

SUCCESS RATE OF VAGINAL BIRTH AFTER ONE CESAREAN SECTION
AND ASSOCIATED FACTORS AT METTU KARL REFERRAL
HOSPITAL,SOUTH WEST ETHIOPIA.



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A RESEARCH THESIS TO BE SUBMITTED TO HEALTH RESEARCH AND GRADUATING
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COLLEGE OF PUBLIC HEALTH AND MEDICAL SCIENCES

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ABSTRACT

Introduction: Vaginal birth after caesarean (VBAC) is a vaginal child birth by a woman who has had a surgical delivery caesarean section in the past. Multiple studies have shown that successful VBAC has the lowest rate of maternal morbidity and mortality compared to elective repeat caesarean delivery (ERCD). Vaginal delivery after previous one caesarean section for a non-recurring indication has been described by several authors as safe and having a success rate of 60–80%.

Objective: To assess success rate of vaginal birth after caesarean section and factors associated with VBAC in Women who gave birth at Mettu Karl referral Hospital.

Method: Institutional based cross-sectional study was conducted at Mettu Karl referral Hospital among 194 mothers who have one previous c/s scar. The data was collected by structured questionnaire which pretested before data collection and participants were selected by sampling convenient technique. The data was entered and cleaned by epidata 3.1 and analysed by SPSS v.20 to identify frequency distributions, mean with standard deviations and bivariate and multivariate logistic regression was used to assess success rate of vaginal birth after caesarean section and factors associated with VBAC. A 95% confidence interval and 5% level of precision was used to declare presence of association between dependent and independent variables in final model.

Results: The total number of mother with one previous caesarean section who were offered trial of labour and included in the study was 194 out of this 48(24.7%) was successful vaginal birth, the independent variable history of meconium stained amniotic fluid [AOR=0.106(.023,.490)] previous history of VBAC [AOR=3.136(1.348,7.295)] and indication of previous caesarean section with unknown indication [AOR=.202(.057,718)] are highly associated with current VBAC.

Conclusion: Generally the overall success rate of VBAC is low in this study when compared to previous studies. The Study revealed that VBAC, previous history of vaginal birth after C/S scar, previous indication of C/S Scar and Meconium Stained Amniotic Fluid are the main predictors of Success rate of VBAC.

Key words: Success rate, Previous Caesarean section, vaginal birth, VBAC, Mettu Karl referral hospital.

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TABLE CONTENTS

ABSTRACT	iii
ACKNOWLEDGEMENT	iv
TABLE CONTENTS	v
ABBREVIATION	vii
LIST OF TABLES AND FIGERES.....	ix
1. INTRODUCTION.....	2
1.1. Statement of the problem.....	3
1.2. Significance of the study	4
2. LITRATURE REVIEW.....	5
2.1. Success Rate of Vaginal Birth after Caesarean Section	5
2.2. Factors That Influence VBAC.....	7
2.2.1.Socio Demographic Factors.....	7
2.2.2.Obstetric Factor	7
2.3. Prenatal and Maternal Outcome	8
3. OBJECTIVE.....	11
2.2. General objective.....	11
2.3. Specific objectives.....	11
1. METHODS AND MATERIAL.....	12
4.1. Study area	12
4.2 Study period	12
4.3 Study design.....	12
4.4 . population.....	12
4.4.1 .Source population	12
4.4.2 Study population	12
4.5 Inclusion Criteria.....	12

4.6 Exclusion criteria	13
4.7 Sample size	13
4.9 Sample technique	13
4.10 Data collection tools and collection procedures.....	14
4.11 Data quality management.....	14
4.12 Data processing and analysis	14
4,13 Ethical considerations	14
4.14 Study Variables	14
Dependent variables.....	14
Independent variables	15
4.15 Operational definition	16
5. RESULTS.....	18
5.1 Socio-demographic characteristics.....	18
4.3 Obstetrics History	19
4.1. Maternal and Neonatal Outcome	20
5.5. Factors Associated with vaginal birth after caesarean section.....	22
6. DISCUSSION.....	25
7. STRENGTH AND LIMITATION	26
7.1. Strength.....	26
7.2. Limitations.	26
8. CONCLUSION AND RECOMMENDATION	27
8.1. CONCLUSION	27
8.2RECOMMENDATION.....	27
8. DISSEMINATION PLAN OF THE STUDY FINDINGS	28
REFERENCES:	29
Questionnaire.....	31
III Consent form	33

ABBREVIATION

ANC	Antenatal care
ACOG	American College of Obstetrics and Gynecology.
AOR	Adjusted odd ratio .
CS	Caesarean Section
CSAC	Central Statistics Association
CPD	CephaloPelvic Disproportion
COR	Crude odd ratio
ERCD	Emergency Repeat Caesarean Delivery
FHB	Fetal Heart Beat
GA	Gestational Age
GC	Gregorian calendar
GYN	Gynecology
HCT	Haematocrit
ICU	Intensive Care Unit
IEOS	Integrated Emergency Obstetrics and Surgery
LNMP	Last Normal Menstrual Period
LUSTCS	Lower Uterine Segment Cesarean Section
NGO	Non-governmental Organization
NICU	Neonatal Intensive Care Unit
NMH	National Maternity Hospital
MSAF	Meconium Stained Amniotic Fluid

MKRH	MettuKarl Referral Hospital
PMR	perinatal Mortality Rate
SPSS	Statistical Package for Social Science
TOL	Trial of Labour
VBAC	Vaginal Birth AfterCaesarean Section
WHO	World Health Organization

LIST OF TABLES AND FIGERES

Table 1: Socio demographic variables 18

Table 2: Obstetrics History..... 19

Table 3: maternal and Neonatal out come..... 21

Table 4: Table 4: binary logistic regression analysis of socio-demographic variables associated with Vaginal birth after caesarean section of success rate. from January 1, 2018- August 30, 2018G.C.....22

Table 5: Multivariate Binary Logistic Regression Analysis Of Variables Associated With VBAC Success Rate 2018.....24

