PERINATAL OUTCOME OF SINGLETON TERM BREECH DELIVERY AND ASSOCIATED FACTORS AT METTU KARL REFERAL HOSPITAL, OROMIA REGION AND ATAT PRIMARY GENERAL HOSPITAL ,GURAGE ZONE IN SOUTH WEST, ETHIOPIA

BY SULTAN AMANO (B. Sc)

A RESEARCH THESIS SUBMITTED TO JIMMA UNIVERSITY COLLAGE OF PUBLIC HEALTH AND MEDICAL SCIENCES, COORDINATOR OF INTEGRATED EMERGENCY OBSTETRICS AND SURGERY (IEOS); IN PARTIAL FULFILLMENT FOR THE REQUIEMNTS FOR DEGREE OF MASTERS OF SCIENCE IN INTEGRATED EMERGENCY SURGERYAND OBSTETRICS

DECEMBER, 2019

JIMMAUNIVERSITY

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DECEMBER,2018

Abstract

Back ground. Breech deliveries have always been topical issues in obstetrics because of the very high perinatal mortality and morbidity. Neonates undergoing term breech deliveries have long-term morbidity up to the school age irrespective of mode of delivery.

Objective: To determine the prevalence and associated factors of adverse outcome of term singleton breech delivery at Mettu Karl Hospital.

METHOD: Hospital based cross sectional study was conducted at Mettu Karl.and Atat general-hospital.from-December to July. All pregnant women who were presented on outcome of singloten term breech delivery.at Atat & Mettu Karl hospital was study population. Data were entered into Epideta version 3.1 and exported to SPSS version 21 for analysis. Logistic regrasion was done to identify factores associated with out come variabele.

Result; The incidence of adverse outcome (death) among singleton breach delivered neonates at Metu & Karolina hospital is 6(2.9%). Mothers whose membrane ruptured early was 17.7 times (AOR=17.72; 95%; CI) more likely died neonate as compared to their counter parts. Mothers having >/=4 ANC visit was 0.13(AOR=0.13; 95%; CI) times less likely died neonates as compared to <4 ANC visit.

Conclusion; The incidence of adverse outcome (death) among singleton breach delivered neonates at the study area was low as compared to other studies. ANC visit and membrane ruptured were factors independently associated with adverse outcomes of breach delivery.

Acknowledgement

First of all I would like to thank my advisor; Dr. Woubshet Girma (MD, Gynecologist & Obstetrician) for his valuable advice, guidance and encouragement during this proposal development.

Last but not least I would like to thank my families, friends, relatives those who encouraged me to follow my education carefully.

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Acronyms

ANC---------- antenatal care

APGAR ----------appearance, pulse rate, grimace, activity and respiratory rate.

CS ---------- cesarean section

C/D……..cesarean delivery

CSA---------- central statistics association

CPD---------- cephalopelvic disproportion

EDHS---------- Ethiopian demographic health survey

EmOC---------- emergency obstetric care

ERCS----------Ethiopian red cross society

FGAE----------Family guidance association of Ethiopia

GA----------gestational age

GC---------- Gregorian calendar

GYN---------- gynecology

HCT----------hematocrite

HIV ----- ----------human immune deficiency virus

ICU---------- intensive care unite

IEOS---------- integrated emergency obstetrics and surgery

LNMP----------last normal menstrual period

LUSTCS---------- lower uterine segment cesarean section

NGO----------nongovernmental organization

NICU----------neonatal intensive care unit

PMR----------per natal mortality rate

VBAC---------- vaginal birth after cesarean section

V/D……Vaginal delivery

TBT……..term breech trial

WHO-------world health organization

CHAPTER ONE: Introduction

1.1 Background

Prenatal outcome is … Perinatal mortality is a death in the perinatal period which includes fetal death (still birth) and early neonatal death (death of live newborn before the age of 7 completed days). The Perinatal mortality rate is calculated as total number of Perinatal deaths per total number of births (still births + live births)) x 1000 (1) The overall perinatal mortality rate was calculated according to the formula: [no. of still births + no. of 1st-week neonatal deaths)/no. of total births] × 100. Perinatal mortality in relation to parity and birth weight were compared by route of delivery. when comparing vaginal and caesarean deliveries (12)

.Breech presentation is a longitudinal lie of fetus with the caudal pole (buttock or lower extremity) occupying the lower part of the uterus and cephalic pole in the uterine fundus.The breech of fetus is palpated at the pelvic brim. Breech presentation may be caused by an underlying fetal or maternal abnormality, or may be an apparently chance occurrence, or related to otherwise benignvariant such as cornual placental position.The predisposingfactors includePolyhydramnious,Oligohydramnious,Uterine anomalies, Pelvic tumors (myomaovarianeoplasetc),CPD,Placenta previa,Cornual placenta, Multiple pregn ncy,Anencephaly, Hydrocephaly and other fetal anomalies, IUFD and Uterine relaxation associ ated with high parity (16) The incidence of breech presentation decreases with increasing gestational age. It is a common occurrence in early pregnancy when the fetus is highly mobile within a relatively large volume of amniotic fluid. While 20 to 25 percent of fetuses under 28 weeks are breech, only 7 to 16 percent are breech at 32 weeks, and only 3 to 4 percent are breech at term (2,3) There is a global increase in rates of Cesarean delivery (CD). A minor factor in this increase is a shift towards CD for breech presentation. The aim of this study was to analyze breech births by mode of delivery andinvestigate short-term fetal and maternal outcomes in a low-income setting (18) Spontaneous version may occur at any time before delivery, even after 40 weeks of gestation. A prospective longitudinal study using serial ultrasound examination reported the likelihood of spontaneous version to cephalic presentation after 36 weeks was 25 percent (4). Characteristics that lower the likelihood of spontaneous version include extended fetal legs, oligohydramnios,short-umbilicalcord,primiparity,andfetal/uterine-abnormalities

Breech presentation occurs when spontaneous version to cephalic presentation is prevented as term approaches or if labor and delivery occur prematurely before cephalic version has taken place. Some causes include oligohydramnios, hydramnios, uterine anomalies such as bicornuate

or septate uterus, pelvic tumors obstructing the birth canal, abnormal placentation, advanced multiparity, and a contracted maternal pelvis.

