

A Study of Feto-Maternal Outcome in Cases of Vaginal Birth after Cesarean Section

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Abstract

Introduction: Pregnancy with a previous cesarean section (CS) may lead to several concerning maternal, fetal, and neonatal complications in subsequent pregnancies such as placenta accreta and uterine rupture. Trial of labour after cesarean (TOLAC) and Vaginal Birth After Cesarean (VBAC) has a quantifiable effect on decreasing total cesarean deliveries.

Aim: To assess maternal and fetal outcome of vaginal birth after one lower segment cesarean section in selected cases.

Materials And Methods: Prospective observational study of maternal and fetal outcome included 100 ANC patients with singleton pregnancy of more than 34 weeks gestation and one previous lower transverse cesarean delivery admitted in SMIMER hospital between January 2018 to June 2019.

Results: 57% patients had vaginal delivery without any assistance, while 18% patients required vacuum assistance and 25% patients required repeat LSCS after failure of TOLAC. Among successful VBAC none had any complications, while among repeated CS patients, 4% patients had PPH, 2% had intraoperative finding of uterine dehiscence and 1% had intraoperative finding of uterine scar rupture. 67% had interval of ≤ 3 years between current and previous pregnancy. Bishop's score of less than 8 resulted in 100% CS whereas Bishop's score of more than 9 resulted in 100% VBAC. Among VBAC, 5.3% babies required NICU admission, while among repeated CS, 16% babies required NICU admission.

Conclusion: This study has found a high success rate of VBAC (75%).

Keywords: Vaginal birth after cesarean section; trial of labour after cesarean section.

Introduction

Vaginal birth after cesarean section (VBAC) is allied with both benefits and risks for pregnant women with a previous cesarean section.¹ Increasing trend of cesarean section (CS) rate concerned and resulted in a consensus statement by the American College of Obstetricians and Gynaecologists that "most women with one previous cesarean delivery with a low-transverse incision were candidates for Trial of labour after cesarean section (TOLAC) and should be counselled about TOLAC".² Pregnancy with a previous CS may lead to several concerning maternal, fetal, and neonatal complications in subsequent pregnancies such as placenta accreta and uterine rupture. The risk increases in patients with multiple cesarean delivery. Trial of labour after cesarean (TOLAC) and Vaginal Birth After Cesarean (VBAC) has a quantifiable effect on decreasing total cesarean deliveries.³ VBAC is a feasible measure for reducing overall CS rates in both developed and developing countries. With careful patient selection and good management, it is found to be safe with success rates ranging between 60% to 80%.⁴ VBAC is related with shorter maternal hospitalizations, less blood loss and fewer transfusions, fewer

infections and fewer thromboembolic events than cesarean delivery.

Materials and Methods

Place of Study: The study was conducted in patients admitted in Department of Obstetrics and Gynaecology at SMIMER hospital, Surat, Gujarat (a tertiary care hospital) from January 2018 to June 2019.

Study Design: Prospective Observational Study.

Inclusion Criteria: Women with a singleton pregnancy of more than 34 weeks gestation and previous one lower transverse cesarean delivery with non-recurrent indication, with clinically adequate pelvis and in spontaneous labour.

Exclusion Criteria: Two or more previous cesarean deliveries/Previous history of uterine rupture/Previous classical section, inverted T shaped incision and extension of incision in upper segment/Contracted pelvis/Obstetric indications of CS: Malpresentation, Placenta previa (major), Twin gestation, severe pregnancy induced hypertension, Eclampsia, Postdate etc/Medical disorders like Hypertension, Heart disease, renal disease, Asthma, Seizure etc./Women not willing to participate in the study.

Methodology

A detailed history of the pregnant women included in the study was taken. Thorough general and systemic examination was done. All preliminary investigations were sent. The patients were counselled regarding advantages and disadvantages of VBAC and elective repeat cesarean delivery (ERCD), explained about the risks and benefits of VBAC vs ERCD and were given TOL only after taking written and informed consent. The booked patients attending the OPD and fulfilling the above criteria were counselled for trial of vaginal birth while attending the OPD. Trial of labour (TOL) was abandoned immediately if there was presence of any of the following symptoms and signs suggesting maternal or fetal distress:

- Alteration in fetal heart rate pattern (bradycardia or tachycardia)
- Maternal tachycardia
- Scar tenderness
- Non-progress of labour
- Appearance of hematuria
- Appearance of signs of obstruction
- Signs of scar dehiscence/rupture uterus

