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**Original Article**

## **Trial of Vaginal Birth After Caesarean (VBAC): Sharing Experience From a Tertiary Care Center of Eastern Nepal**

*Sita Pokhrel (Ghimire)\*, Ashima Ghimire, Aruna Pokharel, Sabina Lamichhane and Mahanand Kumar*  
 Department of Obstetrics and Gynaecology, Nobel Medical College Teaching Hospital, Biratnagar, Nepal  
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**Abstract****Background**

Rising rates of cesarean section is a matter of great concern and trial of labor in previous cesarean section women is an attractive alternative. Vaginal Birth After Caesarean (VBAC) may be one of the strategy developed to control the rising rate of cesarean deliveries in our country. Analyzing outcome of previous cesarean pregnancies will provide an insight for reducing the cesarean rates and formulating protocols and policies for trial of labor. The purpose of this study is to evaluate the pregnancy outcome in previous cesarean section women with VBAC trial with the hope of avoiding unnecessary repeat cesarean section rates.

**Methodology**

It is a cross-sectional observational institute based study carried out in Nobel Medical College Teaching Hospital from 15<sup>th</sup> March 2017 to 14<sup>th</sup> March 2018 after the approval from Institutional Review Committee (IRC). This consists of patient with past history of cesarean section, who delivered in NMCTH during the study period and meeting the Royal College of Obstetrics and Gynecology (RCOG) inclusion criteria for VBAC. Feto-maternal outcomes were analysed.

**Results**

There were 1225 previous cesarean cases, among them, we did VBAC trial in 135(11%) patients, 99 (73.33%) had successful vaginal delivery whereas 36(26.66%) could not do the same after labor trial. Feto-maternal outcome was better in VBAC patients than cesarean group.No maternal and neonatal mortality occurred.

**Conclusion**

In the country like ours where rate of cesarean section is increasing alarmingly we have to try VBAC in appropriate group of patients. National policy and guidelines are necessary after large multicenter prospective studies.

**Keywords**

*Vaginal Birth After Cesarean (VBAC), Cesarean Section, Feto-maternal Outcome*

**Introduction**

Nowadays, there is a significant increase in primary cesarean section for various indications, thus increasing the rate of pregnant women with previous scarred uterus [1]. Vaginal Birth After Cesarean

(VBAC) may be one of the strategy developed to control the rising rate of cesarean section. It is a trial of labor in selected cases of previous cesarean sections in a well-equipped hospital. In 1916, Cargin popularized the dictum once

a cesarean section, is always a cesarean section, which was the era of classical cesarean section [2]. In the present era of lower cesarean section, the dictum now is once a cesarean section, always a mandatory hospital delivery in a well-equipped hospital. Rising rates of cesarean section is a matter of great concern and trial of labor in previous cesarean section is an attractive alternative [3]. Analyzing outcome of previous caesarean pregnancies will provide an insight for reducing the caesarean rates and formulating protocols and policies for trial of labor in previous cesarean section deliveries. The most important event because of which obstetricians still hesitate to attempt planned VBAC is the uterine scar integrity. There is a definite risk of uterine rupture in vaginal birth after caesarean delivery often leading to catastrophies which can be avoided by early diagnosis and prompt intervention. The purpose of this study is to evaluate the pregnancy outcome in previous caesarean section women with VBAC trial with the hope of avoiding unnecessary repeat caesarean section rates.

### **Methodology**

It is a cross-sectional observational institute based study carried out in Nobel Medical College Teaching Hospital, Birtanagar from 15<sup>th</sup> March 2017 to 14<sup>th</sup> March 2018 after the approval from Institutional Review Committee (IRC). This prospective study consists of patient with past history of cesarean section, who delivered in NMCTH during the study period. All women coming with previous cesarean section delivery meeting the Royal College of Obstetrics and Gynecology (RCOG) recommended inclusion criteria for VBAC were taken in this study.(4 )

### **Exclusion criteria**

- History of more than one cesarean section
- Cephalo-Pelvic Disproportion
- Associated with obstetric complications
- Preeclampsia, eclampsia and Antepartum Hemorrhage
- Multiple pregnancy
- Malpresentation, Malposition
- Medical disorder
  - Moderate and severe anemia
  - Hypertension
  - Diabetes mellitus
  - Renal disease
  - Heart disease

Any patient with history of blood transfusion, hematuria, and incontinence of urine, wound infection, puerperal pyrexia and prolonged catheterization in previous cesarean section was noted and were excluded from the study group.

