

A RETROSPECTIVE STUDY ON PREDICTORS OF TRIAL OF LABOUR IN ONE PREVIOUS LOWER SEGMENT CAESAREAN SECTION AT OUR TERTIARY CARE CENTRE

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Abstract

Background: In the current health scenario, ever increasing Caesarean rates is a potential threat to the maternal health. This study was done to identify those factors that governed success of trial of labour in one previous lower segment caesarean section for appropriate patient selection and increase TOLAC rate as a strategy to reduce C-Section. **Materials and Methods:** Retrospective observational study conducted on antenatal women with one previous lower segment caesarean section who attended antenatal clinics and emergency room at our hospital, with spontaneous onset of labour who have given consent for trial of labour after 1 previous LSCS. **Result:** Majority of subjects participating in study were in the age group of 21-25yrs (59.9%). In this age group success rate was also higher @77.4% compared to 71.3% in 26-30yrs and 28.4% in >30yrs. 17% of subjects had 1 previous Vaginal Delivery & all had a successful TOLAC. Most common indication for previous section was Breech, a non-recurrent indication .74% had success of TOLAC in this study and majority of them (70.2%) delivered spontaneously . Most common indication for LSCS in present pregnancy was Scar tenderness in 48.1%, foetal tachycardia in 21.9%, maternal tachycardia in 22% and haematuria in 4%. 23.2% has scar dehiscence and those with scar dehiscence had last child birth between 1.5-2 yrs. There was significant association between success of trial & age distribution & previous vaginal delivery , Mean pre pregnancy BMI & Estimated Foetal Birth Weight , which was lower in subjects who had success of TOL . Bishop score was high among those with success of TOL. **Conclusion:** Trial of labour after caesarean may not be the right choice for every woman, but it is certainly a safer alternative for many.

INTRODUCTION

Trial of labour after caesarean (TOLAC) is a planned attempt to labour by a woman who has had a previous caesarean delivery irrespective of outcome. Vaginal birth after caesarean delivery (VBAC) is a vaginal delivery after a TOLAC i.e., a successful trial of labour after a caesarean section. There is a significant increase in the rate of caesarean births in India due to various maternal & fetal factors. ACOG & NIH reports an increase from 5% in 1970 to 32% in 2008.^[1,2] Vaginal birth after C-section has been a controversy for over an 100 years. In 1980 the consensus development conference on caesarean child birth concluded that vaginal delivery after 1 previous lower segment caesarean section was a safe & acceptable option in singleton vertex presentation in comparison to repeat C-Section.^[3] However in

comparing caesarean section delivery, elective is safer than emergency surgery. It is thus in the best patient interest to come up with a proper selection criterion for which patients have the best chance of successful VBAC and those with a poor chance should be encouraged to have elective repeat caesarean section. Thus would reduce both maternal & fetal morbidity and at the same time save on resources used in failed TOL after caesarean section. Decline of trial of labour in 1 previous LSCS is certainly a contributing factor to rise of caesarean section rates and is due to a number of barriers at individual and policy level. ACOG & NIH recommended that measures have been taken to assure women that trial of labour in 1 previous LSCS is an available option. In addition to fulfill a woman's preference for vaginal delivery at an individual level, VBAC is associated with decreased maternal

morbidity & decreased risk of complications in future pregnancies as well as a decrease in the overall caesarean rate at the population level.^[4] We studied to identify those factors that governed success of trial of labour in one previous lower segment caesarean section for appropriate patient selection and increase TOLAC rate as a strategy to reduce C-Section.

MATERIALS AND METHODS

Retrospective observational study conducted on antenatal women with one previous lower segment caesarean section who attended antenatal clinics or emergency room at MGMH, Petlaburz from October 2020 to October 2021.

After considering inclusion & exclusion criteria 106 patients were selected & assigned to groups based on age, previous vaginal deliveries, pre-pregnancy BMI, BISHOP's score, estimated foetal birth weight.

Inclusion Criteria

Singleton pregnancy, Vertex presentation, 1 previous transverse Lower segment scar, Women who have given consent for trial of labour after 1 previous LSCS and Women with spontaneous onset of labour.

Exclusion Criteria

Multiple pregnancy, IUFD, 2 previous LSCS, malpresentation, previous vertical scar / Scar of other uterine surgery, any contraindication to vaginal delivery like CPD, Placenta previa, women with post-dated pregnancy. Presence of any medical disorders like Anaemia, Gestational Diabetes and Hypertension. Women with 1 previous LSCS who are appropriate candidates for trial of labour are counselled.

In latent phase of labour, they were admitted for observation.

