FETOMATERNAL OUTCOME OF PREGNANCY WITH PREVIOUS CESAREAN SECTION

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ABSTRACT: OBJECTIVE: The aim of the study was to see the fetomaternal outcome of pregnancy with previous cesarean section. METHODS: This study was conducted in the department of OBGYN, BARC Hospital, Mumbai from October 2011 to September 2012, a period of one year. All the pregnant women with previous one cesarean section attending ANC clinic for confinement were included in the study group after giving consent. **RESULTS:** Out of total75 cases, a total of 23 patients (30.67%) were given trial of labor. Out of 23 patients given trial of labor, 12 patients (52.17%) had successful VBAC. Commonest indication for unsuccessful trial of labor undergoing repeat cesarean section was nonprogress of labor (54.55%) and failed IOL (36.67%). Out of 12 patients who had successful VBAC, 3 patients (25%) had complication like episiotomy hematoma, perineal tear and cervical tear. No patients had major complications. In present study no baby had appar score <7 at 1min and 5 min in VBAC group and elective LSCS group. CONCLUSION: The current study concludes that women with a prior cesarean are at increased risk for repeat cesarean section. Vigilance with respect to indication at primary cesarean delivery, proper counseling for trial of labor and proper antepartum and intrapartum monitoring of patients, are key to reducing the cesarean section rates. The antepartum, intrapartum and postpartum complications are more in repeat cesarean section cases. There is no doubt that a trial of labor is a relatively safe procedure, but it is not risk free. Therefore, patient evaluation prior to TOLAC, careful observation throughout labor in a well-equipped unit with around the clock services for emergency surgery and availability of expertise is the backbone for successful VBAC.

KEYWORDS: VBAC- vaginal birth after cesarean, TOLAC-trial of labor after cesarean

INTRODUCTION: Cesarean birth has been a major source of interest & concern over the last few decades. In the past 35 years, the rate of cesarean section has steadily increased from 5% to approximately 25%.¹ So pregnancy with history of previous cesarean section is prevalent in present day obstetric practice. Precise quantification of the risk attributable to a prior cesarean section is difficult.

A retrospective analysis of catastrophic complication of previous cesarean section by Cynthia Chazotte showed that 2.4% of the patient after one or more cesarean section had an extremely serious complication like uterine rupture & placenta previa or accreta with accompanying haemorrhage.² Other complications like impending rupture, preterm delivery, operative interference & incidental morbidity can occur during pregnancy, labor & in repeat cesarean section.³

Although maternal mortality after scar rupture is low, the major risk is to the fetus that can suffer from anoxic brain damage or die if not delivered urgently. Studies have shown that 30 - 80% of women with one previous lower segment caesarean section can achieve vaginal delivery when trial of scar is done.^{4, 5}

Offering trial of scar and sub sequent vaginal delivery can contribute to reduction of the rate of cesarean section. However, the risk of uterine rupture and other morbidities associated with failed trial of the scar remain the major concern for many practitioners.⁴ Uterine dehiscence or ruptures occur in less than 2% of planned VBAC, the same proportion as is seen among women who have routine repeat cesareans.

Most of these are asymptomatic and of no clinical importance. Perinatal mortality and morbidity rates were similar with planned vaginal birth after cesarean and elective repeat cesarean section in these studies.⁶ The most important event because of which obstetricians still hesitate to attempt planned VBAC is the uterine scar integrity and hence the terminology "Trial of scar".

Because repeat cesarean deliveries are performed largely to benefit the neonate, clinicians may often overlook maternal complications resulting in significant morbidity and mortality as a result of the repeat surgeries. The choice of VBAC over planned repeat cesarean section, like virtually every other medical choice, involves the balancing of risks & benefits. One point is clear though "once a cesarean, always a hospital delivery".⁷

The risk of suspected neonatal sepsis is greater in women attempting TOLAC but appears to be confined to those who fail TOLAC and require a repeat cesarean section. The current study assessed obstetric outcome in women with one previous cesarean section delivering at BARCH with the objective to determine the proportion of women under-going trial of labor (TOLAC), elective and emergency repeat cesarean section and maternal and fetal complications associated with each mode of delivery.