LIST OF FIGURE

Figure 1: Conceptual frame work on outcome of VBAC.....10

1. INTRODUCTION

Caesarean delivery is an operation done to deliver of baby through the abdominal and uterus incision It is the most frequently performed surgical procedure worldwide. Caesarean section is one of life saving procedures medical intervention attributed to the decrease of the maternal mortality and morbidity rates Even though, variation exists in rates of caesarean delivery across countries; currently the rate ranges from 10% to 40%. This high caesarean section rate has put burden on the economy of nation and individuals. Previous caesarean section has been found to be the commonest cause of increased caesarean section rate in many parts of the world . Because of increased risk of maternal complications with repeat caesarean section and safety of VBAC, trial of labour for selected group of patients with previous scar has become a preferred strategIn1988 ACOG recommended that, in the absence of a contraindication, a woman with one previous low transverse caesarean delivery be counselled attempt labor in a subsequent pregnancy [1].There is remarkable variation in the VBAC rates quoted by the different national guidelines varying from 30-51% to 50-85% [2].

Vaginal birth after caesarean section (VBAC) is associated with shorter maternal hospitalizations, less blood loss and fewer transfusions, fewer infections, and fewer thromboembolic events than cesarean delivery. Several reports have indicated that the absolute risk of uterine rupture attributable to a trial of labor is about 1 per 1000 [1-4]. A 60 to 80% success rate of vaginal birth after previous caesarean section has been reported by manyauthors if the primary caesarean was done for nonrecurring indications [2]. Some of the non-recurring indications for caesarean section are: poor labor progress ,fatal distress, placenta previa, transverse lie, breech presentation, oblique lie, pregnancy induced hypertension and twins [3]

A number of factors are associated with VBAC, including; previous vaginal birth, particularly previous VBAC, being the single best predictor for VBAC and is associated with an approximately 87–90% planned VBAC rate [4].

Sub-Saharan Africa: a meta-analysis Maternal mortality among all women with a previous caesarean section was 1.9/1000 (95% CI 0-4.3). Uterine rupture and scar dehiscence occurred in 2.1% (95% CI 1.0-3.2).

One study in Lahore reported Successful vaginal delivery in 70% of the patients and repeat emergency caesarean section in 30% of the patients. The leading indications for the repeat caesarean sections were: failure to progress, fetal distress and scar tenderness. There were no maternal and fetal complications occurred. They concluded that VBAC is a safe practice (5)

VBAC is a current standard of care and it presents the experiences for CS which causes patient dissatisfaction about maternal care (6). It also prevents the complications resulting from CS such as excessive blood loss by half, risk of blood transfusion and its complications, damage of organs near the uterus which includes bladder, intestine and infection related to the procedure

Criteria used to select women for a trial of labour appeared to have a limited impact on the probability of vaginal delivery [9].

1.1. Statement of the problem

One of the most dramatic features of modern obstetrics is the persistent increase in the caesarean section rate. The rise in CS rate is a major health problem as it increases the risk for mothers and babies as well as of health care compared with normal deliveries Women with previous caesarean sections constitutes a high risk group in obstetrics, with associated medical and legal implications.

Previous caesarean section has been found to be the commonest cause of increased caesarean section rate in many parts of the world [1]. The rates of caesarean delivery across countries; currently the rate ranges from 10% to 40% [1]. This high caesarean section rate has put burden on the economy of nation, individuals and increased risk of maternal complications with repeat caesarean section, so VBAC, trial of labour for selected group of patients with previous scar has preferred.

Sub-Saharan Africa: a meta-analysis Maternal mortality among all women with a previous caesarean section was 1.9/1000 (95% CI 0-4.3). Uterine rupture and scar dehiscence occurred in 2.1% (95% CI 1.0-3.2). Criteria used to select women for a trial of labour appeared to have a limited impact on the probability of vaginal delivery [14].

At tertiary university teaching hospital in Tanzania shows from 80 women who underwent trial of the scar 44 (55%) delivered vaginally.

At three teaching hospitals in Addis Ababa, Ethiopia offered trial of labour (TOL) and included in the study was 204.101(49%) delivered vaginally of them 65 (64.5%) and increase of repeat caesarean section.

There are no studies conducted in the study area on the assessment of vagina birth after one previous C/S.

1.2. Significance of the study

The crucial questions are how to reliably predict successful vaginal birth after caesarean section, and how to and quantify the magnitude of the risk of failure that is acceptable to women. Many studies have addressed methods for identifying women at low and determine high risk of failure of an attempt vaginal birth after prior caesarean but none of them have resulted in a validated result. Even those factors found to be associated with successful VBAC vary from center to center [13].

This study will help in filling the gap of success rate of vaginal birth after caesarean section and factors associates and prenatal and maternal outcome among previous caesarean scar. It can also be used as baseline information for future valuable researches to be undergone around the subject of interest.

2. LITRATURE REVIEW

2.1. Success Rate of Vaginal Birth after Caesarean Section

Vaginal birth after caesarean (VBAC) is a vaginal child birth by a woman who has had a surgical delivery(c/s) in the past. Multiple studies have shown that successful vaginal birth after caesarean (VBAC) has the lowest rate of maternal morbidity and mortality compared to elective repeat caesarean delivery (ERCD)[1].

A large prospective American study of women with a singleton Gestation and prior CS was conducted at 19 academic medical centres. The authors concluded that a trial of labour after prior caesarean was associated with a greater perinatal risk than elective repeat caesarean, although absolute risks were low. There is now emerging evidence that these publications in the influential New England Journal of Medicine contributed to a reversal of the trend in VBAC rates. Data from the National Centre for Health Statistics have shown that VBAC rates in the United States are now in single figure percentages. An ACOG survey showed that between 2003-2006, 26% of American obstetricians were no longer prepared to offer a TOLAC regardless of prior vaginal delivery experience. Some of the non-recurring indications for caesarean section are: poor labor progress ,fatal distress, placenta previa, transverse lie, breech presentation, oblique lie, pregnancy induced hypertension and twins [3].