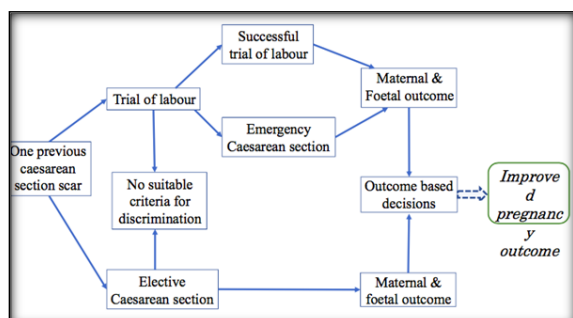


Table 1: General distribution of subjects among study.

Age in years	Number of cases	Percentages
20 yrs	8	7.5
21-25 yrs	63	59.4
26-30 yrs	31	29.2
>30 yrs	4	3.7
Previous pregnancies		
no previous vaginal delivery	88	83
1 previous vaginal delivery	18	16.9
Previous caesarean sections		
Breech	24	22.6
Cord around neck	2	1.8
Failed induction	3	2.8

Raw data was entered into a Microsoft excel spreadsheet. Appropriate statistical tests were done using SPSS 17A and openepi.com to compare between qualitative data and quantitative data. The qualitative data were presented in the form of number and percentage.

RESULTS

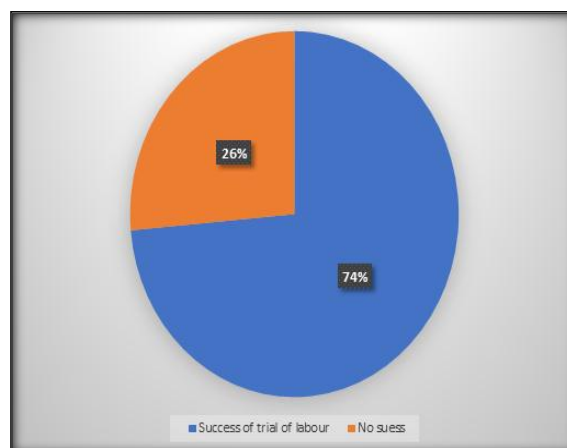


Figure 1: Success of trial of labour distribution in study subjects

In this study 74% (78 subjects) had success of TOLAC

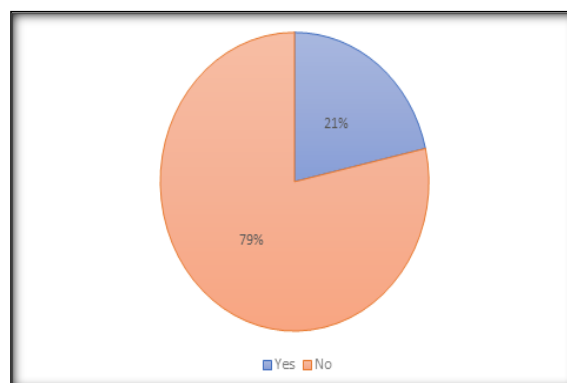


Figure 2: Scar dehiscence among those who underwent LSCS in present pregnancy in this study.

23.2% has scar dehiscence & majority with scar dehiscence had last child birth between 1.5-2 yrs.

Foetal distress	15	14.1
MSL	13	12.2
NPOL	14	13.2
Oligoamnios	13	12.3
Post dated delivery	7	6.6
PROM	4	3.7
Severe Preeclampsia	1	0.94
Transverse Lie	10	9.4

Majority of subjects participating in study were in the age group of 21-25yrs (59.9%). 17% of subjects has 1 previous Vaginal Delivery & all had a successful TOLAC. Most common indication for previous section was Breech.

Table 2: Mode of delivery distribution in study subjects

Mode of delivery	Number of cases	Percentages
OVD (foetal bradycardia)	2	1.9%
OVD (poor maternal effort)	2	1.9%
SPVD	74	70.2%
LSCS	28	26%
Indication for LSCS distribution		
Foetal tachycardia	7	25.9%
Haematuria	1	4%
Maternal tachycardia	6	22%
Scar tenderness	14	48.1%

Most common indication for LSCS in present pregnancy was Scar tenderness in 48.1%, foetal tachycardia in 21.9%, maternal tachycardia in 22% and haematuria in 4%.

Table 3: Complications in present delivery distribution

PPH	Number of cases	Percentages
Yes	8	7.8
No	98	92.2
Scar rupture		
Yes	0	0
No	106	100
NICU admission		
LBW	6	5.4
Respiratory distress	6	5.4
No Admission	94	88.2
Blood transfusion		
Yes	6	5.8
No	100	94.2

Most common neonatal complication was LBW & Respiratory Distress and it did not differ significantly in success or Failed TOL. There was no significant difference in PPH, NICU admissions & Blood transfusions with respect to TOL.