Breech deliveries have always been topical issues in obstetrics because of the very high perinatal mortality and morbidity. These are due to combination of trauma, birth asphyxia, prematurity and malformation (1). In addition 19.4% of neonates undergoing term breech deliveries have long term morbidity up to the school age irrespective of mode of delivery (2) Thus wide ranges of management policies have been instituted with the aim of reducing this perinatal morbidity and mortality,and hence improve the quality of life of these infants later in life.External cephalic version (ECV) is one of such policies. Advocates of ECV believe that in the absence of a complicated breech presentation and other contraindications to vaginal delivery, a successful ECV leads to a more favorable presentation and reduces the incidence of breech deliveries, perinatal morbidity and mortality (3,4,5).This was the reason the Roya College of Obstetricians and Gynecologists in 2001(6), recommended that all women with an ncomplicated breech presentation at term be offered an ECV. Those against ECV on the otherhad argue that the incidence of breech deliveries and perinatal morbidity are not better in where ECV are practiced when compared to units that avoid it (7). Moreover some successfulECV later re vert to breech presentation. The recent use of ultrasound guidance in ECV has however improved it. In our environment where facilities for monitoring fetal activities are deficient, the detection of fetal compromise after ECV may be difficult. It is on this basis that most units in developing countries offer assisted vaginal deliveries for appropriate and well-selected cases and caesarean section for cases in which vaginal delivery may pose problems. The breech scoring system of Zatuchinis and Andros also provide useful guides for assessment of the likely outcome of vaginal breech delivery (9). The problem is further compounded in our environment, where only a small percentage of pregnant women assess the available antenatalservic es and many of them present to the hospital in advanced stages of labour or with intr-uterine fetal death (10).Hence only a few of them benefit from planned vaginal breech delivery(11)This retrospective study was therefore, undertaken to determine the perinatal outcome and thus evaluate our present mode of management of breech presentations withaview t o improving on our current management modalities and thus further reduce the fetal morbidity and mortality from breech deliveries

This retrospective study was therefore, undertaken to determine the perinatal outcome and thus evaluate our present mode of management of breech presentations withaview to improving on our current management modalities and thus further reduce the fetal morbidity and mortality from breech deliveries.

1.2 Statement of the problem

Breech deliveries have always been topical issues in obstetrics. Neonates undergoing term singleton breech deliveries have long term morbidity breech fetus is at increased risk of harm during delivery because cord compression between the cervix and body must occur as the breech crowns and because the after coming shoulders, head, and arms are at greater risk of harm from dystocia.Breech deliveries have always been topical issues in obstetrics because of the very high perinatal mortality and morbidity. These are due to combination of trauma, birth asphyxia, prematurity and malformation .The predisposing factors for breech deliveries include maternal factors (foetopelvic disproportion,sof t tissue dystocia,) In the United States, cesarean delivery for breech presentation rose from 12 percent in 1970 to 87 percent in 2001 (9). Similar increases have been reported worldwide. This change in clinical practice was largely due to evidence from randomized trials, particularly the Term Breech Trial that showed a policy of planned cesarean delivery for term breech presentation was associated with a large decrease in perinatal/neonatal mortality and neonatal morbidity, with only a modest increase in short-term maternal morbidity, compared with a policy of planned vaginal delivery. There are limited data that the worldwide change in clinical practice has also led to a reduction in the morbidity and mortality of breech presentation (9-11)This evidence should be applied with due consideration to specific health care environments, individual women, and the limitations inherent in the trials evaluated (5-10). A policy of planned cesarean delivery may not be affordable or feasible in resource-poor settings. On an individual case basis, there may be clinical situations in which the risks of cesarean to the mother, or the mother's desire to avoid cesarean delivery, may outweigh the short-term risks of vaginal birth to the baby. Both routes of delivery have similar long-term maternal and childhood outcomes and some data suggest some long-term health benefits to being born vaginally. (11-13). In addition, cesarean delivery has implications for women planning future pregnancies including repeat cesarean delivery and increased risks of placenta accreta and uterine rupture .(14). Lastly, the randomized trials that were the basis of current policies for planned cesarean delivery included fewer than three thousand women. Increasing the magnitude of planned cesarean deliveries worldwide will increase the absolute number of women who develop rare but life-threatening complications of this major operative procedure (17,16) The American College of Obstetricians and Gynecologists Committee on Obstetric Practice recommends use of external cephalic version and planned cesarean delivery for persistent singleton breech presentation at term (17). However, they

also state that a planned vaginal delivery of a term singleton breech may be reasonable with detailed patient informed consent, under hospital specific protocol guidelines, and by a health care provider experienced in vaginal breech delivery. The Society of Obstetricians and Gynecologists of Canada also allows for selective vaginal breech delivery; this follows an eight-year period during which vaginal breech delivery was discouraged based on the results of the Term Breech Trial (18). The prevalence of singleton term breech deliveries in most of studies was almost similar to what was stated by world health organization which is affected by factors like sociodemographic related factors, maternal and obstetric related factors, and child related factors. In our nation ,Ethiopia, early diagnosis and intervention are not equally performed at all setups due to lack of human resources and diagnostic facilities, inadequate transportation facilities, poor ANC visit which might contribute to difficulty of management and increased risk of complications and poor outcomes. It is important to know prevalence in breech presentation and perinatal outcome in our setups. Knowing the prevalence in breech presentation and perinatal outcomes will help as know the most frequent complications in this setup, which in turn helps to develop guidelines on breech presentation and prevention of complications. Therefore, this study fills the existing information gap and will improve existing knowledge Some studies, however, have reported an increased risk of perinatal mortality and morbidity following a trial of vaginal breech labor (2,12-15). Adverse perinatal outcomes in vaginal breech delivery can be caused by complications that are typical for a vaginal breech delivery including umbilical cord prolapsed and entrapment of the fetal head, or by prenatal factors like fetal growth restriction, congenital anomalies, and placenta insufficiency (11). These prenatal risk factors for adverse prenatal outcome can sometimes be the cause for breech presentation as they might prevent the fetus from rotation into vertex presentation during pregnancy (7).The present study was designed to investigate the Pathopysiology of breech presentation and to investigate the safety of a trial of vaginal breech labor at term. We specifically focused on risk factors that put the fetus at risk for adverse outcome during pregnancy and labor. In addition, we investigated the long-term neurological effects on children born after a trial of vaginal breech labor at term(7).