This decrease in TOLAC rates has led to the overall CS rates in the United States to rise again, which has prompted calls for further reconsideration of national policies for the management of women with a previous C/S. Dublin, the VBAC rate with a trial of labour in 2002 was 65% in the National Maternity Hospital and 74% in the Coomb compared with 73% in the US study. However, overall 52% of women in the NMH and 61% in the Combo with a prior CS had a VBAC compared with only 29% in the US study [4].

Comparative prospective study was conducted in Ahmadi Hospital, Kuwait; Trial of labour after cesarean section was successful in 72.13% and was unsuccessful in 27.87% [5].

Case series study was undertaken at Marie Stops Clinic, in Begum Out of 150 patients, 81 (54%) patients had trial of scar and the remaining 69 (46%) patients underwent repeat elective caesarean section. Among those which had trial of scar only 35 (43.2%) patients achieved successful vaginal delivery and remaining 46 (56.8%) had emergency caesarean section [6].

Study done Department of obstetrics and gynecology, university of NIGERIA teaching hospital a total of 370 women with one previous Cesarean section had non recurrent indications, of whom 355 consenting pregnant women with one previous Caesarean section were studied .A majority of the women (320/355, 90.1%) preferred to have vaginal delivery despite the one previous Caesarean section. However, only approximately 54% (190/355) were found suitable for trial of VBAC, out of whom 50% (95/190) had successful VBAC. Ninety-five women (50.0%) had failed attempt at VBAC and were delivered by emergency Caesarean Section while 35 women [9.8%] had emergency Caesarean section for other obstetric indications (apart from failed VBAC) [6].

Havana Specialist Hospital, Lagos, Nigeria Of the 1481 deliveries in our hospital during the period, 179(11.9%) had previously been delivered through caesarean section. While 51 [29.3%] of the women with previous caesarean delivery had elective caesarean section 123 [70%] were allowed trial of labour 85 [69%] women had successful trial of labour [7].

Study done at Tertiary Care Centre in North India The Caesarean section rate was 32.4% and the rate of successful VBAC was 67.6%. Two patients had elective repeat Caesarean section in view of placenta previa and contracted pelvis [8].

At teaching hospitals in India the success rate of VBAC was 62.3% with 2513 women had successful vaginal delivery and 1522 [37.7%] delivered by emergency repeat caesarean section [9,21]. Another study done on pregnancy outcomes after caesarean at tertiary university teaching hospital in Tanzania shows from 80 women who underwent trial of the scar, 44 (55%) delivered vaginally and 8 delivered vaginally while waiting for emergency repeat caesarean section, giving a total of 52 (65%) women with one previous caesarean section delivering vaginal [10].

Among women who delivered vaginally after trial of the scar, three delivered while waiting for caesarean section after decision for failed trial of the scar was declared [11].

Sub-Saharan Africa: a meta-analysis the proportion of women who were allowed a trial of labour ranged from 37% to 97% across reports. The probability of a vaginal delivery among these women was 69% (95% CI 63-75%)[12].

At three teaching hospitals in Addis Ababa, Ethiopia: case control study The total number of mothers with one previous caesarean section who were offered trial of labour (TOL) and included in the study was 204.101[49%] delivered vaginally of them 65 (64.5%) of the cases had spontaneous vaginal deliveries while the rest were instrumental deliveries[13].

2.2. Factors That Influence VBAC

2.2.1. Socio Demographic Factors

The factors were predictive of failed TOLAC; older maternal age (OR= 1.1, 95%CI: 1.01-1.16, p=0.03).At three teaching hospitals in Addis Ababa, Ethiopia study age between 25-30 years maternal and primi parity was associated with high success rate with vaginal delivery [13].

Presence of gestation age ≥ 40 weeks was risk factor for unsuccessful TOLAC[15].VBAC success was independently associated with age < 30 years, body mass index < 30 [16].Age (OR= 0.7, 95% CL: 0.6-0.9, p < 0.01).

2.2.2. Obstetric Factor

Station ≥ -2 was significantly high in the unsuccessful TOLAC group 76.5% Study in University of Malaya show cervical dilatation < 4 cm were risk factors for an unsuccessful TOLAC. Havana Specialist Hospital, Lagos, Cephalic pelvic disproportion and slow progress of labour was the main cause of failure. Majority (58.8%) of the patients that achieved vaginal deliver needed assistance in the form of vacuum delivery (40.0%), vacuum deliver & episiotomy (30.0%), episiotomy alone (28.0%) and forceps deliver[17].

At three teaching hospitals in Addis Ababa, Ethiopia study mothers who had experienced successful VBAC after the past caesarean section had a higher chance of success with significant statistical association. Spontaneous onset of labour, vaginal delivery after caesarean section, and associated with success of VBAC [13].

Indication of pervious caesarean section; the woman has had a previous caesarean section for labour dystocia VBAC is achieved in only 40% of cases[13].

2.2.3. Fetal factor

Study was conducted in Mafraq Hospital, a tertiary care referral Centre in Abu Dhabi; UA Average-sized babies (2.5–4.0 kg) had a successful vaginal delivery rate of 66.2%. Small for gestation babies (<2.5 kg) had a lower rate of VBAC (50%) while babies larger than 4 kg had an even lower success rate (20%)[16].

At three teaching hospitals in Addis Ababa, Ethiopia: case control study, the strongest factor determining success was cervical dilatation at admission, The other important factor determining success was the position of the present part, mothers who had experienced successful VBAC after the past caesarean section those mothers who were admitted after rupture of membrane and at active firsts stage of labour [11].

Meconium-stained liquor is more frequently encountered in an emergency repeat caesarean delivery than in a primary emergency cesarean delivery [19].

2.3. Prenatal and Maternal Outcome

Study on neonatal outcomes after elective caesarean delivery in America states neonates born by caesarean delivery had higher NICU admission rates compared with the VBAC group (9.3% compared with 4.9 %)and higher rates of oxygen supplementation for delivery room resuscitation and after NICU admission. Neonates born by VBAC required the least delivery room resuscitation with oxygen; whereas neonate delivered after failed VBAC required the greatest degree of delivery room resuscitation [20].

