

Research Article



Feto-Maternal Outcomes Among Women with Previous Cesarean Section at a Tertiary Care Hospital in Puducherry, India

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ABSTRACT

Women with previous cesarean section (CS) constitute a high risk group in obstetrics. The present study was done to determine the mode of delivery, various indications for repeat CS, maternal and perinatal outcomes among women with previous CS. A hospital based observational study was done in Pondicherry Institute of Medical Sciences, Puducherry. All pregnant women at ≥ 34 weeks of gestation with history of previous one lower segment caesarean section (LSCS) and singleton pregnancy in cephalic presentation were enrolled. Study protocol was approved by Institute Ethics Committee. Taking the incidence of repeat CS as 50% among women with previous one CS, a sample size of 96 was calculated. However 103 women were enrolled. Proportions were calculated for categorical variables and chi-square test was applied for significance. Among 44 women who were given trial of labour, 18 (40.9%) delivered vaginally. Most common indication for emergency cesarean section in trial of labour group was scar tenderness (46.2%) followed by non-progress of labour (34.6%). Among women who underwent elective CS, emergency CS and VBAC, the proportion of complications was 10.3%, 8.7% and 11.1% respectively. Almost one-fourth of the newborns had complications (24.3%). 88% of them required NICU admission and 36% had some form of respiratory morbidity. Trial of labour is a reasonable option for properly selected group of pregnant women with prior one LSCS.

Keywords: Previous one LSCS, repeat CS, VBAC, maternal outcome, neonatal outcome.

INTRODUCTION

Women with previous cesarean section (CS) constitute a high risk group in obstetrics. Vaginal birth after cesarean (VBAC) is the practice of delivering a baby vaginally after a previous baby has been delivered through cesarean section. VBAC was a common practice in 1980 and 1990s in several countries but it suffered a major setback after publication of the study by Mc Mohan which concluded that repeat CS was associated with less maternal complications than VBAC.¹ Since last two decades the number of VBACs has declined, contributing to the overall increase in cesarean delivery.^{2,3} In India, the cesarean section rate has increased to 10.6%; an increase of 7.7% during last 10 years.⁴ Similarly, in Tamil Nadu state of India, the current cesarean section rate is 23% (an increase of 15.9% in last 10 years).⁴ This rising trend in cesarean section is mainly because of repeat CS that are being performed.⁵

In March 2010, the National Institutes of Health (NIH) Consensus Development Conference Panel and in the same year American College of Obstetricians and Gynecologists (ACOG) modified their guidelines and both concluded that, trial of labor is a reasonable option for many pregnant women with one prior low transverse uterine incision.^{6,7}

For women with a prior one cesarean delivery, there are three possible outcomes: a VBAC (i.e., a successful trial of labor), an unsuccessful trial of labor resulting in

emergency cesarean delivery, or an elective repeat cesarean delivery. In general, the overall benefits of trial of labour are directly related to having a VBAC, because these women typically have the lowest morbidity.⁸ Similarly, the harms of trial of labour are associated with an unsuccessful trial of labour resulting in cesarean delivery, as these deliveries have the highest morbidity.⁸

Managing pregnancies with prior cesarean section has always been challenging and controversial. The fear, that a scarred uterus will result in rupture, leading to severe maternal and perinatal morbidity with medico legal implications prevents majority of obstetricians and pregnant women from adopting a trial of labour after cesarean (TOLAC). Hence cesarean section has become the most common operation in obstetric practice, especially in private hospitals in India.⁹

The present study was conducted to determine the mode of delivery in women with previous one cesarean section, indications of repeat cesarean section, rate of vaginal delivery, and to assess the association between type of delivery with maternal and perinatal outcomes.

MATERIALS AND METHODS

A hospital based prospective observational study was done in the Department of Obstetrics and Gynecology, Pondicherry Institute of Medical Sciences (PIMS), Puducherry in India during March 2013-February 2014. The study protocol was approved by the Institute Ethics Committee of PIMS. Taking the incidence of repeat CS as



50% among women with previous one CS, a sample size of 96 was calculated.¹⁰

However 103 women were enrolled. Study population includes all pregnant women with previous one cesarean section who were coming to the hospital.