1.3. Significance of the study

To provide background data for further study .

To forward some recommendations based on the findings and

To develop management protocol of breech deliveries.

CHAPTER 2: LITRATURE REVEW

Breech presentation, which complicates 3–4% of all pregnancies, occurs when the fetal pelvis or lower extremities engage the maternal pelvic inlet. Three types of breech are distinguishe,a ccording to fetal attitude. In frank breech**,** the hips are flexed with extended knees bilaterally or Incomplete breech**,** both hips and knees are flexed. In footling breech**,** 1 (single footling breech both (double footling breech) legs are extended below the level of the buttocks (16).In singleton breech presentations in which the infant weighs less than 2500 g, 40% are frak breech, 10% complete breech, and 50% footling breech. With birth weights of more than 2500 g, 6% are frank breech, 10% complete breech, and 25% footling breech (16).The.overall perinatal mortality rate was 4.3% (9/210). Neonatal deaths in the first week occurred significantly more often among infants delivered vaginally (8/9 8.2%) than by with caesarean delivery(1/113, 0.9%) ($P < 0.05$). There were no stillbirths in either group (12). The cause of 1st-week neonatal death was birth asphyxia in both vaginal and caesarean deliveries. Neonatal mortality was higher in both nulliparous and parous women). Among the nulliparas, a higher rate of neonatal mortality was recorded for vaginal deliveries (23.8%) compared with caesarean deliveries (1.2%). For the paras, there were 3/76 neonatal deaths in the vaginal delivery group (3.9%) while there were no neonatal deaths in the caesarean delivery group. Among the infants with birth weight 2500–3500 g, there were 6 neonatal deaths (7.4%) for those delivered vaginally while there were no neonatal deaths among caesarean deliveries . In the infants with birth weight 3500–4000 g, the neonatal death rate was 12.5% for vaginal deliveries and 3.2% for those delivered by caesarean.(12) During the study period there were 10214 deliveries in(6) in three years. From these deliveries 384 cards were included in the study. Most of the study participants,141 (36.7%), were within the age group of 25–29 years.Among study subjects 334 (87.0%) were rural, 381 (99.2%) were married, only 3 (0.8%) were single, 382 (99.5%) were attended ANC, 145 (37.8%) had ANC follow-up less than 4 times, 307 (79.9%) did not know their LNMP, 54 (73%) were with 37–42 weeks of GA from LNMP, 266 (69.3%) were with non-fully dilated cervix, 229 (59.6%) were with ruptured membrane, 184 (79.5%) were with rupture of membrane < 8 hours, 281 (73.2%) had assisted vaginal breech delivery, 13 (19.1%) were having indication for CS by footling breech

presentation, 362 (94.3%) were with alive intrauterine fetal condition prior to admission, and 322 (83.9%) were alive immediately after delivery..(*6)*. Among mothers with term breech presentations, 317 (82.6%) of them gave birth vaginally while 67 (17.4%) of mothers gave birth through caesarean delivery. Among mothers who gave birth vaginally, 281 (73.2%) gave birth through assisted breech delivery, 31 (8.1%) through spontaneous breech delivery, 4 (1%) gave birth through destructive deliveries, and 1 (0.3%) through forceps deliveries.

The common reasons caesarean section is indicated for mothers who gave birth in this study were footling breech, 13 (19.1%), failure to progress, 11 (16.2%), previous c/s scar, 11 (16.2%), fetal distress, 9 (13.2%), contra The common reasons caesarean section is indicated for mothers who gave birth in this study were footling breech, 13 (19.1%), failure to progress, 11 (16.2%), previous c/s scar, 11 (16.2%), fetal distress, 9 (13.2%), contracted pelvis, 4 (5.9%), cord prolapse, 4 (5.9%), PROM, 9 (13.2%), and others, 1 (1.5%).(6) Of the total singleton 384 breech presentations, 22 (5.7%) were IUFD and 362 (94.3%) were alive prior to admission. Regarding neonatal birth weight, cted 53 (13.8%) neonates were less than 2500 gm, 262 (68.2%) were 2500–3500 gm, and 69 (18%) was greater than 3500 gm.(6) From the total 384 singleton breech presentations, 62 (16.1%) with (95% CI: 13, 20.3) deliveries had bad outcome (death) within the first 5 minutes. The possible cause of bad outcome (death) in 14 (25.5%) was aftercoming head entrapment, in 17 (30.9%) was cord prolapse, in 14 (25.5%) was asphyxia, and in 10 (18.2%) was other, whereas among 322 alive babies within 5 minutes, 253 (79.1%) were healthy looking, 22 (6.9%) were with birth injury, 20 (6.2%) were asphyxiated, and 25 (7.8%) were transferred to NICU. This increased poor fetal outcome and fetal complication could be due to only 31 (8.1%) ofmothers giving birth through spontaneous breechdelivery and 67 (17.4%) of mothers giving birth through caesarean section delivery.Therefore majority of mothers gave birth through assisted breech delivery (281 (73.2%) and 4 (1%) gave birth through destructive deliveries and 1 (0.3%) through forceps deliveries).This condition could increase the chance of fetal distress andcanresult inpoor fetal outcome and increase fetal complication(6) The CD rate for breech presentation increased from 28 % in 1999 to 78 % in 2010. Perinatal deaths were associated with vaginal delivery (VD) (adjusted odds ratio (aOR) 6.2; 95 % confidence interval (CI) 3.0–12.6) and referral (aOR 2.1; 95 % CI 1.1–3.9), but not with parity, birth weight, or delivery year. Overall perinatal mortality was 5.8 % and this did not decline, due to an increase in stillbirths among vaginal

