



## Original Article

# Study of Factors Associated with Success of Vaginal Birth after Previous One Caesarean Section

Authors

**Dr Jyoti Bindal<sup>1</sup>, Dr Sujata Bhargava<sup>2</sup>, Dr Ankita Manik<sup>3</sup>**

<sup>1</sup>Professor & Head, Department of Obstetrics & Gynecology, GR Medical College, Gwalior (MP)

<sup>1</sup>Associate Professor, Department of Obstetrics & Gynecology, Sri Aurboindo Institute of Medical Sciences, Indore (MP)

<sup>3</sup>EX-Resident, Department of Obstetrics & Gynecology, GR Medical College, Gwalior (MP)

Corresponding Author

**Dr Jyoti Bindal**

11, J.A. Hospital Campus, Gwalior (MP)

Email: [drjyotibindal@bindal.me](mailto:drjyotibindal@bindal.me), 9826255566

## Abstract

**Background:** A women with previous caesarean birth has two options in her subsequent delivery, either planned elective repeat caesarean or planned vaginal birth. Both the options are associated with risks and benefits.

**Aims and Objective:** To study the factors associated with vaginal birth after a cesarean delivery (VBAC) and associated fetal and maternal outcome.

**Materials and Methods:** Two hundred women with previous one lower segment caesarean section (LSCS) were included in the study conducted at Department of Obstetrics and Gynecology, Kamla Raja Hospital, Gajra Raja Medical College, Gwalior from November 2013 to October 2014. All the women were divided in to elective repeat Caesarean section (ERCS) group (women who delivered through caesarean section after trial of labor) and VBAC group (patient who delivered through vaginal route after trial of labor). Both the groups were studied for age, parity, gestation age, indication for previous CS, reason for failed trial and neonatal birth weight.

**Results:** In VBAC group, most of the patients (48%) belong to age group of 26-30 years, most of them were having gestation age of 37-40 weeks (60%), most common indication for previous CS was malpresentation (40%) followed by fetal distress (30%). Non-progress of labour (48%) was the common cause of failed trial of labour and 86% of the neonates of VBAC group had birth weight of  $\leq 3$  kgs. Maternal complications were more in ERCS group compared to VBAC group.

**Conclusion:** In all women with prior CS, if selected properly on the basis of predictive factors can be successfully tried for VBAC.

**Keywords:** VBAC, caesarean section, previous CS, maternal complications.

## Introduction

In last three decades the rates of cesarean section (CS) have increased worldwide, this is alarming and need an in-depth study to reduce its rate. The

procedure adopted for the CS is not so simple and it must be performed in special circumstances only.<sup>1</sup>

“Once a cesarean, always a cesarean” this phrase was being dominated by obstetric practice before 1970s. But due to escalating rates of CS, it was suggested that vaginal birth after CS (VBAC) could help in reducing CS rates.<sup>2</sup>

Trial have proved that in selected women and suitable clinical setting, VBAC can be effective and safe as compared to CS.<sup>3,4</sup> Also repeat CS is not required in women with prior one CS as majority of the such women who have been carefully selected for VBAC delivered vaginally.<sup>1</sup>

The present study was done to study the factors associated with VBAC along with fetal and maternal outcome.

### Materials and Methods

The present case control study was done including 200 antenatal women in the Department of Obstetrics and Gynecology, Kamla Raja Hospital, Gajra Raja Medical College, Gwalior from November 2013 to October 2014.

A written informed consent from all the women included in the present study and approval from Ethical committee was obtained before starting the study.

Women with previous one lower segment Caesarean section (LSCS), no contraindication to trial of labor (no obvious fetopelvic disproportion) and women came with spontaneous labor were included in the present study whereas women with contraindication to trial of labor (obvious fetopelvic disproportion), any other uterine scar like myomectomy, hysterotomy and women with high risk pregnancy were excluded from the study.

All the patients were divided in to two groups 100 each in to ERCS group (women who delivered through caesarean section after trial of labor) and VBAC group (patient who delivered through vaginal route after trial of labor).

### Results

In present study out of 200 pregnant women 100 (50%) delivered vaginally and 100 (50%) needed CS. The distribution of basic parameters is given in table 1.

The women who had a history of vaginal delivery before previous CS were more likely to have a successful VBAC (61%) whereas only 22% cases in ERCS group had it ( $p<0.05$ ). It was also observed that cases that had a vaginal delivery following CS were significantly more likely to have a successful VBAC compared to those who had one prior to CS ( $p<0.05$ ). In VABC group, 24 (39.3%) cases had vaginal delivery before CS and 37 (60.7%) cases had vaginal delivery after CS and in ERCS group 16.72% cases had vaginal delivery before CS and 6 (27.3%) cases had vaginal delivery after CS.

