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Clinical evaluation of spontaneous and induced vaginal birth after caesarian delivery in pregnant females from Bihar regions

Dr. Vijaya[1], Dr. Sunita Kumari[2*]

[1] Associate Professor, Department of Obstetrics and Gynaecology, Jawahar Lal Nehru Medical College and Hospital, Bhagalpur, Bihar, India

[2] Associate Professor, Department of Obstetrics and Gynaecology, Patna medical college and Hospital, Patna Bihar, India

[*] Corresponding Author: Dr. Sunita Kumari

Abstract

Before 1970s the phrase "once a caesarean, always a caesarean" dictated obstetric practice. Later because of escalating rates of caesarean section (CS) suggestions were made that vaginal birth after CS (VBAC) might help in reducing the rates of CS. So trial of labour in cases of previous CS (PCS) has been accepted as a way to reduce the overall CS rates. There is evidence of safety of trial of labour, with or without induction of labour, with reduction in iatrogenic prematurity, and maternal morbidity and mortality. VBAC is believed to be appropriate for most women with a history of low transverse CS. However several factors increase the likelihood of a failed trial, which in turn might lead to increased maternal and perinatal morbidity including uterine rupture and related fetal morbidity and mortality rates. The purpose of this study was to identify the obstetrical parameters that influence the success of vaginal delivery in women with previous caesarean section.

The present study was planned in Department of Obstetrics and Gynaecology, Jawahar Lal Nehru Medical College and Hospital, Bhagalpur, Bihar and Patna Medical College and Hospital Patna from June 2017 to June 2018. A total 250 women with singleton live pregnancy of >34 weeks of gestational age with previous one caesarean delivery and willing for vaginal birth after caesarean (VBAC) were enrolled in the study. No attempt was made to screen candidates based on relative likelihood of success. Each patient was counselled about the risks and benefits of undergoing trial of labour and delivering vaginally. Data was analysed by going through the case sheet of each patient The data generated from present study concludes that attempt for VBAC is well justified for post caesarean pregnancies with non recurrent indications. Screening for this should preferably begin at antenatal stage itself to minimize the related risks. Proper selection, appropriate timing and suitable methods of induction with close supervision by competent staff are the key factors to achieve greater degree of success. The ability to predict women who are at high risk for failing trial of labour and those with high probability of successful vaginal delivery would help guide clinicians and women in making good clinical decisions and minimizing adverse events.

Keywords: vaginal birth after cesarean delivery, previous cesarean delivery, VBAC, etc

Introduction

In case of a previous caesarean section a subsequent pregnancy can be planned beforehand to be delivered by either of the following two main methods: Vaginal birth after caesarean section (VBAC) and Elective repeat caesarean section (ERCS).

Both have higher risks than a vaginal birth with no previous caesarean section. There are many issues which affect the decision for planned vaginal or planned abdominal delivery. There is a slightly higher risk for uterine rupture and perinatal death of the child with VBAC than ERCS, but the absolute increased risk of these complications is small, especially with only one previous low transverse caesarean section [1]. 60–80% of women planning VBAC will achieve a successful vaginal delivery, although there are more risks to the mother and baby from an unplanned caesarean section than from an ERCS [2, 3]. Successful VBAC also reduces the risk of complications in future pregnancies than ERCS [4].

While vaginal births after caesarean (VBAC) are not uncommon today, the rate of VBAC has declined to include less than 10% of births after previous caesarean in the USA. Although caesarean deliveries made up only 5% of births overall in the USA until the mid-1970s, it was commonly believed that for women with previous caesarean sections, "Once a Caesarean, always a Caesarean". A consumer-driven movement supporting VBAC changed medical practice and led to soaring rates of VBAC in the 1980s and early 1990s, but rates of VBAC dramatically dropped after the publication of a highly publicized scientific study showing worse outcomes for VBACs as compared to repeat caesarean and the resulting medicolegal changes within obstetrics [5]. In 2010, the National Institutes of Health, U.S. Department of Health and Human Services, and American Congress of Obstetrics and Gynecology all released statements in support of increasing VBAC access and rates [6].

