ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

Outcomes of parturients attempting vaginal birth after caesarean section

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Abstract

Background: Cesarean delivery (CD) drives escalating C-section rates, resulting in scarred uteri for subsequent pregnancies. Managing women with prior CD scars presents challenges due to increased risks for mothers and infants. Options include planned vaginal birth after cesarean (VBAC) or elective repeat C-section. Opting for VBAC is advisable for scarred uteri to lower the repeat CD risk. Nevertheless, repeat C-sections impose limitations on consecutive deliveries and elevate complications such as adhesions, placenta issues, postpartum hemorrhaging, and peripartum hysterectomy.

Objectives: The purpose of this study was to establish the rate and predictors of successful vaginal birth following cesarean section, as well as to measure mother and newborn outcomes of VBAC after one previous cesarean section.

Methods: In this hospital retrospective study, 120 women with a single prior C-section who attempted VBAC were compared to 120 women with no prior C-section (controls) bearing suited for maternal age, parity, and gestational age singleton cephalic fetuses. The major outcome indicators were vaginal delivery success and its indicators. The collected data was analyzed using SPSS, and $p<0.05$ was considered significant.

Results: Our findings revealed that VBAC was successful in 61.7% of cases. Cervical dilation of 4cm on entrance to the labor unit, augmentation of labor and maternal age more than 35 years were significant predictors of successful VBAC. VBAC was determined to be safe in the study. Its result is comparable to that of women who have never had CD.

Conclusion: VBAC is risk-free and has been linked to equivalent prenatal and maternal effects in women who had never had a child. Women over the age of 35 are more inclined to have had a prior vaginal delivery or VBAC.

Keywords: *vaginal birth after delivery, predictor, model*

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

Introduction

Cesarean delivery (CD) remains the leading cause of growing C-section rates, while rising main C-section predicts a greater percentage of women who have scarred uteri in later pregnancies [1, 2]. Women's management who had one prior C-section scar is a difficulty because of the predicted more risks in maternal and neonatal illness and mortality as compared to women with unscarred uterus, particularly problems that are potentially fatal. Women with past CD scars are managed with either a planned VBAC or an elective repeat C-section, while Women with bruised uteri obstetricians are recommended to choose VBAC to lower the chance of repeat CD [1]. In addition, repeat C-section limits the woman for consecutive deliveries, raises the likelihood of placenta previa, thick vaginal adhesions, morbidly adherent placenta, peripartum hysterectomy, and postpartum hemorrhaging (PPH) [2].

The VBAC versus elective repeat CD checklist is recommended by the “Royal College of Obstetricians and Gynecologists” (RCOG) [3]. As “Royal College of Obstetricians and Gynecologists” women carrying an unborn cephalic fetus at 37 weeks or more, having one prior CD and no contraindications to vaginal birth, had a 72-75% success rate for VBAC [3]. Furthermore, because of the increased risk of failed vaginal birth following C-section and consequent emergency C-section, adequate patient assessment and choice for planned vaginal birth following C-section are recommended [3]. Because of an aversion to CD, low-income countries continue to practice VBAC; consequently, obstetricians require suitable personalized analysis which can aid in the development of a secure birth plan.

Data from large clinical series, primary centers, small public and private healthcare facilities are presented imply the advantages of Vaginal birth following C-Section surpass the risks for the majority of women who have had one parallel lower segment scar [1, 2, 4, 5]. Other experts, however, have expressed major concerns regarding the efficacy of Vaginal birth following C-Section reports of ruptures associated with infant fatalities and long-term cognitive deficits [6]. The benefit of meta-analysis of controlled studies for VBAC is still restricted because of moral challenges in the planning and execution of these studies due to the choice of delivery methods is dependent depending, among other things, on elements like the couple's decision and their familiarity with the practitioner [1-4].

A recent systematic review on elements linked to success VBAC came to the conclusion that type 2 diabetes, Bishop score, hypertensive disorders adding to pregnancy, macrosomia, induction of

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

labor, before vaginal birth, obesity, age, and indications for previous CS must all be considered [7]. A comprehensive clinical treatment examines affecting VBAC rates, on the other hand, revealed that there is inadequate high-quality information to suggest optimal therapeutic interventions involving females undertaking a labor trial following previous CD [8]. The aim of this study is to determine the outcome rate of VBAC, determinants of success, and mother and neonatal outcomes.

