PERINATAL OUTCOME OF SINGLTON TERM BREECH DELIVERIES AT METTU KARL HOSPITAL OROMOMIA REGIONAL STATE, SOUTH WEST, ETHIOPIA,CROSS-CECTIONAL RETROSPECTIVE STUDY.

BY:

BEYENE KESESA, BSc

A THESIS SUBMITTED TO RESEARCH AND POST GRADUATE COORDINATING OFFICE, COLLEGE OF PUBLIC HEALTH AND MEDICAL SCIENCES, JIMMA UNIVERSITY, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF SCIENCE (MSc) IN INTEGRATED EMERGENCY OBSTETRICS AND GYNECOLOGY AND GENERAL SURGERY

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ADIVISORS

1. Dr.Demisew Amenu,**obstatrician and gynacologist**, Assistant Professor
2. Dr.Elias Ali Yesuf, Assistant Professor

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Jimma University

Jimma

Abstract

Introduction: 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. Neonates undergoing term breech deliveries have long-term morbidity up to the school age irrespective of mode of delivery. However, outcome of breech deliveries are not well understood in the Ethiopian setting.

Objective: To assess the fetal outcome of breech deliveries at Mettu Karl Hospital.

Methods: Hospital based cross sectional retrospective study was conducted on outcome of breech delivery utilizing a four years data at Mettu Karl Hospital, Oromoia Regional State South Western Ethiopia. Socio-demographic and pregnancy related information of all pregnant women who presented with a breech presentation and gave birth in the hospital was reviewed from Patient medical records at Mettu Karl hospital from March 1-30, 2013. The collected data was analyzed using SPSS for windows version 16.0. Descriptive statistics was run to describe the data by independent and dependent variables. The association between dependent and independent variables was determined by Odds Ratio. A P value of less than 0.05 was considered statistically significant in all tests of association.

Result: During the 4 years study period, a total of 164 singleton term breech deliveries were recorded out of 5628 deliveries giving the prevalence of singleton term breech deliveries in the hospital during the study period to be 3%. It was recorded in this study that, the perinatal outcome of breech deliveries were 139(84.8%) born alive and 25(15.2%) were dead indicating that the perinatal mortality rate to be 152 per 1000 breech presentations. Among live born, neonatal condition within the first 5 minute showed that, 115 (70.1%) born healthy, 23(14%) asphyxiated and 1(0.6%) born with birth injury. The possible causes of death for dead delivered fetus were entrapment of head 10 (40%), birth asphyxia 8 (32%), cord prolapse 4(28%) and intrauterine death with unknown cause 3 (12%). Mode of delivery was found to be significant on multivariate analysis. Vaginal delivery have significant statistical association with perinatal outcome of breech delivery (p=0.006). Vaginal delivery have (29) times risk to have perinatal loss than Caesarean delivery (AOR=29.68, 95% CI 2.68- 33.06)

Conclusion and recommendation: In this study, it can be concluded that the perinatal mortality rate, of 152 per 1000 breech deliveries, was high indicating that breech delivery to be associated with an increased perinatal mortality and morbidity than caesarean delivery. Entrapment of head, birth asphyxia and cord prolapse were the most common causes of perinatal mortality. In general, perinatal outcome was significantly associated with vaginal delivery, failure to attend ANC, early rupture of membrane and fetal weight factors in this study. Obstetricians, midwives, and other health care personnel conducting deliveries should receive a continuous medical education to update on how to conduct vaginal breech deliveries.

Key words: Peri-natal outcome, Breech delivery, associated factors

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List of Acronyms and Abbreviations

ANC	Antenatal care
AOR	Adjusted odd ratio
CI	Confidence Interval
COR	Crude odd ratio
ECV	External Cephalic Version
MCH	Maternal and child Health
MKH	Mettu Karl Hospital
PROM	Premature Rupture of Membrane
SPSS	Statistical package for social science

I. Introduction

1.1 Background

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 the uterine funds. The breech of the 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 an otherwise benign variant such as cornual placental position. The predisposing factors include Polyhydramnious, Oligohydramnios, Uterine anomalies, Pelvic tumors (myoma, ovarian neoplasm etc), CPD, Placenta previa, Cornual placenta, Multiple pregnancy, Anencephaly, Hydrocephaly and other fetal anomalies, IUFD and Uterine relaxation associated with high parity.(16)

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 Royal College of Obstetricians and Gynecologists in 2001(6), recommended that all women with an uncomplicated breech presentation at term be offered an ECV. Those against ECV on the other hand argue that the incidence of breech deliveries and perinatal morbidity are not better in units

where ECV are practiced when compared to units that avoid it (7). Moreover some successful ECV later revert 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 antenatal services and many of them present to the hospital in advanced stages of labour or with intra-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 with a view 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 presentation occurs in about 3-4% of all term singleton pregnancies (12). Compared with a fetus with cephalic presentation, a breech fetus faces an increased risk of asphyxia from cord compression and of traumatic injury during labor and delivery of the shoulders and head (13). The safest route of delivery for breech presentations has long been a topic of debate (14).

