

Original article

Outcome of women with previous caesarian section at a tertiary care hospital in eastern Nepal

A Agrawal¹, S Chhetri¹, A Thakur¹, S Agrawal¹, P Basnet¹

¹Department of Gynaecology and Obstetrics, BPKIHS, Dharan, Nepal

Abstract

Background: Pregnant women with previous caesarean section are increasing due to the liberal use of caesarean section in first pregnancy due to multifactorial reason. The risks, benefits, and relative safety of vaginal birth after caesarean (VBAC) have been subject of interest for well over 100 years. Thus mutual understanding between the treating obstetrician and patient herself is a core towards achieving good maternal and perinatal outcome considering all the risk and benefit in women with previous caesarean section. **Objective:** The aim was to analyze the maternal and perinatal outcome in pregnant women with previous caesarean section. **Methods:** In this prospective observational study, 300 women with singleton pregnancy in cephalic presentation with previous one lower segment caesarean section (LSCS) having inter pregnancy interval ≥ 18 months presenting at ≥ 37 -41 week period of gestation admitted for delivery were enrolled and various maternal and perinatal outcome were noted. **Results:** Caesarean delivery rate during the study period was 26.95%. Eighty percent of eligible women opted for trial of labor. Successful vaginal birth after caesarean section was 29%. Elective repeat caesarean delivery was 19.66%. The rate of failed VBAC was 51%. Failed VBAC increased with increasing weight of baby. There was no difference in mean birth weight among patient who had successful VBAC, who refused VBAC and who had failed VBAC. Mode of delivery had no significant effect on the number of neonatal intensive care unit admission and number of still births.

Keywords: maternal outcome, perinatal outcome, previous caesarian section

Introduction

In 1916, Cragin made a statement "Once a caesarean always a caesarean" but this statement was made when only classical vertical uterine incision were used but after 1926 when Kerr's transverse incision was recommended Cragin statement became an exaggeration.¹

While vaginal births after caesarean (VBAC) are not uncommon today, their numbers are decreasing. VBAC rates soared in 80s and 90s, but more recently the rates of VBAC have dramatically dropped owing to medico legal

restriction. As modern caesarean typically involves the horizontal incision along the muscle fibers in the lower portion of the uterus hence uterus can maintain its integrity and can tolerate the contraction of future childbirth. What should be emphasized in modern obstetrics care that decision should be mutual between doctor and mother after assessing the risk and benefits of each type of delivery.²

There are risks associated with both elective repeat caesarean birth and VBAC.³ The risk of uterine rupture and the subsequent risks of fetal and maternal well-being can be catastrophic.^{4,5} However, repeat elective caesarean section is not completely risk free and may be associated

Address for correspondence

Dr Ajay Agrawal
Associate Professor
Department of Obstetrics and Gynaecology BPKIHS
E-mail: drajayagrawal@yahoo.com

with increased haemorrhage and need for blood transfusion, operative damage to adjacent organs, infection and an increased risk of deep venous thrombosis when compared with vaginal birth.⁶ Additionally, there may be longterm consequences in subsequent pregnancy related to placenta previa or placenta accreta.⁶

The risks, benefits, and relative safety of vaginal birth after caesarean (VBAC) have been subject of interest for well over 100 years. A meta analysis published in the period 1982-1989 failed to identify advantages for elective repeat caesarean delivery, compared with trial of labor with regard to uterine rupture and perinatal death⁷. In contrast, another meta analysis of subsequent investigations published from 1989 to 1999 reported a higher rate of uterine rupture and perinatal death following a trial of labor than following elective repeat caesarean section.⁸

Study has demonstrated failed vaginal births after caesarean have higher risks of uterine disruption and infectious morbidity compared with patients who have successful vaginal birth after caesarean or elective repeat caesarean delivery.⁹ A prospective observational study showed uterine rupture in 0.7% women who underwent a trial of labor with an attempt rate for trial of labor being 38.9%.¹⁰

We conducted this study involving women with prior caesarean to assess, number of women who are offered planned VBAC, successful rate of VBAC, the factors associated with their failure, the number of women undergoing repeat elective caesarean section and finally to observe the maternal and fetal outcome of each group.