Pregnant women at ≥ 34 weeks period of gestation with history of previous one lower segment caesarean section (LSCS) and singleton pregnancy in cephalic presentation were enrolled in the study.

Women with a history of previous classical cesarean, two or more CS, multiple gestation and intrauterine fetal death were excluded.

Written informed consent was obtained from all study participants. The study participants were interviewed by using a predesigned, pretested structured questionnaire. Information regarding indication of previous LSCS, complications during previous surgery and any prior vaginal birth were obtained.

Also information regarding details of the present pregnancy, estimated fetal weight, amount of liquor, condition of the scar and any other medical disorder were recorded.

A detailed general, medical and obstetrical examination was carried out. A Pelvic examination was done to know Bishop's Score and adequacy of pelvis.

Women who were eligible candidates for TOLAC and willing for vaginal delivery were given a trial for vaginal delivery as per American College of Obstetrician and Gynecologist (ACOG) guidelines.⁷

The labour was monitored with hourly recording of maternal pulse, blood pressure and continuous fetal heart rate monitoring by cardiotocography. Partogram was used to document progress of labour, maternal and fetal conditions. Trial of vaginal delivery was abandoned in the presence of maternal tachycardia, undue vaginal bleeding, scar tenderness, abnormal fetal heart rate tracing or non-progress of labor. Second stage of labor was shortened by use of ventouse. All women undergoing trial of labour were always prepared for emergency cesarean section.

Data analysis

All the data was entered in Microsoft excel 2010 and was analyzed using SPSS version 17. Means and proportions were calculated for continuous and categorical variables respectively. Chi square test was applied to find the association of mode of delivery with various fetomaternal outcomes. A p-value of <0.05 was considered as statistically significant.

RESULTS

During the study period a total of 126 women were admitted with history of previous one cesarean section. Of these, 103 women fulfilled the inclusion criteria and were enrolled in the study.

Table 1: General characteristics of the study participant

Characteristics		N	%
Age (years)	19-24	29	28.2
	25-29	41	39.8
	30-34	23	22.3
	35 and above	10	9.7
Period of Gestation(weeks)	<37	13	12.6
	37-40	89	86.4
	>40	1	1.0
Gravida	2 nd	62	60.2
	3 rd	31	30.1
	4 th	9	8.7
	5 th	1	1.0
Parity	1	96	93.2
	2	7	6.8
Booking Status	Booked	81	78.6
	Booked elsewhere	22	21.4
Total		103	100

Table 1 Majority of the women (39.8%) belong to 25-29 years of age and 86.4% women had term pregnancy. There was only one women with >40 weeks of gestation. Majority of women were second gravida (60.2%) and parity one (93.2%). Eighty one women were booked at our hospital and 22 were booked elsewhere.

Table 2: Various mode of delivery among study participant (n=103)

Mode of Delivery	N	%
Vaginal delivery (n=18)		
Spontaneous vaginal delivery	9	8.7
Vacuum delivery	9	8.7
Cesarean Section (n=85)		
Elective	39	37.9
Emergency	46	44.7
Total	103	100

Majority of women (82.5%) delivered by cesarean section.

Among them elective and emergency cesarean section was done in 45.9% and 54.1% of cases respectively. Successful vaginal delivery occurred in 17.5% of cases.

Out of the total vaginal deliveries 9 were spontaneous and the rest were vacuum assisted.

Fetal distress (35.9%) was the most common indication of primary cesarean section followed by non-progress of labour (NPOL) 15.5% and cephalo-pelvic disproportion (CPD) in 11.7%.

Among women whose previous section was done for fetal distress, 78.4% had repeat section in the index pregnancy and 21.6% had successful vaginal delivery.

Repeat cesarean section was done in majority of women (87.4%), where previous section was done for NPOL and in 100% of cases in whom previous CS was done for failed induction.

Maternal wish (40.0%) was the most common indication of repeat section in the index pregnancy followed by scar tenderness (14.1%) and CPD (12.9%).