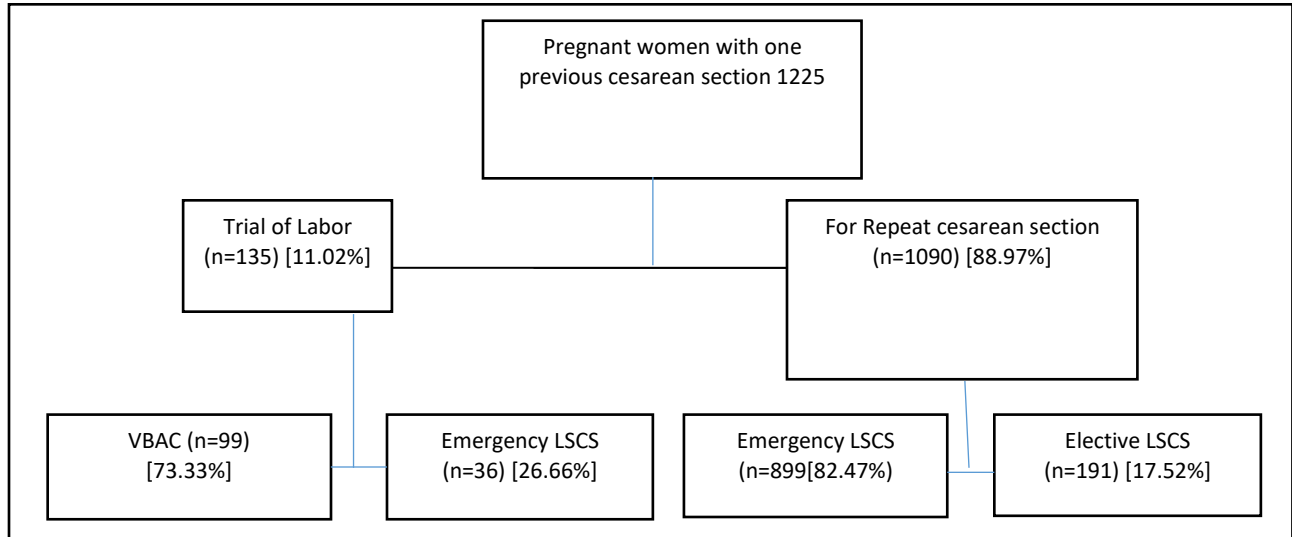
A detail history regarding previous pregnancies, intraoperative and postoperative events, indication of previous cesarean section, and history of previous vaginal delivery were noted. Detail physical examination along with per abdomen fundal height, lie, presentation, position, scar tenderness and Fetal Heart Sound (FHS) recorded. Patient meeting inclusion criteria were enrolled for trial of labor. Patient who were not meeting the inclusion criteria was opted for elective cesarean section. Outcome of trial of labor was categorized into Successful VBAC and Failed VBAC. These cases were analyzed in terms of indication of previous cesarean section, history of previous vaginal delivery. Intraoperative, postoperative complications and neonatal outcome was noted and critically analyzed.

### **Results**

There were 11,048 deliveries during the study period among which 3213(29.08%) patients underwent cesarean section. Out of total 3213 cases of cesarean section 1225(38.12%) were due to previous

cesarean section. Above data reflects the burden of previous cesarean section in our set up. Total 144 cases meeting the inclusion criteria for VBAC were enrolled for study but only 135 cases were

analysed because 9 cases dropped out and requested for cesarean section during the course of labor. Among 135 cases only 29 cases were booked case and remaining were un booked.



Above flow chart shows maximum number of previous cesarean underwent repeat cesarean section in emergency basis because more than 90 percent of women were unbooked and referred to our center in labor and after reaching term.

