

# Prevalence and Perinatal Outcome of Singleton Term Breech Delivery in Mizan Aman General Hospital, South West, Ethiopia; A Three Year Retrospective Hospital based Study

Tilahun T<sup>1</sup>, Mengistie H<sup>1\*</sup> and Hiko D<sup>2</sup>

<sup>1</sup>Emergency Surgery Professional Specialist, Jimma University, Ethiopia

<sup>2</sup>Epidemiology, Jimma University, Ethiopia

\*Corresponding author: Mengistie H, Emergency Surgery Professional Specialist, Jimma University, Ethiopia, Tel: +251912474885; E-mail: habtie.nit@gmail.com

Rec date: May 21, 2016; Acc date: June 11, 2016; Pub date: June 25, 2016

Copyright: © 2016 Tilahun T et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

## 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.

**Objective:** To determine the perinatal outcome of singleton term breech deliveries and identify associated factors at Mizan Aman General Hospital.

**Methods:** Hospital based cross-sectional study was conducted. Data on Socio-demographic, obstetric conditions and outcome of singleton breech deliveries of all pregnant women was collected from January 01, 2012 to December 31, 2014 GC. The collected Data was entered to SPSS version-20 for analysis. Descriptive statistics was run and the association between independent and dependent variables was measured using logistic regression model and p-value < 0.05 statistically significant.

**Result:** During the 3 years study period, a total of 126 singleton term breech deliveries were recorded out of 3729 deliveries giving the prevalence of singleton breech deliveries in the hospital to be 3.4%. The perinatal outcome of breech deliveries were 104(88%) born alive and 14(12%) were dead indicating that the perinatal mortality rate to be 120 per 1000 term breech presentations. The possible causes of death for dead delivered fetus were entrapment of head 5(35.7%), prolapsed cord 4(28.6%), birth asphyxia 3(21.4%) and intrauterine death with unknown cause 2(14.3%). Birth weight greater than 3500 gm have 26% chance of fetal loss when compared with fetal weight 2500-3499 gm. Vaginal breech delivery have significant statistical association with perinatal loss than abdominal route.

**Conclusion and Recommendation:** Perinatal mortality rate, of 120 per 1000 breech deliveries. Which indicate that breech vaginal delivery is associated with an increased perinatal mortality and morbidity than caesarean delivery. Birth weight  $\geq$  3500 gm increase risk perinatal loss than fetal weight between 2500-3500 gm.

**Keywords:** Perinatal outcome; Breech delivery; Associated factors

## Introduction

### 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 fundus. This presentation occurs in 3 to 4 percent of labors overall, although it is found in 7 percent of pregnancies at 32 weeks and in 25 percent of pregnancies of less than 28 weeks' duration [1].

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. 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, Oligohydramnious, 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 [2].

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 [3].

In addition 19.4% of neonates undergoing term breech deliveries have long-term morbidity up to the school age irrespective of mode of delivery [4]. 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 [5-7].

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 [8]. The problem is further compounded in our environment, where only a small percentage of pregnant women assess the available antenatal services and many of the present to the hospital in advanced stages of labor or with intra-uterine fetal death [9]. Hence only a few of them benefit from planned vaginal breech delivery [10].

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.

This was the reason the Royal College of Obstetricians and Gynecologists in 2001 [11], 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 [12].

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.

## Methods and Materials

### Study area

The study was conducted at Mizan Aman general hospital, SNNPR, South west Ethiopia, which is about 574 kilometers from Addis Ababa. The zone has 33 health centers which are government owned and Mizan Aman General Hospital which is used as general hospital and owned and run by the Government (Mizan Aman Town health Administration Office, 2011).

The total population of the Bench Maji zone is 760, 314; of which 381, 449 are males and 378, 865 are Females. The hospital gives a general service for different parts of the zone. The average delivery service in a month in 2011 was about 100.

The hospital was established in 1979 E.C and it is the only general hospital in the zone that service for many peoples. It has 136 beds. The Hospital has labor and delivery room (32 beds and 2 delivery coaches) which give services for parturient mother. The room operates with multidisciplinary staffs.