Breech presentation may be caused by an underlying fetal or maternal abnormality, or may be an apparently chance occurrence, or related to an otherwise benign variant such as cornual placental position. In the latter instances, breech presentation places healthy fetus and mother at increased risk of a complicated vaginal delivery or caesarean section. It is not surprising that, over the years, the possibility of manipulating the baby from the breech to the cephalic presentation has intrigued obstetric caregivers (15).

The optimal management of breech presentation at term remains a lively debating issue in the labor ward, and in the obstetric literature. The opinions of many have been polarized by their personal experiences, good and bad, and there have been no prospective randomized trials of sufficient size to resolve this issue. In the absence of such information, obstetricians have to rely

on data derived from retrospective analysis (15). Data on outcome of singleton breach presentations in Ethiopian setting is scarce. This study will close this gap.

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

II. Literature Review

Breech presentation (buttocks or feet at the cervix) is the most common of the non cephalic mal presentations. Breech presentations considered normal until late in gestation and only become a concern during labour and delivery. About 16% of foetuses are breech at32 weeks, but the incidence of breech at term is about 3-4%. 25% of foetuses who are breech at 36 weeks will turn to cephalic presentation before delivery (16).

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 (17).

In multiple gestations, each fetus may prevent the other from turning, with a 25% incidence of breech in the first twin, nearly 50% for the second twin, and higher percentages with additional fetuses. Additionally, 6% of breech presentations are found to have congenital malformations, which include congenital hip dislocation, hydrocephalus, anencephalus, familial dysautonomia, spina bifida, meningomyelocele, and chromosomal trisomies. Thus, those conditions that alter fetal muscular tone and mobility increase the likelihood of breech presentation (17).

Analysis of data from a population based registry showed that the risk of breech presentation in a second pregnancy was 9 percent if the first infant was breech and 2 percent if the first infant was non breech [18]. After two consecutive breech deliveries, the risk of another breech presentation rises to 21 to 28 percent [18,159], and after three consecutive breech deliveries the risk is 38 percent [18].

However, in Europe (notably in France, Belgium, Ireland, Switzerland, and the Netherlands), planned vaginal breech delivery based on selected strict criteria remains relatively frequent with rates as high as 54% [3,13]. Goffinet et al. reported that, in areas where planned vaginal delivery is a common practice and when strict criteria are met before and during labor, planned vaginal delivery of singleton fetuses in breech presentation at term remains a safe option that can be offered to women. In one study in Nigeria, the neonatal outcome between vaginal and cesarean

births for fetuses presenting breech at term was not significantly different in terms of the neonatal mortality rate or neonatal intensive care unit admission rate [20].

Study conducted over a 12-month period (from 1 September 2005 to 31 August 2006) on women attending the delivery room with a live singleton term breech presentation at the maternity and child hospital in Basra, Iraq, Of 210 women in labour in Basra maternity and child hospital, 97 underwent vaginal breech deliveries and 113 delivered by caesarean section. Birth trauma was restricted to vaginal deliveries. The perinatal mortality was significantly higher in vaginal deliveries (8.2%) compared with caesarean deliveries (0.9%). A higher perinatal mortality was recorded among infants > 3500–4000 g birth weight in vaginal deliveries. (21)

Outcome of Singleton Term Breech Deliveries at a University Teaching Hospital in Eastern Nigeria, There were 122 singleton breech deliveries out of a total 4741 deliveries. The prevalence of singleton term breech deliveries in the study period was 2.6%. Eighty eight (72.1%) of the breech deliveries were through the vaginal route, while 22 (18.0%) and 12 (9.8%) were through elective and emergency caesarean sections respectively. A total prenatal deaths of 32 (36.2%) were recorded. These included 8 (6.6%) intra-uterine deaths prior to admission, fresh still birth 15 (12.3%) and early neonatal death 7 (5.7%).Nineteen (61.9%) of the perinatal deaths occurred in un-booked mothers. The perinatal mortality rate was 250 in 1000 deliveries. (22)