MATERIALS AND METHODS: The prospective study was conducted at Bhabha Atomic Research Centre hospital, Mumbai between October 2011 and September 2012. The study was granted ethical approval from the local ethics committees. Those included in the study are, pregnant women with previous one cesarean section attending ANC clinic for confinement and given consent.

Those excluded from the study are Pregnancy with previous cesarean section for recurrent indication, pregnancy with previous 2 or more cesarean section, pregnancy with previous classical cesarean section, twin pregnancy with previous cesarean section. Total of 75 eligible pregnant women registered in hospital after 24 weeks of gestation enrolled in the study after a written informed consent.

Detailed history was taken on registration with respect to certain demographics and maternal characteristics like age, gravida, parity etc. A detailed past obstetric history was taken which included indication, numbers, type and place of previous caesarean section, history of full term vaginal deliveries prior to or following previous caesarean section together with the birth weight of the babies and history of complications associated with previous section.

General examination, systemic examination and obstetric examination was carried out. Subsequently they were investigated for CBC, blood grouping, other specific investigations pertaining to medical high risk. For fetal assessment, ultrasonography was performed at regular intervals and non-stress tests were done whenever indicated. These cases were regularly followed up in antenatal OPD. Pelvic assessment was performed at around 37 weeks.

The points assessed were sacral curve, whether sacral promontory was reached or not, sacrosciatic notch, lateral pelvic walls, ischial spines and inter spinous distance, sub pubic angle, diagonal conjugate and transverse diameter of pelvic outlet and decision regarding mode of delivery

was taken. All the women fulfilling the selection criteria for TOLAC like definite history of prior one lower segment caesarean section, patient willing for trial of labor, gestation age >37 completed weeks, clinically adequate pelvis, single live fetus, vertex presentation, inter delivery interval>24 months were counseled about TOLAC, success rate of VBAC and all the risks and benefits associated with VBAC.

Patients not willing for TOLAC and not fulfilling the criteria of TOLAC like not willing for trial of labor after counseling, unfavorable cervix, placental abnormalities like placenta previa, cephalo pelvic disproportion, non-vertex presentation, were planned for elective repeat cesarean section after 38 weeks.

Patients planned for TOLAC were waited for spontaneous labor till 40 wks if no medical or obstetrical high risk, and not allowed to go post EDD. High risks patients were induced earlier after 37 completed weeks. Bishop score less than 4 were taken up for Elective repeat caesarean section for unfavorable cervix and Bishop Score between 4-6 were induced. Indications of induction were medical disorders like-PIH, GDM; Obstetric disorders like-Rh negative, oligohydramnios, IUGR, PROM etc.

In patients with bishop score up to 6 cervical ripening was done with single PGE2 gel (cerviprime gel 0.5 mg in 3 mg base). Bishop score was reassessed after 6 hours followed by induction of labor with oxytocin of 3mU/min drip (2.5 unit of oxytocin in 500 ml of ringer lactate) and was titrated to double every 30 minutes. In patients with bishop score more than 6 induction of labor was done with oxytocin based on standard protocol.

During labor, the previous history was checked and completes examination including general and per abdominal examination was done to check the position of the baby:

- Blood was sent for cross matching and kept ready in case of emergency as soon as patient went into labor.
- Intravenous line was established.
- Patients were carefully monitored during labor with regular checking of the vital signs like maternal pulse rate and blood pressure.
- Scar tenderness was looked for.
- Fetal heart rate monitoring was done continuously by external electronic fetal monitoring machine.
- Cervical dilatation, effacement and station of the head were noted serially for progress of labor. Also character, duration and frequency of uterine contractions were monitored.
- Early signs of scar dehiscence such as hypotension, tachycardia, abdominal tenderness, fetal heart rate alteration, loss of station of presenting part, palpation of fetal parts outside the uterus and symptoms such as acute abdominal pain and vaginal bleeding, were watched for.
- Intrapartum monitoring was carried out with the help of cardiotocography.

Cesarean section was considered in cases of failed trial and maternal and fetal benefits. All the patients were observed for complications like PPH, need of blood transfusion, infection, hematoma formation, pyrexia. Care of wound, breast and perineum given. Check dressing was done on day 5 and stitches were removed on day 9-10.

The neonatal outcomes noted are, Apgar score at 1min and 5min, sign of birth asphyxia, NICU admission, sign of hypoxic ischemic encephalopathy, evidence of birth trauma, perinatal mortality.

