Prospective Study of Vaginal Birth After One Previous Caesarean Section
Maternal and Fetal Outcome among Delivered at Wad Medani Obstetrics and Gynecology Teaching Hospital, Gezira State, Sudan
(2014 –2015)

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A thesis submitted to the University of Gezira in partial fulfillment of the Requirements for the Degree of Clinical Doctorate in Obstetrics and Gynaecology

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Date of examination: 14/4/2016
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الايّة الكريمة

قال تعالى:

(المال وِ النُّور زينة الحياة الدُنيا وَ الباقيات الصالِحاتُ خيرٌ عند رَبِّك ثواباً وَ خيرٌ أَمَالاً) (46)

صدق الله العظيم

سورة الكهف
Dedication

To

My kind family, Colleagues
And teachers in all learning process
Acknowledgement

I would like to express my thanks to my supervisor

Dr. Somia Khalfalla and Co-supervisor Dr. Elhadi Miskeen

For their supervision

My thanks extended to my colleagues in the Wad Medani teaching hospitals

Also I want to thank all my teachers, family and friends
Prospective Study of Vaginal Birth After One Previous Caesarean Section Maternal and Fetal Outcome among Delivered at Wad Medani Obstetrics and Gynecology Teaching Hospital, Gezira State, Sudan (2014 –2015)

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Abstract

Objectives: The aim of this research is to assess the outcome and complications of VBAC and to estimate the successful rate of VBAC in WTHOBG.

Methodology: This is prospective hospital-based study. The population of this study was all the Planned VBAC patients who was admitted to the labour ward at Wad Medani Teaching Hospital. Consent was obtained from patients and relatives. Ethical clearance was obtained. Data was analyzed by SPSS version 20.

Main results: This study showed a successful rate of VBAC was found to be 77 % and fail VBAC 23 %. There were 10 % developed morbidity. Of them 30 % Scar dehiscence discovered intraoperative, 30 % rupture uterus, 40% blood transfusion and fortunately no maternal mortality occurred. The three cases developed ruptured uterus two of them underwent hysterectomy and one underwent repair. Regarding fetal outcome we found that most of them were normal and cried immediately after birth 82%. Cried after resuscitation 4%, admission to neonatal care unit 4%, fresh still birth 3% and macerated still birth 3%.

Conclusion: We concluded that vaginal birth after previous caesarean section is a safe way of delivery in selected groups of mothers. Meticulous follow up for VBAC at labour room by partogram and better, together with electronic fetal monitoring.
благо الأمهات والولدان بعد الولادة المهبلية بعد ولادة قيصرية واحدة سابقة


بابكر ابراهيم حسن محمد

ملخص الدراسة

الهدف من هذا البحث لتقديم منتجول الطفل وأمه والتعقيدات التي حدثت لتقسيم على ضوءها مسية فاعلية إعطاء فرصه للولادة الطبيعية بعد قيصرية واحدة سابقة في مستشفى ودمدني التعليمي للنساء والتوليد.

طريقة البحث:

هو عبارة عن بحث استقصائي من داخل المستشفى لجميع السيدات اللاتي قرر إعطاءهم فرصة للولادة الطبيعية بعد عملية قيصرية سابقة وتم إدخالهم الى عبر الولادة. وقد تم التفاصل المواقف من المستشفى ومرافقهم على إجراء هذه الدراسة. بالإضافة إلى اخذ

الإذن الأخلاقي من جامعة الجزيرة.

تم تحليل هذه البيانات بواسطة مجموعة علوم الإحصاء الاجتماعي (SPSS).

النتائج الرئيسية:

هذه الدراسة وضحت أن 77% من حالات الولادة كانت طبيعية بعد القيصرية الأولى السابقة، حالات الفشل كانت 23% حدث تعقيدات ل 10% منهم و 30% حدث له انفصال في الرحم و 30% حصل لهم انفجار في الرحم و 40% لم نقلهم.

عدد أتى من الحالات التي حدث لها انفجار بالرحم انتهت بالذك وحالة واحدة تم فيها ترميم الرحم. ولحسن الحظ لا توجد أي حالة وفاة.

أما من ناحية المولودين 82% منهم صرخ بعد الولادة مباشرة 4% احتاج إلى إبعاش بعد الولادة و4% تم إدخالهم الى وحدة حديثي الولادة. 3% كانت حالات وفاة أثناء الولادة من غير وجود تغير في الجلد و 3% حالات وفاة داخل الرحم مع وجود تغير في الجلد.