Majority (n=78) of women were eligible candidates for trial of vaginal delivery. Of them 44 women gave consent and 34 refused for trial.

Among the 44 women who were given trial of vaginal delivery, 18(40.9%) were successfully delivered vaginally and 26 (59.1%) women were taken for emergency cesarean section. (Figure 1)

Most common indication for emergency cesarean section in the trial of labour group was scar tenderness (46.2%) followed by non-progress of labour (34.6%).

Scar dehiscence was present in one case of trial of labour group.

Women who were not eligible for TOLAC (n=25), elective cesarean section was done for 18 women and the rest (n=7) had emergency CS. Most common indication for cesarean section in this group was cephalo-pelvic disproportion (44%) followed by short inter delivery interval (28%).

Almost one-fourth of the newborns, (24.3%) had one or more complications. With respect to various modes of delivery, vaginal delivery was associated with maximum complications (38.9%) followed by emergency cesarean section (30.4%).

Among neonates with complications, majority (88%) required NICU admission and 36% had some form of respiratory morbidity.

There was one perinatal death in the VBAC group (2.27%) as the baby had anomalies not picked up by ultrasonography. The baby with birth asphyxia was discharged from NICU.

There were 9.7% women who had complications during the process of labour and delivery. The most common complication was hemorrhage (6.8%). Among various mode of delivery, 11.1% women in the VBAC group had complications followed by 10.3% and 8.7% in the elective CS and emergency section group respectively.

Table 3: Indications of previous cesarean section and mode of delivery in the index pregnancy

Indications of previous cesarean section	Spontaneous vaginal delivery (n=9)	Vacuum delivery (n=9)	Repeat Cesarean Section (n=85)	Total
	n (%)	n (%)	n (%)	
Malpresentation	1(10.0%)	2(20.0%)	7(70.0%)	10
Cephalo-pelvic disproportion	1(8.3%)	1(8.3%)	10(83.3%)	12
Maternal wish	0(0.0%)	0(0.0%)	2(100.0%)	2
Deep transverse arrest	0(0.0%)	0(0.0%)	1(100.0%)	1
Failed induction	0(0.0%)	0(0.0%)	7(100.0%)	7
Fetal distress	4(10.8%)	4(10.8%)	29(78.4%)	37
Intra-uterine growth retardation	0(0.0%)	0(0.0%)	2(100.0%)	2
Non progress of labour	1(6.3%)	1(6.3%)	14(87.4%)	16
Severe Oligohydramnios	1(16.7%)	0(0.0%)	5(83.3%)	6
Placenta previa	1(100.0%)	0(0.0%)	0(0.0%)	1
Postdated	0(0.0%)	0(0.0%)	5(100.0%)	5
Severe Preeclampsia	0(0.0%)	1(25.0%)	3(75.0%)	4
Total	9	9	85	103

Table 4: Indications of repeat cesarean section in the index pregnancy

Indications of repeat cesarean section	Elective cesarean section (n=39)	Emergency cesarean section (n=46)	Total (n=85)
	n (%)	n (%)	n (%)
Contracted pelvis	1 (2.6%)	0	1 (1.2%)
CPD	9 (23.1%)	2 (4.3%)	11 (12.9%)
Deep transverse arrest	0 (0.0%)	1 (2.2%)	1 (1.2%)
Fetal distress	0 (0.0%)	6 (13.0%)	6 (7.1%)
Maternal wish	21 (53.8%)	13 (28.3%)	34 (40.0%)
Morbid obesity	2 (5.1%)	0 (0.0%)	2 (2.4%)
Non progress of labour	0 (0.0%)	9 (19.6%)	9 (10.6%)
Scar tenderness	0 (0.0%)	12 (26.1%)	12 (14.1%)
Severe IUGR	1 (2.6%)	1 (2.2%)	2 (2.4%)
Short inter-delivery period	5 (12.8%)	2 (4.3%)	7 (8.2%)
Total	39 (100.0%)	46 (100.0%)	85 (100.0%)

