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Original Research Article

Vaginal birth after cesarean

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ABSTRACT

Background: A heightened awareness must be present among the clinicians while taking the decision to perform the first cesarean section, as it decides the future obstetric career of the women. Because of the rise in cesarean section rate in recent decades, the question of how to manage the subsequent deliveries becomes important. Vaginal birth after cesarean (VBAC) has long been proposed as an alternative measure to reduce repeat cesarean rate. Our present study aims to assess the predictive factors of successful VBAC and study the risks and benefits involved.
Methods: A prospective observational study was conducted to assess the success of VBAC and its outcome in GMERS Medical College and Hospital, Ahmedabad. A total of 100 pregnant women with history of previous one cesarean section who fulfilled the criteria for vaginal delivery were recruited for study and the outcome was analyzed.
Results: The success rate of VBAC was 58% while failed TOLAC which ended up in emergency repeat cesarean section was 42%. Vaginal delivery either before or after the history of previous cesarean section, neonatal birth weight between 2.5-3kg, and admission during active phase of labour were associated with successful VBAC. There were 2 cases of partial scar rupture diagnosed peroperatively. The commonest indication of repeat cesarean section was non progress of labour (45.2%) followed by fetal distress (16.7%). The neonatal morbidity rate was similar in both groups due to limited prolonged unsuccessful trial in our study. There was no maternal and neonatal mortality.
Conclusions: To reduce the escalating rate of total cesarean section worldwide, VBAC is an alternative option which should be encouraged in carefully selected patients. However, it should be carried out in a well equipped institute with close fetal monitoring and availability of blood and trained personnel. Thus "once a cesarean section, always a hospital delivery" and not, "once a cesarean section, always a cesarean section".

Keywords: Previous cesarean, Repeat cesarean, Scar tenderness, Scar rupture, TOLAC, VBAC

INTRODUCTION

Dr. Edward Creigan in 1916 had pronounced "once a cesarean section, always a cesarean section," which established elective cesarean section as the standard of care.[1] His statement was identified as an intelligent argument in those days because of the fear of catastrophic uterine scar rupture of classical cesarean section, inadequate blood bank and lack of advanced means of fetal monitoring.

With the passing years, there were changes in the technique of cesarean section, especially the site of uterine incision along with advancement in technology for monitoring the fetus and maternal well being. The introduction of lower segment cesarean section resulted in a strong and sound scar on the uterus which is capable of holding and safely delivering a subsequent baby by vaginal route. This made trial of labour after cesarean (TOLAC) a relatively safer and easy job for both patient as well as the clinician. Labour after previous cesarean section has 75% success rate with the risk of uterine

rupture of less than 1%.[2] The risk of uterine rupture is slightly increased with trial of labour by 0.24%.[3]

Nowadays, with the concept of having two children and rising literacy rate and socioeconomic status of Indian population, neither the patient is willing to take the risk of prolonged trial of normal labour and tolerate neither extremly painful labour pains nor the clinician because of medicolegal issues. So, the trend of having elective cesarean section or taking early decision of cesarean section after a short trial of labour is prevalent. This has lead to a rise in the incidence of previous one cesarean section and the clinician should not forget that "once a cesarean section, always a scar". Thus, the decision of first cesarean section should always be taken cautiously.

There is consensus amongst National Institute for Health and Care Excellence (NICE), Royal College of Obstetrics and Gynecology (RCOG), American College of Obstetrics and Gynecology (ACOG) and National Institutes of Health (NIH) that vaginal birth after cesarean is a clinically safe and acceptable option for women with single previous lower segment cesarean section. VBAC avoids major abdominal surgery, lowers the women's risk of postpartum morbidity like fever, blood transfusion, infections, shorter hospital stay and encourages earlier breastfeeding and better bonding between mother and neonate.

Due to the slightly increased risk of VBAC in comparison to normal delivery, it should be encouraged in well equipped centers having round the clock facilities of obstetrician, anesthetist, blood bank and pediatricians. Thus, now it can be said "once a cesarean section, always a hospital delivery". This study is based on the same idea of giving trial of vaginal birth after one cesarean section when there is no other obstetric contraindication to vaginal birth and analyzing its feto-maternal outcome.