الخلاصة: نخلص من الدراسة أعلاه أن الولادة الطبيعية بعد العملية القيصرية الأولى طريقة آمنة لمجموعة متقدمة من السيدات. تحتاج إلى رعاية ومتباينة لصياغة داخلي غرفه الولادة عبر جداول متاعة سير الولادة ويفضل أن يكون هناك جهاز كتروني لمتابعة الجنين.
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ABBREVIATIONS

ACOG  American College of Obstetrics and Gynecology
ASA   American Society of Anesthesiologists
CPD   Cephalopelvic disproportion
CI    Confident interval
CSs   cesarean sections
ERCD  elective repeat cesarean delivery
NICHD National Institute of Child Health and Human Development
NIH   National Institutes of Health
OMAR  Office of Medical Applications of Research
ONH   Omdurman New Hospital
SPSS  Statistical Package for Social Sciences
TOLAC Trial of labor after cesarean delivery
VBAC  vaginal birth after cesarean
WTHOBG Wad Madni Teaching Hospital Of Obstetric and Gynecology
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CHAPTER ONE

INTRODUCTION AND BACKGROUND

Vaginal birth after cesarean section is widely acknowledged in modern obstetric practice. For most of this century, routine repeat cesarean section was the rule in the United Kingdom and United States. Prior to 1970, almost every North American hospital maintained the policy that all women who underwent a cesarean delivery would have a repeat cesarean operation for all subsequent births. This practice followed an article published in 1916 which contained the then famous phrase, “once a cesarean, always a cesarean.” *(1)* The purpose of that article was to stress the various risks of repeat classic cesarean operation. The “once a cesarean” phrase was clearly meant to emphasize that one of the risks of a primary cesarean was that a dangerous repeat operation might be required. In that area, primary cesarean was performed via the “classical” longitudinal uterine incision, which extended up vertically from the lower uterine segment to the fundal region. The use of the classic cesarean incision began to decline after the low transverse uterine incision was pioneered by Kerr in the mid-1920s. *(2)* Fortunately, the risk of uterine rupture during labor following a low transverse cesarean is approximately 10 times lower than that during labor following a classical cesarean. In 1963, Douglas et al. documented the risk of uterine rupture during trial of labor after previous cesarean section. *(2)* Between the 1960s and 1980s, several studies concluded that vaginal birth after cesarean (VBAC) was a reasonable option. *(3)* In response to these results, many obstetricians abandoned the old dictum and offered the option of VBAC to appropriate and consented patients. Vaginal delivery rate among pregnant women with prior cesareans (VBAC rate) in the United States increased from 3.5% in 1980 to almost 25% by 1993. *(4)* This implies that more than one third of all pregnant women with a prior cesarean delivery were opting for a trial of labor by 1993. The attitudes of patients and clinicians for VBAC changed. A retrospective review of hospital discharge data found what appeared to be a marked increase in uterine rupture rates when prostaglandins were used for cervical ripening in vaginal birth after cesarean section (VBAC) patients. *(4)* However, the study had serious limitations that were appropriately acknowledged by its authors and subsequently reviewed in a published
criteria. (5) In spite of the study’s limitations, the American College of Obstetrics and Gynecology (ACOG) responded by publishing a Committee Opinion stating that the purpose of the document was to cast doubt on the use of prostaglandins for cervical ripening or the induction of labor in women attempting VBAC. (6) This opinion will no doubt be controversial because both a large multicenter study and a review of many smaller studies did not find any increased risk with prostaglandin use in VBAC patients. (7)

**LITTERATURE REVIEW**

The optimum management of the woman who has undergone a previous cesarean delivery has been debated for over 100 years (8-13). The increasing primary cesarean delivery rate in recent decades has led to large numbers of women undergoing repeat cesarean deliveries and multiple cesarean deliveries. In 1980, a National Institutes of Health (NIH) Consensus Development Conference report questioned the necessity of routine repeat cesarean delivery and, with endorsement from the American College of Obstetricians and Gynecologists (ACOG) (14-16), encouraged attempts to increase the rate of trial of labor after cesarean delivery (TOLAC). These attempts were highly successful; rates of vaginal birth after previous cesarean (VBAC) increased from 3.4 percent in 1980 (17) to a peak of 28.3 percent in 1996 (18), along with a concomitant decline in total cesarean delivery rates for the United States (19).

As the VBAC rate increased, however, so did reports of uterine rupture-related maternal and perinatal morbidity (20-24). These adverse outcomes dampened enthusiasm for VBAC. They also prompted VBAC to issue a practice bulletin in 1998 that cautioned VBAC should only be attempted in appropriately equipped institutions with physicians ‘readily’ available to provide emergency care (25). Within nine months, ACOG revised the practice bulletin to say that physicians should be ‘immediately’ available (26), a position endorsed by the American Society of Anesthesiologists (ASA) (27,28). This one-word change, from ‘readily’ to ‘immediately’ available, may have been the most important factor responsible for the decade-long decline in national VBAC rates, reaching a low of 8 percent in 2007 (29-31). Two surveys of hospital administrators found that 30 percent of hospitals discontinued allowing VBAC because they were unable to comply with the
immediately available requirement for surgical and anesthesia services and, of the hospitals who continued to offer VBAC, over half made changes in their policies to accommodate ACOG recommendations (32-34). Ironically, during this same decade, there were continuing reports describing the success and safety of VBAC in selected clinical settings (35,36).