breech deliveries. Mothers with CD had more hemorrhage compared to those with VD. One mother died in association with CD, and one died in association with VD.(18) Of the total 2029 deliveries in the hospital during the study period, 108 (5.3%) were singleton term breech deliveries. The age of the study participants ranged from 16 to40 years, with a mean age of 26.21 (± 5.13). More than half (53.7%) of the mothers were rural residents, about half (50.9%) attended primary and secondary school. Forty-seven (43.5%) of the women had their first deliveries Majority of the women (86.1%) had ANC follow up, and in nearly half (50.9%) of them breech presentation was diagnosed during their last ANC visits. A quarter (24.6%) of them had history of previous breech delivery. Overall, 99 (91.9%) of the women had term pregnancy Most (88%) women were in labor on arrival to the labor ward, and 42 (38.9%) were in latent first stage of labor Frank breech was the commonest (38%) type of presentation.Ultrasound scanning was done for three quarters of the women at admission to the labor ward. Emergency C/D was the route of delivery in 57 (52.8%), while 42 (38.9%) and 9 (8.3%) had assisted vaginal delivery and elective C/D respectively. Footling breech was the commonest indication (31%) for emergency C/D (11).*Perinatal outcomes* There were 14 (13.9%) intrapartum fetal deaths, of whom 5 (4.6%) were recorded after admission to the labor ward while on follow up, and 94 (87.1%) were born alive. First minute Apgar score was between 5 and 7 for the majority (72.3%) of the neonates, and fifth minute Apgar score was > 7 for most (77.7%) of the neonates. More than sixin ten (62%) of the newborns were male while 67 (62%) weighed between 2500 and 3500 g with mean weight of 2988 ± 700 g. Of the neonates born alive, twenty-seven (25%) required admission to the neonatal intensive care unit (NICU); two-fifth (40.7%) of them had diagnoses of perinatal asphyxia. Three neonates died in the first 7 days of their lives while in the NICU, making a perinatal mortality rate (PMR) of 157.4 per 1000 births among the breech deliveries (11). Moreover, as nearly half the women (49.1%) were undiagnosed until labor, statistical analysis was done whether perinatal outcome (perinatal death, birth trauma, perinatal asphyxia, still birth, intrapartum fetal loss, 5thmin APGAR score, and admission to NICU) would be affected by diagnosis of breech presentation during labor or ANC follow up and there were no statistical differences. More details can be found in Additional file (11) Of all the mothers, 37 (34.3%) developed wound infection, and 26 (24%) had diagnoses of post-partum hemorrhage. One maternal death was recorded in the emergency C/D group caused by post-partum hemorrhage(11)

A cross section study done Ethiopian (in mizzen aman) hospital in 2016, among mothers had singleton breech delivery in the last three years back in the hospital showed that, perinatal mortality rate was 120 per 1000 births breech delivery, beside this it shows the perinatal outcome of singleton breech term deliveries were 140(88%) were alive and 14(12%) died (14) .According cross sectional study conducted at Walliso hospital in 2017 shows that perinatal out comes in this study in this study the perinatal mortality rate 161 per1000 term breech presentation ,prevalence of perinatal out come in this study was prevalence outcome(death) of singleton breech delivery . in this study the prevalence singleton breech delivery was 3,8% ,over all its comparable with worldwide incidence 3-4% in this study found that prevalence of fetal bad outcome (death) in singleton breech delivery was 16.1% . that; Perinatal mortality rate, Which indicate that breech vaginal delivery is associated with an increased perinatal mortality and morbidity than caesarean delivery(6). Birth weight ≥ 3500 gm increase risk perinatal loss than fetal weight between 2500-3500gm, (24).Prevalence of singleton breech deliveries in the hospital was 3.4%. The perinatal outcome of breech deliveries was 322 (83.9%). Adverse perinatal outcome of singleton term breech delivery was significantly associated with women's age of greater than or equal to 35 years (AOR = 2.62, 95% CI = 1.14–6.03), fully dilated cervix (AOR = 0.48, 95% CI = 0.25–0.91), ruptured membrane (AOR =5.11, 95% CI = 2.25–11.6), and fetal weight of <2500 g (AOR = 6.77, 95% CI = 3.22–14.25). Entrapment of head, birth asphyxia, and cord prolapsed were the most common causes of perinatal mortality Factors like fetal weight <2500 gm, mothers of age 35 years and above, those mothers not having a fully dialated cervix, and mothers with ruptured membrane were associated with increased perinatal mortality (6) In study II 73 women with a fetus in breech presentation at term were induced and 195 women attempted a spontaneous vaginal breech delivery. Induction of labor was associated with an increased intrapartum cesarean section rate compared to deliveries with a spontaneous onset of labor (36 % versus 20 %, $P < 0.01$). However, an induction of labor in breech presentation was not associated with an increased adverse perinatal or maternal outcome when compared to the outcome of patients with a trial of spontaneous vaginal breech labor. Labor induction was also associated with a longer active second delivery stage (means 34 versus 18 minutes $P < 0.01$), higher gestational weeks at delivery (means 39.9 versus 39.6 weeks, $P < 0.05$) and the gestational duration equal to or higher than 41 gestational weeks (36 % versus 12 %, $P < 0.01$). Women with induced labor were more often suffering from hypertension (11 % versus 3.6%, $P < 0.05$). (12) In study III we included 776 women