VBAC patients were discharged on day4 of delivery and those delivered by caesarean section discharged on day 6 of surgery with advice of contraception and postnatal follow up was done at 6 weeks after delivery.

RESULTS: In study group of 75 cases, 23 cases (30.67%) were given trial of labor. Rest all 52 cases (69.33%) were for elective repeat cesarean section. Out of 23 cases who were given TOL, 12 cases (52.17%) had successful VBAC. Out of rest 52 cases who were not given TOL, 19 cases (36.53%) came in labor were taken up for emergency LSCS and 33 cases (63.47%) who were not in labor, delivered by elective LSCS (flow diagram-1).



Flow diagram-1

In present study out of 23 cases given trial of labor, 17 cases were induced with cerviprime gel and oxytocin according to bishop score. Out of which 9 cases (52.94%) had successful VABC and 8 cases (47.06%) had unsuccessful VBAC hence were posted for an emergency LSCS for various indications. From rest 6 cases that were given trial of labor all went spontaneously in labor, out of which 3 cases (50%) had successful VBAC.

Among patients given trial of labor commonest indication for previous caesarean section was NPOL 6(26.09%) and breech 6(26.09%) out of which 3(13.04%) and 3(13.04%) delivered by VBAC respectively. Next common indication was fetal distress 5 (21.74%) out of which4 (17.39%) delivered by VBAC (Table-1).

Indication of	No. Of Cases (n = 23)		Vagina	l deliveries	Emergency LSCS		
previous LSCS	No.	%	No.	%	No.	%	
Fetal distress	5	21.74	4	17.39	1	4.35	
Breech	6	26.09	3	13.04	3	13.04	
NPOL	6	26.09	3	13.04	3	13.04	
Placenta Previa	1	4.35	-	-	1	4.35	

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Oligohydramnios	1	4.35	-	-	1	4.35		
Cord around neck	1	4.35	1	4.35	-	-		
On demand	1	4.35	-	-	1	4.35		
MSL	2	8.70	1	4.35	1	4.35		
Total 23 100 12 52.17 11 47.83								
TABLE 1: Indication for previous LSCS with mode of delivery in group given trial of labor								

In present study patients with Bishop Score between 4 -6 (14 cases) who required PGE2 for cervical ripening, 42.86% (6 cases) had successful VBAC. Success rate was 100 % in group where pre induction cervical ripening was not required before induction with oxytocin i.e. Bishop Score >6 (Table-2).

Richon Scoro	VBAC		Emerg	gency LSCS	Total		
bishop score	No.	%	No.	%	No.	%	
4 - ≤ 6	6	42.86	8	57.14	14	82.35	
> 6	3	100	-	-	3	17.65	
Total 9 52.95 8 47.05 17 100							
TABLE 2: Bishop Score Wise Distribution of Induced Cases of trial of labor group							

Incidence of adhesions (omental, bowel and bladder) was 36.36% in patients with Elective LSCS, 16.67% in Emergency LSCS. Occipito transverse / lateral position, loops of cord around neck, and MSL constituted 30% patients with emergency LSCS (Table-3)

	No. Of Cases (n = 63)		Electi	ive LSCS	Emergency LSCS						
Intra op Findings			(n = 33)		(n = 30)						
	No.	%	No.	%	No.	%					
No. Complications	30	47.61	17	51.51	13	43.33					
MSL	3	4.76	0	0.00	3	10.00					
Omental, bowel and	17	26.08	12	3636	ц	16.67					
bladder adhesions	17	20.90	12	30.30	5	10.07					
Difficulty in opening	2	3 1 7	1	3.03	1	3 3 3					
abdomen due to adhesions	L	5.17	1	5.05	1	5.55					
Occipito transverse/	3	476	0	0.00	з	10.00					
lateral position	5	4.70	0	0.00	5	10.00					
Loop of cord around neck	4	6.35	1	3.03	3	10.00					
Others	4	6.35	2	6.06	2	6.67					
TABLE 3: Intra operative findi	ngs bes	ides Scar	dehisce	ence in rep	eat cesar	TABLE 3: Intra operative findings besides Scar dehiscence in repeat cesarean section					

Out of 63 patients in whom repeat LSCS was performed 8 patients (12.69%) had complications. Out of which 3 cases (4.76%) had wound gape, 2 cases (3.17%) had puerperal pyrexia.