At teaching hospitals in India Blood loss was more than 1000ml in 8.0% of TOL whereas in VBAC it was only (0.3%) as compared to EmRCS 20.6%. Blood transfusion rates were 3.7% and it was 1.8% in VBAC versus 20.6% in EmRCS. Of those 12 women only 2 cases of uterine rupture was reported in VBAC. Dehiscence of scar in VBAC was 6(6.8%) as compared to EmRCs 82 (93.2%). Post-operative complication was 2.8% cases in TOL where as in VBAC (0.4%) as compared to 6.8% in emergency caesarean section. Maternal death was reported in 6 cases of VBAC as compared to 4 cases in emergency cesarean section[12].

A retrospective study on the risk factors for emergency repeat caesarean delivery and neonatal admission in a trial of labour after prior caesarean section at University of Malaya. There were 2 (0.6%) prenatal deaths but no uterine rupture within this group of 342 women.

Another study done on pregnancy outcomes after caesarean at tertiary university teaching hospital Tanzania the incidence of uterine rupture was 2% and perinatal mortality ratio were 55 per 1000 live birth and Maternal deaths (case fatality rate) of 1.1 [10] .

Study done Department of obstetrics and gynaecology, university of Nigeria teaching hospital there was no case of uterine rupture or neonatal and maternal deaths recorded in any group. Apgar scores of less than 7 in the first minute were significantly more frequent amongst women who had vaginal delivery when compared to those who had elective repeat Caesarean section (P0.03)[21].

Havana Specialist Hospital, Lagos, Nigeria When fetal and maternal outcome were compared between emergency and elective caesarean section, it was only in Apgar score at 1 minute was there significant difference. One (0.8%) uterine rupture occurred because of delayed consent and she was not among the eight patients that had oxytocin augmentation of labour [8].

Sub-Saharan Africa: a meta-analysis Maternal mortality among all women with a previous caesarean section was 1.9/1000 (95% CI 0-4.3). Uterine rupture and scar dehiscence occurred in 2.1% (95%CI: 1.0-3.2). Criteria used to select women for a trial of labour appeared to have a limited impact on the probability of vaginal delivery [9].

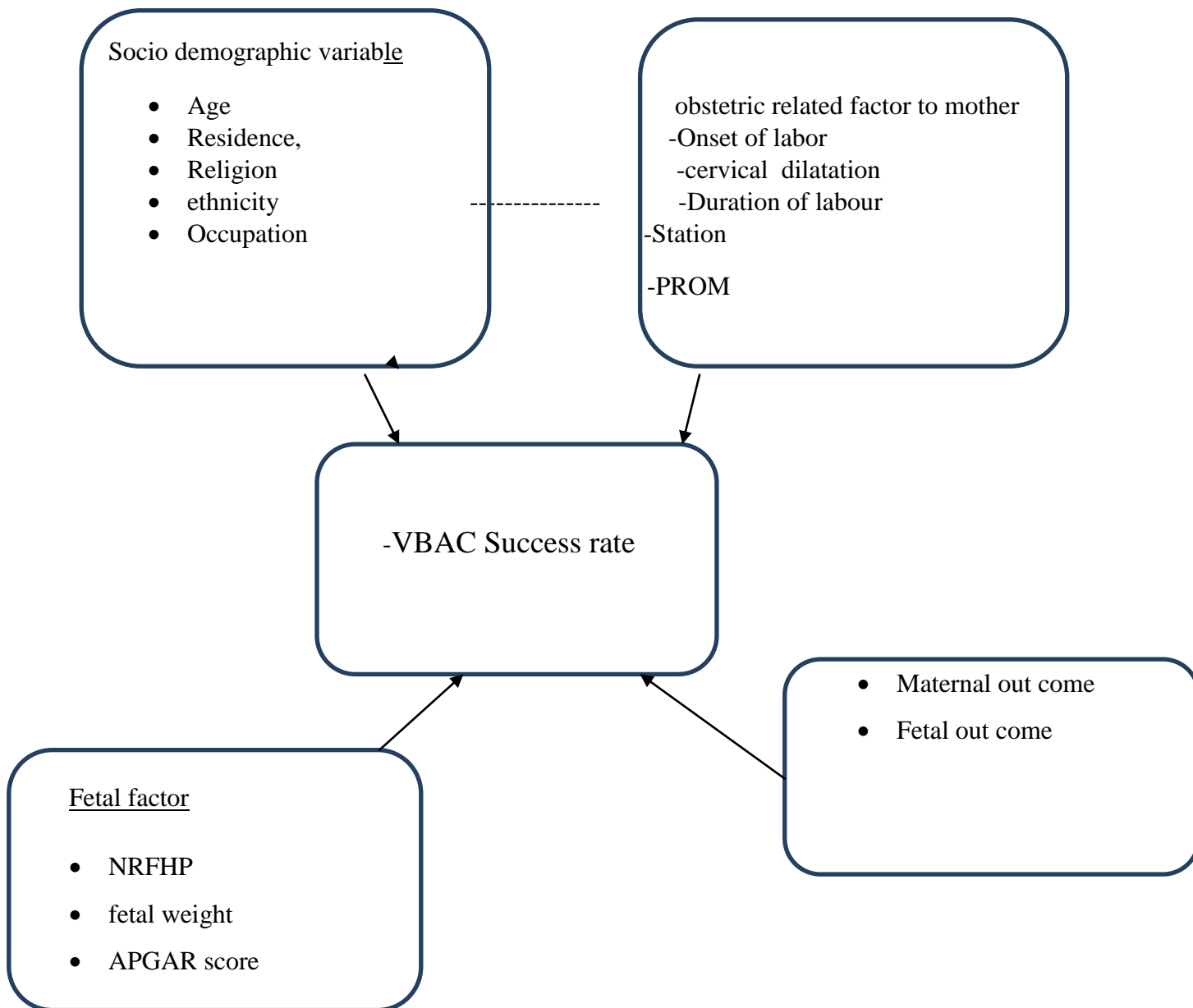


Figure 2: Conceptual frame work on outcome of VBAC

3. OBJECTIVE

2.2. General objective

- To assess success rate of VBAC and associated factors for women with previous one caesarean section who gave birth at Mettu Karl referral hospital from January 1, 2018- August 30, 2018 G.C.