Methods

This prospective observational study was conducted at the Department of Obstetrics & Gynaecology, BP Koirala Institute of Health Sciences, Dharan, Nepal from March 2009 to April 2010. Total 300 women with singleton pregnancy in cephalic presentation with previous one lower segment caesarean section (LSCS) having inter pregnancy interval \geq 18 months presenting at \geq 37-41 week POG admitted for delivery were enrolled in the study. Women with

complications indicating elective or emergency repeat caesarean section like placenta previa, abruptio placentae, prior myomectomy, non reassuring fetal heart rate, genital herpes, severe pre-eclampsia and gestational diabetes mellitus were excluded. Also, women with previous repaired uterine rupture and women not giving written consent were excluded from the study.

Patient opting for elective caesarean were listed in the elective repeat caesarean section (ERCS) group. Patients opting for trial of vaginal birth were grouped as trial of labor group (TOL). Some patients opting for TOL, landed into emergency LSCS due to change in patient's decision during labor were grouped as refused VBAC (R-VBAC) and some due to any fetal and maternal indication were grouped as failed group (F-VBAC). Patient having successful vaginal delivery after TOL grouped as successful VBAC (S-VBAC). Total number of patient undergoing repeat caesarean section either elective or emergency grouped as repeat caesarean group.

In women enrolled in TOL group, the variables observed included uterine contraction, scar tenderness, fetal heart rate, pulse, blood pressure every half an hour; cervical assessment every four hours; artificial rupture of membrane done on favorable BISHOP score. The progress of labor was also observed and plotted in the partograph. Emergency LSCS was done if patient had scar tenderness, and or persisting maternal tachycardia or other indication during labour. When women progressed to second stage of labor, vaginal delivery was conducted but instruments for assisted delivery like forceps and vacuum were kept ready and used as indicated. Active management for third stage of labor was done. Neonatal resuscitation and evaluation of new born was done. Pediatrician consultation done if needed and baby admitted to pediatric ward, nursery or neonatal intensive care unit (NICU) as per pediatrician advice. Follow up of new born was done for one week. Cases taken for emergency LSCS for any fetal or maternal indication were noted. The mothers were followed up for fever, wound infection and amount of blood loss (<1 liter or > 1 liter).

Hospital stay was also noted. A predesigned proforma was used to collect these data.

Results

There were 8214 births during the study period out of which 2214 were by caesarean section giving a caesarean delivery rate of 26.95%. Total number of repeat caesarean was 442. Women eligible for our study were 300, out of them, 241(80.33%) opted for trial of labor and rest 59(19.66%) had elective repeat caesarean delivery.

Mean age was 26.61 ± 4.08 years ranging from 18 to 40 years. Most common indications for caesarean section in the previous pregnancy were fetal distress (23.30%), malpresentation (21.70%) & non progression of labour (21.7%). In 9.3% of the cases, reason for previous LSCS could not be established. Out of total eligible women, 45 (15%) had at least one vaginal delivery. Two hundred and fifty-two (84%) of the women were primipara. Interval between last delivery and last menstrual period of current pregnancy is shown in Table 1.

Table 1: Interval between last delivery and last menstrual period (LMP) of current pregnancy

Status / History	Categories	Number of Patients	Percentage	Mean±SD
Interval between last delivery & LMP of current pregnancy (in month)	18-35	95	31.67	46.56±24.44
	36-53	117	39.00	
	54-71	38	12.67	
	≥72	50	16.67	

At admission, 160 (53.30%) women had Bishop Score ≤ 6 , 81 (27%) had >6 , with mean Bishop score of 5.74 ± 2.12 . There were 190 (63.40%)

women in latent stage of labour and one (0.30%) presented in second stage of labor (Table 2).

