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Original Research Article

A Prospective Controlled Clinical Study to Analyze the Vaginal Birth with Previous Caesarean Section and its Outcome

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Abstract

Aim: The aim of the present study was to analyse the vaginal birth with previous caesarean section and its outcome.

Methods: A year passed over the course of this prospective controlled clinical trial. A total of 150 women with a history of cesarean sections participated in the research. One hundred women (or 66.66 percent) met our inclusion criteria and were enrolled in the research. A matched control group of 100 women who had never had a cesarean section before served as the basis for this study.

Results: Study and control groups had similar age, parity, gestational age, and obstetric and medical histories. Eight (8%) instances of oxytocin-assisted labor had no uterine rupture. 2 (2%) of VBAC patients had uterine dehiscence and 1 (1%) had rupture. No maternal fatalities and 1 stillbirth followed uterine rupture. Neither the VBAC trial nor the control group showed significant differences in Apgar ratings, with 5% of infants in the former having scores < 6 (P > 0.05). 2% of infants in the case group weighed > 3500 g but < 4000 g. Out of the women who delivered vaginally, 75 (75%) were admitted at the first stage and 25 (25%) in the second, compared to 78 (78%) and 22 (22%).

Conclusion: A trial of vaginal birth may have a high success rate with no additional risk of mother and fetal morbidity or mortality for selected patients with one prior lower segment cesarean section who come in spontaneous active labor.

Keywords: Vaginal Birth, Caesarean Section, Outcome.

Introduction

The WHO reports a global increase in cesarean sections (CS). [1] Cesarean section rates are rising despite WHO recommendations of 5–15%. [2] Cesarean section was performed on 21.1% of women worldwide. [3] 29.55% of Ethiopian hospital births were cesarean sections. [4] Placenta previa, hysterectomy, adhesions, blood transfusions, and surgical damage rise with repeated cesarean sections [5], mothers have a greater risk of postpartum death. [6,7]

CS rates rise mainly due to repeat CS. Prior CS is the main sign of repeat CS. [8] To lower CS rates, TOLAC is tried. Many national medical groups have published VBAC practice guidelines [9,10], although they vary by on country. [11] In comparison to recurrent CS, VBAC is generally safe. [12] TOLAC rates have decrease dramatically worldwide in recent years. [13,14] Trials of labor are sometimes the last chance for cesarean mothers to have a normal birth. A failed VBAC increases maternal and postnatal problems more than a planned repeat CS. Women with one prior CS who undergo IOL had reduced vaginal delivery success rates compared to spontaneous labor. [15,16] Women with a successful VBAC had an 85%–90% likelihood of delivering vaginally. [17] Factors affecting outcomes include mother age <40, ethnicity, BMI <30, gestational age <40 weeks, newborn birth weight <4 kg, and higher admission bishop score. [18,19] VBAC success rate corresponds with the indication of the previous CS; fetal malpresentation had high success rate (84%) compared to labor dystocia (64%) or fetal distress (73%). [20] The present study examined vaginal birth after cesarean section and its results.

Materials ans Methods

A one-year prospective controlled clinical trial was conducted in Department of Obstetrics and Gynecology, ICARE Institute of Medical Science and Research & Dr BC Roy Hospital,Haldia, West Bengal, India for one year .This facility follows ACOG standards for selecting women for VBAC

trials. [21] However, prostaglandin induction is avoided and oxytocin is occasionally administered in modest dosages under close monitoring to enhance labor.

This research included women with one cesarean section who were eligible for VBAC. We chose only women who were at term (37 completed weeks up to 40 weeks) by last menstrual period and/or first trimester ultrasonography and had spontaneous onset of labor. The study excluded women who did not have spontaneous labor, did not reach term, or had other obstetric or medical reasons for cesarean delivery. This study found no post-date pregnancies.