In a three year period (September 1989 to August 1992), among 7,170 consecutive deliveries at Yekatit 12 Hospital, Addis Abeba, Ethiopia, there were 291 singleton breech deliveries with a 4% incidence rate at a gestational age of 28 weeks and above. In 28% and 57% of the infants, weight was below 2,500 grams and Apgar score was less than 7 in the first minute, respectively. The gross perinatal mortality rate for breech delivery in the first 24 hours was 330 per 1,000 deliveries, which was significantly higher than for the total number of deliveries (70 per 1,000; $p < 0.001$). However, the perinatal mortality rate was 1,000 per 1,000 deliveries for fetuses of less than 1,500 grams, 635 for fetuses between 1,500-2,500 grams, and 156 for fetuses of greater than 2,500 gm. In general, fetuses with low birth weight showed a high mortality rate ($p < 0.001$). There also a two-fold increase in perinatal death in patients without antenatal care ($p < 0.001$) (22).

2.1 Conceptual Framework

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

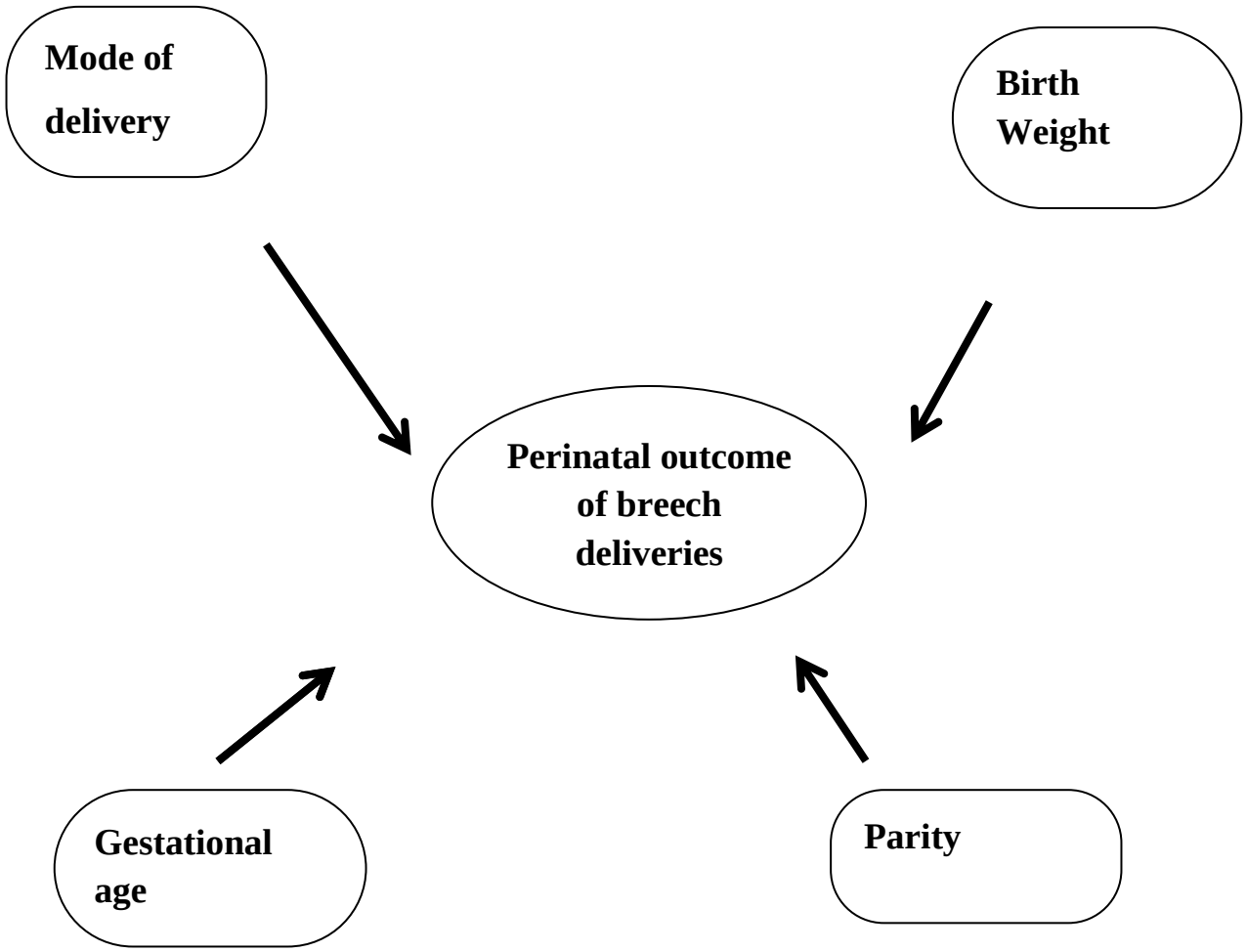

Figure 1.1: Conceptual framework: Factors affecting perinatal outcome of breech deliveries