that attempted a vaginal breech delivery. In total 38 neonate (4.9 %) born out of these attempted vaginal breech deliveries had an adverse perinatal or neonatal outcome, whereas 738 neonates did not have an adverse outcome. One intrapartum death occurred. The perinatal mortality rate in women undergoing a trial of vaginal breech delivery at term was 0.13 %.(12) The labor of the deceased child was induced in gestational week 41+0. The mother delivered a stillborn baby during an emergency cesarean section in the first phase of labor. The fetus suffered from nuchal cord complications. Three intrapartum risk factors for adverse perinatal- and neonatal outcome were found. A second delivery stage (active) lasting less than 40 minutes (18) [aOR 0.34 (0.15 - 0.79)] and a higher intrapartum cesarean section rate [aOR 0.07 (0.01 - 0.34)] had protective characteristics. The cesarean section rate was lower in the group of neonates with adverse outcome (5.3 %), compared to the cesarean section rate in the group of neonates born without an adverse outcome (24.3 %)(12). The application of epidural anesthesia was associated with a higher adverse outcome rate in vaginal breech delivery [aOR 2.88 (1.08 - 7.70)]. During study IV 10 057 women delivered a singleton fetus in breech presentation at term. Out of these 4805 women attempted a vaginal breech labor at term, 35 % delivering by cesarean section and 65 % vaginally. 73 (1.5 %) children born after a trial of vaginal delivery had a severe adverse perinatal outcome (11).In study IV adverse perinatal outcome was related to fetal growth restriction (aOR, 2.94; 95 % CI 1.30 - 6.67), gestational diabetes (aOR, 2.89; 95 % CI 1.54 - 5.40), a history of cesarean section (aOR, 2.94; 95 % CI 1.28 - 6.77), oligohydramnios (aOR, 2.94; 95 % CI 1.15 – 7.81 During study IV 10 057 women delivered a singleton fetus in breech presentation at term. Out of these 4805 women attempted a vaginal breech labor at term, 35 % delivering by cesarean section and 65 % vaginally. 73 (1.5 %) children born after a trial of vaginal delivery had a severe adverse perinatal outcome (9) There were no stillbirths in either group (5,9). The cause of 1st-week neonatal death was birth asphyxia in both vaginal and caesarean deliveries. Neonatal mortality was higher in both nulliparous and porous women when comparing vaginal and caesarean deliveries (5,9). Among the nulliparous, a higher rate of neonatal mortality was recorded for vaginal deliveries (23.8%) compared with caesarean deliveries (1.2%). For the paras, there were 3/76 neonatal deaths in the vaginal delivery group (3.9%) while there were no neonatal deaths in the caesarean delivery group Among the infants with birth weight 2500–3500 g, there were 6 neonatal deaths (7.4%) for those delivered vaginally while there were no neonatal deaths among caesarean

deliveries (5,9). In the infants with birth weight 3500–4000 g, the neonatal death rate was 12.5% for vaginal deliveries and 3.2% for those delivered by caesarean.(5,9)

2.1 Conceptual Framework

The arrows in the framework indicate the direct effect of boxed factors on the outcome variable of the study.

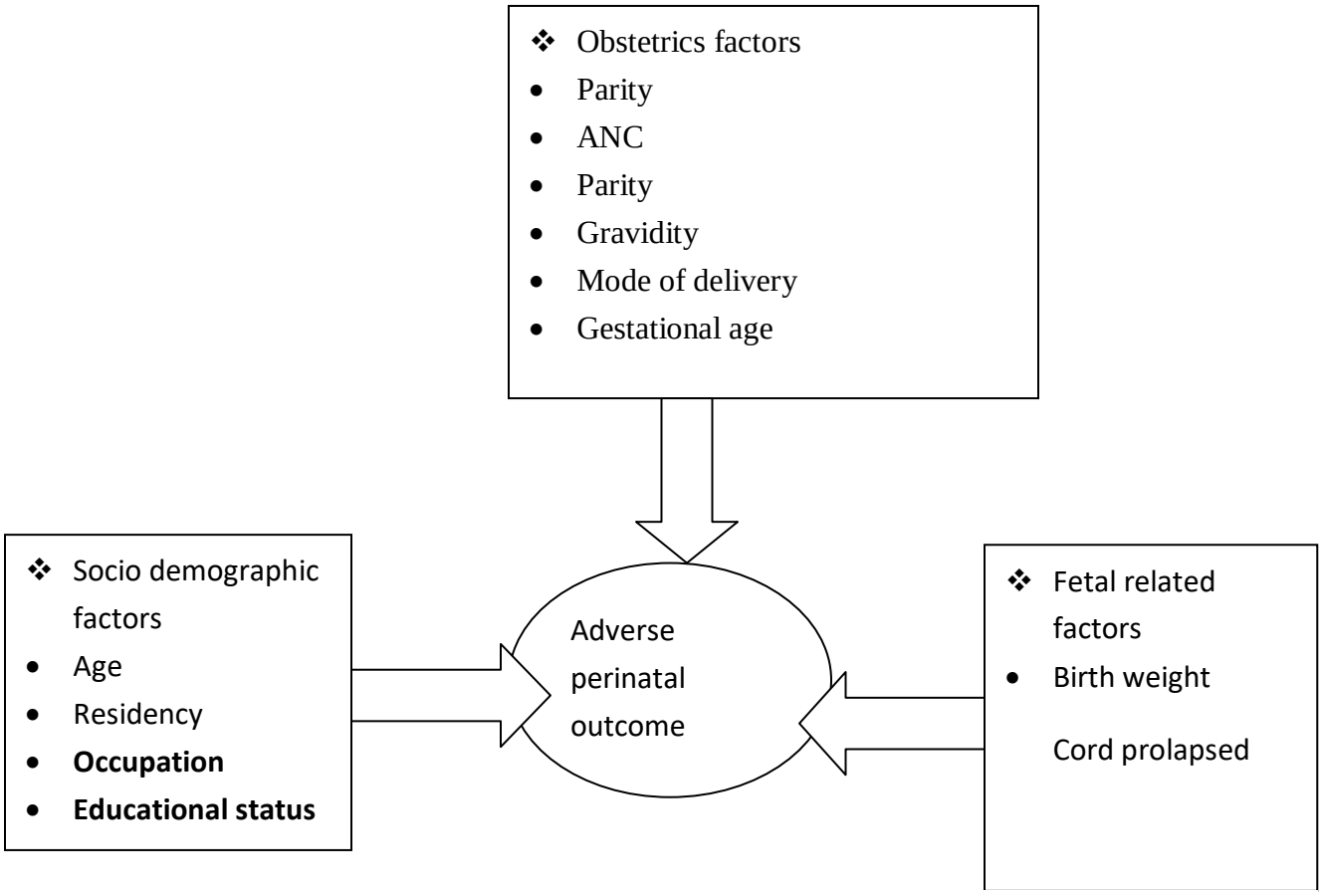

Figure 1: conceptual frame work developed from different literature

CHAPTER THREE: OBJECTIVE

3.1 General objective

To determine the perinatal outcome of term singleton breech delivery and associated factors in Mettu Karl and Atat primary hospital .