Results And Discussion

- In current study, mean age of the patients was 25.6 ± 3.5 years. Maximum number of patients were belonged to 20 to 25 years (47%), followed by 26 to 30 years (37%), less than 20 years (8%) and more than 30 years (8%).
- In study done by Uma et al⁵, younger age group women <30 years of age were found significantly more likely to have successful TOLAC (OR=1.6) v/s women ≥ 35 years of age (OR= 0.28).
- Commonest age group in Ray et al⁶ study were 20–30 years (67%) and 30–35 years age (16%).
- More than three-fourth of the Patients (77%) were booked pregnancy, while remaining 23% patients were unbooked pregnancy.
- In Renu Jain study⁷, majority of women were unbooked and were referred from rural areas.
- In Bangal et al study⁸, 80% women had registered themselves for antenatal care.
- A study done by Fidvi et al⁹ had found that the rate of successful VBAC among booked patients was 46.5% and among unbooked was 31.5%
- 31% had taken one ANC visit, 18% had taken two ANC visits, 7% had taken three visits and 44% had taken more than three ANC visits.
- Common indications for previous cesarean delivery were Meconium stained Liquor (13%), Breech presentation (13%), Malposition & Malpresentations other than Breech (11%), Non-progress of labour (10%), Oligohydroamnios (7%), Cephalopelvic disproportion (6%), Fetal distress (5%), Hypertensive disorder of Pregnancy (4%), Premature rupture of membranes (4%) and others.
- In Ray et al study⁶, commonest indication for previous CS were fetal distress (64%), dystocia (20%), breech presentation (4%) and others.
- In study of Zaitoun et al¹⁰, among emergency repeated CS group the indications of previous sections were failure of labour progress (39.3%), macrosomia (28.6%) and fetal distress (10.7%), while in VBAC group, commonest indication of previous CS were malpresentation (38.1%), fetal distress (23.8%) and PIH (12.9%) and APH (11.8%).

Table 1: Duration between current and previous delivery.

Duration between current and previous pregnancy	No of Patients	Percent
≤ 3 years	67	67.0
> 3 years	33	33.0
Total	100	100.0

Mean duration of time interval between current and previous pregnancy was 3.2 ± 1.4 years with minimum being 1 year and maximum being 11 years. More than two-thirds of Patients (67%) had time interval between current and previous pregnancy of less than 3 years and remaining 33% had time interval between current and previous pregnancy of more than 3 years.

Fidvi et al⁹ had found that successful VBAC was more in patients where indication of section was fetal distress and malpresentation and inter-pregnancy interval was not significantly associated with rate of successful VBAC.

Though Zaitoun et al¹⁰ demonstrated that there was significantly longer spacing period (≥ 18 months) among VBAC group women (74.1%) between their previous CS and their present pregnancy compared to ERCS group (32.1%) { $P=0.001$ }.(Table 1)

Table 2: Distribution of patients based on active stage in to LAC.

Duration of active stage in TOLAC (hours)	No of Patients	Percent
< 3	33	33.0
3 - 5	44	44.0
> 5	23	23.0
Total	100	100.0

The duration of active stage in majority of patients (44%) was 3-5 hours, 33% was less than 3 hours and 33% whereas in it was more than 5 hours. It showed that in majority of the patients, labour progressed satisfactorily.

Renu Jain⁷ had found that VBAC rate was more (71.42%) when women were in active phase of labour at the time of admission than when they were in latent phase (16.92%).

In Bangal et al⁸ study, the average duration of labour was <10 hours in 94% cases who delivered vaginally as compared to 80% cases who required repeat CS. (Table 2)

Table 3: Distribution of Patients Based on Bishop’s Score at the time of admission.

Bishops	Mode of Delivery		Total
	EMLSCS	VBAC	
≤5	15 (60%)	20 (26.7%)	35 (35%)
6-8	10 (40%)	25 (33.3%)	35 (35%)
≥9	0 (0%)	30 (40%)	30 (30%)
Total	25 (100%)	75 (100%)	100 (100%)

In present study, Bishop’s score of less than 8 resulted in 100% CS whereas Bishop’s score of more than 9 resulted in 100% VBAC. This suggests that good Bishop’s score is a good predictor for success of VBAC.

Bangal et al⁸ had found cervical dilatation of more than 3 cm at the time of admission was a significant factor in favor of a successful VBAC.

Fidvi et al⁹ had found that only 19% of patients with cervical dilatation <3 cm had successful VBAC.

In Zaitoun et al study¹⁰, successful VBAC was more likely among women with Bishop Score ≥ 4 than those with Bishop Score <4 (88.1% & 11.9% respectively).(Table 3)

Table 4: Distribution of patients based on mode of delivery in current pregnancy.