### Study design

Institutional based cross sectional study was conducted.

## Population

**Source population:** All mothers who gave birth in Mizan Aman General Hospital.

**Study population:** All mothers who gave birth for singleton term breech deliveries in Mizan Aman General Hospital from January 01/2012 to December 31/2014 GC and fulfilling inclusion criteria.

## Inclusion criteria

All Women who gave birth of singleton term breech deliveries in Mizan Aman General Hospital (term was considered using LNMP, early ultrasound, early HCG, fetal biometrics (femoral length, biparietal diameter).

## Exclusion criteria

- All Mothers who gave multiple birth.
- Mothers with abortion and preterm breech deliveries.
- Lost and incomplete cards.

Maternal conditions which will affect fetal outcome (mothers with chronic medical illnesses and obstetric complications like preeclampsia, APH, sepsis).

## Sample Size

All clinical record of mothers with the diagnosis of term breech singleton birth at Mizan Aman General Hospital during the period of January 01/2012 to December 31/2014 E.C.

## Data collection Procedure

First, Obstetrics and operative records from obstetric ward and major operation registry book in the operation room will be reviewed to identify women who gave birth for breech presentation from January 1, 2012 through December 31, 2014. Next, using card number of patients, cards was collected from the card room. Finally, using structured checklist data on socio-demographic factors, obstetric conditions and foetal outcomes was collected from charts which fulfil inclusion criteria of the study by trained data collectors (midwives).

## Variables

### Dependent variables

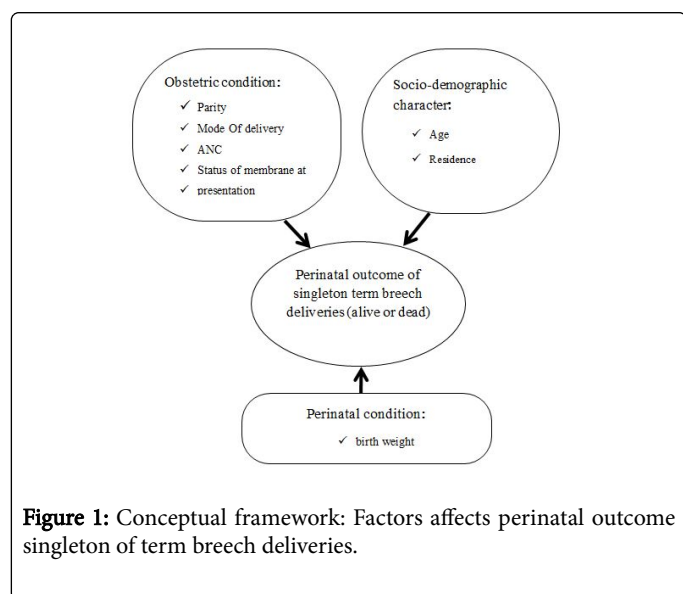
- Perinatal outcome of singleton term breech deliveries
- Alive
- Dead

### Independent variables

- Age
- Address
- Parity
- Route of delivery
- ANC
- Status of membrane
- Duration of rupture of membrane
- Types of breech
- Birth weight

## Data Processing and Analysis

The collected data was checked for its completeness and entered to SPSS version-20 database program for analysis. Descriptive statistics of both dependent and independent was worked out and the association measured and tested using logistic regression. The processed Data was presented using Odds Ratio with their 95% CI and p-value < 0.05 taken as statistically significant (Figure 1).



## Data Quality Management

To assure the quality of the data, data collectors and supervisors were trained and a regular supervision and follow up done by Supervisor. In addition regular checkup for completeness and consistency of the data was made on daily basis.

## Result

### Demographic pattern

The age distribution ranged from 17 to 40 years with mean age 25.68 years with standard deviation of 4.818. Larger proportion of mothers who attended the hospital for delivery were under the age category of 20-24 years 43(36.4%) and 25-29 years 47(39.8%). With regard to residency, 44.1% of these mothers reside in Mizan Aman and Teppi town and the rest 55.9% were out of that. All mothers enrolled in this study were married (Figure 1) (Table 1).