One patient who had central placenta previa came with bleeding per vagina underwent obstetric hysterectomy and needed blood transfusion for placenta accreta confirmed on histopathology (Table-4).

Morbidity	No.	%			
Wound Gape	3	4.76			
Puerperal Pyrexia	2	3.17			
РРН	1	1.59			
Ileus	1	1.59			
Obstetric Hysterectomy + BT	1	1.59			
Total	8	12.69			
TABLE 4: Maternal morbidity in repeat cesarean section (n = 63)					

Out of 12 patients who had successful VBAC (25%) 3 patients had complication as shown above. No patients had major complications. (Table-5)

Morbidity	No.	%		
Hematoma of episiotomy	1	8.33		
Cervical tear	1	8.33		
Perineal tear	1	8.33		
Total	3	25		
TABLE 5: Maternal Morbidity				
in VBAC patients (n = 12)				

Apgar score is predictive for Birth asphyxia, in present study no baby had apgar score <7 at 1min and 5 min in VBAC group and elective LSCS group. Only 1 baby out of 3 with apgar<7 at 1 min, had apgar<7 even at 5 min in Emergency LSCS. So risk of perinatal morbidity is more in Emergency LSCS (Table-6).

Apgar Sc	ore	Elective LSCS (n = 33)	%	Emergency LSCS (n = 30)	%	VBAC (n = 12)	%
Aftor 1 Min	4 - <7	-	-	3	10	-	-
Alter 1 Mill	≥7	33	100	27	90	12	100
Aftor 5 Min	4 - <7	3	-	1	3.33	-	-
Alter 5 Mill	≥7	33	100	29	96.67	12	100
TABLE 6: Apgar score association with mode of delivery							

In study 13.33 % (10) babies developed complications among them 5 babies were delivered by preterm emergency LSCS, 2of them had birth asphyxia &2were IUGR, 1 baby had IVH+ RDS. Four babies were delivered by elective LSCS, 2 of them had tachypnea, and 2 had hypoglycemia as mother had GDM, so most of major complications which required NICU admission were due to preterm LSCS (Table-7).

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Sr. No.	Complication	Elective LSCS	%	Emergency LSCS	%	VBAC	%
1	Hyperbilirubinemia	-	0%	-	0%	1	1.33%
2	Tachypnoea	2	2.66%	-	0%	-	0%
3	Hypoglycemia	2	2.66%	-	0%	-	0%
4	Preterm with Birth Asphyxia	-	0%	2	2.66%	-	0%
5	Preterm with LBW	-	0%	2	2.66%	-	0%
6	Preterm with IVH & RDS	-	0%	1	1.33%	-	0%
	TABLE 7: Correlation of neonatal morbidity with mode of delivery (n=75).						

Cesarean section had longer hospital stay (Table No-8).

Outcome	Average Hospital Stay in Days				
Elective LSCS	6.2				
Emergency LSCS	6.5				
VBAC	4.2				
TABLE 8: Correlation of duration of hospital stay and mode of delivery					

DISCUSSION: Out of the 75 patients in present study, 30.66% were given a trial of labor as against 39.90% of the patients in the study by Landon et al and 64% of the patients in the study by Gonen and Colleagues.⁴ The proportion of women with one previous cesarean section undergoing trial of scar is reduced not only due to fear of complication but litigation.

The obstetrician will rarely be blamed for doing a cesarean section, while may be sued for not having done it.⁸ In present study out of total 16% patients underwent VBAC, which is much higher than VBAC rates of 8.5 percent according to Hamilton BE et al.⁹ In present study 52.17% of patients had a successful VBAC, which is lower than that in other studies Landon and associates reported a success rate for vaginal delivery of 73.41% and Gonen et al reported a success rate of 79.66%.^{4,10}

Cowen and colleagues reported a successful VBAC of 81%.¹¹ACOG 2004 reported a successful VBAC of 60-80%.¹² The success rate of a TOL after Cesarean ranges between 50% and 85%.¹³ The probable reason for a low rate of successful VBAC in our study was that NO patients who opted for a trial of labor had a history of prior vaginal deliveries as compared to 50% of the patients in the study by Landon and colleagues and 42.20% of the patients in the study by Gonen et al.^{4,11}