Methods

Study design and population

An observable comparison research was conducted at the Department of Obstetrics and Gynecology in SNMMCH, Dhanbad, Jharkhand, India. Mother's age, equality, and gestational stage were compared between women with one prior CD who attempted a vaginal birth at the investigation's site (subject) and women without a prior uterine scar (control).

Inclusion and exclusion criteria

Subjects were required to have one previous CD scar, an unborn cephalic fetus, a clinically acceptable pelvis, and no contraindications to vaginal delivery. Women with singleton pregnancies who were admitted to labor without a preexisting uterine scar were matched to the study group in terms of maternal age, parity, and gestational age. Women with a history of numerous CDs, a previous myomectomy, a classic uterine scar, perforation of the uterus or rupture, several pregnancies, or other conditions that prevent vaginal delivery were barred from participating in the study.

Sampling method

All subsequently permitted and keen women were selected till the desired sample size was reached using purposeful random sampling.

Recruitment

Participants were selected at the study site's booking or prenatal clinic by the 20th week of gestation.

Size design

Following recruiting, the study was explained to participants, involving take-home literature outlining the chances of achievement, the possibility of a VBAC failure, potential complications from the procedure, and treatment options to prevent or address the issues. The birth plan included the participant's desired partner or any other person. Obstetric ultrasound was done on subjects at

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

36 weeks' gestation to examine placental location, liquid volume, wound thickness, viability of fetal tissue, and weight and presentation. The abdominal palpation method was used to estimate clinical fetal weight. Then we determine the fetal weight at term in-utero. In the blood bank, for every patient, one pint of blood was drawn and preserved.

Each person was observed for two hours in the labor room prior to being transferred to the postoperative ward, where they remained for at least 24 hours before being discharged if there were no difficulties during or after delivery. Up to six weeks of age following the birth, they were monitored in the postnatal clinic with their infants.

Data collection

All subjects' documentation pertaining to labor and delivery, postpartum, after delivery, and during surgery issues, as well as length of hospital stay, were noted. Apgar scores are recorded at the first and fifth minutes and duration of hospital stay were among the neonatal result metrics.

Data management

The Chi square test was used to assess the relationship between category factors and variable results. Similarly, the sample t-test was used to determine the relationship between a continuous variable and an outcome variable as well as other categorical variables. IBM SPSS version 25.0 was then used to evaluate the data.

Results

As shown in table 1, women with and without previous CD had equivalent socioeconomic class (p=0.271), and marital status (p=0.604). There was no variation in the vaginal delivery process that was statistically important (72 vs. 86), vacuum delivery (2 vs. 6), or CD (46 vs. 28) between patients (women with one prior C-section) and controls (women without uterine scar) p=0.149.

Table 1: Participants' biosocial traits and manner of delivery

Parameter	**Subjects N=120**	**Control N=120**	**X^2**	**P-value**
Social class				
Low	16	16	2.68	0.271
Middle	74	58		
High	30	46		
Marital status				

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Single	2	0	1.01	0.604
Married	116	118		
Widowed	2	2		
Mode of delivery				
Caesarean delivery	46	28	3.81	0.149
Instrumental delivery	2	6		
Vaginal	72	86		
Indication for cesarean delivery				
Cephalopelvic disproportion	22	16	5.62	0.231
Fetal distress	8	8		
Cervical dystocia	10	0		
Cord prolapses	6	2		
Cord presentation	0	2		

Table 2 depicts the connection among core CD indications and the result of the index pregnancy in women who had prior C-section (subjects). Ruptured placentas, prolapsed cord, twin gestations with unusual lie or poor birth progress, fetal macrosomia, which distress in the fetus, unusual lie, and severe preeclampsia with an unfavorable cervix had a 100% success rate for a vaginal birth canal; eclampsia and placenta previa had a 54.2% success rate; and hand prolapse had a 33.3% success rate. The rate of repeat C-section deliveries was 66.7% in cases of hand prolapse, 50% in cases of eclampsia with placenta previa, 45.8% in cases of CPD, and 25% in cases of severe preeclampsia with a cervix that is not in favor.