2.3. Specific objectives

1. To determine the success rate of VBAC who gave birth at Mettu Karl referral hospital from January 1, 2018- August 30, 2018 G.C.
2. To determine maternal outcome with success rate of VBAC at Mettu Karl referral hospital from January 1, 2018- August 30, 2018 G.C.
3. To determine fetal outcome with success rate of VBAC at Mettu Karl referral hospital from January 1, 2018- August 30, 2018 G.C.
4. To identify the factors associated with success rate of VBAC at Metu Karl referral hospital from January 1, 2018- August 30, 2018 G.C.

1. METHODS AND MATERIAL

4.1. Study area

Study was conducted at Mettu Karl referral hospital which is found in the centre of capital city of Illu-Ababora Zone, Mettu Town at 600 Km to the South West of Addis Ababa. It is the only hospital in the town established by Swedish Missionaries and Ras Tiderip in 1932. Currently, it is providing full health care services for the population of Illu-Ababora zone and its surroundings estimated to be 1.6 million people. Currently, there are a total of 214 beds in the surgical, medical, gynaecology-obstetrics, and paediatrics wards of the hospital. Of which 42 beds were found in the gyn/obs ward. The gyn/obs ward is run by one gynaecologist, one IESO and 17 midwives.

4.2 Study period

The study was conducted from January 1, 2018-August 30, 2018 G.C.

4.3 Study design

Hospital based cross sectional study design was used.

4.4 . population

4.4.1 .Source population

All mothers have one previous caesarean section.

4.4.2 Study population

All mothers have one previous caesarean scar who was candidate for VBAC at Mettu Karl referral hospital within the study period.

4.5 Inclusion Criteria

- ✓ Women with one previous lower segment caesarean section
- ✓ Singleton pregnancy
- ✓ vertex presentation
- ✓ Term gestation week pregnancy
- ✓ In spontaneous labour

4.6 Exclusion criteria

- ✓ post term pregnancy
- ✓ Twinpregnancy
- ✓ Preterm pregnancy

4.7 Sample size

All mothers have one previous caesarean scar was gave birth at Mettu Karl referral Hospital was included in the study period.

VBAC success rate with previous indication at Addis Ababa=40% [13].

$$P=0.4 \qquad n=(z\alpha/2)^2 p(1-q)/w^2$$

$$q=0.6 \qquad (1.96)^2 \times 0.4(0.6)/(0.05)^2$$

$$CI=95\%=1.96(\text{from table})$$

$$W=5\%=0.05 \qquad n=369$$

Since N is less than 10,000, the correction formula was used to calculate the final sample size as follows:

$$nf = n / (1 + n/N)$$

$$N=350$$

$$nf=184$$

After non-response rate =5% added, the final sample size is:

$$nf + NRR$$

$$\text{sample size} = 194.$$

4.9 Sample technique

The sampling technique was convenient sampling technique.

Patients were enrolled consecutively and women who had one previous Cesarean section were individual counseled and selected for the study after which her written consent was obtained.

4.10 Data collection tools and collection procedures

Data was collected by using structured questionnaire which includes maternal socio demographic, past and present obstetric experience and birth outcomes variables. The data was collected by interviewing the participants and filling the questionnaire.

4.11 Data quality management

The questionnaire was prepared in English and data was collected by interview of relevant health staff, interview of clients and families (after informed consent) for all VBAC women by two supervisors and four data collectors were participated in the data collection process. One day intensive training was given for the data collectors and supervisors. Before the actual data collection, the questionnaire was tested on 5% of the total study subjects. At the end of each day, the questionnaire was reviewed and cross checked for completeness, accuracy and consistency by the investigator and corrective discussion was made. Data was cleaned and edited before used by Epidata 3.1 and it was exported to the SPSS version 20.

4.12 Data processing and analysis

The collected data was checked for its completeness and exported to SPSS version 20 after cleaned by Epidata 3.1. Descriptive statistic was used to describe the study variables. Frequency distributions of both dependent and independent variables was worked out and the association between independent and dependent variables was measured and tested using logistic regressions analysis. To determine factors for VBAC and its outcome, multivariable logistic regressions was used. A 95 % confidence interval and 5% level of precision was utilized to check for association between variables. Finally the data was described and presented using tables and charts.

4.13 Ethical considerations

Letter of ethical clearance was obtained from Research Ethical Committee of Jimma University and from the coordinator of integrated emergency obstetrics/Gyn and surgery and letter of permission was obtained from Mettukarl referral hospital. Additionally confidentiality and anonymity of the record information was kept.

4.14 Study Variables

Dependent variables

- ✓ Success rate of vaginal birth after one caesarean section.

Independent variables

- ❖ Socio demographic factors
 - ✓ Age
 - ✓ Residence
 - ✓ Educational status
 - ✓ Ethnicity
 - ✓ Marital status
 - ✓ Occupation
- ❖ Past obstetric history
 - ✓ gravidity
 - ✓ LNMP
 - ✓ ANC follow up
 - ✓ Indication of previous c/s
 - ✓ Previous success of VBAC
- ❖ Current obstetric history
 - ✓ GA
 - ✓ onset of labour
 - ✓ duration of labour
 - ✓ Station
 - ✓ cervical dilatation
 - ✓ Malpresentation
 - ✓ PROM and presence of meconium,

❖ Fetal condition

✓ NRFHP

✓ Birth weight

✓ APGAR score

4.15 Operational definition

Gestational age- is calculated from the LNMP or fundal height that was documented on the card, if not from the duration of amenorrhea documented from mothers recall & is rounded to the nearest weeks. Amenorrhea of 9 months was taken as 37-42 weeks gestation for all mothers.

Caesarean section- delivery of the foetus, membrane and placenta after 28 weeks of gestation by opening of abdomen and uterus.

Elective caesarean section - operation that done by schedule time for delivery before onset of labour, usually at completed 39 week.

Elective Repeat caesarean section – caesarean section done at a schedule time for delivery before onset of labour in presence of previous c/s

Successful VBAC - vaginal delivery (spontaneous or assisted) in a woman who had previous c/s.