"Once a caesarean, always a caesarean." From 1916, when these words were spoken to the New York Association of Obstetricians & Gynecologists, through the ensuing 50-60 years, this statement reflected most of US obstetricians' management of patients with a prior caesarean delivery. By 1988, the overall caesarean delivery rate was 25%, rising from less than 5% in the early 1970s. Only 3% of live-born infants were delivered vaginally after the mother had undergone a prior caesarean delivery.

Although attempts at a trial of labour after a caesarean birth (TOLAC) have become accepted practice, the rate of

successful vaginal birth after caesarean delivery (VBAC), as well as the rate of attempted VBACs, has decreased during the past 10 years (see the image below). Whereas, 40-50% of women attempted VBAC in 1996, as few as 20% of patients with a prior caesarean delivery attempted a trial of labour in 2002. This number is drifting down toward the 10% mark with fewer than 10% of women achieving successful VBAC in 2005.

Nevertheless, despite the known risks (0.5-1% rate of uterine rupture), TOLAC remains an attractive option for many patients and leads to a successful outcome in a high proportion of cases. In comparison, the alternative of elective repeat caesarean delivery is not without risks. In addition to the inherent risks that caesarean delivery has over vaginal delivery, patients may experience uterine rupture prior to the onset of labour.

The decision to undergo TOLAC is an individual one that should be based on careful, thorough counseling [1]. Maternal characteristics and obstetric history can provide a patient a rough estimate of her chance of a successful trial of labour. This same obstetric history can be used to estimate a patient's risk of uterine rupture.

If possible, avoid induction of labour, because induction of labour decreases the probability of success and increases the chance of uterine rupture in a trial of labour after caesarean delivery. Counsel patients who elect to undergo TOLAC to be evaluated early in labour and to manage the pregnancy in a hospital setting in which uterine rupture can be both recognized and managed expediently.

Certainly, counselling should address the question of whether patients are interested in subsequent pregnancies after the current pregnancy. Undergoing 2 prior caesarean deliveries further increases the risks of VBAC in a subsequent pregnancy; thus, for a future pregnancy, having had a successful VBAC offers protection after undergoing the risk in the current pregnancy.

Several factors have contributed to the decline in VBAC. As practitioners experience complications related to managing patients undergoing trials of labour after caesarean delivery, they are less likely to allow new patients to undergo a trial of labour. In addition, 1999 guidelines from the American College of Obstetricians and Gynecologists (ACOG) stated explicitly that patients undergoing TOLAC require the presence of an obstetrician, an anesthesiologist, and/or a staff capable of performing an emergency caesarean delivery throughout the patient's active phase of labour [7].

Whereas academic centers and larger community hospitals are able to comply with these requirements, many smaller hospitals do not offer in-house anesthesia or obstetric staff. Furthermore, to meet the financial demands of managed care, many obstetricians now cover more than one hospital simultaneously, making it difficult to comply with the 1999 guidelines.

Two specific outcomes of interest regarding TOLAC have been well investigated: successful VBAC and uterine rupture. Other outcomes are certainly of interest, including neonatal outcome, hysterectomy, and maternal mortality; however, few studies have focused on these outcomes, and poor outcomes occur too rarely to be well represented in established databases.

In earlier studies, most outcomes were reported after univariate analysis. Risk factors were examined without controlling for potential confounding variables, and results were reported as a relative risk or odds ratio. These ratios represent the risk of the group of individuals who have the risk factor divided by individuals without the risk factor. Over the last decade, several large cohorts have examined predictors and outcomes related to women with a prior caesarean delivery. These studies have ranged from Nova Scotia to Boston to the state of Washington.

Finally, 2 large multicenter studies have been publishing multiple studies on this issue, one out of Pennsylvania and the other out of the Maternal-Fetal Medicine Units. These large studies over the last decade have used multivariate statistics to examine risk factors. This means that other risk factors and confounding factors, such as birth weight, maternal age, obstetric history, and labour management, were controlled for in the analysis.

Several studies examine prepregnancy weight and height to examine the effect on mode of delivery. Not surprising, women who are shorter and women who are obese are more likely to undergo caesarean delivery. Of note, caesarean delivery has been associated not only with increased prepregnancy weight but also with increased gestational weight gain.