2.2. Significance of the Study

This study aimed to assess and compare the perinatal outcome of breech deliveries towards the mode of delivery. It also tries to address the fetal outcome and those factors that affect fetal outcome of breech deliveries. The result of this study will help Mettu Karl Hospital in developing management protocol of breech deliveries and Mettu zonal health department in facilitating referral systems of health institutions. Besides, this study will give additional input to the previous studies, and it will serve as a starting point for further studies in the future

III. Objectives of the study

1.1 General objective

- To determine the perinatal outcome of singleton term breech deliveries

1.2 Specific objectives

- To determine the magnitude of breech deliveries among all deliveries.
- To asses perinatal outcome of singleton term breech deliveries.
- To determine factors affecting fetal outcome of singleton breech deliveries.

IV. Methodology

4.1 Study area and period

Hospital records of four years all pregnant women who were presented with a breech presentation and delivered in the hospital were reviewed at Mettu Karl hospital from **March 1-30, 2013**. Mettu Karl Hospital is one of the zonal hospitals in Oromia regional national state. It is found in the center of capital city of Illu-Ababora Zone, Mettu Town. It is the only governmental hospital in the town located at 595 Km to the South West of Addis Ababa. It is established by Swedish Missionaries and Ras Teferi in 1932. Currently, it provides full health care services for the population of Illu-Ababora zone and its surroundings estimated to be 1.5 million people. The total number of staff of the hospital is 291 including one general surgeon, one gynecologist-obstetrician, one internist, 11 general practitioners, 8 health officers, 3 anesthetists, 1 dentist, 88 nurses, 8 laboratory technologists, and 5 pharmacists. There are a total of 160 beds in the surgical, medical, gynecology-obstetrics, and pediatrics wards of the hospital. In obstetric and gynecologic ward, there are two delivery coaches, four beds for first stage of labor, three beds for normal post partum, 12 beds for post operative and other abnormal post partum, and 18 beds for all gynecologic problems. The ward is currently run by one gynecologist and obstetrician, four midwifery and 8 clinical nurses.

4.2 Study Design

Hospital based cross sectional retrospective study was conducted on outcome of breech delivery in the past four years at Mettu Karl Hospital Oromoia Regional State, South Western Ethiopia.

4.3 Population

4.3.1 Source Population

All mothers who presented with breech presentation at Mettu Karl Hospital are considered the source population for this study.

4.3.2 Study Population

All mothers with breech deliveries in Mettu Karl Hospital from January 1, 2010 to December 31, 2013(N=5628).

Exclusion Criteria

4.3.3 Inclusion Criteria

All mothers with singleton term breech deliveries.

4.3.4 Exclusion Criteria

- Mothers with multiple pregnancy
- Mothers with abortion& preterm breech deliveries.
- Lost and incomplete cards
- Maternal conditions which will affect fetal outcome (mothers with chronic medical illnesses and obstetric complications like pre-eclampsa, APH, sepsis...)

4.4 Sample Size and Sampling Technique

4.4.1 Sample Size

All hospital records of pregnant women with a clinical diagnosis of breech presentation and gave birth at Mettu Karl hospital during the past four years from January 1, 2010 to December 31, 2013.

4.4.2 Data collection procedure

All pregnancies with breech presentations were included.

First, Obstetrics and operative records from obstetric ward and major operation registry book in the operation room were reviewed to identify women who present with breech presentation and delivered from January 1, 2010 through December 31, 2014. Next, using card no. of patients, cards were collected from the card room. Finally, based on the inclusion and exclusion criteria of the study, cards were selected and analyzed.

4.5 Dependent Variables

- Fetal outcome of breech deliveries

  Alive

  Dead

4.6 Independent Variables

- Maternal age
- Marital status
- Address
- Parity
- ANC follow up
- Gestational age
- Status of cervical dilatation
- Status of membrane on presentation
- Time duration of rupture of membrane
- Mode of delivery
- Birth weight of newborn

4.7 Data Collection Instruments

A pre-prepared checklist was developed after review of relevant literatures. Data collection was started in the operation room and Obstetric ward and relevant cards were collected from the card room. Appropriate information were gathered and entered in to the pre-prepared data collection tool.

4.5 Data Processing and analysis

Data were analyzed using SPSS for windows version 16.0 software. Descriptive statistics was run to describe independent and dependent variables. The association between dependent and independent variables were determined by Odds Ratio. Binary and Multivariable regression analysis were done to see the strength of association and determine independent predictor of perinatal outcome.

4.9 Operational definitions

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

♦ **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 the 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.

