

Study of TOLAC (trial of labour after caesarean) at a tertiary hospital

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Abstract

Background: Cesarean section (CS) is one of most common major surgical procedures, life-saving both for the mother and the newborn when medically indicated. Trial of labor after cesarean delivery (TOLAC) refers to a planned attempt to deliver vaginally by a woman who has had a previous cesarean delivery, regardless of the outcome. Assessing the likelihood of VBAC as well as the individual risks is important when determining who is an appropriate candidate for TOLAC. Present study was focused towards maternal and early neonatal outcome in patients underwent at our tertiary health care center. **Material and Methods:** Present study was a prospective, observational study conducted in patients who underwent TOLAC. Labour was monitored as per standard protocols with the help of WHO partograph. All the cases were provisionally prepared for emergency LSCS. Augmentation of labour was done with artificial rupture of membranes/oxytocin infusion when indicated. Ventouse/ forceps were used in second stage of labour. Ante partum, intra partum and post-partum complications were noted in all patients whether delivered vaginally or abdominally. Maternal and early neonatal outcome were collected. **Results:** Out of total 171 cases, 67 (39%) patients had successful VBAC (vaginal birth after caesarean delivery) while 104 (61%) patients required emergency caesarean section. Most common maternal age group for present study was 25- 29 years (42 %) followed by 19- 24 years age group (35 %). Most patient in present study were of parity 2 (52%), underwent emergency LSCS in previous pregnancy (64%). Successful TOLAC was most common in patients with <2500 gm fetal birth weight in last pregnancy (46 %). In patients kept for TOLAC most common indications of previous caesarean section was fetal distress (22%), cephalo-pelvic disproportion (19%), mal-presentation (16%) and non-progress of labour (13%). Among patients kept for TOLAC 55% had spontaneous delivery while 33% required augmentation with ARM and/or oxytocin and 12% had instrumental vaginal delivery. **Conclusion:** TOLAC is a safe alternative to repeat an elective caesarean. Majority of the cases of previous caesarean section done for non-recurrent indication can be delivered safely by the vaginal route, without any major complication to the mother and the newborn, in an institution having facilities for emergency caesarean.

Key Words: Post Caesarean Pregnancy, TOLAC, VBAC, Maternal Outcome, early neonatal Outcome.

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INTRODUCTION

Cesarean section (CS) is one of most common major surgical procedures, life-saving both for the mother and the newborn when medically indicated.¹ Women undergoing cesarean section have a higher morbidity and mortality rate than those having vaginal birth, such as massive postpartum hemorrhage, need for blood transfusion, anesthesia-associated complications, surgical risks (intestinal obstruction, wound dehiscence, wound scars, infection, etc.), and obstetric complications in subsequent pregnancies.² Trial of labor after cesarean delivery (TOLAC) refers to a planned attempt to deliver vaginally

by a woman who has had a previous cesarean delivery, regardless of the outcome. However, although TOLAC is appropriate for many women, several factors increase the likelihood of a failed trial of labor, which in turn is associated with increased maternal and perinatal morbidity when compared with a successful trial of labor (i.e., VBAC) and elective repeat cesarean delivery.³ For women with more than one previous cesarean delivery, TOLAC is likely to be successful, but with an estimated higher risk of uterine rupture (0.2 to 1.5% with a transverse uterine incision, 1.0 to 1.6% with a low-vertical uterine incision).⁴ While vaginal delivery has less chances of infection, can be performed without general or spinal anaesthesia, provide early ambulation and early discharge, results in better bonding and early breast feeding.⁵ Therefore, assessing the likelihood of VBAC as well as the individual risks is important when determining who is an appropriate candidate for TOLAC. Present study was focused towards maternal and early neonatal outcome in patients underwent at our tertiary health care center.

MATERIAL AND METHODS

Present study was a prospective, observational study of the patients who underwent TOLAC from December 2016 to December 2019 at Anugrah Narayan Magadh Medical College, Gaya. Study was conducted at department of obstetrics and gynaecology, done after institutional ethical approval.