Socio-demographic Variable	Frequency	Percent
<b>Age (years)</b>		
15-19	5	4.2
20-24	43	36.4
25-29	47	39.8
30-34	14	11.9
>=35	9	7.6
Total	118	100

Residence		
Mizan Aman and Teppi	52	44.1
Out of Mizan Aman and Teppi	66	55.9
Total	118	100

**Table 1:** Socio-demographic characteristics of mothers gave singleton term breech delivery at Mizan Aman Hospital from January 1, 2012 to December 31, 2014 (n=118).

### Obstetrics condition

In this study, 68(57.6%), of the mothers parity was multiparous, among this 9(7.6%) are grand multiparous ( $\geq 5$ ) while the remaining 50(42.4%) mothers were primiparous. Among participants of this study, majority, 105(89%) of the mothers have history of ANC follow up.

On the other hand, among mothers with term breech presentations, 67(56.8%) of them gave birth vaginally while 51(43.2%) of mothers gave birth through cesarean section. Among mothers who gave birth vaginally, 59(50%) gave birth through assisted breech delivery, 5(4.2%) through spontaneous breech delivery and 3(2.5%) were destructive deliveries.

The common reasons cesarean section to be indicated for mothers whose gave birth in this study were big baby 15(12.7%), footling breech 13(11%), cord prolapse 6(5.1%), non-reassuring fetal heart rate pattern 6(5.1%), previous c/s scar 5(4.2%) and other including PROM 6(5.1%) (Table 2).

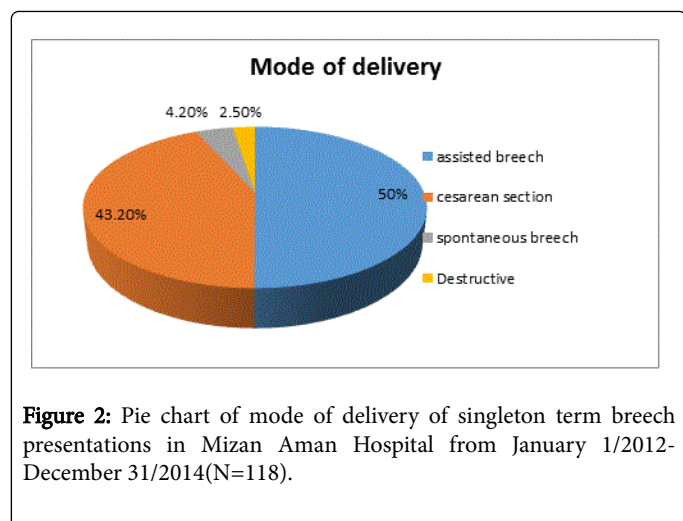
Indication for c/s	Frequency	Percent (%)
Big baby	15	12.7
Footling breech	13	11
Cord prolapse	6	5.1
Non reassuring FHR	6	5.1
Previous c/s scar	5	4.2
Others including prom	6	5.1

**Table 2:** Frequency distribution of indications for cesarean deliveries of term singleton breech presentations in Mizan Aman Hospital from January 1/2012-December 31/2014.

### Perinatal outcome

It was recorded in this study that, the perinatal outcome of breech deliveries were 104(88%) born alive and 14(12%) were dead indicating that the perinatal mortality rate to be 120 per 1000 term breech presentations.

Among live born, neonatal condition within the first 5 minute showed that, 81(73%) born healthy, 27(24.3%) asphyxiated and 3(2.7%) born with birth injury (Figure 2).



**Figure 2:** Pie chart of mode of delivery of singleton term breech presentations in Mizan Aman Hospital from January 1/2012-December 31/2014(N=118).

The possible causes of death for dead delivered fetus were entrapment of head 5(35.7%), cord prolapse 4(28.6%), birth asphyxia 3(21.4%) and intrauterine death with unknown cause 2(14.3%).