A number of interrelated factors, both medical and nonmedical, have contributed to declining VBAC rates. Concerns about medical liability claims have contributed to reduced access to VBAC (37,38). A 2009 Survey of Professional Liability by ACOG found that 91 percent of members who responded reported at least one liability claim against them in their career; 62 percent of claims within the survey period were related to obstetric care (37). Of those who made changes in their obstetric practice as a result of risk or fear of liability, 25 percent stopped offering VBAC. Another survey of private practice obstetricians also reported that the risk of liability was an important reason cited for no longer offering VBAC to their patients (39). Efforts at medical malpractice tort reform may prompt a change in this trend (40).

There is little information on provider views or preferences regarding the practices and policies of VBAC. In addition to medicolegal/liability concerns and ACOG/ASA requirements for providers and institutions offering VBAC, fear of catastrophic complications associated with VBAC may be another reason providers avoid encouraging it for their patients (32,41).

In 2010, the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) and the Office of Medical Applications of Research (OMAR) of the NIH convened a Consensus Development Conference to study these issues (32). Their final report summarized the state-of-knowledge concerning the risks and benefits of elective repeat cesarean delivery (ERCD) versus VBAC in women who have undergone one or more prior cesarean deliveries. These findings are described throughout this review, along with summaries of recommendations of various professional organizations regarding the approach to management of a woman with a prior cesarean delivery.
PATIENT COUNSELING:

planning the route of delivery for the woman who has had a previous cesarean delivery should be addressed early in her prenatal care, and can even begin preconceptionally. There are two choices: TOLAC with the goal of achieving VBAC. If cesarean delivery becomes necessary, then it is termed a “failed VBAC.” Overall, the success rate for women who attempt VBAC is approximately 75 percent (41). ERCD, which includes scheduled cesarean delivery, as well as planned but unscheduled cesareans performed because spontaneous labor or another indication resulted in the need for delivery before the scheduled date.

The decision for VBAC or ERCD should be made by the woman in consultation with her provider. No high-quality trials have been performed comparing the risks and benefits of VBAC versus ERCD.

With either approach, women who have undergone a prior cesarean delivery are at risk for serious maternal and perinatal complications and should be counseled about the risk and significance of these complications. Importantly, individual patient factors that affect the risks and benefits for each delivery route should be discussed. This is especially important for women who are potentially at higher risk of uterine rupture and its attendant sequelae. The decision should also be based on consideration of factors known to affect VBAC success rates. Ongoing discussion at intervals throughout pregnancy is important, as conditions may arise that alter the risks versus benefits of the planned route of delivery.

A woman’s decision regarding route of delivery is influenced by a variety of factors, in addition to obstetrical/perinatal risks, success rate, and availability. Women report that their health care providers’ recommendations and preferences exert a strong influence on their decision whether or not to pursue VBAC. Other factors underlying women’s preference for VBAC include prior successful vaginal delivery, future pregnancy plans, family obligations making a speedy return to normal activities postpartum desirable, and desire for their partners’ involvement in labor and birth. Factors identified as advantages of scheduled ERCD include scheduling convenience, ease of sterilization at the time of delivery, and fear of failed trial of labor (32, 41).
FACTORS AFFECTING SUCCESS RATE OF VBAC:

As mentioned above, overall, women who attempt VBAC have an approximate 75 percent success rate (41). The rate varies among institutions and providers, and is affected by various antepartum, intrapartum, and nonmedical factors. The highest success rates (over 80 percent) are found among women who have had a successful vaginal delivery before or after their cesarean, who present in active labor, and in whom the indication for the prior cesarean delivery was fetal malpresentation. Conversely, women who have never had a vaginal delivery, need labor induction (especially with an unfavorable cervix), had a previous cesarean for failure to progress or non-reassuring CTG tracing, have a macrosomic infant, or are postterm have a reduced likelihood of a successful VBAC.

Antepartum factors:

Indication for prior cesarean delivery: The rate of successful VBAC by indication for prior cesarean delivery is 75 percent for fetal malpresentation, 60 percent for non-reassuring fetal heart rate pattern, and 54 percent for failure to progress or cephalopelvic disproportion (41,42)

History of prior vaginal delivery:

Women who have had a vaginal delivery before or after their previous cesarean delivery are significantly more likely to have a successful VBAC than those who have never delivered vaginally (42,48).