METHODS

A prospective observational study was conducted in the labour room of the Department of Obstetrics and Gynecology, GMERS Medical College and Hospital, Ahmedabad from July 2018 to May 2019. A total of 100 term pregnant women with history of previous one cesarean section who wished to attempt VBAC in the current pregnancy were included in the study.

Inclusion criteria

The All women with previous one cesarean section having:

- Singleton pregnancy with cephalic presentation
- Clinically estimated fetal weight <3.5kg
- Adequate pelvis on fetal assessment
- Gestational age between 34-40 weeks
- Previous cesarean section for non recurrent indication
- Pregnancy delivery interval of >18months
- Women with favorable cervix (bishop >6)
- Willing for TOLAC.

Exclusion criteria

- Gestational age <34weeks and >40 week
- Refusal for consent
- Contracted pelvis
- Inter delivery interval <18months
- Presence of medical or obstetric high risk factors
- Estimated fetal weight>3.5kg
- Obstetric indications of cesarean section (eg. malpresentation, multiple pregnancy, etc.)
- Women with unfavorable cervix (bishop score <6).

In our hospital, according to the departmental protocol, all those women with previous one cesarean section who met the standard criteria for VBAC were routinely offered trial of labour after cesarean (TOLAC).

Patients were counseled about the risks and benefits of VBAC and informed consent was taken. Thorough general and obstetric history specifying the reason for previous cesarean section was taken. A standard examination to assess the fetal presentation, fetal weight, fetal heart rate, scar tenderness, vaginal examination and adequacy of pelvis was carried out. All the routine investigations and other special investigations wherever necessary were carried out. Samples were collected and sent for cross match and one unit of blood was kept ready if needed. All patients were allowed to go into spontaneous labour and progress was monitored by partogram. Close supervision and one on one care was kept for early recognition of scar dehiscence by monitoring maternal tachycardia, fetal heart rate and scar tenderness.

Emergency cesarean section was done if patient developed scar tenderness, signs of imminent rupture, non progress of labour, fetal distress or if patient refused for further trial. Patients were closely observed in the postpartum period for any complications. Routine follow up was done after 1 week. Neonatal outcome was analyzed in relation with APGAR score and NICU admission.

RESULTS

Table 1: Mode of delivery.

Mode of delivery	No. of cases (n=100)	Percentage (%)
Vaginal birth after cesarean(VBAC)	58	58%
Lower segment cesarean section (LSCS)	42	42%

Among the 100 women who underwent trial of labour, 58% of the women delivered vaginally (Group A) while the rest 42% had to undergo repeat cesarean section for failed TOLAC (Group B).

Table 2: Obstetric characteristics of patients.

Obstetric characteristics of patients	No of cases n=100	Group A Successful trial of labour (VBAC) (n=58)	Group B Failed TOLAC (emergency repeat cesarean section) (n=42)
Mean gestational age (weeks)	-	37.2	38.5
History of vaginal delivery before or after cesarean section	22	18 (31.0%)	4 (9.5%)
Inter-delivery interval			
1.5 - 3 years	46	19 (32.8%)	27 (64.3%)
3 - 4.5 years	42	30 (51.7%)	12 (28.6%)
>4.5 years	12	7 (12.1%)	5 (11.9%)
Intrapartum			
Latent phase	47	33 (24.1%)	33 (78.6%)
Active phase	53	44 (75.9%)	9 (21.4%)
Baby weight at birth			
< 2.5kg	18	12 (20.7%)	(14.3%)
2.5 - 3kg	58	41 (70.7%)	17 (40.5%)
> 3kg	24	5 (8.62%)	19 (45.2%)

Table 3: Indication of previous cesarean section.