The non-progress of labour (48%) was the most common cause of failed trial of labour followed by fetal distress (29%) and scar tenderness (23%).

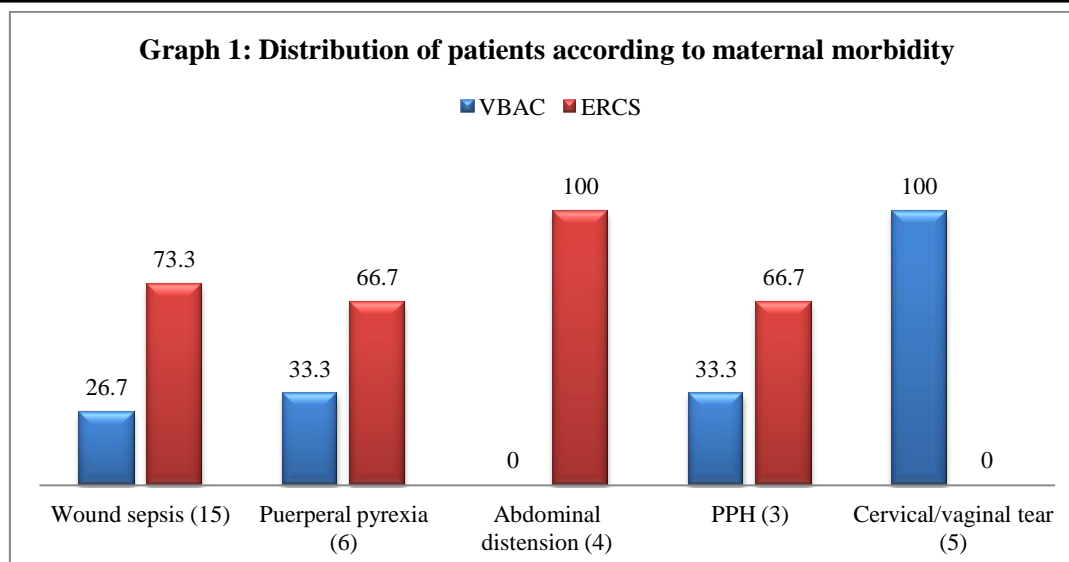
Data on neonatal weight revealed that 86% of the neonates of VBAC group had birth weight of  $\leq 3$  kgs and only 14% of them had birth weight of  $>3$  kg. In ERCS group, 64% of neonates had birth weight of  $\leq 3$  kg and 36% had  $>3$ kg ( $p<0.05$ ).

Apgar score (5 minutes) in present study was comparable in both the group ( $P>0.05$ ). In present study there was 20% NICU admission in VBAC group and 17% in ERCS group ( $p<0.05$ ).

**Table 1:** Distribution of patients according to different parameters

Parameters		VBAC	ERCS	P value
Age (years)	20-25	34	36	NS
	26-30	48	41	NS
	31-35	17	19	NS
	$>35$	1	4	0.001
Parity	1	46	80	$<0.05$
	2	46	19	$<0.05$
	3	8	1	$<0.05$
Age of gestation (weeks)	28-32	7	7	NS
	33-36	28	21	$<0.05$
	37-40	60	52	NS
	$>40$	5	20	0.0001
Indication of previous CS	Malpresentation	40	32	NS
	Fetal distress	30	18	NS
	NPOL	8	30	0.0001
	APH	8	6	NS
	PIH	6	7	NS
	Postdated pregnancy	3	3	NS
	Severe oligo	5	4	NS
Interval (years)*	$\leq 2$	13	54	0.0001
	$>2$ to $\leq 4$	60	30	0.0001
	$>4$ to $\leq 6$	21	9	0.0001
	$>6$	6	7	NS

Data is expressed as percentage of patients (%), CS; caesarean section, VBAC; Vaginal birth after caesarean section, ERCS; elective repeat Caesarean section, NS; not significant.\*Interval between last CS and Present pregnancy.



Data on history of post operative wound infection in primary CS revealed that only 4% cases in VBAC group had history of infection whereas 13% cases in ERCS group had such history ( $P < 0.05$ ).