Demographic factors:

Hispanic, African American, and Asian women are more likely to pursue a VBAC, but are less likely to have a successful VBAC when compared with non-Hispanic and white women (OR for successful VBAC for Caucasians, African Americans, and Hispanics: 1, 0.69, 0.65 respectively) (41,42-52)
Increasing maternal age, single marital status, and less than 12 years of education are also associated with a reduced likelihood of successful VBAC (41, 42, 50, 53).

Women over age 35 are less likely to pursue a VBAC; those who attempt VBAC are less likely to have a successful VBAC and more likely to experience VBLAC-associated complications than younger women (47).

The likelihood of successful VBAC increases with increasing maternal height (for each 5 cm maternal height increase the OR for successful VBAC is 1.33, 95% CI 1.28-1.37) and is lower in obese women (for BMI >30 kg/m2 the OR for successful VBLAC is 0.55, 95% CI 0.51-0.60) (41, 49, 55).

An interpregnancy interval of less than six months is an independent risk factor for both uterine rupture and maternal morbidity during VBAC (56).

**Maternal medical disease:**

Data on the effect of preexisting maternal medical disease on the outcome of a VBAC are inconclusive. Several cohort studies of women with preexisting maternal disease, such as hypertension, diabetes, asthma, renal disease, and heart disease, reported a reduced likelihood of successful VBAC (42,43,51). In one prospective study, however, there were no significant differences in the rates of successful VBAC in women with these medical disorders (49).

**Intrapartum factors:**

**Admission labor status:**

When admitted to the labor unit, women in spontaneous labor or with a high bishop score are more likely to have successful VBAC than women who are being induced or who have low Bishop scores (ORs for successful VBAC with spontaneous labor, induction, augmentation 1.0, 0.50, 0.68, respectively; for admission cervical examination >4cm 2.56, 95% CI 2.38-2.67) (41,42).
Fetal macrosomia:

A fetus weighing more than 4000 g reduces the likelihood of successful VBAC (OR for successful VBAC for birth weight >400g 0.55, 95% CI 0.49-0.61) (41, 42, 57, 58).

Type of hospital:

University hospitals or those affiliated with an obstetrics and gynecology residency program have higher rates of TOLAC and successful VBAC (52,58,59). Women who deliver at a private or rural hospital have a decreased likelihood that VBAC will be attempted, and if attempted, a decreased rate of successful VBAC when compared to a tertiary care or perinatal center (41). As an example, a study that compared VBAC rates across hospital settings in California reported rates of VBAC (adjusted for baseline and medical characteristics of mother and fetus) were 14 percent in private nonteaching hospitals, 57 percent in public hospitals, 60 percent in private teaching hospitals, and 41 percent in health maintenance organizations (60).

RISKS AND BENEFITS OF TOLAC AND ERCD:

There are three possible outcomes for the woman who has had a prior cesarean delivery: a successful trial of labor culminating in vaginal birth (successful VBAC), an unsuccessful VBAC results in a repeat cesarean delivery, or an ERCD. The benefits of VBAC are closely related to having a successful vaginal birth, which is associated with the lowest morbidity of the three possibilities. The highest risks for maternal and neonatal morbidity are associated with unsuccessful VBAC that culminates in a repeat cesarean delivery (23).

When counseling women concerning the risks and benefits of VBAC versus ERCD, it is important to recognize that many studies that compared these two routes of delivery reported maternal and neonatal outcomes based on the actual route of delivery rather than the intended route. If this type of analysis is performed, the outcomes of women who undergo cesarean delivery after an unsuccessful VBAC are grouped along with the outcomes of women undergoing ERCD. In addition, the outcomes of women who planned ERCD, but spontaneously labored and were delivered vaginally, are grouped
along with the outcomes of women who had a successful VBAC. This method of analysis leads to misleading conclusions about the actual risk of adverse events or outcomes associated with the decision to attempt VBAC or ERCD (32, 41, 61). Analysis of available data is also complicated by imprecise definitions and outcome measurements, as well as difficulties encountered when trying to characterize events and outcomes attributable to route of delivery.

**Overall estimated risk:**

The NICHD consensus conference panel determined the following risk estimates based on data obtained by systematic review (41, 61).

In a hypothetical group of 100,000 women of any gestational age who undergo VBAC, there will be 4 maternal deaths, 468 cases of uterine rupture, and 133 perinatal deaths (61).

In a hypothetical group of 100,000 women of any gestational age who undergo ERCD, there will be 13 maternal deaths, 26 uterine ruptures, and 50 perinatal deaths (61).