Table 2. Bishop Score & cervical finding at the time of enrollment

Pelvic Examination finding	Categories	Number Of Patients	Percentage
Bishop Score	0-3	35	11.60
	4-6	125	41.70
	7-9	70	23.30
	10-13	11	3.70
		Mean ±SD	5.74±2.12
Cervical dilatation (cm)	0-3	190	63.40
	4-6	43	14.30
	7-9	7	2.30
	10	1	0.30
		Mean ±SD	2.73±1.64

After delivery the women were divided in three groups according to their mode of deliveries (Fig.1). It was found that out of 300 enrolled women, 86 (28.70%) had successful vaginal delivery, grouped as S-VBAC & 155 (51.70%) were taken for emergency LSCS for different indications and grouped as F-VBAC. Hence it was observed that out of total 241 women who actually underwent trial of labor for VBAC, 86 delivered vaginally with success rate of 35.68 % (Fig.2).

Figure 1: Mode of delivery of enrolled cases

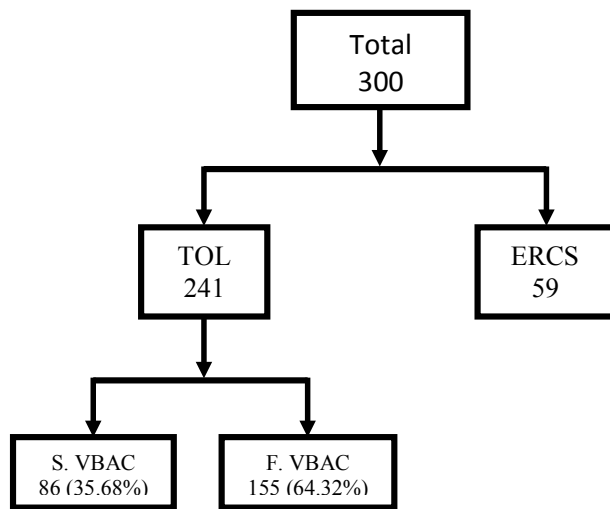


Figure 2: Flow chart of delivery outcome

Indication for emergency caesarean among F-VBAC group was fetal distress (29.69%), patient changed decision for VBAC (23.87%), followed by signs of impending rupture like maternal tachycardia, scar tenderness in 22.58%, and nonprogression of labour in 16.77%. Of the total 300 cases, 4 (1.33%) had uterine dehiscence which was diagnosed intraoperatively and one women (0.33%)

had uterine rupture, hence total number of scar complication were 5 (1.66%). Seventeen (5.7%) women had blood loss of one liter either intrapartum or postpartum. Postpartum 18 (6%) women received blood transfusion, 14(4.70%) had febrile morbidity and 16(5.30%) developed wound infection. Regarding hospital stay, 6% were in the hospital for > 9 days. Hence mean hospital stay was 4.48±4.20 days.

When women among S-VBAC & F-VBAC group were compared, success rate of VBAC was found to decrease as age increased and also lower success rate was seen in women having previous LSCS for antepartum hemorrhage and oligohydramnios. However inter delivery interval did not make any difference for success of vaginal delivery. It was observed that rate of S-VBAC increases with increasing number of vaginal deliveries. According to our study, success rate is 100% for previous 3 vaginal deliveries, 44.44% for previous 2 vaginal deliveries and 41.93% for previous 1 vaginal delivery. Success rate of VBAC was also more if patient presented in active stage of labour as compared to that in latent stage of labour.

Table 3: Maternal complications among enrolled cases (n=300)

Parameter	Categories	S –VBAC		ERCS		F- VBAC		Total No.	P Value
		No.	%	No.	%	No.	%		
Uterine	Dehiscence	0	0	1	1.69	3	1.93	4	0.160
	Rupture	0	0	0	0	1	0.64	1	
Blood loss	<1L	81	94.18	56	94.91	146	94.19	283	0.977
	>1L	5	5.81	3	5.08	9	5.80	17	

There was no uterine rupture or dehiscence in S-VBAC group. There was one (1.69%) dehiscence seen in ERCS group. There were 3 dehiscence (1.93%) and one (0.64%) rupture seen in F-VBAC group. There was no significant difference in the intraoperative

maternal complications among different groups. Post delivery morbidity regarding need of blood transfusion and febrile morbidity were not significantly different in the groups however wound infection was significantly more in F-VBAC group (Table 4).