Inclusion criteria – patients fulfilling all below mentioned criteria

1. Singleton pregnancy.
2. Cephalic presentation
3. Gestational age 37 completed weeks.
4. H/O previous one Caesarean section, non-recurrent indication for the previous Caesarean section.

5. Clinically adequate pelvis.
6. No uterine scars or history of previous rupture >37 weeks gestational age,

Exclusion criteria

1. More than one previous Cesarean Section
2. Previous history of vertical or inverted T-shaped or J-Shaped or unknown uterine incision.
3. Previous h/o Uterine surgery like Myomectomy or Hysterotomy.
4. Previous h/o Uterine perforation.
5. patient not willing for TOLAC

Study was explained to patients in local language and written consent was taken for participation. Final inclusion was done by senior obstetrician. Demographic details (age, address, educational and socioeconomic status) and clinical history (obstetric, menstrual, Relevant past, personal and family history) were noted. General examination and obstetrical examination and relevant investigations are noted from the case sheets. Special attention was paid to the details of the previous caesarean section such as indication, elective/emergency surgery, complications encountered during and after delivery, gestational age, baby weight, fetal outcome, any surgical abortions after LSCS. Labour was monitored as per standard protocols with the help of WHO partograph. All the cases were provisionally prepared for emergency LSCS. Augmentation of labour was done with artificial rupture of membranes/ oxytocin infusion when indicated. Ventouse/ forceps were used in second stage of labour. Ante partum, intra partum and post-partum complications were noted in all patients whether delivered vaginally or abdominally. Maternal and early neonatal outcome were collected. For statistical analysis continuous variables (age, birth weight) were presented as Mean + SD. Categorical variables were expressed in percentages. Chi square test was used for comparison. Statistical analysis was done using descriptive statistics.

RESULTS

In the present study, total 171 cases satisfying study criteria were included for trial of labour after caesarean delivery. Out of these 67 (39%) patients had successful VBAC (vaginal birth after caesarean delivery) while 104 (61%) patients required emergency caesarean section.

Table 1: Mode of delivery in TOLAC patients

Characteristics	Number of cases	%
Trial of labor	171	
Successful vaginal birth (VBAC)	67	39%
Failed trial requiring emergency section	104	61%

Most common maternal age group for present study was 25- 29 years (42 %) followed by 19- 24 years age group (35 %). Successful TOLAC was most common in 19- 24 years (51 %) followed by 25- 29 years age group (37 %). Emergency LSCS was most common in 25- 29 years (44 %) followed by 19- 24 years age group (25 %). Most patient in present study were of parity 2 (52%), underwent emergency LSCS in previous pregnancy (64%). Successful TOLAC was most common in patients with <2500 gm fetal birth weight in last pregnancy (46 %). Emergency LSCS was most common in patients with 3000-3499 gm fetal birth weight in last pregnancy (35 %).

Table 2: Characteristics of pregnant women undergoing trial of labor after caesarean section.

Characteristics	VBAC (n=67)	Emergency LSCS (n=104)	Total (n=171)
Maternal age (in years)			
19-24	34 (51%)	26 (25%)	60 (35%)
25-29	25 (37%)	46 (44%)	71 (42%)
30-34	6 (9%)	21 (20%)	27 (16%)
>=35	2 (3%)	11 (11%)	13 (8%)
Mean ± SD	25.1 ± 4.5	27.4 ± 4.9	25.9 ± 4.1
Parity			
2	35 (52%)	54 (52%)	89 (52%)
3	22 (33%)	31 (30%)	53 (31%)
4 or more	10 (15%)	19 (18%)	29 (17%)
LSCS			
Elective	19 (28%)	43 (41%)	62 (36%)
Emergency	48 (72%)	61 (59%)	109 (64%)
Fetal birth weight in last pregnancy			
<2500	31 (46%)	15 (14%)	46 (27%)
2500-2999	18 (27%)	21 (20%)	39 (23%)
3000-3499	10 (15%)	36 (35%)	46 (27%)
3500-3999	6 (9%)	24 (23%)	30 (18%)
≥4000	2 (3%)	8 (8%)	10 (6%)

In patients kept for TOLAC most common indications of previous caesarean section was fetal distress (22%), cephalo-pelvic disproportion (19%), mal-presentation (16%) and non-progress of labour (13%).