Parity: The number of live born children a woman has delivered

♦ **Urban**: Resident of Mettu town.

♦ **Rural**: Resident out of Mettu town.

Gestational= the duration of gestation. It is measured from the first day of last menstrual period or fundal height and is expressed in completed weeks

Term period =the period from37 completed weeks up to the end of 42 weeks.

Preterm period=Refers to less than 37 completed weeks of gestation.

Post term=the period greater than 42 completed weeks of gestation.

Preterm delivery=Birth of baby before 37 completed weeks of gestation.

Neonatal death=the death of baby that occur at less than 28 days of age.

Early neonatal death=the death of alive born during the first 7 days of life.

4.10 Ethical Consideration

Ethical permission was obtained to undertake the research from Institutional Ethical Review Board of Jimma University. Letter from the research and Post graduate coordinating office was submitted to Mettu Karl Hospital administrative office and permission to conduct the research activity was obtained. Names not used& charts returned back. Information was used only for study purpose.

4.11 Dissemination of Results

Having obtained the approval from Jimma University College of Public Health and Medical Sciences, the findings of this research will be disseminated to:

- Jimma University College of Public Health and Medical Sciences
- Jimma University College of Public Health and Medical Sciences Obstetrics and Gynaecology Department
- Mettu Karl Hospital
- Mettu town health Bureau
- Peer reviewed Medical Journals

V. Results

During the 4 years study period, a total of 169 singleton term breech deliveries were recorded out of 5628 deliveries giving the prevalence of singleton term breech deliveries in the hospital during the study period to be 3%. And card retrieval rate was 97.1%.

5.1 Demographic Pattern

Age of the mothers ranged from 16 to 38 years with ***mean (±SD) of*** 25 (±5) years. Larger proportion of mothers who attended the hospital for delivery were within the age category of 20-24 years 50 (30.5%) and, 25-29 years 63(38.4%) (Table 1). With regard to residency, 75% of these mothers reside out of Mettu town and the rest (25%) were from Mettu town (Figure 5.2).

Table1. Socio-demographic characteristics of mothers gave breech delivery at MKH from January 1, 2010 to December 31, 2013 (n=164)

Variables	**Frequency**	**Percent**
Maternal age		
15-24	74	45
>=25	90	55
Residence		
Urban	41	25
Rural	123	75

5.2 Obstetrics condition

More than half, 98 (59.8%), of the mothers parity was between 2-4, 63 (38.4%) mothers were para 1. Among participants of this study, majority, 135(82.3%) of the mothers have history of ANC follow up. Out of the mothers who gave breech delivery, 145(88.4%) of them gave birth during 37-40 complete weeks of pregnancy, 12(7.3%) before 37 complete weeks and 7(4.3%) gave birth during 41-42 complete weeks by LMP. On the other hand, among mothers with breech presentations, 98(59.8%) of them gave birth vaginally while 66(40.2%) of mothers gave birth through cesarean section. Among mothers gave birth vaginally, 96(58.5%) gave birth through assisted breech delivery (Table2).

Table 2.Obstetric condition of mothers gave breech delivery at MKH from January 1, 2010 to December 31, 2013 (n=164)

Variables	Frequency	Percent
Parity		
Primi para	63	38.4
Multipara	101	61.6
Gestational age singleton term breech records		
Pre-term	12	7.3
Term	152	92.7
Status of ANC		

Attended	135	82.3
Not attended	29	17.7
Status of cervix at presentation		
Fully dilated	25	15.2
Not fully dilated	130	79.3
Closed	7	4.3
Status of membrane		
Intact	87	53
Ruptured	77	47
Duration of rupture of membrane		
Less than 12 hrs	66	40.2
More than 12 hrs	11	6.7
Mode of delivery		
Vaginal breech delivery	98	59.8
Caesarean delivery	66	40.2

The common indication for cesarean section were footling breech 19(28.8%), big baby 16(24.2%), cord prolapse 14(21.2%), fetal distress (12.1%), previous c/s scar 7(10.6%) and other including PROM 2(3%) (fig1).