In terms of absolute risk for the woman undergoing VBAC, 0.001 trials of labor will result in neonatal death or significant neurological injury (61). Specifically, 1 in 100 trials will result in uterine rupture, and 1 in 10 uterine ruptures will result in neonatal death or neurological injury. The absolute risk of uterine rupture with ERCD is 0.026 percent (95% CI 0.009-0.082%) (41)

**Maternal risks:**

Data were derived from a systematic review of 41 studies on the maternal outcomes for trial of labor versus ERCD that reported on the actual route of delivery rather than the intended route (41)
**Uterine rupture:**

Uterine rupture is a life-threatening pregnancy complication; it is rare (in resource-rich countries), but when it occurs, it is most often associated with VBAC. The term refers to complete disruption of all uterine layers, including the serosa. It often leads to maternal hemorrhage and adverse fetal outcomes. By comparison, uterine dehiscence generally refers to an incomplete, and frequently clinically occult, uterine scar separation where the serosa remains intact, and is not usually associated with hemorrhage or adverse outcomes (41).

**Risk:**

The overall risk of uterine rupture in women with a prior cesarean delivery is 0.3 percent (32, 35, 41). There is no reliable way to predict which women will have a rupture, but the risk is higher in women who undergo TOLAC and lower in women who undergo ERCD (32,61). Based on available data, the best estimate of the risk of uterine rupture at term is 0.78 percent with VBAC and 0.22 percent with ERCD (32, 61).

The risk of rupture varies depending on the type and location of the prior uterine incision. In the Maternal Fetal Medicine Units Network study of 45,988 women with a singleton gestation undergoing TOLAC, the uterine rupture rate was significantly lower when the prior uterine incision was low transverse than when it was low vertical (0.7 versus 2.0 percent) (35).

Intrapartum factors reported to increase the risk of rupture include lower Bishop Score on admission to Labor and Delivery and labor induction with either oxytocin or a prostaglandin (41, 53). Labor dystocia (64,65), particularly at advanced dilation (>7 cm) (66), has been associated with impending uterine rupture and failed VBAC. Factors inconsistently reported to be associated with increased risk of rupture include increasing maternal age, advancing gestational age, birth weight exceeding 4000 g, interdelivery interval <18 to 24 months, and single-layer uterine closure (41,63). None of these risk factors is sufficiently reliable to be clinically useful for prediction of this catastrophe.
JUSTIFICATION

The decision for VBAC should be made by the woman in consultation with her provider. The decision should also be based on consideration of factors known to affect VBAC success rates. Ongoing discussion at intervals throughout pregnancy is important, as conditions may arise that alter the risks versus benefits of the planned route of delivery. So such study is important in this regards. Furthermore, VBAC is a major concern in any strategy to reduce the rate of cesarean section.

PROJECT OBJECTIVES

General Objectives:

To study maternal and fetal outcome associated with vaginal birth after one previous caesarean section among patient presented Wad Medani Teaching Hospital in the period time (sept 2014 – march 2015).

Specific Objectives:

1. To determine the rate of successful VBAC
2. To determine the mode of delivery in successful VBAC
3. To determine maternal outcome
4. To determine neonatal outcome
5. To determine the incidence of complications
CHAPTER TWO

METHODOLOGY

(A) **Study Design:** This is a prospective cross sectional descriptive hospital based study.

(B) **Study Period:** The study was conducted in Wad Medani Teaching Hospital consider the women delivered in the period from Sept 2014-March 2015.

(C) **Study Areas:** Wad Medani Teaching Hospital (WTHOG) is a well-established tertiary hospital with high standard services. It is a model of referral hospital, offer elective service as well as emergency service all over the day. Also it is well recognize training side for both undergraduates and postgraduates students. There is multidisciplinary approach between obstetric side and pediatric side.

The hospital contend 19 ward and 17 special rooms. Antenatal unit, ICU, 6 theater rooms, blood bank and tow lap. 

There are 19 consultant of OBG, one anesthetist, tow pediatricians, well trend midwifes, theater staff and nurses.

(D) **Study population:** The study population included all women with single term vertex presentation who were allowed for vaginal birth following one previous lower segment caesarean birth during the period of the study.

(f) **Sample size:** All women with VBAC in (WTHOG) was included in the study.

(J) **Sampling method:** All patients who fulfill the inclusion criteria and admitted during the period of the study.

(K) **Inclusion criteria:**

1- Previous one lower segment caesarean section
2- The decision of VBAC either made by consultant or registrar

3- Agreed to participate in the study

(I) **Exclusion criteria:**

1. Not planned for VBAC.
2. Refuse to consent.

(M) **Data collection tool:** The instrument was used for data collection is well constructed questionnaire. were filled from patient and their relative by me and registrar

(K) The uptake of the patients was started when they admitted to the labour ward.

(I) **Data analysis:** Data was analyzed by computer using statistical package for social science (SPSS) software version 20 and the results were expressed in tables and figure.

(Q) **Ethical clearance:** The ethical clearance of this study from University of Gezira and acceptance of Wad Medani Teaching Hospital (hospital director).