Table 4: Post Delivery morbidity

Post partum events	S -VBAC		ERCS		F- VBAC		Total No.	P value
	No.	%	No.	%	No.	%		
Blood Transfusion	6	6.97	3	5.08	9	5.80	18	0.885
Febrile morbidity	4	4.54	1	1.69	9	5.80	14	0.444
Wound Infection	0	0	1	1.69	15	9.67	16	0.002

Regarding neonatal outcome, F-VBAC increased on increasing weight of baby. There is no difference in mean birth weight of all the

three groups. Mode of delivery had no significant effect on the number of NICU admission and number of still birth (Table 5).

Table 5: NICU admission & its indications

Parameter	S- VBAC		ERCS		F- VBAC		Total	P Value
	No.	%	No.	%	No.	%		
NICU	4	4.64	1	1.69	10	6.45	15	0.820
Birth Asphyxia	2	2.32	0	0	7	4.51	09	
MAS	2	2.32	0	0	2	1.29	4	
TTN	0	0	1	1.69	0	0	1	
Prematurity	0	0	0	0	1	0.64	1	
Still Birth	1	0.11	0	0	2	1.30	3	0.687

(MAS: meconium aspiration syndrome; TTN: transient tachypnea of the newborn)

Discussion

In the current study attempted rate of VBAC was found to be 80.33% which is comparable to a study done by Michiel et al¹¹ showing rate of 76%, and 50.9% in study done by Blanchette et al.¹² Our study showed no difference in the age distribution among S-VBAC group or F-VBAC group, but it is observed that there is increased rate of F-VBAC with increasing maternal age in previous studies. Bujold et al¹³ found women 35 years or older are more prone to have a failed TOL after a prior caesarean delivery.

Relation of rate of symptomatic uterine rupture with inter delivery interval could not be established in our study as there is only one uterine rupture in 300 cases (0.3%). According to the study done by Shipp et al¹⁴, interdelivery interval of 18 months or less is associated with three fold increase in symptomatic uterine rupture compared to that of less than 18 months. We have excluded cases having interdelivery interval of less than 18 months. We have also excluded cases with more than one LSCS. In the present study, no uterine rupture was observed in women who had successful VBAC and overall rupture rate was 0.3%. According to Miller et al, uterine rupture rate is 0.6 % and 1.8% for women with one and two prior caesarean delivery respectively¹⁵. In the study of Landon et al¹⁰ uterine rupture was twice higher in previous multiple caesarean section than in previous single caesarean (1.4 vs.0.7%).

It was found, in our study, that previous vaginal delivery has a significant effect (p=0.04) over the success of VBAC. In the study by Caughey et al¹⁶, the overall success rate in women with previous caesarean was 45.23% if she had at least one vaginal delivery. Also they observed

that success rate was 38.23%, 44.44% and 100% in women with previous one, two and three vaginal deliveries respectively.

Overall success rate of VBAC in our study among women in TOL group was 35.68%. Successful vaginal delivery in the study done by Rossi et al¹⁷ was 73% & in the study done by Kwee A et al¹¹ was 54%. Incidence of blood transfusion and fever are statistically similar in ERCS, failed VBAC and successful VBAC patient but more maternal morbidity in terms of wound infection is seen in failed VBAC patient. In a study¹⁷ it was concluded that maternal morbidity, uterine rupture or dehiscence, blood transfusion and hysterectomy were more common after failed VBAC (17%, 4.4%, 3%; 0.5%) than after successful VBAC (3.1%, 0.2%, 1.1%; 0.1%) or ERCS (4.3%, 0.4%, 1%; 0.3%) .

Success rate of VBAC in our patients may have been less compared to other studies because of lack of continuous electronic fetal monitoring in our setup. Availability of fetal monitoring is likely to give more confidence to the patient as well as the attending physician for accepting lower threshold towards VBAC. To decrease the rate of caesarean section, primary LSCS should be prevented and proper selection of cases for VBAC should be done.