**Table 2 : Indication of previous caesarean section and outcome of trial of VBAC in present pregnancy.**

**Table 1: Demographic profile**

Patient Characteristics	Successful VBAC Group n = 99	Failed VBAC Group n = 36	P-Value
Mean age (yrs.)	26.63 ± 3.69	26.54 ± 3.11	0.887
Mean Parity	1.30 ± 0.9	1.25 ± 0.7	>0.05
Mean POG in weeks	38.50 ± 2.23	39.52 ± 1.82	>0.05

Patient Characteristics	Successful VBAC Group n = 99	Failed VBAC Group n = 36
Fetal distress	46 (46.46%)	6 (16.6%)
Oligohydraminos	8 (8.08%)	1 (2.77%)
Failed Induction	13 (13.13%)	11 (30.55%)
Eclampsia in LSOL	10 (10.10%)	2 (5.55%)
CPD before onset of Labor	3 (3.03%)	3 (8.33%)
Malpresentation a. Breech b. Transverse	8 (8.08%) 2 (2.02%)	2 (5.55%) 0
Multiple Pregnancy 1 <sup>st</sup> Non-vortex	2 (2.02%)	2 (5.55%)
Not able to recall indication	3 (3.03%)	7 (19.44%)
POP	2 (2.02%)	1 (2.77%)
Cord prolapse	1 (1.01%)	1 (2.77%)
Abruptio placente	1 (1.01%)	0

Mean age of patients was around 26 years which reflects the child bearing age of women in our region. It was observed that high parity and lower period of gestation was significantly associated with successful VBAC.

While analyzing indication of previous cesarean section and outcome of VBAC, we observed that majority (46.46%) had fetal distress followed by failed induction and malpresentation.

**Table 3: Indication of caesarean section in failed cases of VBAC n-36**

Patient Characteristics	n %
Fetal Distress	17 (47.2%)
Scar Tenderness	8 (22.2%)
Deep transverse arrest	2 (5.55%)
Persistent occipitoposterior position in second stage of labour with non descent of head	2 (5.55%)
Non-progress of labor	3 (8.3%)
Cord Prolapse	1 (2.7%)
Suspected rupture	3 (8.3%)

In failed VBAC group, indication of cesarean section was fetal distress 17 (47.2%) and Scar tenderness 8(22.2%). Among 8 cases of scar tenderness none of the patients had rupture intra-operatively ,which indicates scar tenderness may not be the reliable feature of impending or complete rupture of uterus. Though three women were suspected rupture uterus preoperatively, none of them had ruptured intraoperatively. Despite ongoing efforts by governmental NGOS and INGOS to promote family planning, many women 18 (50%) out 36 cases of repeat cesarean group refused to go for tubal ligation. Among them eight women had strong desire for more number of children in the want of male baby. Two of women refused for religious reason, three of them had not discussed with abroad working husband whereas rest five denied as their first child age was below five. This decision exposes them to the development of complications related to scar rupture in subsequent pregnancy and labor.

**Table 4: Present VBAC outcome and history of previous vaginal delivery**

Patient Characteristics	No. of Cases	Successful VBAC n-99	Failed VBAC n-36
History of previous VD	29	24 (24.24%)	5 (13.88%)
History of Successful VBAC	12	11 (11.11%)	1 (2.77%)

Above data demonstrates that the history of past vaginal delivery and VBAC were more frequently associated with successful VBAC.

**Table 5: Operative complications in failed cases of VBAC n = 36.**

Patient characteristics	n %
Postpartum haemorrhage	4 (11.1%)
Wound infection	11 (30.5%)
Bladder Injury	3 (8.33%)
Uretric injury	1 (2.77%)
Gut injury	0
Placenta accreta	3 (8.33%)

In the present study four (11.1%) cases had atonic post-partum haemorrhage managed with uterotonic drugs in one case, whereas other one required internal iliac artery ligation and rest two required peripartum hysterecctomy as bleeding was not controlled by uterine artery ligation and B-LYNCH suture. While performing hysterectomy ureter was transected due to extensive adhesion but it was diagnosed intraoperatively and ureteric injury was repaired by urosurgeon in same setting. There were three cases of bladder injury which was unavoidable due to extensive adhesion and all three were operated in periphery for fetal distress in active stage of labour in previous pregnancies. Wound infection was more commonly 11(30.5%) found in failed VBAC cases and among them, six were having haemoglobin level <8 gm% requiring blood transfusion post operatively but none of the patient had significant blood loss intraoperatively. All six cases had preoperative haemoglobin in the range of 9.8 to 10 gm%.