**The following definition were adopted:** (67,68,69)

**Uterine rupture:** is a potentially catastrophic event during childbirth by which the integrity of the myometrial wall is breached. A uterine rupture is a life-threatening event for mother and baby. A uterine rupture typically occurs during active labor, but may also develop during late pregnancy.

failure to progress (lack of progressive cervical dilatation and or lack of descent), in spite of efficient uterine contractions

Still birth: is the birth of a baby who is born without any signs of life at or after 24 weeks of pregnancy. A baby may have died during late pregnancy (called intrauterine death). fresh still birth without skin change. Macerated still birth with skin change.
Fetal distress the term fetal distress is poorly is defend and is often a clinical assessment. In labour it should be thought of as hypoxia which if allowed to persist may result in fetal death or permanent fetal damage.

Postterm pregnancy refers to a pregnancy that has ≥42 weeks of gestation or ≥294 days from the first day of the last regular menstrual period.

Malposition's are abnormal positions of the vertex of the fetal head relative to the maternal pelvis.

Malpresentations are all presentations of the fetus other than vertex (breech, shoulder...).
CHAPTER THREE

RESULT

We included in this research 100 women had previous cesarean section and experienced VBAC.

Table 1: Regarding the age mean it was 21.4±6.1. Parity mean was 3.9±1.3, mean of miscarriage 0.7±0.7, mean number of vaginal birth 1.8±1.1. Mean of gestational age was 38.5±1.4.

Table 2: Distribution according to the age. Less than 20 were 5 (5%), (21-25) 28 (28%), (26-30) 33 (33%), (31-35) 20 (20%), (36-40) 10 (10%), (more than 40) 4 (4%).

Table 3: Regarding residency most of the population study from Wad Medani City 59 (59%), rural area around Wad Medani were 41 (41%).

Table 4: Distribution according to indication of previous C/S. The common indications of previous C/S were breech presentation 26 (26%), pre-eclampsia 18 (18%), malposition 9 (9%), sizable body 7 (7%), placenta previa 7 (7%), multiple pregnancy 6 (6%), fetal distress 6 (6%), undiagnosed failure to progress 4 (4%), and postdate 2 (2%). Not reported indication 10 (10%) and other were 5 (5%).

Table 5: In most of patients the pelvic assessment is clinical 97 (97%) and 3 (3%) were by x-ray pelvimetry.

Table 6: Successful VBAC in 77 (77%) and fail VBAC in about 23 (23%). Regarding the mode of delivery it was spontaneous 72 (72%) and forceps or ventose in 5 (5%). Those who failed VBAC underwent emergency C/S.

Table 7: Fail VBAC in 23 (23%) women and underwent emergency C/S. Considering the indications of emergency C/S were; failure to progress 6 (6%), fetal distress 4 (4%), abruption placenta 2 (8.9%), rupture uterus 3 (3%), prolonged rupture of membrane 3 (3%).
Table 8: There was 10/56 (17.9 %) developed morbidity. Of them 3/10 (30 %) Scar dehiscence discovered intraoperative, 3/10 (30 %) rupture uterus, 4/56 (7.1 %) blood transfusion. The two cases developed rupture uterus two of them underwent hysterectomy and one underwent repair and fortunately no maternal mortality occurred.

Table 9: Regarding Fetal outcome. Most of them were normal and cried immediately after birth 210/252 (83.3 %). Cried after recitation 12/252 (4.8 %), Admission to neonatal care unit 12/256 (4.8 %), fresh still birth 10/252 (3.9 %) and macerated still birth 8/252 (3.2 %).
Table 1: Distribution according to Descriptive Statistics of the study population

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>Mean</th>
<th>Std. D</th>
</tr>
</thead>
<tbody>
<tr>
<td>age</td>
<td>21.4</td>
<td>6.1</td>
</tr>
<tr>
<td>parity</td>
<td>3.9</td>
<td>1.3</td>
</tr>
<tr>
<td>Number of miscarriage</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Number vaginal birth</td>
<td>1.8</td>
<td>1.1</td>
</tr>
<tr>
<td>Gestational age</td>
<td>38.5</td>
<td>1.4</td>
</tr>
</tbody>
</table>
Table 2: Distribution according to the age

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent</th>
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</thead>
<tbody>
<tr>
<td>&lt; 20</td>
<td>5</td>
<td>5%</td>
</tr>
<tr>
<td>21-25</td>
<td>28</td>
<td>28%</td>
</tr>
<tr>
<td>26-30</td>
<td>33</td>
<td>33%</td>
</tr>
<tr>
<td>31-35</td>
<td>20</td>
<td>20%</td>
</tr>
<tr>
<td>36-40</td>
<td>10</td>
<td>10%</td>
</tr>
<tr>
<td>&gt; 40</td>
<td>4</td>
<td>4%</td>
</tr>
</tbody>
</table>
**Table 3:** Distribution according to residency (rural / urban)