In present study 47.83% patients had Unsuccessful VBAC were taken up for emergency cesarean section for indications of NPOL, failed IOL, scar dehiscence, was higher than 36% of Yogev¹⁴ study. The most common indication for an ERCS in the present study was the unwillingness of the patient for a Trial of labor inspite of being eligible for a trial of labor, which constituted 27.28% of the total number of patients who had an ERCS. This is comparable to the study by Gonen and colleagues where 37.90% of the patients had an ERCS on maternal request and declined for a trial of labor.¹¹

In the present study, the most common indications for a repeat emergency LSCS were and NPOL and failed IOL, together constituting about 90.90% of the total number of repeat emergency LSCS. This is comparable to other studies.^{4,11} In present study Out of 23 patients given trial of labor 17 (73.91%) patients were induced for some obstetrical or medical indication 9(52.94%) patients had successful VBAC and only 1 patient had scar dehiscence, no cases of uterine rupture. Gonen et al reported that 68.33% of the patients who were induced, delivered vaginally and there were no cases of uterine rupture following induction.¹¹

In present study patients with Bishop Score between 4-6 (14 cases) who required PGE2 for cervical ripening, 42.86% (6 cases) had successful VBAC which was consistent with success rate of 51.4% of Flammet al¹⁵ and 63% of Margareta et al.¹⁶ The main difficulties in the present study while doing a repeat cesarean section were, adhesions between omentum, peritoneum and bladder in 26.98% of the cases and difficulty in separation of the bladder, difficulty in opening the abdomen due to adhesions in 3.17% of the cases.

Parikh et al found excessive adhesions in 36% of the patients for an LSCS in his study.¹⁷ The increased morbidity and mortality associated with cesarean section as compared to vaginal delivery is clearly borne out by the literature.¹⁸ This fact together with the lower reported incidence of uterine rupture and consequent maternal and fetal compromise strongly argues for the trial of labor in carefully selected patients with previous cesarean section.¹⁹ Present study reveals that majority (87.30%) case shad no post-operative complication.

Here important complications were, wound gape (4.6%), puerperal pyrexia (3.17%), PPH (1.56%), Ileus (1.56%), obstetric hysterectomy (1.56%) etc. The rate of complication is significantly less in this study in comparison to other two studies done by Chowdhury et al andAsaduzzaman.^{20,21} There was no significant difference in overall maternal morbidity between women who underwent a trial for VBAC (1.60%) and those who had an ERCS (1.03%).⁴ Most of the published data suggest the incidence of uterine rupture following LSCS is <1 %.²²

The present study had no major complications like Hysterectomy, blood transfusion, PPH, pyrexia in patients who had successful VBAC only 3 cases had minor morbidities like hematoma of episiotomy site, cervical tear and perineal tear. It has generally been accepted that vaginal delivery is associated with lower maternal morbidity and mortality rates than repeat CS. Our results are comparable to an earlier meta-analysis comparing ERCS Vs trial for VBAC.²³ Duration of hospital stay difference was more than 48 hours in between LSCS and VBAC patients, which is consistent with the findings of Murphy et al.²⁴

CONCLUSION: The current study concludes that women with a prior cesarean are at increased risk for repeat cesarean section. Vigilance with respect to indication at primary cesarean delivery, proper counseling for trial of labor and proper antepartum and intrapartum monitoring of patients, are key to reducing the cesarean section rates. The antepartum, intrapartum and postpartum complications are more in repeat cesarean section cases.

The major maternal and fetal morbidities are also documented on higher side. There is no doubt that a trial of labor is a relatively safe procedure, but it is not risk free. Therefore, patient evaluation prior to TOLAC, careful observation throughout labor in a well-equipped unit with around the clock services for emergency surgery and availability of expertise is the backbone for successful VBAC. A large number of patients declined a trial for labor in spite of being eligible for it.

Hence it is essential to counsel patients with a history of prior LSCS, ideally during the antenatal period, regarding the benefits and the risks (both maternal and perinatal) of the VBAC. This enables them to make an informed choice early and probably bring down the repeat cesarean rate, with a low maternal and perinatal morbidity. Vaginal deliveries have much safer outcome than repeat cesarean deliveries.

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