**Table 6: Intranatal Complication in Successful VBAC n = 99**

Patient characteristics	n %
Postpartum haemorrhage	1 (1.01%)
Wound Infection	3 (3.03%)
Scar rupture	None
Urinary complication	None
Puerperal Pyrexia	2 (2.02%)
Placenta accreta	None
Wound Gaping	None
Cervical Tear	1(1.01%)
3 <sup>rd</sup> and 4 <sup>th</sup> degree perineal Tear	None

There was no uterine rupture in successful VBAC group. We observed only one case of postpartum haemorrhage which was manageable with uterotonic drugs and blood transfusion. There were two cases of puerperal pyrexia due to infected episiotomy wound but could controlled by antibiotic according to culture and sensitivity .In both the case Escherichia coli was the causative microorganism and it was sensitive to second generation cephalosporin drugs.

**Table 7: Neonatal outcome**

Patient Characteristics	n %	n %
Mean wt. in Kg	2.7100 +- 0.544	3.12 +-0.580
Apgar Score ≤7 in 5 minutes	1 (1.1%)	3 (8.33 %)
NICU admission	11 (11.11%)	5 (13.88%)
Neonatal mortality	None	None
Duration of Hospital Stay >7 days	5 (5.05%)	3 (8.3%)

While analyzing neonatal outcome, 11 (11.11%) babies were admitted in NICU in successful VBAC group, five for preterm and low birth weight for supportive care. But all five were discharged within 7 days

of admission. Rest was for neonatal jaundice, neonatal sepsis and mild intrauterine growth retardation and there were no cases of neonatal mortality. In failed VBAC group five babies (13.88%) were admitted, three for birth asphyxia and meconium aspiration whose mother had undergone cesarean section for fetal distress, two were admitted for presumed sepsis.

#### Discussion

Many researches are raising the issue that VBAC may not be as safe as originally thought [5,6] but reports are conflicting and these factors along with medico-legal concerns have led to a decline in clinicians offering and women accepting trial for VBAC in various parts of the world [7,8]. It is well established that repeat cesarean section increases the risk of maternal and perinatal morbidity, including bleeding, wound infection, postpartum thromboembolism, increased risk of blood transfusion, anesthetic complications. Similarly repeat cesarean section may carry the risk of neonatal respiratory morbidity and future risk of asthma. So, the present study evaluated the outcome and trends in patients with a history of prior LSCS who delivered in our hospital in one year. In the current study, the attempted rate of VBAC was 135 (11%) of total 1225 cases of previous cesarean section which is comparable (10.4%) with the study done in Pakistan [9] but it is lower than in many other studies done in Western Countries [10]. Underdeveloped countries have low VBAC attempt rate because of multiple factors including limited resources for maternal and fetal monitoring. Most of the women were around 26 years reflecting the child bearing age group of third world countries. Among our 135 patients 99 (73.33%) had successful vaginal delivery whereas 36 (26.66%) could not do the same after labor trial. We were surprised with this high rate of successful vaginal

delivery. Our success rate was higher than a recent study (52.17%) reported by Misra N et al [11]. But other studies have shown success rate of 50-85% [12,24]. Our trial of labor became success because most of the high risk cases were already excluded from the trial. Other reason is that our center has government funded Safe Motherhood Programme, for this reason many women with low socioeconomic status attend our center and they believe more on vaginal delivery in contrast with women of well-to-do families who don't want to suffer labor pain. While analyzing the factors favoring vaginal delivery, our study revealed higher rate of successful VBAC in patients with previous vaginal delivery 24 (24.24%) compared with no prior vaginal delivery 5 (13.88%). This finding corroborates with other studies [13]. Our study has shown that success of VBAC was more significantly associated with previous history of VBAC that is consistent with other studies [14]. While analyzing the indication of previous cesarean section, fetal distress was the leading indication in successful present VBAC group 46 (46.46%) followed by failed induction and malpresentations . Similar results were obtained by other studies [15, 25-26]. Hence trial of labour should always be offered to such patients [11].