Table 3: Indications of Previous CS

Indications of Previous CS	VBAC (n=67)	Emergency LSCS (n=104)	Total (n=171)
Fetal Distress	23 (34%)	15 (14%)	38 (22%)
Cephalo Pelvic Disproportion	6 (9%)	26 (25%)	32 (19%)
Mal-presentation	7 (10%)	20 (19%)	27 (16%)
Non-progress of Labour	9 (13%)	13 (13%)	22 (13%)
Hypertensive Disorder	5 (7%)	11 (11%)	16 (9%)
Oligohydramnios	3 (4%)	5 (5%)	8 (5%)
Post Date	3 (4%)	3 (3%)	6 (4%)
Precious Pregnancy	1 (1%)	5 (5%)	6 (4%)
Placenta Previa	3 (4%)	2 (2%)	5 (3%)
Twin pregnancy	4 (6%)	1 (1%)	5 (3%)
Abruptio placentae	2 (3%)	1 (1%)	3 (2%)
Maternal request	1 (1%)	2 (2%)	3 (2%)

Among patients kept for TOLAC 55% had spontaneous delivery while 33% required augmentation with ARM and/or oxytocin and 12% had instrumental vaginal delivery.

Table 4: mode of delivery in VBAC

Mode of delivery	Number of cases	%
Spontaneous	37	55%
Assisted labour (ARM + oxytocin)	22	33%
Ventouse	6	9%
Forceps delivery	2	3%

Among patients kept for TOLAC who required repeat emergency caesarean section, in cases of failed trial of labor, fetal distress (44%), nonprogress of labour (31%) and maternal request (9%) were most common indications.

Table 5: Indication of repeat emergency caesarean in cases of failed trial of labor

Indication of repeat emergency caesarean	Number of cases (n=104)	%
Fetal distress	46	44%
Nonprogress of labour	32	31%
Maternal request	9	9%
Cervical dystocia	5	5%
Abruption	5	5%
Persistent Occipito posterior	4	4%
Deep transverse arrest	3	3%

In present study 39% success rate was noted in patients with or without history of prior vaginal delivery.

Table 6: Prior Vaginal Delivery

	VBAC (n=67)	Emergency LSCS (n=104)	Total	Success Rate
History of prior vaginal delivery	32	50	82	39%
No history of prior vaginal delivery	35	54	89	39%

We noted only one case of atonic PPH in VBAC patients. In emergency LSCS group 1 atonic PPH, 2 traumatic PPH (1 due to dense adhesions, 1 due to extension of uterine incision), 3 scar dehiscence were noted. Postoperative SSI and fever were also noted in emergency LSCS group. We did not noticed any case of uterine rupture in present study.

Table 7: Maternal complications

Morbidity	VBAC (n=67)	Emergency LSCS (n=104)
Atonic Postpartum hemorrhage	1 (1%)	1 (1%)
Traumatic Postpartum hemorrhage	0	2 (2%)
Dehiscence of the scar	0	3 (3%)
Surgical site infection	0	2 (2%)
Post-op fever	0	1 (1%)

13% and 11% neonates from VBAC and emergency LSCS group required NICU admission respectively. No stillbirth or neonatal death was noted in present study.