150 women underwent cesarean sections throughout the research. The study comprised 100 women (66.66%) who met our criteria. Women without prior caesarean section were matched into a 100-woman control group. Age, parity, gestational age, newborn weight, Apgar score, oxytocin usage, and delivery style were compared. 5 controls suffered intrapartum fetal distress and were sent to the operating room for abdominal delivery, leaving 100 controls who finished the research. Each subject gave informed permission and the hospital ethical committee approved the study.

Data Collection: Every participant received a thorough history, clinical and obstetric examination. The data retrieved included: maternal age, parity, gestational age, indications for previous caesarean section, circumstances surrounding the previous delivery, type of uterine incision, interval since the previous caesarean and previous vaginal delivery before or after the caesarean section. We always assess pelvic adequacy using digital pelvimetry.

During the trial of labour, the senior physician responsible for the labour room was informed about the case. An intravenous line was established and maintained and intravenous infusion of 5% dextrose in water was given. At least 1 unit of blood was typed and cross-matched for each woman. For those women in both groups who presented early in the first stage (cervical dilatation > 4 but < 7 cm) the partogram was established and the fetal and maternal conditions were assessed and plotted regularly. For the other women, fetal cardiac activity, maternal vital signs and uterine contractions were assessed every 30 min in the first stage and 15 min in the second stage. The uterine scar was assessed every 30 min by noting maternal tachycardia, scar tenderness, fetal tachycardia, haematuria, vaginal bleeding and loss of the presenting part on vaginal examination. The progress of labour was assessed by abdominal and/or vaginal examination 4 hourly in the first stage and more frequently in the second stage or when membranes were ruptured or bleeding ensued. This monitoring was continued throughout the trial of labour. Our policy to augment women with oxytocin during VBAC attempt is to infuse oxytocin 2.5 units in 500 mL of dextrose (or normal saline) at 10 drops/min (2.5 mIU/min) and increase the infusion rate by 10 drops/min every 30 min until a good uterine contractions pattern is established. All the women in our study responded to the first dose without further increment. All women had cardiotocography monitoring. Pain relief was given on the form of intramuscular injection of tramadol hydrochloride. Epidural analgesia was not available. The outcome measures were the duration of first and second stage of labour, intrapartum complications, Apgar score, birth weight, postpartum haemorrhage, uterine separation, need for blood transfusion and length of hospital stay.

Statistical Analysis: Data were analysed using SPSS version 20. The data were presented as mean and standard deviation (SD) and percentages when appropriate. Statistical significance was taken as P value < 0.05.

Results

Table 1: Maternal characteristics and outcome measures for the case group of women with trial of vaginal birth after caesarean section and the control group

Variable	Case group (n = 100)		Control group (n = 100)		P-value
	Mean	SD	Mean	SD	
Age (years)	23.7	5.5	24.6	8.4	0.755
Parity	2.8	1.0	2.8	1.2	0.314
Gestational age (weeks)	38.4	3.1	38.7	0.5	0.590
	No.	%	No.	%	
Oxytocin					< 0.001
No	92	92	46	46	
Yes	8	8	54	54	
Birth weight (g)					0.935
≤ 2500	22	22	18	18	
> 2500–3500	76	76	77	77	
> 3500	2	2	5	5	
Apgar score					0.945

< 6	5	5	5	5	
6–8	51	51	50	50	
> 8	44	44	45	45	
Postpartum complications					0.713
Dehiscence	2	2	0	0.0	
Uterine rupture	1	1	0	0.0	
Blood transfusion	1	1	0	0.0	
Length of hospital stay (hours)					0.856
2	90	90	96	96	
> 2–4	6	6	0	0.0	
> 4	4	4	4	4	

There were no significant differences between the study group and control group in terms of age, parity, gestational age or obstetric and medical history. Oxytocin was used to augment labour in 8 cases (8%) but there was no uterine rupture recorded in these cases. Overall there were 2 cases (2%) of uterine dehiscence and 1 case (1%) of uterine rupture among the VBAC group. There were no maternal deaths and only 1 stillbirth after the case of uterine rupture. There was no significant difference between the groups in Apgar scores; 5% of neonates in the VBAC trial group had Apgar score < 6 compared with 5% in the control group (P > 0.05). We found 2 neonates (2%) weighed > 3500 g but < 4000 g in the case group.