## Discussion

In order to combat the growing rate of CS, VBAC seems to be the wisest choice. There are many factors which supports the usefulness of VBAC to be adopted by the doctors.<sup>5</sup>

In present study, success rates of VBAC in age group of  $>35$  were significantly small ( $P=0.001$ ). Bujold et al did a study on 2493 patients in order to evaluate the role of maternal age on the rate of vaginal delivery. They reported that success rate of vaginal delivery by a women was inversely related to age of women ( $P=0.005$ ), they concluded that maternal age of  $\geq 35$  years was associated with lower success rate of vaginal delivery in women with history of previous CS.<sup>6</sup> Another study by Srinivas et al including 25005 patients to evaluate the maternal age and its effect of vaginal delivery found that women with much advanced age ( $\geq 35$  years) were more likely to experience an unsuccessful trial of labour ( $p < 0.009$ ), in addition such women were more likely to experience VBAC related complications ( $p=0.039$ ).<sup>7</sup>

In present study rate of VBAC delivery was higher if indication of previous CS included malpresentation and fetal distress. Rate of ERCS was higher when indication of previous CS was non-progress of labor (NPOL) ( $p=0.001$ ) Shakti et al in their study of 237 women with one prior lower segment cesarean section (LSCS), reported that 72.1% patients delivered vaginally whereas

27.9% required emergency CS, hence advocated to consider VBAC in women with previous one CS for non recurrent indication.<sup>8</sup> Doshi et al did a similar study involving 216 women, found that 75% had VBAC and the most common indication reported was malpresentation which is consistence with present study results.<sup>9</sup> This suggests non-recurrent indication of previous CS was associated with higher rate of successful VBAC delivery. Cases that had NPOL in previous pregnancy i.e. prolonged trial of labour has decreased success rate of VBAC delivery in present pregnancy.

Doshi et al also reported that success rate of VBAC was higher in women with inter-conceptional period of  $>2$  years which is consistence with the present data, where success rate of VBAC was decreased if inter-pregnancy interval was  $\leq 2$  years ( $p=0.0001$ )<sup>9</sup> so interval from last caesarean section played an important role in success of VBAC.

Landon et al did a study including 14529 women to determine the factors which are responsible for successful trial of labor (TOL) in women with previous CS, reported that gestational age  $< 41$  weeks (OR, 1.6; 95% CI, 1.5, 1.8) was a favorable intrapartum factor for successful VBAC.<sup>10</sup> Present study is in concordance with them, demonstrating that only 5% of the patients in VBAC group had gestational age  $> 40$  weeks whereas 20% of the

patients in ERCS group had gestational age >40 weeks.

Quinones et al in large study of 20,156 patients reported 82% success rate for VBAC for preterm group whereas in our study preterm deliveries were similar in both the groups ( $p>0.05$ ).<sup>11</sup>

In present study, non-progress of labour was the most common cause of failure of labour. But Shakti et al reported fetal distress as the most common indication for emergency repeat CS whereas Mafatlal et al reported fetal distress (47.3%) as the most common indication followed by non-progress of labour in 27.3% patients.<sup>1, 8</sup> In present study non progress of labour may be due to the poorly formed lower uterine segment in case of previous CS delivery.

The cases having history of vaginal delivery after CS have more chances of successful VBAC in present pregnancy (60.7%) as compared to cases whose vaginal delivery was prior to caesarean delivery (39.3%). This was consistent with studies done by Caughey et al and Doshi et al.<sup>9, 12</sup>

Another important finding is that with increasing neonatal birth weight chance of successful trial of labour is reduced which supports the study done by Doshi et al but Birara et al opposed such association between birth weight of baby and success of VBAC.<sup>9, 13</sup>

Shakti et al and Mafatlal et al both have reported higher rates of maternal complications in ERCS group which supports present study findings.<sup>1, 8</sup>

As per the previous reported data there were more chances of babies to get admitted in NICU if delivered vaginally in cases of previous CS. Kamath et al in a study of 672 women with one prior CS, reported that neonates born by CS had more NICU admissions compared to VBAC group ( $p=0.025$ ).<sup>14</sup>

It was observed that infection (4%) at the time of previous CS have decreased rate of VBAC in subsequent trial of labour which is consistent with the study by Dodd et al.<sup>15</sup>

The present study had limitation of being small in sample size; a large randomized trial is required to confirm the present study findings.

## Conclusion

It is justified to go for VBAC in women with one prior CS with non-recurrent indications. It is required to screen such women from the first antenatal visit itself in order to reduce the associated complications. Right selection, suitable timing and appropriate methods of induction along with keen observation are the key for successful VBAC in women with prior CS.

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