Table 8: Neonatal complications in vaginal deliveries (n=15) and repeat cesarean group (n=85)

Neonatal complications	VBAC (n=67)	Emergency LSCS (n=104)	Total (n=171)
NICU admission	9 (13%)	11 (11%)	20 (12%)
Birth asphyxia	4 (6%)	6 (6%)	10 (6%)
Neonatal jaundice	7 (10%)	4 (4%)	11 (6%)
Neonatal infection	1 (1%)	3 (3%)	4 (2%)
Resuscitation at birth	5 (7%)	6 (6%)	11 (6%)

DISCUSSION

Rise in rate of caesarean deliveries is noted in every part of world. Most researchers believe that the main causes of this rise are the continuous monitoring of the fetal heart during labour, the lack of experience in dealing with instrumental delivery or vaginal breech delivery, and maternal request.⁶ Repeat caesarean section after a previous one is also a major contributing factor, accounting for more than one-third of all caesarean deliveries in the United States.⁷ TOLAC is an alternative to reduce rate and morbidities associated with caesarean delivery. The success rate of vaginal delivery after trial of labor (TOLAC) is dependent on several factors, which includes cervical Bishop score at admission, spontaneous onset of labor, and epidural analgesia.⁸ In present study VBAC was noted in 39% patients kept for TOLAC. other Indian studies reported different incidence of VBAC such as Najma KP *et al.*⁹ (11.87%), Sharma A *et al.*¹⁰ (27.45%), Manikya Rao¹¹ (48%). 73% patients with birth weight of ≤ 3.0 kg had successful vaginal delivery, similar results were noted by Mugdha L Jungari *et al.*¹² and Balachandran L *et al.*¹³. In a study by Iyer *et al.*,¹⁴ on 318 women noted that there are more chances of VBAC (84.8%) in women with history of previous vaginal delivery compared to ones without (62.7%). In the present study the most common indication for repeat LSCS were fetal distress and Nonprogress of labour. Other studies from India reported similar findings.^{11,15,16} Factors associated with decreased

VBAC success were labor induction, labor augmentation, short inter-pregnancy interval, birth weight >4000 gm, gestational age 41 weeks or greater, excess maternal weight gain, maternal obesity, recurrent indication for initial caesarean delivery and unfavorable cervical status at admission.^{17,18} Uterine rupture or dehiscence associated with TOLAC results in the most significant increase in the likelihood of additional maternal and neonatal morbidity. Uterine rupture is associated with an increased risk of severe maternal complications, such as hysterectomy, hemorrhage, as well as severe fetal complications, such as hypoxic ischemic encephalopathy and perinatal death. Because of concerns about this complication, the rate of attempted TOLAC continues to fall all over the world.^{19,20} In emergency LSCS group we noted 3% PPH, 2% SSI and 1% post-op fever. Comparing with other studies, Uma Pandey *et al.*¹⁵ reported pyrexia 7.1%, blood transfusion done for 7.1%, urinary tract infection (UTI) 7.1%, episiotomy infection in 7.1%, while Manikya Rao *et al.*¹¹ reported 23.07% overall morbidity. Goel SS *et al.* also reported significantly more maternal complications in the form of PPH and need of blood transfusion in cases undergoing repeat CS whether emergency or elective than delivered vaginally.²¹ The age-old dictum from Cragin ER (1916), "Once caesarean is always caesarean" has completely lost its relevance and finally given way to another statement: "if a strong uterine scar is indicated and there are no other indications for CD, preference should be

given to spontaneous delivery".²² According to the American College of Obstetricians and Gynecologists (ACOG), most women with one previous cesarean delivery and a low-transverse incision are candidates of TOLAC and should be counseled about TOLAC and offered a trial of labor.³ However, TOLAC should only be attempted in centre well equipped with comprehensive emergency obstetric care and with facilities for emergency 24-hour caesarean section, due to the catastrophic nature of uterine rupture.²³

CONCLUSION

TOLAC is a safe alternative to repeat an elective caesarean. Majority of the cases of previous caesarean section done for non-recurrent indication can be delivered safely by the vaginal route, without any major complication to the mother and the newborn, in an institution having facilities for emergency caesarean.

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