Table 2: Duration of first and second stages of labour for the case group of women with trial of vaginal birth after caesarean section and the control group

Stage of labour	N	Case group (n =100)	N	Control group (n = 100)	P-valuea
		Mean (SD) duration (min)		Mean (SD) duration (min)	
1st stage	75	144.4 (72.8)	78	145.5 (67.3)	0.960
2nd stage	25	32.8 (6.4)	22	28.8 (7.3)	

Of the women who successfully delivered vaginally, 75 (75%) were admitted during the first stage of labour and 25 women (25%) in the second stage versus 78 (78%) and 22 (22%) respectively in the control group.

Discussion

CS reduction initiatives failed to meet the WHO's 15% target. [22] Repeat CS is the biggest cause of rising CS rates. [23] TOLAC aims to lower CS rates. Several national medical groups have published VBAC practice guidelines [24,25], although they vary by country. [26] Comparatively, VBAC is safer than repeat CS.27 Global TOLAC rates have declined dramatically in recent years. [28,29] Success rate for VBAC trial was 80%. It matches similar research. Flamm et al. found an 86% success rate for VBAC in women with dilatation ≥ 4 cm. [30,31] High success rates suggest a better maternal outcome [32], but they frequently apply to a chosen population [33] and should include additional delivery-related neonatal problems such hypoxic ischaemic encephalopathy.

There were no significant differences between the study group and control group in terms of age, parity, gestational age or obstetric and medical history. Oxytocin was used to augment labour in 8 cases (8%) but there was no uterine rupture recorded in these cases. Overall, there were 2 cases (2%) of uterine dehiscence and 1 case (1%) of uterine rupture among the VBAC group. There were no maternal deaths and only 1 stillbirth after the case of uterine rupture. There was no significant difference between the groups in Apgar scores; 5% of neonates in the VBAC trial group had Apgar score < 6 compared with 5% in the control group (P > 0.05). We found 2 neonates (2%) weighed > 3500 g but < 4000 g in the case group. There were no maternal deaths and only 1 stillbirth after the case of uterine rupture. Uterine rupture rarely occurs in unscarred uterus (may occur in neglected prolonged labors). In western societies, rupture of uterus may occur in women undergoing VBAC. A study done in the Netherland showed that the use of PGE2, for induction or augmentation of labor with low bishop score, increased the risk of uterine rupture. [34] One study, including 20,059 women (done in the USA) who had one previous CS, found a rate of uterine rupture of 0.52% for spontaneous labor, 0.77% for induced labor with cervical catheter, and 2.22% for PG induction. Secondary analysis of the study showed that proper selection of women most likely to give birth vaginally and avoiding sequential use of multiple doses of PG and oxytocin are the best ways to avoid uterine rupture. [35]

However, classical incisions, multiple caesarean sections, inducement of labor, and shorter interpregnancy intervals increase the frequency. [21] Compared to 78 (78%) and 22 (22%) in the control group, 75 (75%) of vaginally delivered women were hospitalized during the first stage and

25 (25%) in the second. It appears that clinical and radiographic estimates of fetal weight at term are erroneous. Birth weight is only known after delivery, which may restrict its clinical decision-making value. Therefore, birth weight may only be useful when combined with other factors. It suggests that women with one previous cesarean section and fetal weight > 3500 g but < 4000 g should consider VBAC. [35]

Conclusion

A trial of vaginal birth may have a high success rate with no additional risk of mother and fetal morbidity or mortality for selected patients with one prior lower segment cesarean section who come in spontaneous active labor. These women had typical labors. If low-risk patients are properly selected, our findings may encourage obstetricians to tolerate VBAC and raise the caesarean section threshold.

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