As shown on the Figure 2 Among 118 newborn deliveries with breech deliveries 66(55.9%) of newborn have birth weight of 2500-3499 gm, 44(37.3%) have birth weight of 3500 gm and above and the remaining 8(6.8%) of new born have birth weight less than 2500 gm Of 108 live born fetus, 81(68.6%) had Apgar score of greater than 7 while 27 (22.9%) have Apgar score of less than 7 at 1st minute of life and 3(2.5%) were with birth injuries. All dead delivered fetuses have Apgar score of 0. With subsequent evaluation among 108 live births 89(82.4%) scored 7 and above, 15(13.9%) less than seven and 4(3.4%) of them were dead (0 Apgar) (Table 3).

Variables	Frequency	Percent (%)
<b>Intrauterine fetal condition</b>		
Alive	111	94.1
Dead	7	5.9
<b>Fetal condition immediately at birth</b>		
Alive	108	91.5
Dead	3	2.5
<b>Fetal condition with in 5 minute</b>		
Health looking	81	75
Asphyxiated	27	22.9
With birth injury	3	2.5
<b>Apgar score at 5th minute</b>		
0	4	3.4
≥7	89	75.4
<7	15	13.9
<b>If dead possible causes</b>		
Entrapment of after coming head	5	35.7

Cord prolapse	4	28.6
Birth asphyxia	3	21.4
Unknown causes	2	14.3

**Table 3:** Fetal outcome of singleton term breech deliveries in Mizan Aman Hospital from January 1, 2012 to December 31, 2014 (N=118).

Based on this study fetal condition at first minute of breech delivery with their respective route of delivery was asphyxiated in 20.2% and 4.6% cases and health looking in the remaining 32.4% and 42.6% through vaginal and abdominal routes respectively (Table 4).

Fetal condition at 1st minute	Route of delivery				Total
	Vaginal		Abdominal		
	no	%	no	%	
Health looking	35	32.4	46	42.6	81(75%)
Asphyxiated	22	20.2	5	4.6	27(24.6)

**Table 4:** fetal condition at 1st minute of live born with route of singleton term breech deliveries in Mizan Aman General Hospital from January 1, 2012 to December 31, 2014 (N=118).

When we see route of breech delivery with their 5th minute Apgar score of live born, 3(2.7%) and 2(1.8%) are dead (0 Apgar score) while 45(41.7%) and 44(40.7%) had seven and above and the remaining 9(8.3%) and 5(4.6%) had less than seven through vaginal and abdominal routes respectively.

#### Factors associated with perinatal outcome of singleton term breech delivery

Binary logistic regression was done to measure the association between perinatal outcome and other independent variables (Table 5).

Apgar score at 5th minute	Route of delivery				Total
	Vaginal		Abdominal		
	no	%	no	%	
0	3	2.7	2	1.8	5(4.5%)
≥7	45	41.7	44	40.7	89(82.4%)
<7	9	8.3	5	4.6	14(12.9%)

**Table 5:** 5th minute Apgar score of live born with route of singleton term breech deliveries in Mizan Aman Hospital from January 1, 2012 to December 31, 2014 (N=118).

As described in Table 6 below that age group, residence, parity and duration of rupture of membrane of the mother with singleton term breech delivery haven't significant statistical association with perinatal outcome at CI 95% (p >0.05). ANC follow up, Status of membrane on presentation and footling breech have significant statistical association with perinatal outcome (p-value= 0.036, 0.022 and 0.021 respectively) (Table 6).