3.2 Specific objective

1. To determine adverse outcome of term singleton breech delivery at Mettu Karl and Atat Hospital.

2. To indentify associate factors of adverse prenatal outcome term singleton breech delivery at Mettu Karl and Atat Hospital

CHAPTER FOUR: METHODS AND MATERIALS

4.1 Study area and period

The study will be conducted from first January to last July /20011 EC, 2019 in Attat primary and Mettu Karl hospital. Attat primary hospital found in cheha district, Gurage zone in SNNP, Ethiopia. It is located 187 km to the south west of Addis Ababa & 254km far from regional city of Hawassa. .It gives service for 1.2 mill population of Gurage zone, some parts of south west showa, Silte and Hadiya zone. Currently it has 100 beds, staffed with 54 health professionals of different categories such as:-Gynecologist, General Surgoen,IESO,General practionar, Health officers ,nurses, midwifes and 28 administrative workers and

Mettu Karl referral Hospital is found at the centre of Mettu Town, capital city of Illu-Ababora Zone, at 600 Km to the South West of Addis Ababa. It is the only hospital in the town established by Swedish Missionaries and RasTeferi in 1932 E.C. currently it providing full health care services for the population of Illu-Ababora zone and its surroundings estimated to be 1.6 million people. The total number of staff of the hospital is 316 including170 Professional workers and 146 supportive staffs. There were 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 gynaecology/obstetrics ward. Currently, the ward is run by 2 gynaecologists, two IESO and 17 midwifes and both hospitals provides outpatient, in patient services, major and minor operation, NICU, psychiatric, MCH, HIV/TB control, laboratory, x-ray, US, Pharmacy and Physiotherapy services. Additionally support outreach activities.

4.2 Study design

Hospital based cross-sectional study design will be conducted.

4.3 Population

4.3.1 Source population

All mothers gave birth at term singleton breech by vaginal delivery vs cesarean section at mettu karl Hospital and Atat catholic church from first January to last July /20011 EC

4.3.2 Study population

All mothers gave birth at term singleton delivery at Mettu Karl and Atat Catholic Church Hospital from .first January to last July /20011 EC

4.4 data collection and measurement

4.4.1 Data collection instrument

The data for the study will be collected using pre-tested structured questionnaire which will have socio-demographic variables, obstetric history and prevalence of prenatal outcome term singleton breech delivery. The questionnaire will be prepared in English. Pre- test Before the actual data collection, the questionnaire will be tested on 5% of the total study that delivered by during study period.

4.4.2 Collection procedure

Data will be collected from patient Data with direct interview during study period and from record cards, registration books in both the hospital prenatal outcome term singleton breech delivery and structured questionnaires using trained data collectors.

4.4.3 **Data processing and analysis** :

The collected data will be checked for its completeness, entered using epidata and exported to SPSS 22 database program for analysis after edition. Frequency distributions of both dependent and independent variables were worked out. Binary logistic regration will be done to identify factors for dependent variables. In bivariate analysis covariates with P-value of <0.25 will be included in multivariate analysis. To declare statically significance between independent and dependent variable AOR at 95 % confidence interval with p< 0.05 were used.

4.4.4 Data quality assurance

To keep the quality of data detail trainings given for data collectors, day to day activities during data collection; supervised and evaluated errors will be corrected by the investigator before the following day activity. And to have good quality health professionals will be involved in data collection

4.5 Ethical considerations

Letter of ethical clearance will be obtained from Research Ethical Committee of Jimma University and from the coordinator of integrated emergency obstetrics/Gyn and surgery.

4.6 Limitations of the study

The study will not show long term complications.

4.7. ***Inclusion Criteria*** Mothers with singleton breech presentation who had either vaginal,C/S ,or instrumental birth

4.8. Exclusion Criteria. (i) Mothers with preterm breech deliveries.

(ii)Congenital malformed breech deliveries, because congenital malformed fetus can have reduced survival so that can affect outcome of the fetus

4.9 Sample Size Determination.

The sample size was calculated by the single population proportion formulae considering the following assumptions: The proportion (p) for sample size determination was taken from study at welliso Hospital P= 0.839,because there is no study done in Ethiopia on perinatal outcome of singleton breech delivery .q or (1 − p) = proportion of deliveries without breech deliveries

$Z\alpha/2$ = statistic for the level of confidence at 95%, which is 1.96, with 4% margin of error (*e*). The following formula was used for calculating the sample

size: n = (($Z\alpha/2$)2 × P(1 − P)/d2

n = (1.96)2 × 0.839× /(0.161)2 = 208

4.10 Variables

Independent variables- Age, residence, gravidity, parity, LNMP,ANC follow up, frequency of ANC follow up, GA, duration of labor, , FHB, cervical dilatation ,breech delivery, cesarean section.

Dependant variables:- Adverse perinatal outcome(death).

4.11 Operational definitions and definition of terms

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.

Birth weight- is taken from the record in delivery note & it is rounded to the nearest two decimals in kg & categorized according to the standard classification.

Cesarean section- Delivery of the fetus, membrane and placenta after 28 weeks of gestation by opening of abdomen and uterus.

Gravidity: - the total number of pregnancies includes abortion, ectopic pregnancy and any other pregnancies. (Twin pregnancies considered as one pregnancy)

Parity: - number of deliveries after 28 weeks of gestation including IUFD and still birth (abortion, ectopic pregnancies and etc are not included)

GA: - duration of pregnancy in weeks.

Duration of labor: - Total time from initiation of labor to CS performed and virginal delivery.

Perinatal outcome: Neonatal Condition in first 5 minute after delivery of breech presentation either Alive and diead or alive asphyxiated or alive with birth injury or dead

Adverse perinatal outcome; death perinatal outcome

Breech presentation: Breech presentation is a longitudinal lie of the fetus with the caudal pole (buttock or lower extremity) occupying the lower part of the uterus and cephalic pole in t he uterus.