Parity --number of previous births (both live birth infants & stillbirth) of at least 28 weeks of gestational age.

Birth weight in grams Normal birth weight- 2500-4000 g ms

Low birth weight- 1500-2500gms

High (macrosomia) \geq 4000 gms.

Station - degree of engagement of the presenting part, measured as distance in centimetres or between the fetus and the ischia spines.

Cephalopelvic Disproportion (CPD) - is failure of the fetus to pass safely through the birth canal because the fetal head being relatively larger than the maternal pelvic size.

Prolonged 2nd stage: the 2nd stage of labour lasting more than 1 hour in multipara and 2 hours in nulliparous.

Cervical dilatation status. Active stage- In general, requires ≥ 100 % effacement and ≥ 4 cm dilation of the cervix.

Full dilatation/ second stage -is from full dilation (10 cm) until delivery of the baby.

NRFHRP - abnormal fetal heart rate pattern with Tachycardia of > 160 b /min and Bradycardia of < 110 beats / min.

Operative vaginal delivery - applying direct traction on the fetal skull with forceps or Vacuum.

Uterine rupture-when all layers of the uterine wall are separated.

Uterine dehiscence - when the uterine muscle at the previous incision site separated but the visceral peritoneum is intact.

PROM- Rupture of membrane more than 8 hours before onset of labour.

APGAR- a score for the new born based on appearance, heart rate, grimace, activity (movement) and response.

5. RESULTS

5.1 Socio-demographic characteristics

During the study period a total number of 3253 deliveries were conducted at mettukarl referral hospital. From this 2578 (79.2%) was by spontaneous vaginal delivery (SVD) and 675(21%) by caesarean section (C/S).from total deliveries 341(14%) had pervious one caesarean section scar. from which were offered trail of labour and included in the study was 194 out of this 48(24.7%) was successful vaginal birth.

From a total of 194 mothers who have one caesarean scar were delivered among which about 95(49.0%) were in the age group 26-30years with mean age of 28 years $SD\pm 4$ and majority of Oromo ethnicity 76(39.2%)& protestant 66(34.0%). More than half of them had occupation house wife 124(63.9) and majority of can write and read 81 (41.8%) and married183 (94.3).(see table -1)

Table 1 Socio demographic variables in mattu Karl referral hospital from January 1, 2018- August 30, 2018G.C

Variable	Category	Frequency	Percentage
Age	<25	7	3.6
	26-30	139	71.6
	>31	48	24.7
Residence	Urban	97	50.0
	Rural	97	50.0
Marital status	Married	183	94.3
	Single	11	5.6
Ethnicity	Oromo	76	39.2
	Amara	69	35.6
	Tigre	25	12.9
	Other	24	12.4
Religion	Orthodox	58	29.9
	protestant	66	34.0
	Muslim	46	23.7
	Other	24	12.4
Educational level	Illiterate	53	27.3
	write &read	81	41.8
	complete primary	12	6.2
	high school	7	3.6
	diploma and above	41	21.1

4.3 Obstetrics History

Most of the study subjects 174(89.6) were gravid twoupto five. Majority of them were term by their gestational age 171(88.1%) and half of those mothers had ANC follow up 176(90.1%).The majority of repeatcaesarean section were done as an emergence 146(75.2%) after undergoing trail of labour.(see table -2)

Table 2.Obstetrics history at mettu Karl referral hospital from January 1, 2018- August 30, 2018G.

Variable	Frequency	%
Gravidity2-5	174	89.6
>5	20	10.3
GA in week<37	22	11.3
37-40	171	88.1
>40	1	0.5
ANC fallow up yes	176	90.7
No	18	8.8
passage of liquor at admission yes	98	50.5
NO	96	49.5
Duration of labour at admtion< =12	150	77.3
>12	41	21.1
Not in labour	3	1.5
Station at admission Above zero	59	30.4
Zero	87	44.8
Below zero	48	24.7

Cervical dilatation at admission <4	69	35
>=4	73	37.6
7 &above	52	26.6
Variable	Frequency	%
Pervious VBAC Yes	46	23.7
No	148	76.3
Current VBAC success	48	24.5
Failed	146	75.2
MSAF YES	36	18.6
NO	158	81.4
Indication of pervious VBAC		
malperesentation	44	22.7
NRFHP	31	16.0
CPD	81	41.8
Unknown	38	19.6

4.1. Maternal and Neonatal Outcome

There was no maternal death among women had trail of VABC during the study period, laparotomy were done foruterinerupture 6 (3%) and20 (10 .3%) of mother had haemoglobin<7 aftertrail of delivery and all are transfused blood .The mother of blood lose around 1000ml during VBAC16(8.2%) in this study and those mothers are blood transfused and lastly they are good outcome.TheMajority of neonate with birth weights between2500-4000gm 175(90.2%), out of those neonate 190(98%) APGAR score of>=7 and 4 (2 %)feta death occurred.

Table 3: Maternal and fetal outcome in mattuKarl referral hospital from January 1, 2018- August 30, 2018G.C

Variable	Frequency	%
PPH	16	8.2
uterine rupture	6	3.1
Other	23	11.9
No complication	149	76.8
HCT after delivery <7	20	10.3
>=7	174	89.6
Unit of blood transfused one	7	3.6
>=2	13	6.7
Not transfused	174	89.6
Fetal out come alive	190	98
Dead	4	2
APGAR >=7	190	98
<7	4	2
Birth weight <2500gm	15	7.7
2500-4000gm	175	90.2
>=4000gm	4	2.0

5.5. Factors Associated with vaginal birth after caesarean section

To assess the association between variable of interest by binary logistic regression at bivariate analysis meconium stained amniotic fluid [COR=9.401] history pervious vaginal birth after caesarean section [COR=3.136] and indication of pervious caesarean section [COR=0.013] are highly significantly associated with VBAC success rate (Table. 4)

Table 4: binary logistic regression analysis of socio-demographic variables associated with Vaginal birth after caesarean section of success rate. from January 1, 2018- August 30, 2018G.C