Indication of previous cesarean section	No of cases n=100	Group A Successful trial of labour (VBAC) n=58	Group B Failed TOLAC (n=42)
Malpresentation	7	4 (6.7%)	3 (7.1%)
Oligohydramnios	11	9 (15.5%)	2 (4.8%)
Postdatism	13	5 (8.6%)	8 (19.0%)
Fetal distress	26	22 (37.9%)	4 (9.5%)
Non progress of labour	28	9 (15.5%)	19 (42.2%)
Eclampsia	7	3 (5.1%)	4 (9.5%)
Premature rupture of membranes	8	6 (10.3%)	2 (4.8%)

Among 22% of the patients who had history of vaginal delivery before or after cesarean section, 81.8% of the women again had successful VBAC and only 4 women had cesarean section. In 64.3% of the cesarean section due to failed TOLAC, the inter-delivery interval was between 1.5-3 years.

Chances of VBAC increased to 68.5% when the interval between previous cesarean section and present delivery was more than 3 years.

VBAC rate was more (83.0%) when at the time of admission; women were in active phase of labour than when they were in latent phase (29.8%).

70.7% of the babies with birth weight of 2.5-3kg had a successful vaginal delivery, while failed VBAC rate was more in babies of more than 3 kg (79.2%).

Vaginal birth after caesarean (VBAC) rate was poor in cases where indication of previous cesarean section was non progress of labour and in cases of postdated pregnancy with failed induction. The success rate was more in cases with previous indication of fetal distress, oligohydramnios and premature rupture of membranes which shows that they do not influence future successful trial of labour.

The commonest indication for emergency repeat cesarean section was non progress of labour (42.8%). 21.4% of women refused for further trial of labour after going into active phase either because of inability to bear labour pain or because they were referred from other centers, so they did not want prolonged trial. Among the patients who underwent emergency repeat cesarean section, 26.1% of the cases had bladder adherent to previous scar

and in 23.8% of the cases, previous scar was extremely thinned out.

Table 4: Indication for repeat emergency cesarean section.

Indication for repeat emergency cesarean section	No. of cases (n =42)	Percentage (%)
Fetal distress	8	19.04%
Non progress of labour	18	42.8%
Scar tenderness	7	16.6%
Refusal for further trial	9	21.4%

There was no significant difference between the neonatal outcomes that underwent successful VBAC in comparison to the women who required emergency repeat cesarean section.

DISCUSSION

In obstetrics, VBAC still remains a topic of controversy and dilemma. According to World Health Organization (WHO) statement, the ideal rate for cesarean section has been considered between 10-15% by the International Healthcare Community.[4] According to the data of the United Nations (UN), 18.6% was the global average rate of cesarean section.[5] The reason for increase in cesarean section rate is multifactorial but a recent analysis of the data concludes that the practice of elective repeat cesarean section for women with history of previous cesarean section is the major contributor to the cesarean birth epidemic.[6,7]

Table 5: Intra-operative findings.

Intra- operative findings	No. of cases (n =42)	Percentage (%)
Dense adhesions	8	19.0%
Bladder adherent to previous scar	11	26.1%
Scar thinned out	10	23.8%
Partial scar rupture	2	4.8%

Table 6: Neonatal outcome.

Neonatal outcome	No. of cases	Group A Successful trial of labour (VBAC) n=58	Group B Failed TOLAC n=42
APGAR at			
1min (<7)	21	14 (24.1%)	7 (16.6%)
5 min(>7)	8	5 (8.6%)	3 (7.1%)
NICU admission	6	3 (5.1%)	3 (7.1%)
Neonatal death	0	0	0

Medical indications of cesarean section are very subjective and culture bound. Due to advancement in the medical technology which enables continuous electronic fetal heart monitoring and interventions such as labour induction, the cesarean section rate has increased.[8] Non medical indications also play a major role in escalating the cesarean section rate. The percentage of women willing for TOLAC varies due to multiple reasons but service provider's choice seems to be the most determinant factor in it.[9]

A study has shown that 30% of the obstetric members of the American College of Obstetrics and Gynecology (ACOG) have stopped trying VBAC because of medical litigation.[10] Fear of medical malpractice issues including professional liability concerns among clinicians and hospitals, health insurance status and lack of manpower for stringent labour monitoring plays a major role in decision making.