An increasing number of studies have been carried out in the setting of TOLAC, all of which show that women in the morbidly obese range have a higher risk of failing a trial of labour. Interpregnancy weight gain has been shown to increase the risk of failure in a subsequent trial of labour, but unfortunately, interpregnancy weight loss has not demonstrated an improvement in VBAC success.

Maternal age has also been examined in several studies in VBAC literature. With confounding factors adjusted for, women older than 40 years who have had a prior caesarean delivery have an almost 3-fold higher risk for a failed trial of labour than do women younger than 40 years. In 1 scoring system, women younger than 40 years were given an extra point as a predictor for successful VBAC [8].

Maternal race or ethnicity has been examined as a predictor for VBAC in the setting of trial of labour and has not generally been noted to be a strong predictor. However, in the recent Maternal-Fetal Medicine Unit (MFMU) Caesarean Registry, both Hispanic ethnicity and African American ethnicity were associated with lower rates of successful trial of labour. Whether this association is due to actual biologic reasons or whether ethnicity is acting as a proxy for some other factor or factors remains to be elucidated.

Before 1970s the phrase "once a caesarean, always a caesarean" dictated obstetric practice. Later because of escalating rates of caesarean section (CS) suggestions were made that vaginal birth after CS (VBAC) might help in reducing the rates of CS. So trial of labour in cases of previous CS (PCS) has been accepted as a way to reduce the overall CS rates. There is evidence of safety of trial of labour, with or without induction of labour, with reduction in iatrogenic prematurity, and maternal morbidity and mortality. VBAC is believed to be appropriate for most women with a history of low transverse CS. However several factors increase the likelihood of a failed trial, which in turn might lead to increased maternal and perinatal morbidity including uterine rupture and related fetal morbidity and mortality rates [9].

The purpose of this study was to identify the obstetrical parameters that influence the success of vaginal delivery in women with previous caesarean section.

Methodology

The present study was planned in Department of Obstetrics and Gynaecology, Jawahar Lal Nehru Medical College and Hospital, Bhagalpur, Bihar and Patna Medical College and Hospital Patna from June 2017 to June 2018. A total 250 women with singleton live pregnancy of >34 weeks of gestational age with previous one caesarean delivery and willing for vaginal birth after caesarean (VBAC) were enrolled in the study. No attempt was made to screen candidates based on relative likelihood ofsuccess. Each patient was counselled about the risks and benefits of undergoing trial of labour and delivering vaginally. Data was analysed by going through the case sheet ofeach patient

All the patients were informed consents. The aim and the objective of the present study were conveyed to them. Approval of the institutional ethical committee was taken prior to conduct of this study.

Following was the inclusion and exclusion criteria for the present study.

Inclusion Criteria: Singleton live pregnancy, gestational age more than or equal to 34 weeks, previous one caesarean delivery and, willing for VBAC.

Exclusion Criteria: Estimated fetal weight > 3.5 kg, Breech presentation, History of postoperative wound infection following previous LSCS, Associated anemia, pregnancy induced hypertension, diabetes, heart disease and renal disease, Details of previous caesarean operation not available.

Results & Discussion

Obstetrical practice today has liberalized vaginal birth after caesarean section (VBAC) in appropriately selected women with a previous caesarean pregnancy. This is done without compromising with the foetus maternal safety margins either in a vaginal birth or in a repeat caesarean section. The selection of women for VBAC is mainly influenced by women's desire and conditions favourable for vaginal delivery. The objective of this study is to evaluate the efficacy and safety of attempted VBAC with a view to decrease the caesarean rate.

Table 1: Basic Details of Pregnancy

Parameters	Number of Cases
Age (years)	
Below 23 years	75
23 – 35 years	101
Above 35 years	74
Period of gestation (weeks)	
28 – 37 weeks	31
37 – 41 weeks	176
> 41 weeks	43
Indication for previous caesarean delivery	
Fetal distress	98
Dystocia	90
Breech	42
Transverse lie	3
Placenta previa	4
Abruptio placenta	3
Elderly primi	4
Severe pregnancy induced hypertension	3
Cord proapse	3

Table 2: Mode of Delivery

Mode of Delivery	No. of Cases
Spontaneous	21
Vacuum extraction	129
Forceps delivery	37
Emergency repeat caesarean	63