Variables	Perinatal Outcome		COR 95% CI	P-Value
	Alive No (%)	Dead No (%)		
<b>Age(Years)</b>				
15-19	4(3.4)	1(0.8)	1	
20-24	38(32.2)	5(4.2)	0.53(0.05-5.70)	0.597
25-29	45(38.1)	2(1.7)	0.18(0.01-2.42)	0.194
30-34	11(9.3)	3(2.5)	1.09(0.09-13.78)	0.946
>=35	6(5.1)	3(2.5)	2.00(0.15-26.73)	0.6
<b>Address</b>				
Mizan Aman and Tepi	47(39.8)	5(4.2)	1	
Out of Mizan and Teppi	57(48.3)	9(7.6)	0.67(0.21-2.145)	0.504
<b>Parity</b>				
Primipara(1)	42(35.6)	8(6.8)	1.52(0.17-13.92)	0.709
Multipara(2-4)	54(45.8)	5(4.2)	0.74(0.08-7.18)	0.796
Grand multipara(≥5)	8(6.8)	1(0.8)	1	
<b>ANC follow up</b>				
Attended	95(80.5)	10(8.5)	1	
Not attended	9(7.6)	4(3.4)	4.22(1.10-16.22)	0.036
<b>Status of membrane on presentation</b>				
Intact	65(55.1)	4(3.4)	1	
Raptured	39(33.1)	10(8.5)	4.17(1.22-14.19)	0.022
<b>Duration of membrane rupture</b>				
Less than 12 hrs	25(51)	6(12.2)	1	
Greater than 12 hrs	14(28.8)	4(8.2)	0.84(0.20-3.49)	0.81
<b>Type of breech</b>				
Frank breech	53(44.9)	4(3.8)	1	
Complete	44(37.3)	7(5.9)	2.11(0.58-7.67)	0.258
Footling breech	5(4.2)	3(2.5)	7.95(1.37-46.00)	0.021
<b>Route of delivery</b>				
Vaginal	55(46.6)	12(10.8)	5.35(1.14-25.08)	0.034
Abdominal	49(41.5)	2(1.7)	1	
<b>Birth weight</b>				
<2500 gm	5(4.2)	3(2.5)	6.00(1.14-31.53)	0.698
2500-3499 gm	60(50.8)	6(5.1)	1	
≥3500 gm	39(33.1)	5(4.2)	1.28(0.37-4.49)	0.034

**Table 6:** Binary logistic analyses for selected variables and fetal outcome of breech delivery at Mizan Aman Hospital, January 1, 2012 to December 31, 2014 (n=118).

On the other hand Route of delivery has significant statistical association with perinatal outcome and birth weight greater than 3500 gm have significant statistical association with perinatal mortality ( $p=0.034$ ).

Since most of the associations were found to be significant in the binary analysis, a Multivariate approach was applied to determine best predictor of perinatal outcome of breech delivery. Independent variable like mode of delivery and birth weight were found to be significant on multivariate analysis. Vaginal breech delivery have significant statistical association with 35% increased perinatal mortality than abdominal route ( $p= 0.014$ (AOR=0.35(0.15-0.813)). New born birth weight greater than 3500 gm have significant statistical association with perinatal outcome when we compare with perinatal weight between 2500 gm to 3500 gm. Having birth weight greater than 3500 gm 26% chance of fetal loss when compared with fetal weight less than 2500-3500 gm ( $p=0.013$ ,AOR=0.26(0.09-0.75)). But fetal weight less than 2500 gm have no significant statistical association with perinatal outcome than birth weight 2500-3500 gm. ( $p= 0.191$ ) (Table 7).

## Discussion

During 3 years study period, a total of 126 singleton term breech deliveries were recorded out of 3729 deliveries giving the prevalence of singleton breech deliveries in the hospital during the study period to be 3.4%

Among this 126 term breech deliveries 3(2.2%) and 5(3.7%) are with congenital anomaly and incomplete cards respectively. The prevalence of singleton term breech delivery in this study is 3.4% which is lower than the study done in Yekatit 12 Hospital, Addis Ababa, Ethiopia, with a 4% incidence in the study period of 1989-1992, but it is higher than the study done in a University Teaching Hospital in Eastern Nigeria, having prevalence of 2.6% over all it is comparable with worldwide incidence of 3-4% [13-15].