Table 4: Complications between those with success of TOLAC & failure

PPH	success of TOLAC		failure of TOLAC	
	Number of cases	Percentages	Number of cases	Percentages
Yes	6	8.1	2	6.4
No	72	91.9	26	93.6
NICU admission				
LBW	5	5.8	1	3.7
Respiratory distress	4	4.9	2	7.4
No Admission	69	89.3	25	88.9
Blood transfusion				
Yes	4	4.9	2	6.2
No	74	95.1	26	93

There was significant association between success of trial & age distribution & previous vaginal delivery. Mean pre pregnancy BMI & Estimated Foetal Birth Weight was significantly lower in subjects who had success of TOL & Bishop score was high among those with success of TOL.

Table 5: Factors predicting the success of trial of labour

	Success of TOLAC	Failure of TOLAC
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Maternal age in years (number of cases)	Number of cases	Percentages	Number of cases	Percentages
20 (8)	6	78.1	2	21.9
21-25 (63)	49	77.4	14	22.6
26-30 (31)	22	77.3	9	28.7
>30 (4)	1	28.4	3	71.6
Previous vaginal deliveries				
No previous vaginal delivery	67	75.6	21	24.4
1 previous vaginal delivery	28	100	0	0
Caesarean Indications				
Breech	21	87.5	3	12.5
Cord around neck	1	50	1	50
Failed induction	3	100	0	0
Foetal distress	9	60	6	40
MSL	10	76.9	3	23
NPOL	8	57.1	6	42.9
Oligoamnios	9	69.2	4	30.8
Post-dated delivery	5	71.4	2	28.6
PROM	4	100	0	0
Severe Preeclampsia	1	100	0	0
Transverse Lie	7	70	3	30

Majority of subjects participating in study were in the age group of 21-25yrs in this age group success rate was also higher (77.4%) compared to 71.3% in 26-30yrs and 28.4% in >30yrs. 17% of subjects has 1 previous Vaginal Delivery & all had a successful TOLAC.

Table 6: Pre-pregnancy factors in predicting the success of TOL

BMI kg/m ²	Success of TOLAC	Failure of TOLAC
<18	7	7
18-24	66	3
>24	5	18
Bishop s score		
<6	6	24
>6	72	4
Foetal birth weight in kgs		
< 2.5	10	1
2.5-3.0	66	9
>3.0	2	18

Mean pre pregnancy BMI & Estimated Foetal Birth Weight was significantly lower in subjects who had success of TOL & Bishop score was high among those with success of TOL

Table 7: Comparison of success of trial of labour and mode of delivery of present study to other study

		Present study	Elizabeth W Kimotho ⁵	Yadav Vishesha et al ⁶	Olusola peter Aduloju et al ⁷
Success of Trial of Labour	Yes	74%	45.5%	75%	53.4%
	No	26%	54.5%	25%	46.4%
Mode of delivery	Vaginal	74%	45.5%	75%	53.4%
	LSCS	26%	54.5%	25%	46.4%

Table 8: Comparison of indication for LSCS in the present study to other study

		Present study	Elizabeth W. Kimotho ⁵	O. C. Ezechi et al ⁸
Indication for LSCS	Foetal tachycardia	25.9%	28.9%	13.2%
	Haematuria (or) impending rupture	4%	5.6%	2.6%
Mode of delivery	Maternal tachycardia	22%	-	-
	Scar tenderness	48.1%	-	-

Table 9: Comparison of complications in the present study to other study

	Present study	Elizabeth W. Kimotho ⁵	O.C. Ezechi et al ⁸	M. Madaan et al ⁹
PPH	7.8%	-	-	0.71%
Rupture	0%	0.6%	-	2.15%
NICU admission	10.8%	35%	-	-
Blood transfusion				