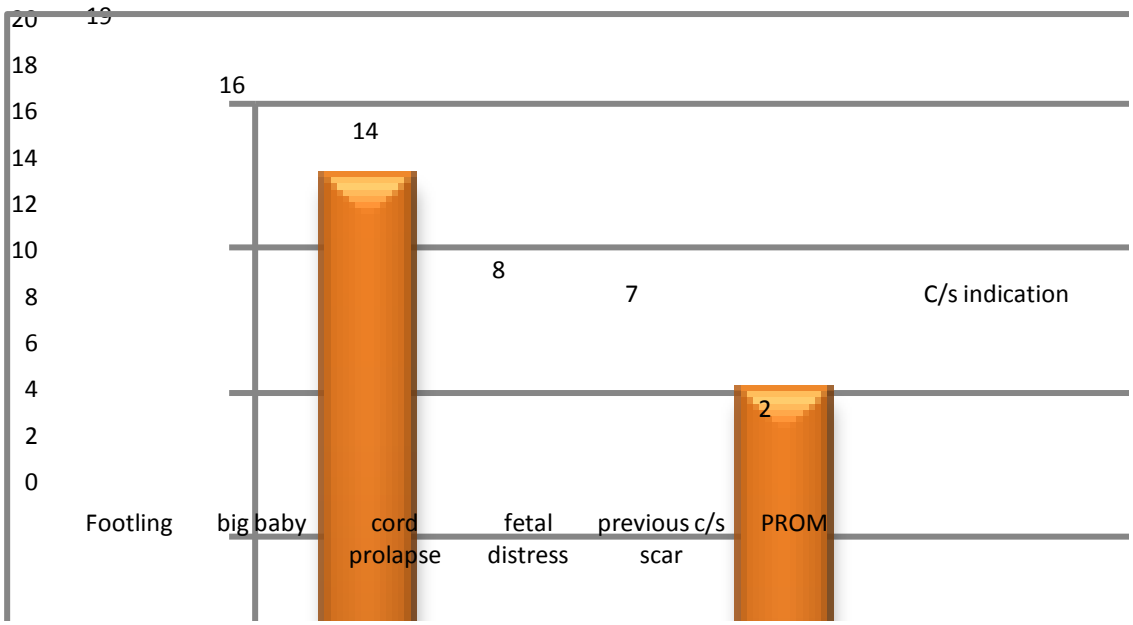

Figure 1: Caesarean section indication of mothers gave breech delivery at MKH from January 1, 2010 to December 31, 2014 (n=66)

5.3 Peri-natal outcome

In this study regarding the perinatal outcome of breech deliveries: 139(84.8%) were born alive and 25 (15.2%) were dead (fig 2) indicating that the perinatal mortality rate to be 152 per 1000 breech presentations. Among live born, neonatal condition within the first 5 minute showed that, 115 (70.1%) born healthy (Table l2). The possible causes of death for dead delivered fetus were entrapment of head 10 (40%), birth asphyxia 8 (32%), cord prolapse 4(28%) and intrauterine death with unknown cause 3 (12%).

Among 164 deliveries, 141(86%) of newborn have birth weight of 2500-3500 gm, 15 (9.1%) have birth weight of greater than 3500 gm and 8(4.9%) of new born have birth weight less than 2500gm (table 3). Of 139 neonates, 116(70.7%) had their first 5 minute Apgar score of greater than 7 while 20(14%) have Apgar score of less than 7.

Table 3: Perinatal outcome of mothers who gave breech delivery at MKH from January 1, 2010 to December 31, 2013 (n=164)

	Frequency	Percent
Intrauterine fetal condition (N=164)		
Alive	142	86.6
Dead	22	13.4
Fetal outcome within first 5 minute of delivery (N = 164)		
Alive	139	84.8
Dead	25	15.2
Alive fetus condition with in first minute of life (N = 139)		
healthy looking	115	82.7
with birth injury	1	.7
Asphyxiated	23	16.5
Possible cause of fetal death (N = 25)		
After coming head entrapment	10	40.0
Cord prolapsed	5	20.0
Asphyxia	8	32.0
Other	2	8.0
5th minute APGAR score		
0	25	15.2
>= 7	116	70.7

less than 7	23	14.0

Table 1: Binary logistic analyses for selected variables and fetal outcome of breech delivery at Mettu Karl Hospital, January 1 2010 to December 31, 2013 (n=164)

Variables	**Alive (per100)**	**Dead (per 100)**	Rate of death	COR 95% CI	P-value
Age					
15-24	66	8	10.81%	1	
≥25	73	17	18.88%	1.92(0.73,5.5)	0.152
Address					
Mettu Town	38	3	7.32	1	
Out of Mettu town	101	22	17.89	0.36(0.36-1.28)	P=0.115
Parity					
Primi para	57	6	9.52	1	
Multipara	82	19	18.81	2.20(0.83,5.85)	0.114
ANC follow up					
Attended	118	17	12.59	1	
Not attended	17	7	29.17	0.38(0.15-0.99)*	P=0.047
Gestational age					
Preterm	9	3	25	1.97(0.49,7.85)	0.337
Term	130	22	14.47	1	