<table>
<thead>
<tr>
<th>Residency</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wed Medani</td>
<td>59</td>
<td>59</td>
</tr>
<tr>
<td>Rural area</td>
<td>41</td>
<td>41</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
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</table>


Table 4: Distribution according to indication of previous C/S

<table>
<thead>
<tr>
<th>indication of previous C/S</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>breech presentation</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>pre eclamptica</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Malposition</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>sizable body</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>placenta previa</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>multiple pregnancy</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>fetal distress</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>failure to progress</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Postdate</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Not reported</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Others</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
**Table 5:** Distribution according to pelvic assessment

(According to some units policy)

<table>
<thead>
<tr>
<th>Pelvic assessment</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>clinical</td>
<td>97</td>
<td>97</td>
</tr>
<tr>
<td>x-ray pelvimetry</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
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</table>
Table 6: Distribution according to mode of delivery in successful VBAC (n=77)

<table>
<thead>
<tr>
<th>Mode of delivery</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
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<tbody>
<tr>
<td>spontaneous</td>
<td>72</td>
<td>72</td>
</tr>
<tr>
<td>forceps or ventose</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Failure of VBAC</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
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</table>
### Table 7: Distribution according to indications of emergency C/S (n=23)

<table>
<thead>
<tr>
<th>indications of emergency C/S</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to progress</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>fetal distress</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>abruptio placenta</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>rupture uterus</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>prolonged rupture of membrane</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Others</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Successful VBAC</td>
<td>77</td>
<td>77</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
</tr>
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</table>
Table 8: Distribution according to maternal morbidity and outcome of management (n=10)

<table>
<thead>
<tr>
<th>Maternal morbidity</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scar dehiscence</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>Rupture uterus</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>Maternal mortality</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
**Table 9:** Distribution according to Fetal outcome (n=100)

<table>
<thead>
<tr>
<th>Fetal outcome</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cried immediately</td>
<td>82</td>
<td>82</td>
</tr>
<tr>
<td>Cried after resuscitation</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Admission to neonatal care unit</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Fresh Still birth</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Macerated Still birth</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
CHAPTER FOUR
DISCUSSION

Vaginal birth after cesarean section is one of the strategies developed to control the rising rate of cesarean sections (70). It is a trial of vaginal delivery in selected cases of a previous CS in a well-equipped hospital.

My study showed the Successful VBAC in (77 %) and fail VBAC in about 56 (23 %). This successful rate is comparable USA where successful ranged between 60-80 % (71). In Australia its 81 % (72). Although VBAC has been extensively validated as a safe option for most women with a previous cesarean (71), non-medical factors are thought to be driving the decline in rates since medical factors have changed little over the years (73, 74). The high VBAC rate of success in this study was achieved due to support of the attending clinicians and acceptance of VBAC by good selected women. Although some women want an elective repeat cesarean delivery may have self-referred to a hospital, no woman who came to the hospital chose a repeat cesarean over a VBAC.

Women who deliver their first baby with a cesarean are at increased risk of adverse reproductive outcomes in subsequent pregnancies and should be counseled accordingly (74)

My study showed there was 10 % developed morbidity. Of them 30 % Scar dehiscence discovered intraoperative, 30 % rupture uterus, 40 % blood transfusion and fortunately no maternal mortality occurred. The three cases developed rupture uterus two of them underwent hysterectomy and one underwent repair. Although uterine rupture in an unscarred uterus is extremely rare at 0.5–2.0/10,000 deliveries; this risk is mainly confined to multiparous women in labour.(75) The NICHD study reported that the overall risk for symptomatic uterine rupture at term was 74/10,000 planned VBAC. (76) As said in the literature a number of factors are associated with successful VBAC. Previous vaginal birth, particularly previous VBAC, is the single best predictor for successful VBAC and is associated with an approximately 87–90% planned VBAC success rate. (77-79) Risk factors for unsuccessful VBAC are:
induced labour, no previous vaginal birth and previous caesarean section for dystocia.(77,80-82).

Another study from USA concluded that uterine rupture and peripartum risks decreased by 50% after the initial successful VBAC and did not increase with increasing prior VBAC number. Neonatal morbidity did not increase with increasing VBAC number.(83) In UK Symptomatic uterine rupture occurred in women who underwent a trial of labor (0.7 percent). (84)

Previous data have suggested a trend toward a greater risk of fetal death among women who undergo a trial of labor.(85) Our findings are consistent with those of McMahon and colleagues, who also reported no increase in perinatal deaths at term among women undergoing a trial of labor.(86)

Our study revealed that fetal outcome in most of them was normal and cried immediately after birth 82 %. Cried after resusation 4 %, Admission to neonatal care unit 4 %, fresh still birth 3 % and macerated still birth 3 %.