Table 5: Distribution of various complications among neonates

Outcomes	VBAC (n=18)	Elective Cesarean (n=39)	Emergency Cesarean (n=46)	Total (n=103)
	n(%)	n(%)	n (%)	n (%)
Complications*				
Respiratory morbidity	3 (16.7)	2 (5.1)	4 (8.7)	9 (8.7)
Birth asphyxia	0 (0.0)	0 (0.0)	1 (2.2)	1 (1.0)
Resuscitation done	1 (5.6)	0 (0.0)	6 (13.0)	7 (6.8)
NICU admission	7 (38.9)	4 (10.3)	11 (23.9)	22 (21.4)
Perinatal death	1 (5.6)	0 (0.0)	0 (0.0)	1 (1.0)
Total	7 (38.9)	4 (10.3)	14 (30.4)	25 (24.3)
No complications	11 (61.1)	35 (89.7)	32 (69.6)	78 (75.7)

*One or more complication were present

Table 6: Distribution of various intra-partum and post-partum complications in mothers

Outcomes	VBAC (n=18)	Elective Cesarean (n=39)	Emergency Cesarean (n=46)	Total (n=103)
	n (%)	n (%)	n (%)	n (%)
Complications [†]				
Hemorrhage	1 (5.6)	4 (10.3)	2 (4.3)	7 (6.8)
Infections	1 (5.6)	0 (0.0)	1 (2.2)	2 (1.9)
Surgical injuries	1 (5.6)	0 (0.0)	0 (0.0)	1 (1.0)
Scar dehiscence	0 (0.0)	0 (0.0)	1 (2.2)	1 (1.0)
Total	2 (11.1)	4 (10.3)	4 (8.7)	10 (9.7)
No complications	16 (88.9)	35 (89.7)	42 (91.3)	93 (90.3)

[†]More than one complication is possible**Table 7:** Determinants of VBAC among women with previous one CS

	Vaginal delivery (n=18)	Repeat CS (n=85)	Total (n=103)	P value
Age group (years)	n (%)	n (%)	n (%)	
19-24	6 (20.7)	23 (79.3)	29 (100.0)	.789
25-29	8 (19.5)	33 (80.5)	41 (100.0)	
30-34	3 (13.0)	20 (87.0)	23 (100.0)	
35 and above	1 (10.0)	9 (90.0)	10 (100.0)	
Indications of previous CS				0.785
Breech	2 (25.0)	6 (75.0)	8 (100.0)	
CPD	1 (9.1)	10 (90.9)	11 (100.0)	
NPOL	3 (13.0)	20 (87.0)	23 (100.0)	
Fetal distress	8 (21.6)	29 (78.4)	37 (100.0)	
Others	4 (16.7)	20 (83.3)	24 (100.0)	
Co-morbidities in mother				0.722
Yes	12 (18.7)	52 (81.3)	64 (100.0)	
No	6 (15.4)	33 (84.6)	39 (100.0)	
Neonatal morbidities				0.133
Yes	7 (28.0)	18 (72.0)	25 (100.0)	
No	11 (14.1)	67 (85.9)	78 (100.0)	

The success rate of VBAC among women of age group 19-24 years was 20.7% and this rate was decreased to 10% among women of age of 35 years and above. There was a consistent decrease in VBAC rate with increasing age but this was not statistically significant. Among various indications for previous section, proportion of women who had successful vaginal delivery in the index pregnancy was lowest in CPD group (9.1%) and the indication for previous CS was not having any association with the type of delivery in the index pregnancy. There was no significant association found between maternal and neonatal complications and mode of delivery, p value >0.05.

DISCUSSION

There are numerous studies done in India and abroad which suggest that for carefully selected women with previous one LSCS, a trial for vaginal delivery is safe with a success rate of 60-80%¹¹⁻¹³