The status of the membrane on presentation					
Intact	81	6	6.90	1	
Ruptured	58	19	24.68	0.23(0.09-0.60)*	P=0.003
Time duration of the membrane					
Less than 12 hrs	49	16	24.62	1	
Greater than 12 hrs	8	3	27.27	0.85(0.20, 3.61)	0.83
Mode of delivery					
Vaginal delivery	74	24	24.49	21.08(2.77-60.18)*	P=0.003
Cesarean section	65	1	1.54	1	
Birth weight of new born					
Less than 2500gm	5	3	27.27	1.20(0.20-7.18)	P=0.842
2500-3500gm	124	17	12.06	0.27(0.08-0.90)*	P=0.033
Greater than 3500	10	5	33.33	1	

*p < 0.05,

Binary logistic analysis was done to show the association between perinatal outcome and other independent variables. The a above table 4 shows that in age group, address, parity and gestational age of the mother doesn't have significant statistical association with perinatal outcome at CI 95% (p >0.05).

Table 2: Multivariate analysis for selected variable and fetal outcome of breech delivery in MKH, January 2010 to December 31, 2013

Variables	Fetal outcome		P-value	AOR	95%CI	
	Alive	Dead			Lower	Upper
Maternal age						
15-24	66	8		1		
>=25	73	17	0.649	0.62	0.08	4.77
Parity						
Primi para	57	6		1		
Multipara or grandmultipara	82	19	0.763	1.41	0.15	12.98
ANC follow up						
Attended	118	17		1		
Not attended	17	7	0.029	4.87	1.17	20.21
Gestational age						
Preterm	9	3	0.29	3.65	0.49	27.28
Term or post term	130	22		1		
Status of membrane on presentation						
Intact	81	6		1		

Ruptured	58	19	0.006	6.36	1.75	23.58
Mode of delivery						
Assisted vaginal	74	24	0.006	29.84	2.68	332.06
Caesarean section	65	1		1		
Weight of newborn (gm)						
<2500	5	3	0.349	0.25	0.014	4.51
2500-3500	124	17	0.002	0.32	0.004	0.28
>3500	10	5		1		

Numerous associations were found to be significant in the binary analysis. Therefore, a Multivariate approach was applied to determine which factors best explained and predict perinatal outcome of breech delivery. P-value >0.25 used candidate for multivariate analisis. Consequently independent variable like, mode of delivery was found to be significant on multivariate analysis). Vaginal delivery have significant statistical association with perinatal outcome of breech delivery (p=0.006 (AOR=29.68, 95% CI 2.68- 33.06).

Status ANC follow up mothers who have history of ANC follow up have significant statistical association with perinatal outcome of breech delivery (p=0.029, AOR=4.87(1.17,20.21)) Mothers who with ruptured membrane have significant statistical association with perinatal outcome of breech delivery (P=0.006,AOR=6.36(1.75, 23.58)). Mothers with ruptured membrane on time of presentation has (6 times) risk to have perinatal loss when compared with intact membrane on presentation (AOR=6.36 CI 95% 1.75-2.58).

Fetal birth weight was found to be significant statistical association with fetal outcome (p=0.033, AOR=0.27(0.08, 0.9)).Fetal weight between 2500-3500 gm has 27% less likely to have perinatal loss compared with birth weight >3500 gm.

VI Discussion

The magnitude of singleton term breech delivery in this study is 3%. It is lower than the 4% reported by study in Yekatit hospital, Ethiopia, 1989-1992, but higher than the 2.6 % reported from a University teaching hospital of East Nigeria, and reported from research done in Yaoundé general hospital, Cameroon 1992-2007 (21.). However, it is still the same to the 3-4%, which was quoted as the worldwide prevalence (16, 22).

The perinatal mortality rate of 15.2% breech deliveries in this study is lower than 330 per 1000 deliveries reported from study in Yekatit Hospital (25,28). This study suggests perinatal death is of breech delivery is higher than general perinatal death 11.4% of study done in Jimma specialization hospital on 2011 (31).

In this study, most perinatal loss was related to vaginal delivery when we compare with cesarean section (24.49% and 1.54% respectively). Similar results ware demonstrated in a study conducted in Basra Iraq also vaginal delivery *versus* cesarean deliver (8.2% and 0.6% respectively). This is relatively the same with that of the current study. Similarly, a study

conducted in Yaoundé Cameroon and study conducted in Nigeria teaching hospital has almost reported the same results. (21, 22, 27) This might be related to vaginal deliveries have high risk of perinatal morbidity and mortality during birth process (16).

Entrapment of after coming head is the leading possible cause of perinatal death. This is the same with study conducted in Nigeria (21). But research done Yaoundé Cameroon the leading cause of peri-natal death related with birth injury (27). This possible cause fetal loss may be related with delay to reach the hospital, this due to large proportion of participants were out of Mettu town (table 1).