Asphyxia: Is the medical condition resulting from deprivation of oxygen to a newborn infant that lasts long enough during birth process of first 5 minute.

Urban: place were cetergorized as urban in EDHS, if study Resident of Mettu town.

4.12 Plan for dissemination of findings

The result of the study will be presented to Jimma university community as part of IEOS thesis; and it will be disseminated to JU College of public health and medical science, coordinating office of Integrated Emergency OBS/GNY and Surgery, it will be disseminate the targeted health facility and working on this area. Further attempt will be made to publish it on national and international scientific journals.

Socio demographic Characteristic of the study participants

OF the total 4480 delivery in both Hospital Mettu Karly (2380) and Atat primary (2100) during study period ,208 (4.6%) were singleton breach delivered mothers were participated in the study with response rate of 100%. Among the study subjects majority of them 99(47.6%) were in age groups of 25-30 years. Of 208 singletons breach delivered mothers majorities' residence 144(69.2%) were rural (table 1).

Table 1Socio demographic characteristic of term singleton breach delivered *mothers at Metu Karl hospitals, Oromia region and Atat primary catholic church Gurage zone in SNNP, Ethiopia 2012*

Variables	Category	No	%
Age	<24 years	62	29.8
	25-30years	99	47.6
	>30 years	47	22.6
Marital status	married	183	88
	live alone	25	12
Educational status	illiterate	99	47.6
	educated	109	52.4
Residence	urban	64	30.8
	rural	144	69.2
Occupational status	employer	43	20.7
	unemployed	164	78.8

Table 2 Obstetric characteristic of singleton breach delivered mothers at *Metu karl hospitals, Oromia region and Atat primary catholic church Gurage zone in SNNP,* Ethiopia 2012

Variables	Category	No	%
Parity	prime Para	70	33.7
	Multi Para	128	61.5
	grand multipart	10	4.8
Gravid	Prime gravid	70	33.7
	malty gravid	138	66.3
ANC follow up	attended	190	91.3
	not attend	18	8.7
Number of ANC visit	<4	113	54.3
	>./=4	77	37
Gestational age during delivery	from early U/S	71	34.1
	from LNMP	136	65.4
Cervical dilatation at arrival	fully dilated	48	23.1
	not fully dilated	150	72.1
Condition of membrane on presentation	intact	124	59.6
	ruptured	84	40.4

The incidence of adverse outcome (death) among singleton breach delivered neonates at *Metu karl hospitals, and Atat primary* hospital is 6(2.9%). Majority of breach delivered neonates 163(78.4%) delivered by cesarean section. Of 208 neonates 19(9.1%) of them were faced fetal distress while 155(74.5%) of them were healthy looking. The prevalence of fetal asphyxiated in this study was 47 (22.6) (table 3).

Table 3 birth outcome and Intra uterine fetal condition of singleton breach delivered mothers at Metu karl and Attat primary hospitals, Ethiopia 2012

Variables	Category	No	%
Mode of delivery	spontaneous breech delivery	9	4.3
	assisted vaginal delivery	36	17.3
	caesarian delivery	163	78.4
Indication for C/s`	big baby	19	9.1
	fetal distress	29	13.9
	footling	21	10.1
	previous c/s	25	12
	PROM	25	12
	others	46	22.1
Intra uterine fetal condition	alive	205	98.6
	death	3	1.4
Fetal outcome immediately after delivery	alive	202	97.1
	death	6	2.9
Apgar score of the child at first 5 minute	health looking	155	74.5
	asphyxia	47	22.6
	0	6	2.9

	>7	150	72.1
	<=7	52	25
Neonatal birth weight	Less than 2500gm	11	5.3
	2500gm to 3500gm	125	60.1
	greater than 3500gm	72	34.6

Factors associated with adverse outcome of singleton breach delivery during bi variate analysis

In bi variate analysis parity being Nuli para &prime Para with COR=3.32(95% CI ;(0.59-18.54)), gravidity being premi gravid with COR=4.121(95%CI; 0.73-23.01)), having ANC visit <4 with COR=0.33(95%; CI; (0.05-1.84)), membrane on presentation ruptured with COR=7.78(95%; CI; 0.89-67.87)) were nominated for multy variate analysis (table 4).

Table 4 Factors associated with adverse outcome of singleton breach delivery at Metu Karl and Attat hospitals, Oromia region, Ethiopia 2012

		Fetal outcome				
Variables	Category	Alive (%)	Death (%)	COR	P-value	95%;CI
Age	<24 years	59(29.2)	3(50.0)	1		
	25-30years	97(48)	2(33.3)	0.4	0.33	(0.06-2.49)
	>30 years	46(22.8)	1(16.7)	0.43	0.47	(0.06-2.49)
Residence	urban	63(31.2)	1(16.7)	1		
	rural	139(68.8)	5(83.3)	2.26	0.46	(0.26-19.8)
Educational status	illiterate	96(47.5)	3(50.0)	1.1	0.9	(0.22-5.6)
	educated	106(52.5)	3(50.0)	1		
occupational status	employer	43(20.8)	1(16.7)	1		
	unemployed	159(78.7)	5(83.3)	1.32	0.8	(0.15-11.61)
Marital status	married	179(88.6)	4(66.7)	1.1	0.9	(0.22-5.6)
	live alone	23(11.4)	2(33.3)	1		
Parity	Nuli para &prime Para	76(37.6)	4(66.7)	3.32	0.17	(0.59-18.54)
	Multi-para	126(62.4)	2(33.3)	1		
gravida	Prime gravid	66(32.7)	4(66.7)	4.121	0.1	(0.73-23.01))
	multy gravida	136(67.3)	2(33.3)	1		
ANC visit	>/=4	111(55.0)	2(33.3)	0.33	0.2	(0.05-1.84)
	<4	73(36.10	4(66.7)	1		
	fully dialated	56(27.7)	2(33.3)	1.3	0.76	(0.23-7.32)
	not fully dialated	146(72.30)	4(66.7)	1		

membrane on presentation	intact	123(60.9)	1(16.7)	1		
	ruptured	79(39.1)	5(83.3)	7.78	0.06	(0.89-67.87)

The independent determinants of adverse outcomes of Term singleton breach delivery

Mothers whose membrane ruptured early was 17.7 times (AOR=17.72; 95%; CI) more likely died neonate as compared to their counter parts. Mothers having >/=4 ANC visit was 0.13(AOR=0.13; 95%; CI) times less likely died neonates as compared to <4 ANC visit (table 5).

