery vaginally and ended up in caesarean section. The commonest cause of failed trial of scar was fetal distress 40% in the present study followed by failure to progress 14.03%.

### *Breech presentation*

Ophir et al has presented in a retrospective review of 71 breech deliveries following previous caesarean section trial of labour was conducted in 66% of patients with 79% of them achieving a vaginal delivery.[12] In present study assisted breech delivery was conducted in 4 cases of successful VBAC.

### *Maternal morbidity and mortality*

There was no maternal mortality in the present study. Overall maternal morbidity was 22.78%. In the failed trial group and 1.73% in the VBAC group. Morbidity statistics showed pyrexia in 5.26% PPH in 5.26%; scar dehiscence in 5.26%; post spinal headache in 3.50%; wound gaping and resuturing in 1.75%. Incidence of atonic PPH in VBAC group being 0.87%; scar dehiscence being 0.43% and adherent placenta being 0.43%

Rutkow in his meta-analysis Rosen et al, Flamm et al, Petit et al showed that maternal mortality and morbidity including scar dehiscence, rupture, fever are higher in the emergency caesarean section group than in the VBAC group.

### *Perinatal morbidity*

Perinatal morbidity was 15.76% in patients who failed to achieve vaginal delivery whereas it was 1.29% in patients who delivered vaginally. Rosen et al in his study showed that the perinatal risk for patients considering VBAC is no higher than that for patients delivering by elective repeat caesarean birth.[14]

### *Perinatal mortality*

Perinatal mortality was 0.43% in the VBAC group and 3.50% in patients who failed to delivery vaginally.

Meehan et al in his study showed that the rise in the caesarean section rate was not associated with a similar corresponding drop in the perinatal mortality rate.[15]

### *Hospital stay*

Hospital stay was less in patients who delivered vaginally when compared to those who underwent emergency LSCS due to failed trial.

Rosen et al in his study showed that VBAC-TOL will have less febrile Morbidity and are thus likely to require a shorter hospital stay and fewer days lost from employment and family care responsibilities.[16]

### *Sterilisation details*

In patients with VBAC pureperal sterilisation could be achieved only in 53.50%. Six patients had CuT insertion. Remaining 46.50% were then counselled for interval tubectomy.

## CONCLUSION

The total number of deliveries during the study period in Government RSRM Lying in Hospital, from January 2017 to December 2017 was 13080.

The total number of Caesarean sections done was 1842, an incidence of 14.08%. The total number of post caesarean pregnancies were 931 an incidence of 7.11%

285 cases were selected for trial of scar. Most of the patients were in the age group of 20-25 years (62.80%). The commonest indication for previous caesarean section was fetal distress 21.40% followed by breech presentation 17.89% Among the 285 patients allowed for trial of scare, 228 patients delivered vaginally.

Induction of labour was done in 14 patients with a success rate of 36%. The most common indication for emergency repeat caesarean section due to failed vaginal delivery was fetal distress 40% followed by failure to progress 14.03%.

Four women with breech presentation and previous caesarean section delivered vaginally and had a successful trial of scar. Trial of labour in previous caesarean section was more successful when the interval between previous caesarean and present pregnancy was between two to four years 86.40%.

Babies with birth weight above 3.5 kg were born by caesarean section 5.26% when compared to VBAC 0.87%. Maternal morbidity was 22.78% in LSCS due to failed trial of scar significantly higher than in patients with successful VBAC 1.73% p value < 0.001.

There was no maternal mortality in the present study. Perinatal morbidity was 15.76% in LSCS group and has significantly higher P value < 0.001 when compared to 1.29% in VBAC group. Perinatal mortality was 3.50% in LSCS group and 0.43% in VBAC group.

Most of the patients 56.57% who had VBAC stayed for only 5-7 days and most of the patients 92.95% of who underwent LSCS stayed for 8-10 days. 53.50% of patients with VBAC underwent sterilization whereas 91.22% of patients who underwent caesarean had their sterilization done.

Craigin's once a caesarean always a caesarean, "is no longer a rule. Munrokerr's "Once a caesarean, always a hospital delivery", is the appropriate term.

Most patients with a prior caesarean birth are candidates for VBAC. In properly selected women, a trial of labour after one previous low transverse caesarean section constitutes the best and safest form of obstetric management.

Hence, VBAC should be a routine part of everyday labour ward work, so that a woman by the end of her pregnancy delivers by a method with minimum risk to herself and her baby.

Prostaglandin use for induction of labout in the scarred uterus is safe. Trial of labour seems reasonable in carefully selected cases of breech presetation after a previous caesarean section.

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