VII. Conclusion and Recommendations

7.1 Conclusion

In this study, it can concluded that the peri-natal mortality rate, of 152 per 1000 breech deliveries, was high indicating that breech vaginal delivery to be associated with an increased perinatal mortality and morbidity than caesarean delivery. Entrapment of head, birth asphyxia and cord prolapse were the most common causes of peri-natal mortality. In general, perinatal outcome was significantly associated with vaginal delivery failure to attend ANC, early rupture of membrane and fetal weight factors in this study.

7.2 Recommendation

Based on the findings of this study the following recommendations are forwarded:

- Offer assisted vaginal breech deliveries for appropriate & well selected cases.
- Offer Caesarean deliveries for cases in which vaginal delivery may pose problems.

- Increase the coverage of pregnant women accesses the available antenatal services.
- Facilitating referral system of health institution t o the hospital in early stage of labor mother with diagnosed or suspected term breech presentation.
- Breech delivery log book for further studies.

Strength and limitation of the study

Strength of the study

- Multiple variable logistic regressions were done to control the effect of confounding variables in the study.

Limitation of the study

- Study period was limited to four years period because of poor documentation of patient's chart prior to time of new HMIS system.
- Relatively time consuming for getting charts.
- Some missing or lost charts were excluded during the study period.

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Annex I

Data collection format

This checklist was designed to assess fetal outcome of breech delivery in Mettu Karl hospital a retrospective study over a- 4 years period from Jaunary1, 2010 to December 31, 2013Gc.

Data were collected from labor ward records and from the patient's case notes retrieved from the Medical Record Department of Mettu Karl Referral Hospital, Illu-Ababora Zone Oromia Region South West Ethiopia.

Encircle the correct number of choice or fill on blank space.

Part A. Socio-demographic Information			
No	Questions	Coding	Code

		categories	
Q 101	Stated maternal age in years_____	15-19	1
		20-24	2
		25-29	3
		30-34	4
		>35	
Q 102	Residence_____	Mettu Town	1
		Outside Mettu Town	2
Q 103	Marital Status	Married	1
		Single	2
		Widowed	3
		Divorced	4
Part B. Obstetric History			
Q 201	Parity_____	Primi-para (para 1)	1
		Multi-para (para	2

		2-5)	
		Grand multi-para (>para 5)	3
Q 202	Does the mother have ANC follow up? _____	Yes/Attended	1
		No/Not attended	2
		Not recorded	3
Q 203	Gestational age by LMP or Fundal height in weeks_____	<37 (preterm)	1
		37-42 (term)	2
		>42 (post term)	3
Q 204	Status of cervical dilatation at presentation	Fully dilated	1
		Not fully dilated	2
		Closed	3
Q205	Status of fetal membrane at presentation_____	Intact	1
		Ruptured	2
Q 206	If your answer is 1 for Q 205, How long was the duration of rupture of fetal membrane at	<12 hrs	1
		>12 Hrs	2

	presentation in hrs_____		
Q 207	Mode of delivery	Spontaneous breech delivery	1
		Vaginal breech delivery	2
		Caesarean breech delivery	3
		Destructive breech delivery	4
Q208	If C/S done what is the indication of Caesarean delivery? _____	Big baby (Mcrosomia)	1
		Footling breech	2
		Previous C/S scare	3
		Other	4
			5
			6
			7

Part C. Fetal condition			
Q301	Intrauterine fetal condition	Alive	1
		Dead	2
Q302	Fetal outcome of singleton breech delivery within first 5 minutes	Alive	1
		Dead	2
Q 303	Condition of alive fetus within first five minutes	Health looking	1
		With birth injury	2
		Asphyxiated	3
		With congenital anomaly	4
Q 304	Possible cause of death of the fetus	After coming head entrapment	1
		Cord prolapse	2
		Asphyxia	3
Q 305	Apgar score of the newborn within first 5 minutes	0	0
		<7	1

		>7	2
Q 306	Weight of singleton breech newborn in(gm) _____	<2500	1
		2500-3500	2
		>3500	3

Assurance of Principal Investigator

I undersigned agrees to accept responsibility for the scientific, ethical and technical conduct of the research project and for provision of required progress reports as per terms and condition of the Faculty of Public Health in effect at the time of grant is forwarded as the result of this application.

Name of the student: Beyene Kesesa

Date……. Signature……..

APPROVAL OF ADVISORS

1. Dr Demesew Amenu

Date……. Signature……..

1. Dr Elias Ali Yesuf

Date …….. Signature…….