Conclusion

Gravid women with previous caesarean section have willingness for trial of labor in second pregnancy though the mode of delivery may differ. With prior patient selection and facility for continuous electronic fetal monitoring women can be counseled for trial of VBAC and optimizing the maternal and perinatal outcome.

References

1. Greene M. Vaginal delivery after cesarean section—Is the risk acceptable? *N Engl J Med* 2001;345:54–55.
2. American College of Obstetricians and Gynecologists Committee on Obstetric Practice. ACOG Practice Bulletin No. 54: Vaginal birth after previous cesarean. *Obstet Gynecol* 2004;104:203–12.
3. Agency for Healthcare Quality and Research [Internet]. Evidence Report /Technology Assessment: Number 71. Vaginal birth after cesarean (VBAC). Rockville, MD: AHQR Publication Number 03-E017, March 2003. Available from: <http://www.ahrq.gov/clinic/epcsu/vbacsum.htm>
4. Sachs BP, Kobelin C, Castro MA, Frigoletto F. The risks of lowering the cesarean delivery rate. *N Engl J Med* 1999; 340: 54–57.
5. Hibbard JU, Ismail MA, Wang Y, Te C, Karrison T, Ismail MA. Failed vaginal birth after a cesarean section: how risky is it? *Am J Obstet Gynecol.* 2001; 184: 1365–1373.
6. Lydon-Rochelle M, Holt VL, Easterling TR, Martin DP. Risk of uterine rupture during labor among women with a prior cesarean delivery. *N Engl J Med.* 2001; 345: 3–8.
7. Rosen MG, Dickinson JF, Westhoff CI. Vaginal birth after cesarean: A meta-analysis of morbidity and mortality. *Obstet Gynecol* 1991; 77:465-70.
8. Mozurkewich EL, Hutton EK. Elective repeat cesarean delivery versus trial of labor: A meta-analysis of the literature from 1989 to 1999. *Am J Obstet Gynecol.* 2000;183: 1187-97.
7. Hibbard JU, Ismail MA, Wang Y, Te C, Karrison T, Ismail MA. Failed vaginal birth after Cesarean section: how risky is it? *Am J Obstet Gynecol* 2001;184:1365–73.
8. Landon MB, Hauth JC, Leveno KJ, Spong CY, Leindecker S, Varner MW, et al. Maternal and perinatal outcomes associated with a trial of labor after prior cesarean delivery. *N Engl J Med.* 2004; 351:2581–2589.
9. Kwee A, Bots ML, Visser GH, Bruinse HW. Obstetric management and outcome of pregnancy in women with a history of caesarean section in the Netherlands. *Eur J Obstet Gynecol Reprod Biol.* 2007;132(2):171–176.
10. Blanchette H, Blanchette M, McCabe J, Vincent S. Is vaginal birth after cesarean safe? Experience at a community hospital. *Am J Obstet Gynecol* 2001; 184: 1478-87.
11. Bujold E, Hammoud AO, Hendler I, Berman S, Blackwell SC, Duperron L, Gauthier RJ. Trial of labor in patients with a previous cesarean section: Does maternal age influence the outcome? *Am J Obstet Gynecol.* 2004;190(4):1113-8.
12. Shipp TD, Zelop CM, Repke JT, Cohen A, Lieberman E. Interdelivery interval and risk of symptomatic uterine rupture. *Obstet Gynecol* 2001; 97(2):175-7.
13. Miller DA, Diaz FG, Paul RH. Vaginal birth after cesarean: a 10-year experience. *Obstet Gynecol* 1994; 84:255–8.
14. Caughey AB, Shipp TD, Repke JT, Zelop C, Cohen A, Lieberman E. Trial of labor after cesarean delivery: the effect of previous vaginal delivery. *Am J Obstet Gynecol* 1998; 179:938-41.
15. Rossi AC, Addario VD. Maternal morbidity following a trial of labor after cesarean section vselective repeat cesarean delivery: a systematic review with metaanalysis. *Am J Obstet Gynecol.* 2008;199(3):224-31