According to RCOG women considering planned VBAC should be informed that this decision carries a 2–3/10,000 additional risk of birth-related prenatal death when compared with ERCS. The absolute risk of such birth-related prenatal loss is comparable to the risk for women having their first birth. (78) The increased risk of prenatal mortality is largely attributable to the statistically significantly increased risk of ante partum stillbirth. When compare between a planned VBAC and ERCS, prenatal mortality at term was significantly greater among women having a planned VBAC than ERCS. Overall perinatal mortalities for planned VBAC versus ERCS. Approximately 43% of such stillbirths in planned VBAC were at or after 39 weeks of gestation (approximately 9/10,000 women delivering at or after 39 weeks) and may have been prevented by ERCS at 39 weeks of gestation. (78)
CONCLUSION

1. The successful rate of VBAC were found to be 77%.
2. There were 10 developed morbidity. Of them 3 cases (30%) Scar dehiscence discovered intraoperatively, 3 cases (30%) rupture uterus, 4 cases (40%) blood transfusion and fortunately no maternal mortality occurred.
3. Regarding fetal outcome in most of them was normal and cried immediately after birth 82%, cried after recitation 4%, Admission to neonatal care unit 4%, fresh still birth 3% and macerated still birth 3%

4. RECOMMENDATIONS
1. The decision regarding mode of delivery in case of one previous cesarean section must be made by every woman after informed discussion with her physician. The final assessment depends upon her individual clinical circumstances, tolerance for the various risks involved, and ability to give birth in a facility capable of emergency cesarean delivery if required.
2. Careful follow up for VBAC at labour room by partogram, and better together with electronic fetal monitoring.
3. Insure good training for management of VBAC at level of registrar, house officers and midwife
4. Patients should be selected based on obstetric history through antenatal care, previous operation including it is indication, our setting and trained personnel.
REFERENCES


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63. Landon MB. Predicting uterine rupture in women undergoing trial of labor after prior cesarean delivery. Semin Perinatol 2010; 34:267.


73. Cragin EB. Conservatism in obstetrics. NY Med J. 1916;104:1–


83. Mark B., John C. Hauthetal. Maternal and Perinatal Outcomes Associated with a


<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
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<tbody>
<tr>
<td>ID :</td>
<td></td>
</tr>
<tr>
<td>1. Age in years :</td>
<td></td>
</tr>
<tr>
<td>2. Residence :</td>
<td></td>
</tr>
<tr>
<td>3. Parity :</td>
<td></td>
</tr>
<tr>
<td>4. Number of miscarriage :</td>
<td></td>
</tr>
<tr>
<td>5. Number of vaginal birth before the previous caesarean section :</td>
<td></td>
</tr>
<tr>
<td>6. Number of vaginal birth after the previous caesarean section :</td>
<td></td>
</tr>
<tr>
<td>7. Indication of previous caesarean section :</td>
<td></td>
</tr>
<tr>
<td>8. Gestational age in weeks :</td>
<td></td>
</tr>
<tr>
<td>9. Type of Pelvic assessment:</td>
<td></td>
</tr>
<tr>
<td>Clinical</td>
<td>X-ray pelvimetry</td>
</tr>
<tr>
<td>10. Mode of delivery</td>
<td></td>
</tr>
<tr>
<td>a) Successful vaginal birth</td>
<td></td>
</tr>
<tr>
<td>b) Failed trial of scar</td>
<td></td>
</tr>
<tr>
<td>(emergency caesarean section)</td>
<td></td>
</tr>
<tr>
<td>11. Indication</td>
<td></td>
</tr>
<tr>
<td>12. Maternal mortality</td>
<td></td>
</tr>
<tr>
<td>a) Alive</td>
<td></td>
</tr>
<tr>
<td>b) Dead</td>
<td></td>
</tr>
<tr>
<td>Cause of death</td>
<td></td>
</tr>
<tr>
<td>13. Maternal morbidity</td>
<td></td>
</tr>
</tbody>
</table>
a) Scar………………………….
Dehiscence  □□ rupture  □□
Treated by ………………………………….
Repair  □□ hysterectomy  □□

b) Blood transfusion ………………….
c) Hospital stay in days ……………..

Others ……………………………………………………………….

……………………………………………………………………

14. Foetal outcome
a) Alive
   i. Cried immediately ……  □□
   ii. Cried after resuscitation ………  □□
   iii. Admission to neonatal care unit ……………  □□

15. Dead
    MSB ……  □□
    FSB ……  □□
    END ……  □□

Cause of death ……………………………………………………………

Birth weight ……………………………………………………………