In our study, out of 100 women included, 58% had successful VBAC and the rest 42% of failed TOLAC needed repeat cesarean section. The overall success rate of VBAC in different studies was 85% by Bangal, 60% by Jani, 60% in a hospital in south India by George et al and 63.5% in North India by Sen et al.[11-14] A recent Australian cohort trial reported a VBAC success rate of 43%.[15]

In present study, 31% of the patients who had successful VBAC had a history of successful prior vaginal delivery before or after cesarean section. This is in conformity with the study of Weinstein et al, who stated that prior successful VBAC is good prognostic indicator of VBAC in current pregnancy.[16]

VBAC was more successful in women with interdelivery interval of 3-4.5 years (51.7%). A short interdelivery interval allows inadequate time for proper healing of previous scar. Taking this into consideration, 64.3% of

the women who had repeat cesarean section, had an interdelivery interval of less than 3 years. In the study by Bujold et al, there is a significant increased risk of uterine rupture when the interdelivery interval was shorter than 18 months.[17]

Women who at the time of admission were in active phase of labour, had better chances of successful TOLAC (83.0%) when compared to the women admitted with cervical dilatation less than 4 cm who had 70.2% rate of cesarean section. This is in synchrony with the study of Bangal et al, and Birara et al.[11,18]

In group A, 70.7% of women delivered neonates with birth weight between 2.5-3kg while vaginal delivery occurred only in 8.62% women when birth weight was more than 3kg. This goes with the finding of Doshi et al in which the success rate of VBAC was significantly higher with birth weight less than 3kg.[19] Thus, fetal weight estimation is a strong determinant factor in the decisions making process for women contemplating TOLAC.

In our study, the success rate of VBAC was low when the indication for previous cesarean section was non progress of labour, postdatism with failed induction and eclampsia. Same finding was reported in a study by Raja et al.[20] When the indication was fetal distress, oligohydramnios and malpresentation, there was a comparatively higher VBAC rate. In the study by Doshi et al, the highest rate for successful VBAC was in patients with prior lower segment cesarean section for malpresentation, followed by fetal distress and non progress of labour.[19]

The commonest indication for emergency repeat cesarean section in our study was non progress of labour in 42.8% women followed by fetal distress in 19.0% and scar tenderness in 16.6%. This is comparable with the finding of Meril et al (fetal distress in 40.0%) as well as Mishra et al.[22] The most significant indication in our study was the refusal for further trial by the patient and her family itself (21.4%). To avoid future medical litigation, and taking into consideration, the uncertainty about the success of TOLAC, the patient's decision of refusing further trial after a certain period was respected and emergency repeat cesarean was taken.

In our study, intraoperatively, dense adhesions were present in 19.0% of the cases. Scar was extremely thinned out peroperatively in 23.8% because of which we concluded that the decision of cesarean section was taken at the right moment of trial in those cases. It is important to note that scar dehiscence maybe asymptomatic in up to 48% of women and the classical triad of complete uterine rupture maybe present in less than 10% of the cases.[23] In two women, who were shifted to the operation theatre for emergency cesarean section after being diagnosed with impending rupture had partial scar rupture peroperatively. However, the maternal and fetal prognosis was not affected due to the same. There was no maternal and neonatal mortality in our study. Several studies have attributed that the risk of uterine rupture during trial of labour is about 1 per 1000.[24]

APGAR score(<7) at 5min was observed in 8.6% of the VBAC cases and 7.1% of repeat cesarean section cases. The rate of NICU admission was similar in both groups. The neonatal morbidity rate was almost similar in both groups in our study due to the fact that a prolonged unsuccessful trial was not given in our institute. Ball et al and Tan et al reported increased risk of neonatal morbidity after an unsuccessful TOLAC.[25,26]

CONCLUSION

Vigilance with respect to the selection of patient with prior cesarean section and proper counseling of women, for trial of scar are key factors which can reduce the cesarean section rate. However, currently there is yet no single validated tool which holds true for predicting the likelihood of successful TOLAC.

The decision of TOLAC should be made by physician on a case to case basis. History of prior successful vaginal delivery and admission in active phase of labour favors VBAC. The trial of scar is a relatively safe procedure but not totally risk free and thus should not be taken in a casual manner.

To conclude the trial of vaginal birth after cesarean section should be done in an institute with close supervision by competent staff and termination by cesarean section should be done when the need arises at the right time without prolonged trial of scar.

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