Variable	Categories	Success Rate		COR	P-Value
		Success	Failed		
Agegroup	<25	3	4		
	26-30	33	106	2.409	.265
	>31	12	36	2.265	.330
Residence	Urban	23	75	1.014	
	Rural	25	71	5.38	
Marital status	Married	146	137	5.42	1.00
	Single	2	9	1.343	.715
Occupation	Employee	10	22		
	house wife	31	93		
	Other	7	26		
Educational status	Illiterate	15	38	5.067	.199
	write & read	12	69	11.50	.053
	high school	1	11	.000	.999
	Diploma & above	13	28	4.909	.212

Table 4: Obstetric history variables which are associated with vaginal birth after cesarean section in bivariate analysis from January 1, 2018- August 30, 2018G.C

Variable	Categories	Success Rate		COR	P value
		Success	Failed		
Gravidity	2-5	7	14	1.61	.333
	>=5	41	132	1	
GA in week	<37	0	22	4.79 (00,0)	.999
	37-40	29	59	.604 (.307,1.12)	.145
	>=40	19	65	4.78 (00,00)	1.00
	Other	4	34	1	

ANC follow up	Yes	43	133	1.05 (.32,3.32)	.997
	No	5	13	.000 (00)	.99
Mecouinemstaineda mniotic fluid	YES	2	34	1	
	NO	48	112	9.407	0.004
Pervious History Of vaginal birth after caesarean section	YES	18	28	1	
	NO	30	118	3.136	0.008
cervical dilatation at admtion	<4	7	24	1	
	>=4	35	99	.935 (.27,3.2)	.915
	7and Above	6	22	.77 (.28,2.05)	.60
Station at admtion	Above Zero	13	34	1	
	Zero	19	68	.000 (.000,.000)	1.00
	Below Zero	16	43	.000 (.00,.00)	1.0
Rupture of membrane	Yes	26	70	1.28(.667,2.46)	.445
	No	22	76	1	
Birth weight	<2500gm	4	11	1.15(.35,3.48)	.52
	2500gm-4000gm	42	133	.364(.38,)	.364
	> 4000gm	2	2	1	
Indication of Pervious caesarean section	Malpresentation	15	29	1	
	NRFHP	11	20	4.961	0.013
	CPD	18	63	4.289	0.031
	Unknown	4	63	3.055	0.077

In multivariate logistic regression after it was adjusted for the variable in the model, women who had no have meconium stained amniotic fluid [AOR=0.106(.023,.490)] 90present times success rate than mother who had have meconium stained amniotic fluid and ,history of pervious vaginal birth after caesarean section[AOR=3.136(1.348,7.295)] 3percenttimes more likely to have successful vaginal delivery than those who had not history of vaginal birth after caesarean section and indication of pervious caesarean section with known indication [AOR=.202(.057,718)]80 presenttimesuccessfulthan unknown indication are significantly associated with VBAC success rate. No association between other variable.

Table 5: Multivariate Binary Logistic Regression Analysis Of Variables Associated With VBAV Success Rate 2018.

Variable	Categories	Success Rate		95% CI AOR	Pvalue
		Success	Failed		
MSAF	Yes	2	34	1	
	No	48	112	0.106(.023,.490)	0.004
Pervious History Of VBAC	Yes	18	28	1	
	No	30	118	3.136(1.348,7.295)	0.008
Indication of Pervious C/S	Malperesentation	15	29	1	
	NRFHR	11	20	0.865(0.305,2.48)	0.0784
	CPD	18	63	0.616(0.25,1.519)	.293
	Unknown	4	63	.202(..057,,718)	0.013

6. DISCUSSION

The results of this study showed that the total number of mother with one previous caesarean section who were offered trial of labour and included in the study was 194 out of this 48(24.7%) was successful vaginal birth Furthermore, the results confirm that VBAC was not associated to mothers death.

The VBAC success rate of wide vary from place to place 24.7% in this study was approximately similar to USA[3] but lower than the rate of Vaginal birth after caesarean section at three teaching hospitals in Addis Ababa , Begum, Nigeria teaching hospital,[16,5,9]. Tanzania,India, and Kuwaite,[15,10,12,4]

This difference may be due to lack of awareness on vaginal birth after caesarean section, poor encouragement on vaginal birth after caesarean section and poor follow up during labour and ANC

The strongest factor determining success in this study was Prior successful VBAC, indication of past caesarean section (unknown indication)and non MSAF was found to be associated with high successful vaginalbirth after caesarean section which is similar to three teaching hospitals in Addis Ababa[13], Many authors reported Previous vaginal birth was the single best predictor for successful VBAC[1,3,8,9,16].

Those mothers with known indication were indication for pervious caesarean section has been found associatedwith high success than unknownindication,and non MSAF success full than those mother had MSAF which is same result at three teaching hospitals in Addis Ababa,Havana Specialist Hospital, andLagos, teachinghospitals in India [13,11].

In this study, Socio-demographic characteristics, gravidity, duration of labour after admission, station at the time of admission, rupture of membrane at admission and birthweight, gestational age was significant not associated with success in this study.

Perinatal and maternal outcome of labour were recorded among women who had trial of VBAC in this study were uterine rupture similar with research done in Tanzania ,and sub-Sahara Africa [16,12,14], and 4(2,1) perinatal death and no maternal death .which was apperximetly similar finding with Malaysia.[9]and no perinatal and maternal death in repeated caesarean section. Another study done on pregnancy outcomes after caesarean at tertiary university teaching hospital Tanzania the incidence of uterine rupture was and perinatal mortality ratio were 55 per 1000 live birth and Maternal deaths (case fatality rate) of 1.1 [10]

The mother of bloodlosearound 1000ml during VBAC16(8.2%) in this study and those mothers are transfused bloodandafter transfused good outcome.

The Majority of neonate with birth weights between 2500-4000gm 175(90.2%), out of those neonate 190(98%) APGAR score of ≥ 7 and 4 (2%) fetal death occurred this occurred may be due to poor management and lack of take action at appropriate time.