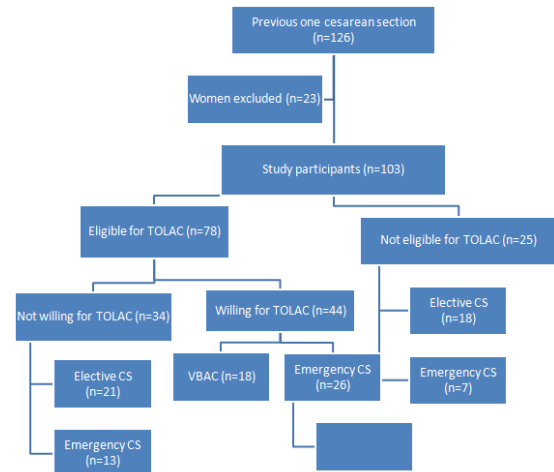
Among the 44 women who were given TOLAC, 40.9% women delivered vaginally. The success rate of VBAC was only 40.9% in our study which was comparatively less than similar articles published. However, in a study done by Rahman R¹⁴ at a tertiary hospital in Dhaka, Bangladesh, there were 28 patients out of 100, who underwent trial of labour, among them 15 had successful vaginal delivery (53.6%). Similarly a study conducted in North India by Sharma A¹⁵ concluded that out of 102 women enrolled, incidence of vaginal delivery after previous one CS was 27.5%. In contrast to this Shah Jitesh Mafatlal¹⁰ found that among 197 women in the trial group, 72.1% delivered vaginally. Similarly in another study by Shah and Mehta¹⁶ found that 72.1% patients delivered vaginally in the trial of labour group. In the present study, the rate of VBAC is very low. This is because many repeat cesarean sections were done on maternal request (40.0%), due to low acceptability of TOLAC among women belonging to middle and high socio-economic strata. Further, as the present study was done in a private teaching institute and considering the medico-legal aspects, the threshold for repeat CS was quite low.

In the present study, repeat elective cesarean section was done in 39 (37.9%) cases and repeat emergency CS was performed in 46 (44.7%) cases. In a similar study done by Sharma A¹⁵ repeat elective CS was done in 31 (30.4%) cases and repeat emergency CS was performed in 43 (42.2%) cases. The findings are consistent with our study.

Most common reason for emergency CS was failed TOLAC (56.5%). Among them scar tenderness (46.2%) followed by NPOL (34.6%) and fetal distress (15.4%) were common indication for emergency CS. Scar dehiscence was present in one case of trial of labour group (2.27%). Sharma¹⁵ has reported that the most common indication of emergency cesarean among TOLAC group was fetal distress (27.9%) followed by scar tenderness (16.3%) and NPOL (11.6%). In a similar study¹⁷ among 205 women, most common indication for emergency CS in unsuccessful TOLAC group

was failed progress of labour (50.0%) followed by fetal distress (24.4%) and scar tenderness (13.3%). There were 4(1.9%) women who had scar dehiscence intra-operatively. In a study done by Shah Jitesh Mafatlal¹⁰ common indications for emergency CS were fetal distress (47.3%), NPOL (27.3%), and scar tenderness (21.8%). Scar dehiscence was found in only one woman (0.5%).

Contradictory to other similar studies, our study showed that maternal complications were more in VBAC group (11.1%) than in emergency repeat CS (8.7%). Kore¹⁸ have reported an incidence of 1.4% postpartum hemorrhage (PPH) and 0.5% rupture uterus, compared to 6.8% PPH and 1.0% scar dehiscence in the present study. PPH was seen more in elective CS group (10.3%) and 5.56% in the VBAC group, the findings were similar to another study¹⁴ in which PPH was found in 6.66%. Among 25 neonates who had complications, 22 required NICU admission. Of them 9 belonged to VBAC group and 11 were from emergency CS group. In another study¹⁰ out of 9 NICU admissions 5 were from the VBAC group and 4 were from the emergency CS group.



CONCLUSION

There are certain limitations in this study. The findings might be affected from small sample size. But the foremost reason for high rate of repeat CS in the present study was due to majority of women opting for repeat CS. It may be postulated that if women are educated regarding the risks and benefit of TOLAC it may subsequently help in their decision making and relieve fear and misconceptions regarding TOLAC.

Moreover women in our study who were given trial of labour, very few had augmentation of labor.

More liberal and judicious use of augmentation of labor might have increased the rate of VBAC.

Thus proper counseling and motivation, towards TOLAC, by flowcharts and group discussions in a properly selected group of women may in some way reduce the rising trend of cesarean section rate in India.



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