Mode of delivery in current pregnancy	No of Patients	Percent
Vaginal delivery	57	57.0
Vacuum assisted delivery	18	18.0
LSCS (Lower section cesarean section)	25	25.0
Total	100	100.0

In current study, more than half of the patients (57%) had a successful termination of the current pregnancy with vaginal delivery without any assistance, while 18% patients required vacuum assistance to cut short the 2nd stage of labour (n=12), for fetal distress (n=4) and MSL (n=2). Thus, 75% patients had successful VBAC while 25% patients required LSCS for delivery where TOL failed due to various reasons. (Table 4)

Table 5: Distribution of patients based on complications and type of delivery.

Complications	Type of delivery		
	Vaginal (%)	Cesarean section (%)	Total (%)
Postpartum haemorrhage (PPH)	0	3	3
Dehiscence	0	2	2
Rupture	1	0	1

This is comparable to other studies as shown in the table below.

Study	VBACs	ERCS	Complication
Present study	75%	25%	PPH (3%), scar dehiscence (2%), Scar rupture (1%)
Singh et al ¹¹	61%	39%	Adhesions (26.9%), PPH (10%), Scar dehiscence (7.7%), Uterine rupture (2.6%)
Renu Jain ⁷	36%	64%	Adhesions (16.4%), Scar dehiscence (7.8%), Bladder adhere to previous scar (4.7%)
Bangal et al ⁸	85%	15%	Scar dehiscence (2%)
Fidvi et al ⁹	80.5%	19.5%	Scar rupture (1%)
Ray et al ⁶	53.6%	46.4%	PPH (9.4%), wound infection (8.2%), pyrexia (4.7%)
Kaur and Jain ¹²	27.14%	72.86%	PPH (3.5%)
Melamed et al ¹³	45.6%	54.4%	PPH (2.2%)
Balachandran et al ¹⁴	63.6%	23.8%	PPH (4%), scar dehiscence (2%)
Zaitoun et al ⁽¹⁰⁾	77.6%	22.4%	PPH (8.9%), uterine dehiscence (7.1%)

In current study, only 3% patient had postpartum haemorrhage (PPH) after delivery. PPH occurred in 3% patients who had undergone cesarean section for delivery. Uterine dehiscence and scar rupture were seen in 2% and 1% of patients respectively. (table 5)

Table 7: Distribution of neonates based on birth weight and type of delivery.

Baby weight (kg)	Type of delivery		Total (%)
	Vaginal (%)	Cesareansection (%)	
<2.5 kg (LBW)	19 (25.3)	6 (24.0)	25 (25.0)
2.5 to 2.9 kg	33 (44.0)	11 (44.0)	44 (44.0)
≥3 kg	23 (30.7)	8 (32.0)	31 (31.0)
Total	75 (100.0)	25 (100.0)	100 (100.0)

Among babies delivered by vaginal route (n=75), 25.3% were LBW, 44% had weight between 2.5–2.9 kg birth weight and 30.7% had weight of ≥3 kg. Among babies delivered by LSCS (n=25), 24% had LBW, 44% had weight between 2.5–2.9 kg birth weight and 32% had weight of ≥3 kg.

The relationship between birth weight and type of delivery was found to be statistically non-significant ($p>0.05$). (table 6)

Though Uma et al⁽⁵⁾ had seen that infants with higher birth weights (≥3 kg) had significantly lower odds of successful TOLAC compared to lower birth weights (<3 Kg) [$P=0.0045$].

Bangal et al⁸ had found Birth weight of >3 kg was associated with a lower success rate of VBAC.

Table 8: Distribution of patients based on parity of pregnancy and type of delivery.

Parity before current pregnancy	Type of delivery		Total (%)
	Vaginal (%)	Caesarian section (%)	
Primi parous (only one CS)	45 (60.0)	15 (60.0)	60 (60.0)
Multi parous (one previous vaginal delivery)	30 (40.0)	10 (40.0)	40 (40.0)
Total	75 (100.0)	25 (100.0)	100 (100.0)

Majority of the patients (60%) were single parous, while 40% patients were multiparous. By applying Chi square test, the relationship between parity of pregnancy and type of delivery was found to be statistically non-significant ($p>0.05$).

However, a study by Zaitoun et al⁽¹⁰⁾ had found that women who had successful VBAC were more likely to have low parity (≤3) compared to those in the ERCS group (90.2% vs 76.8% respectively) (table 7).

Conclusion

A prospective observational cross-sectional study with 100 cases of previous LSCS had found high success rate of VBAC (75%). Success of VBAC was more in patients with age between 20-25 years, normal BMI, history of previous vaginal delivery, favourable bishop's score, neonates with birth weight <3kg. There was no maternal or neonatal mortality in current study.

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