Generally the independent variables found to determine success of VBAC found with multivariate analysis were history of successful VBAC, indication of past caesarean section and MSAF

7. STRENGTH AND LIMITATION

7.1. Strength

- Appropriate data collection and interpretation was employed.
- The study tried to use standardized and pretested check lists to collect the information
- The study tried to identify the associated factors using the appropriate models

7.2. Limitations.

- Since the study was a hospital based study the results of the study may not show the true picture of the problem in the community.
- Not to get full of information from all mothers , like about previous indication.

8. CONCLUSION AND RECOMMENDATION

8.1. CONCLUSION

This study revealed that successful vaginal delivery after one previous caesarean scar was 48(24.7%) which was relatively low. Trial of vaginal birth after caesarean section should be encouraged for appropriate cases. Because of previous caesarean section was the major maternal indication for caesarean section attention should be given to the indication of caesarean delivery and to avoid unnecessary caesarean section.

VBAC is a safe practice as long as it is offered with proper selection of candidates with factors having a high success rate. Repeat caesarean section and planned vaginal birth after caesarean section are both associated with benefits and harms and correct management represents one of the most significant and challenging issues in obstetric practice.

Generally the overall success rate of VBAC is low in this study when compared to previous studies. The study revealed that VBAC, Previous History of vaginal birth after C/Scar, Previous Indication of C/S Scar and Meconium Stained Amniotic fluid are the main predictors of Success rate of VBAC.

8.2 RECOMMENDATION

- Since previous caesarean section was the major maternal indication for c/s attention should be given to the indication of caesarean delivery to avoid unnecessary c/s. And trial of vaginal birth after caesarean section should be encouraged in appropriate cases.
- To give awareness for all Health care providers to give appropriate information during ANC follow up regarding advantage of vaginal birth after one previous c/s scar .
- More attention should be given by mettu Karl referral hospital worker, Illu-Ababora zone health office to Federal Ministry of Health and Partners, to address these associated risk factors especially giving awareness for all pregnant women.

8. DISSEMINATION PLAN OF THE STUDY FINDINGS

Findings will be presented during Master's thesis defence and in different seminars, meeting, conferences and workshops. The results of this study will be submitted to the department and disseminated to the study site and other concerned bodies. Also there will be an attempt to publish the result in a reputable journal.

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ANNEXES

Questionnaire

Jimma university collage of public health, faculty of medical science, coordinating office of integrated emergency obstetrics and surgery, questionnaire format on VBAC success rate at mettukarl referral hospital.

Identification

1. Questionnaire Id: _____
2. Card no _____
3. Date of checking _____

Remark: 1. Complete 2. Incomplete

Part I sociodemographic information

101 .Age by year -----

102 .Residence -----

103 .Ethnicity 1, oromo 2, Amara 3, other

104 .Religion 1, orthodox 2, protestant 3, muslim 4, other

105. Marital status 1, married 2, unmarried 3, widowed

106 .Occupation 1, house wife 2, employe 3, other

107 . Educational status 1, illiterate 2, write and read 3, completed primary school 4, high school(9- 12)
5, higher level education ; 1 Diploma 2, Diger 3, PHD

Part II obstetric history

201 .Gravid 2, 2-5 3, >=5

202 .Did she remember her LNMP? 1, Yes 2, No

If noamenorrhea of-----months.

203 .Her GA in weeks are; . From LNMP 1,<37 2, 37-40 3, >40 4 unknown

.From early US 1,<37 2, 37-40 3, >40 4. no US.

204 .Does the mother have ANC follow –up? 1,yes 2, no

205 .How many times ANC fallow –up 1,<4 2,>= 4.

Part III Outcome of VBAC

301 .Duration Of Labour at Admission 1,<12hr 2,>=12hr 3,Not In Labour.

302 .Cervical Dilatation at Time Of Admission 1,<4cm 2,>=4cm 3,7 cm& above

303 .Station at Admission 1, Above Zero 2, Zero 3,Below Zero

304 . Rupture Of Membranes at Admission ? 1,Yes 2, No .

305 . Presence Of MSAF. 1 ,Yes 2,No.

306 . She Has History Of Pervious VBAC ; 1, Yes 2,No.

307 Indication Of Pervious Caesarean Section ; 1, Malpersentation

2,NRFHP 3,CPD 4 ,unknown.

308Current VBAC is ;1. Success 2 .Failed.

309.Current Complication During VBAC ; 1,Rupture Of Uterus 2,PPH 3, Other. 4. No

3010. Fetal Out Come .1,Alive 2,Dead

3011. APGR scoroffetal ;1 >=7 2<7

3012 . Current Birth weight ; 1,<2500gm 2,2500gm-4000gm 3,> =4000gm.

3013 .What is Maternal Out Come? 1,Good 2,Poor

3014 .What is HCT after the Delivery. 1,<7 2,> =7

3015 .Did the Mother Transfused Blood ? 1,Yes 2,No .

3016 . How many unit of blood transfused . 1, one unit. 2,>= two unit . 3,No blood transfused

Name and signature of data collector-----

Date of data collection-----

III Consent form

My name is _____ I am working with Addis Demie who is doing a research on the VBAC success rate in Mettukral referral Hospital. The purpose of this study is understand better why this happened so that we can riseVBACSuccess rate& help improve care for mothers and babies in this hospital in the future. By addressing these issues we hope to better inform policy makers, health providers and women key finding that will contribute towards devising interventions that will improve vagina birth after previous cesearal section in the country.

In order to assess what might have been reasons for repeat ceaseal delivery, we will interview you using a structured questionnaire. We would like to collect some information about the care provided to you and your baby by reviewing the medical records and by interviewing you. All information will be kept confidential and neither your name nor other identifying information will be recorded. If you don't want to answer all of or some of the questions, you do have the right to do so. However your willingness to answer all of the questions would be appreciated.

Would you participate in responding to the questions in this questionnaire?

Yes No

Name of interviewer: _____ signature_____

Name of the supervisor _____ signature _____

Instruction:The respondents must be mother herself or close relatives if she will be unable to communicate and from her current documentation card.

Please encircle the letter corresponding to the correct response or write the response of the respondent on the space provided.