In this study the perinatal mortality rate is 120 per 1000 term breech presentations. It is lower than study done in Yekatit 12 Hospital, Ethiopia; perinatal mortality rate for breech delivery was 330 per 1,000 deliveries, 194.3 per 1000 deliveries on study done in Black Lion hospital and less than 2% on study done in Canada. On similar study conducted in teaching hospital of eastern Nigeria the perinatal mortality rate was 250 in 1000 deliveries. This study suggests perinatal death is of breech delivery is higher than general perinatal death 11.4% of study done in Jimma specialized hospital on 2011.

Risk of perinatal mortality in breech delivery is higher in vaginal route than cesarean section, 10.8% and 1.7% respectively. This shows perinatal mortality of singleton breech delivery is higher in this study on both routes when compared with the study conducted in Basra ,Iraq ,the perinatal mortality in vaginal deliveries (8.2%) while 0.9% in caesarean deliveries. This might be related to vaginal deliveries have high risk of perinatal morbidity and mortality during birth process [2]. In addition birth trauma was 2.5% which is restricted to vaginal delivery similar to the study conducted in Basra, Iraq. When we see route of breech delivery with their 5th minute Apgar score of live born, 11% and 6.4% had less than seven through vaginal and abdominal routes respectively. Compared to research done at the Yaoundé General Hospital, Cameroon, infants born by cesarean section and those delivered vaginally have low 5-minute Apgar scores 4.1% vs. 17.77% [15-17].

Variables	Fetal Out Come		COR Of 95% CI	AOR Of 95% CI
	Alive No (%)	Dead No (%)		
<b>ANC Follow Up</b>				
Attended	95(80.5)	10(8.50)	1	
Not attended	9(7.6)	4(3.4)	4.22(1.10-16.22)	3.82(0.72-20.43)
<b>Status of membrane on presentation</b>				
Intact	65(55.1)	4(3.4)	1	
Raptured	39(33.1)	10(8.5)	4.17(1.22-14.19)	3.49(0.86-14.12)
<b>Type of breech</b>				
Frank breech	53(44.9)	4(3.8)	1	
Complete	44(37.3)	7(5.9)	2.11(0.58-7.67)	
Footling breech	5(4.2)	3(2.5)	7.95(1.37-46.00)	1.41(0.26-7.57)
<b>Route of delivery</b>				
vaginal	55(46.6)	12(10.8)	5.35(1.14-25.08)	0.35(0.154-0.81)
abdominal	49(41.5)	2(1.7)	1	
<b>Birth weight</b>				
<2500 gm	5(4.2)	3(2.5)	6.00(1.14-31.53)	3.10(0.57-16.91)
2500-3499 gm	60(50.8)	6(5.1)	1	
≥3500 gm	39(33.1)	5(4.2)	1.28(0.37-4.49)	0.26(0.09-0.75)

**Table 7:** Multivariate analysis for selected variable and fetal outcome of singleton breech delivery in Mizan Aman Hospital from January 2012 to December 31, 2014.

In this study newborns weigh less than 2500 gm has high risk of perinatal mortality rate 37.5 per 100 deliveries and new born who weighs more than 3500 has still 11 per 100 risk of perinatal loss. This figure is relatively lower than the study conducted in Yekatit 12 hospital, Ethiopia, with perinatal mortality of 635 and 156 per 1000 for fetuses weighs less than 2500 gm and greater than 2500 gm respectively. But the study conducted in Basra, Iraq, shows higher perinatal mortality record among infants >3500 gm birth weight [16].

Entrapment of after coming head is the leading possible cause of perinatal death. This is the same with study conducted in Nigeria [15]. But research done Yaoundé Cameroon the leading cause of perinatal death related with birth injury [17]. This possible cause fetal loss may be related with delay to reach the hospital, this due to large proportion of participants were away from Mizan and Teppi town.

## Limitation of the Study

Since the study was facility based review, to draw inferences to the wider community can be difficult. The study didn't show long term complications.

## Conclusion and Recommendations

### Conclusion

In this study, it can be concluded that the perinatal mortality rate, of 120 per 1000 breech deliveries, which indicates that breech vaginal delivery is associated with an increased perinatal mortality and morbidity than caesarean delivery.