DISCUSSION

The objective of study was to identify those factors that govern success of trial of labour in one previous Lower Segment Caesarean Section. Most women with 1 Previous LSCS meet criteria for TOL. Acceptance varies with women but it highly depends on the way health care professionals counsel them appropriately about TOL.^[5,6] Majority of subjects participating in study were in the age group of 21-25yrs (59.9%). In this age group success rate was also higher (77.4%) compared to 71.3% in 26-30yrs and 28.4% in >30yrs. 17% of subjects had 1 previous Vaginal Delivery & all had a successful TOLAC. Most common indication for previous section was Breech.^[7] 74% had success of TOLAC in this study and majority of them (70.2%) delivered by SPVD. Most common indication for LSCS in present pregnancy was Scar tenderness in 48.1%, foetal tachycardia in 21.9%, maternal tachycardia in 22% and haematuria in 4%. 23.2% has scar dehiscence & majority with scar dehiscence had last child birth between 1.5-2 yrs. Most common neonatal complication was LBW & Respiratory Distress and it did not differ significantly in success or failed TOL. There was no significant difference in PPH, NICU admissions & Blood transfusions with respect to TOL.^[8] There was significant association between success of trial & age distribution & previous vaginal delivery. Mean pre pregnancy BMI & Estimated Foetal Birth Weight was significantly lower in subjects who had success of TOL & Bishop score was high among those with success of TOL. Hence the inference is that the success rates were higher among those with lower pre-pregnancy BMI, EFBW & high Bishop score in this study. A minimum last child birth of more than 2 yrs. must better be considered to prevent dreadful complications like scar rupture. Since TOLAC was done in situation with close monitoring, multi-disciplinary team and the decision to incision interval to perform a emergency C section in case of impending complications was within 15mins, complications like rupture was 0% in this study.^[9]

A majority of research studies concluded that successful TOL after caesarean section most likely occurs under conditions like spontaneous labour, No other uterine scars, uterine anomalies, previous scar rupture, adequate pelvis & average foetal size and prior low transverse caesarean section.^[10]

History of previous vaginal delivery in which Zelop et al¹⁰ study demonstrated that the risk of scar rupture for women with prior vaginal delivery is 0.2% compared to 1.1% for those without prior vaginal delivery. Bishops score: Flamm et al study (1997) demonstrated that patients presenting with dilation greater than or equal to 4cms had an 86% chance of successful Trial of Labour after Caesarean Section. Young women older than 40yrs with one prior caesarean delivery have 3 fold higher risk of failed TOL after caesarean section than women younger than 40yrs. Participants in this study also had spontaneous onset & trial was given in only one previous LSCS cases & most had good Bishop score

and was below 40yrs with a non-recurrent indication, average size baby & adequate pelvis possibly explaining high success rate of 74% in the study. Although TOL after Caesarean section has success rate of 60-80%, following conditions should alert caution & may be a potential contraindicated to TOL after C-Section.

Single most dreadful complication of TOL after C-section is Scar rupture. Reported rate of scar rupture is 0.3-1% in severe large retrospective cohort studies.^[11] Rate of rupture for patients with an unknown uterine incision is approximately 0.6%. TOL after caesarean section is not contraindicated for women with previous vaginal delivery with unknown uterine scar type unless there is a clinical suspicion of previous uterine incision being high. Health care professionals should be aware of factors that contribute to success of TOL after

caesarean section as well as contraindications to TOL after caesarean section so that they can offer safe & high-quality care. In addition to providing for those who want to experience a vaginal birth, VBAC is associated with several potential health advantages for women like avoiding major abdominal surgeries, lower rates of haemorrhage, thromboembolism, infections, shorter recovery period, consequences related to multiple caesarean deliveries (hysterectomy, bowel & bladder injuries, infection) and abnormal placental presentations like placenta Praevia and Placenta Accreta Syndromes. Although TOL after caesarean section appears to be an appropriate option for many women with 1 previous lower segment caesarean section, inappropriate selection of candidates can result in a failed trial of scar which might cause considerable maternal & perinatal morbidity. Hence, thorough assessment of individual risks and feasibility of TOL after Caesarean section based on the likelihood predictors and adequate monitoring in labour is therefore vital in achieving a good fetomaternal outcome.

CONCLUSION

TOLAC is an invaluable strategy to curb the rising rate of caesarean section in developing countries like India. Whenever possible women should always be offered this safer & relatively less expensive option when compared to Caesarean section. Achieving a normal delivery following a prior Caesarean delivery is a rewarding experience in itself, to both the parturient and the care giver and every opportunity in this direction should be utilised well for a better patient satisfaction. However, it is equally important to understand the risks and benefits of attempting a TOLAC vs choosing a scheduled repeat caesarean delivery because each woman has slightly different risk factors and chances of success. Targeted approach to the woman with careful and compassionate counselling to explore and allay their fears of child birth and any concerns regarding the

process of VBAC right from the booking visit can help more women willing to participate in TOLAC. Needless to say, availability of skilled birth attendants for one - one monitoring during labour, a good birth companion and adequate pain relief, provided in a health care setting with availability of Operation theatre and blood bank services and a dedicated senior Obstetrician round the clock, in addition to appropriate patient selection remains the corner stone for achieving high VBAC success rates with minimal adverse outcomes.

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