Among 36 patients who failed trial of labor and underwent repeat cesarean delivery, the reason was fetal distress 17 (47.2%) followed by scar tenderness 8 (22%) and rest others. This is comparable to the other study [16] where fetal distress and non-progress of labor were main reasons for emergency LSCS in patients with failed VBAC group. Studies in other centers showed that non progress of labor, failed induction and scar dehiscence were reasons for cesarean delivery in failed VBAC patients [17]. Despite these findings what we assume is that the indication of

cesarean delivery is hugely influenced by patient's wishes, obstetrician factors, and availability of monitoring equipments at the time of trial of labor and many other direct and indirect factors which cannot be documented all the time. During analysis of maternal outcomes, maternal morbidity was higher in failed VBAC cases, which is consistent with findings of other study [18]. The maternal morbidity in terms of intraoperative and postoperative complications was more in the failed VBAC cases as compared to successful VBAC group which is consistent with study done by Rizwan N et al [18]. Benefits of successful vaginal birth after cesarean section has a positive impact on the psychology of women and decreases the total cost of hospitalization [18].

Good maternal and fetal outcomes were evident in successful VBAC group in this study when compared with failed VBAC group. Our results were comparable to other studies done by Goel SS et al [19]. In the context of rising rate of primary cesarean section, management of patient with previous cesarean section with the appropriate mode of delivery is the challenge in obstetric practices. Regular and intensive antenatal surveillance, proper selection of patients, vigilant monitoring with competent technical team and dedication on the part of healthcare giver can increase safety of VBAC. There is no doubt that trial of labor is safe if followed with great care but it is not risk free [19]. There were no serious complications like hysterectomy, emergency blood transfusion and visceral injury in patients with successful VBAC group. Only three cases had episiotomy wound infection, one case of atonic PPH but were manageable with oxytocin and methyl-ergometrine, and 2 cases of puerperal pyrexia due to episiotomy wound infection.

Wound infection was more in repeat emergency cesarean section than those

with successful VBAC group. Other complications like Postpartum hemorrhage, placenta accreta, bladder injury and ureteric injury was also more common in repeat emergency cesarean section. Hence we conclude that VBACS is associated with better outcomes than emergency repeat cesarean section. Our results are comparable to Meta-analysis comparing emergency cesarean section versus trial of VBAC group [20]. Although there was no correlation between fetal factors and the success of VBAC in this study but birth weight and postdated pregnancy were commonly associated with failed VBAC group. Regarding neonatal outcome, we evaluated the parameters like mean birth weight, Apgar score, NICU admission and neonatal mortality. Fortunately, no neonatal mortality occurred in both the successful VBAC group and failed VBAC group. The awareness of clinicians in study subjects from litigation point of view, may be the reason for good neonatal outcome in our study. But there are reports of neonatal death in other studies [21]. However we observed 11(11.11%) that baby were admitted in NICU in successful VBAC group for five babies preterm supportive care, two for mild IUGR rest two neonatal sepsis and two neonatal jaundice respectively. None of the baby was admitted for birth asphyxia. This is similar with previous studies indicating vaginal delivery after one cesarean section is safe in regards to neonatal outcome if monitored vigilantly [22-23]. Like other studies this study also has limitations, these are recall bias about previous events by women, non availability of all the previous documents, small sample size and single center based.

### Conclusion

Our study suggests that successful VBAC is associated with better fetomaternal outcomes. Wound infection, blood transfusion, hysterectomy were more

common in failed VBAC followed by cesarean group of patients. Neonatal outcome was not significantly different. We should encourage VBAC trial in appropriate setting after appropriate selection of patients.

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