Factor such as fetal weight  $\geq$  3500 gm and vaginal route of breech delivery are significantly associated with increased perinatal mortality. In this study Entrapment of head, birth asphyxia and cord prolapse were the most common causes of perinatal mortality.

### Recommendation

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

Because of vaginal breech delivery has high perinatal death, better to update our protocol of all term breech delivery with caesarean section. Prenatal and intrapartum evaluation for fetal presentation, weight, wellbeing and other parameters to decide on route of breech delivery should be performed as routine activities.

### Ethical Consideration

Initially ethical approval and permission was obtained from Research Ethical Committee of Jimma University. The coordinator of Integrated Emergency Obstetrics/Gynecology and General Surgery was communicated through formal letters which was taken from before the study. The supportive staffs (i.e. Card room workers and obstetric ward staffs) were informed about the purpose of the study and verbal consent was obtained.

### References

1. Steven GG, Jennifer RN, Joe LS (2012) Obstetrics: Normal and Problem Pregnancies 5: 478-479.
2. Alan HDC, Lauren NT, Murphy G, Neri L (2007) Current Diagnosis & Treatment Obstetrics & Gynecology p: 1-10.
3. Hytten FE (1982) Breech presentation: is it a bad omen? *Br J Obstet Gynaecol* 89: 879-880.
4. Danielian PJ, Wang J, Hall MH (1996) Long-term outcome by method of delivery of fetuses in breech presentation at term: population based follow up. *BMJ* 312: 1451-1453.
5. Garry MM, Govean ADT (1980) Breech presentation. *Obstetrics, Churchill Livingstone, Edinburgh* 3: 238-246.
6. Gini PC, Njoku O (1990) The outcome of breech deliveries. *Trop J Obstet Gynaecol* 89: 15-18.
7. Mahomed K, Seeras R, Coulson R (1991) External cephalic version at term. A randomized controlled trial using tocolysis. *Br J Obstet Gynaecol* 98: 8-13.
8. Hibbard BM (1988) Breech presentation and delivery. *Principle of obstetrics Butterworth's and Co limited London* 1: 557-574.
9. Iffy L, Toliver CW (1981) Manual extraction procedures. *Principles and practice of obstetrics and perinatology. A Wile medical publication, New York* pp: 1521-1524.
10. Adeleye JA (1985) Two year assessment of some aspects of breech delivery: caesarean section in breech presentation and perinatal mortality at the University college hospital, Ibadan. *Nig Trop J Obstet Gynaecol* 1: 31-35.
11. Kotaska A, Menticoglou S, Gagnon R, Farine D, Basso M, et al. (2009) Vaginal delivery of breech presentation. See comment in *PubMed Commons below J Obstet Gynaecol Can* 31: 557-566, 567-78.
12. Ritchie JWK (1986) Malposition of the occiput and malpresentation. In: *Whitfield CR, Dewhurst's Textbook of obstetrics and gynaecology for postgraduates. Blackwell scientific publication* 4: 394-401.
13. Obuna JA, Ugboma HA, Agwu UM, Ejikeme BN (2014) The Prevalence and Outcome of Singleton Breech Delivery in Abakaliki South-East Nigeria, *JMSCR* 2: 1011-1022.
14. Alshaheen H, Al-Karim AA (2010) Perinatal outcomes of singleton term breech deliveries in Basra. *East Mediterr Health J* 16: 34-39.
15. Abdulrazak H, Alnakash (2007) Perinatal outcome of Breech Presentation in the Presentation in the Pretext Mode of Delivery, *Al-kindy Col Med* 4: 70-75.
16. Kemfang NJD, Kasia JM, Ekotarh A, Nzedjom C (2012) Neonatal Outcome of Term Breech Births: A 15-Year Review at the Yaoundé General Hospital, *Cameroon* 9: 1.
17. Getachew B, Yifru B (2012) Perinatal mortality and associated risk factors: A Case Control Study, *Ethiopian health science journal* 22: 3.