Table 2: The association between primary C-section indications and the outcome of the index pregnancy in individuals

Previous CD indication	Vaginal delivery, n=74	Successful VBAC rate	Repeat CD rate	Repeat CD, n=46
Cephalopelvic disproportion	26	54.2%	45.8%	22
Placenta previa	8	50%	50%	8

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Severe preeclampsia with unfavorable cervix	6	75%	25%	2
Hand prolapses	2	33.3%	66.7%	4
Abnormal lie	6	100%	-	-
Twin gestation with leading twin breech	4	100%	-	-
Eclampsia	2	50%	50%	2
Fetal distress	2	100%	-	-
Fetal macrosomia	2	100%	-	-
Cord prolapses	2	100%	-	-
Twin gestation with poor progress of labor	2	100%	-	-
Abruptio placentae with live fetus	2	100%	-	-
Others	10	55.6%	44.4%	8

According to table 3, 74 of 68 women with a history of CD had no mortality, and their VBAC was effective in comparison to 92 women with not a history of CD compared to 86 of those without previous CD, but other morbidities were equivalent. In addition, 46 women had recurrent contrasted with the 28 women who had EMCS among those who had never had CD; for the 36 women who had failed VBAC, there was no complications and 24 of controls. Regardless of manner of delivery, the results for mothers (p=0.145) and newborns (p=0.424) were similar in the two groups. Though the average amount of blood lost at childbirth was larger in participants with repeat CD compared to those with main CD (756.52±423.54 vs. 692.86±208.34), the difference was not statistically significant (p=0.174).

Table 3: Participants' maternal and neonatal outcomes

Outcome	**Vaginal delivery**		**Cesarean delivery**	
	Subjects n=74	**Control n=92**	**Subjects n=46**	**Control n=28**
Maternal outcome				

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Endometritis	0	2	0	0
Blood transfusion	4	4	2	4
Surgical site infection	0	0	2	0
Uterine scar dehiscence	0	0	2	0
Uterine rupture	0	0	4	0
Postpartum hemorrhage	6	4	2	0
No morbidity	68	86	36	24
Neonatal outcome				
Neonatal death	0	0	2	0
Hypoxic ischemic encephalopathy	0	0	0	2
Neonatal jaundice	2	0	4	0
Neonatal sepsis	4	0	4	0
Perinatal asphyxia	6	4	10	0
Neonatal intensive care admission	14	14	16	8
No morbidity	58	86	26	26

Discussion

The effective VBAC rate in the present research is 61.7%, with the greatest incidence between women who had previously undergone CD for fetal macrosomia, premature birth, placenta breakage, cord rupture, a twin pregnancy with an unusual lie, or inadequate labor advancement. Cervical dilation >4cm on admission to labor, maternal age >35 years, and labor expansion were significant predictors of successful VBAC; Not included were estimated gestational age at delivery, parity, height of the mother, BMI, history of delivery via the vaginal canal, method of labor onset, and birth weight at delivery.

When individuals who tried VBAC were compared to those who did not have a prior uterine scar, maternal and newborn results were not substantially different. Differences regarding the variations in patient selection requirements and policies of hospitals, postpartum track protocols, attending obstetrician knowledge, and hint for the prior CD have all been linked to successful VBAC rates,

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

the parturient desire, and the healthcare worker's ability to quicken delivery when showed [4]. In this study, mother age > 35 years was a significant predictor of successful VBAC. This contradicts prior research that linked advanced maternal age to VBAC failure [10, 11]. This conclusion could be explained by women over the age of 35 are more inclined to have had a prior vaginal delivery or VBAC, both of which are useful guidelines for VBAC accomplishment.

In VBAC, ruptured uterus is a serious problem; one of the two occurrences of rupture in the study was oxytocin infusion augmenting, then live birth via emergency C-section. The second patient, on the other hand, was displayed in the following stage of childbirth with distress in the fetus, but the operation was postponed because the couple refused to accept an abdominal delivery that resulted in a premature birth. While research has shown that uterine rupture can occur after a failed VBAC [11], early detection and intervention can help to limit subsequent difficulties. However, a delay in speeding delivery exacerbates the situation. by the abdominal route [12].

Limitations

The sample size and single-center design of this study limit its scope. More multicenter research with high sample sizes is needed to answer crucial issues about VBAC risk factors and outcomes. Furthermore, the research's statistical strength is insufficient to suggest routine a hormone called oxytocin enhancement of work during vacuum-assisted birth.

Conclusion

To conclude, VBAC is risk-free and has been linked to equivalent prenatal and maternal effects in women who had never had a child. As a result, comprehensive pregnancy information, counseling, partner participation, and careful choice of patient should be encouraged. Women who tried VBAC were compared to identical controls who had never had CD is the study's strength.

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