Table 5 The overall factors associated with adverse outcome of term singleton breach delivery at Metu karl and Atat hospitals, Ethiopia 2012

		Fetal outcome					
Variables	Category	Alive (%)	Death (%)	COR	P-value	AOR	P-value
Parity	Nuli para &pirim para	76(37.6)	4(66.7)	3.32	0.17	3.05	0.24
	multipara	126(62.4)	2(33.3)	1		1	
gravida	primigravida	66(32.7)		4.121	0.1	3.23	0.23
	multy gravida	136(67.3)		1		1	
ANC visit	>/=4	111(55.0)	2(33.3)	0.33	0.2	0.13	0.03
	<4	73(36.10	4(66.7)	1		1	
membrane on presentation	intact	123(60.9)	1(16.7)	1		1	
	ruptured	79(39.1)	5(83.3)	7.78	0.06	17.72	0.01

Discussion

The incidence of term breech delivery was 4.6% between previous report with incidence in the range of(3.37%) - (5.3%) (14,11) .

adverse outcome (death) among singleton breach delivered neonates at Metu Karl & Atat hospital is 6(2.9% (95%; CI; (1-5.3)). Which was low as compared to study done at Mizan aman general hospital and Jimma referral hospital of breech delivered neonates 14(12%) and 14(13.9%) of them were dead respectively(11,14) The low incidence could be related the difference of mode of delivery and service quality.

The prevalence of fetal asphyxiated in this study was 47 (22.6), which was low as compaired to study conducted at south west Ethiopia Waliso hospital, of breach delivered 40.7% had prenatal asphyxia.(6)

Mothers whose membrane ruptured early was 17.7 times (AOR=17.72; 95%; CI) more likely died neonate as compared to their counter parts. This finding was in line with study done at (6), Adverse perinatal outcome of singleton term breech delivery was significantly associated with ruptured membrane(6). Mothers having >/=4 ANC visit was 0.13(AOR=0.13; 95%; CI) times less likely died neonates as compared to <4 ANC visit. This could be related with ANC visited mothers gate spatial care for their pregnancies.

Conclusion

The incidence of adverse outcome (death) among Term singleton breach delivered neonates at the study area was low as compared to other studies. ANC visit and membrane ruptured were factors independently associated with adverse outcomes of breach delivery.

Recommendation

Based on this finding; Health workers should have to give health education on antenatal care follow up for pregnant women's to prevent adverse outcome of breach delivery. Mothers should have to have awareness on danger sign of pregnancy like rapture of membrane. Metu karl and Atat hospitals should have to work quality maternal service to prevent death resulted due to breach delivery.

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Annex I ;Data collection format

This questioner will be designed to determinen prenatal outcome of term singleton breech delivery in Mettu karl hospital from december to June 2019.

1. Demographic Background

1. Age ; 1.less than 19 . 3.25 to 30 . 2. 19 to 24 . 4.31 to35 5. greater than 35

2.Address 1. Urban 2. Rural

3. Marital status ;1. Married 2.. Widowed 3. Single 4. Divorce

4 .Ocupation status ; 1 .employer 2 un employer

5 Educational status? 1 cant write and read 2 pramary or secandary school 3 post secandary

II Obstetrics condition

1. Parity 1 .Primi par 2 Multipara 3.Grand multi para

2. ANC follow up ? 1. Attended 2. Not attended .

3 Q no 2 if yes haw match……? 1 ./ 1x 2 /.2x 3 / 3x 4 / 4x

4. Gestational age during delivery ……? 1.from early U/S 2.from LNMP

5. Cervical dilatation on time of arrival to hospital? . 1. Fully dilated 2. Not fully dilated 3. Closed

6. Condition of the membrane on presentation ? 1. Intact 2. Ruptured

7. if membrane ruptured duration of rupture ? 1. Less than 8 hours 2. Greater than 8 hours

8. Mode of delivery 1. Spontaneous breech delivery. 2. Assisted breech delivery
3. Caesarian Delivery 4. Destructive delivery

.9 if mode delivery is C/S its Indication for c/s 1. Big baby 2. Fetal distress 3. Footling
4. Previous c/s scars 5. PROM 6. Others .

10 . If yes, Q no 9 is complication what factor anticipated is..?
1 prolapse cord . 2 placent previa 3 difficult delivery . 4 . Others

11. If there is post operation complication what its cause……

1 PPH 2. Genital tract laceration 3 uterie rupture 4. others ……

12. if mother death from … Mode of delivery . 1 Spontaneous breech delivery
2 Assisted breech delivery 3. Caesarian Delivery 4. Destructive delivery

III. Fetal condition

1. Intrauterine fetal condition on arrival 1 Alive 2. Dead

2. Fetal outcome immediate after delivery 1. Alive 2 Dead
3. For question no.2 if alive fetal condition with in first 5 minute 1. Healthy looking
2. With birth injury 3 Asphyxiated
4. For question no 2 if dead possible cause of death
1.After coming head entrapment 2 Cord prolapse 3 Asphyxia 4. Others …
5.if fetal death from what mode of delivery 1. Spontaneous breech delivery
2. Assisted breech delivery 3. Caesarian Delivery 4. Destructive delivery
6. If alive APGAR score the neonate at 5 th minute 1. 0 2. >7 3. <7
7. Neonatal birth weight 1. less than 2500gm 2. 2500 – 3500g 3. greater than 3500g

Name and signature of data collector ; ……

DECLARATION

I, the undersigned, declare that this thesis is my original work, has not been presented for a degree in this or any other university and that all sources of materials used for the thesis have been fully acknowledged.

Name: **sultan amino**

Signature: _____

Name of the institution: Jimma University

Date of submission: _____

This thesis has been submitted for examination with my approval as University

Advisor

Nam**e and Signature of my adviser.**

Dr ……