Table 3: Indications for emergency repeat caesarean section

Indications	No. of Cases
Indications Number	29
Fetal distress	14
Scar tenderness	7
Failed progress of labour	5
Cord prolapse	5
Abruptio placenta	3

The decision for a VBAC delivery is more influenced by traditional medical practice and the patient reluctance to consider VBAC, viewing labour pain as more severe than the pain of surgery [10]. To reduce the caesarean delivery rate, the number of trial of labour should be increased among women who have had caesarean section [11]. Leeman LM *et al.* [12] reflected patient choice caesarean delivery is increasing in the US citing ethical premises of autonomy and informed consent, despite a lack of evidence of its safety. Goldman G *et al* [13] found the VBAC rate depend on the caesarean rate of the attending obstetrician.

Emmanuel Bujold *et al* [14]. And Srinivas *et al* [15]. analyzed the relation between maternal age and VBAC success. Both the studies concluded that women C35 years age were more likely to experience unsuccessful trial of labour.

Various studies (Peaceman *et al* [16], Hoskins and Gomez [17], Shipp *et al.*, [18], etc.) were done to study the influence of indication of previous caesarean section on the success of VBAC. In our study, we concluded that indication of previous CS is an important predictor of success of trial of labour. Women who underwent primary caesarean section for fetal malpresentation or fetal distress had more chances of having a successful VBAC as compared to those who underwent their primary caesarean for non-progress of labour or failure of induction. Also, women with spontaneous onset of labour and those with better Bishop's score had more VBAC success rates than their counterparts.

Zweefler J *et al* [19] found a decrease in the VBAC rate after the American College of Obstetricians and Gynaecologists (ACOG) revised the guidelines to allow VBAC to be attempted in institutions equipped to respond to emergency with physicians immediately available to provide emergency care. Iglesias S. *et al.* [20] recommended that hospitals providing obstetric care have units of blood, operating rooms, neonatal resuscitation equipment and nursing, anaesthetic and surgical personnel available so that, if necessary, a VBAC can be performed within 30 minutes for any women including those undergoing VBAC.

But pregnancy after the age of 35 years is very much prevalent in our present day society and improved obstetrical care has made advanced maternal age compatible with successful pregnancy for such women, especially in the absence of pre-existing medical or obstetrical disorders. Matias JP *et al.* [21] found an association of older age with increasing repeat CS rate.

Oxytocin is effective and is recommended in response to standard obstetric indications. However prostaglandin induction/ augmentation needs much caution. In properly selected women, VBAC can constitute safe form of management. Non recurrent indication for PCS bears little influence as it relates to the success of achieving vaginal delivery in current pregnancy. The key is the discerning selection of women to be allowed a trial of vaginal delivery with or without induction.

Maternal and foetal monitoring to be done very carefully while giving trial of scar [22-23]. Partogram has to be used to ensure adequate progress with respect to descent of head, cervical dilatation, moulding and caput. Artificial rupture of membranes to be done in the active phase of labour. Induction of labour can be done with prostaglandins – PGE2 gel. Oxytocin could be used for induction or augmentation of labour with careful maternal and foetal monitoring [24].

We have to be alert for clinical signs of uterine rupture. Prolonged deceleration of the foetal heart rate is the most specific sign of uterine rupture [25]. Variable decelerations that are both persistent and severe and do not respond to interventions are always of concern in a VBAC patient. “17 minutes rule” has to be applied in VBAC cases. On diagnosing foetal distress, caesarean to be done within 17 minutes. Second stage of labour to be cut short with instrumental delivery. Third stage labour to be monitored carefully as there may be chances of adherent placenta. Manual removal of placenta may have to be done.

Epidural analgesia may be used for patients while giving trial of scar. Postpartum digital exploration of caesarean scar not to be attempted unless there is persistent bleeding [26].

Conclusion

The data generated from present study concludes that attempt for VBAC is well justified for post caesarean pregnancies with non recurrent indications. Screening for this should preferably begin at antenatal stage itself to minimize the related risks. Proper selection, appropriate timing and suitable methods of induction with close supervision by competent staff are the key factors to achieve greater degree of success. The ability to predict women who are at high risk for failing trial of labour and those with high probability of successful vaginal delivery would help guide clinicians and women in making good clinical decisions and minimizing adverse events.

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