

Incidence and management outcome of uterine rupture in Nekemte
referral Hospital, Oromia Regional Stat, Ethiopia

By:-

Gadissa Berhanu (BSc)

A Research thesis submitted to college of Public Health and Medical
Science, Research and post graduate coordination office in partial
fulfillment of the requirement for degree of master in Integrated
Emergency Obstetrics& Gynecology and General Surgery

July 2005 E.C

Jimma-Ethiopia

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Abstract

Introduction: Uterine rupture is a serious life threatening obstetric complication during child birth. The extent to which it happened and its management outcome is unknown in NRH

Objective: - To assess incidence and management outcomes of ruptured uterus at NRH.

Method: A retrospective study conducted to retrieve 213 Cases of uterine rupture from all deliveries managed from September 2003-September 2006 E.C .Data was collected by trained data collectors from maternal records using structured checklist Patient cards and operating room registration books was used to review diagnosis of rupture, surgical intervention and treatment outcome during a period. Data was cleaned, entered & analyzed with SPSS 16.0 statistical packages. Chi square test *was done to see the association between the independent and the dependent variables and P-Value <0.05 at 95% CI was taken as statically significant throughout the analysis* .Finally data will be presented in tables, figures and texts.

Result:-The incidence of uterine rupture was during the period. Causes of rupture were CPD 113(53.1%) and mal presentation in 89(38.5%) were the leading causes of uterine rupture. Repair was done in 198 (92.8%) Of cases, Anemia was a leading post operative complication occurred in 116(54.5%)cases Causes of MD were hemorrhagic 18(8.5%)&septic shock6(2.8).62 Septic shock has statistical association with management outcome of uterine rupture. (COR=0.072, 95% CI: 0.010-0.547,P value<0.011&AOR=0.016, 95% CI:,0.001-0.17).Anemia has significant association with management outcome of uterine rupture.(COR=0.092,95% CI:0.046-0.148,P value<0.001& AOD=0.010,95% CI :0.003-0.040,P value<0.001).

Conclusion& recommendation Significant numbers of uterine rupture cases seen in NRH with overall incidence rate of 2.9%. almost one-third (66.2%) of mothers with uterine rupture and managed at NRH have poor management outcome. Blood transfusion, Septic shock and anaemia are independent predictors of maternal outcome in uterine rupture in NRH.

Finally large scale prospective study is recommended to identify maternal, socio-economical and socio-cultural determinants of uterine rupture

Key words: uterine rupture, incidence, and Management outcome

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Acronyms

UR RU	- Uterine rupture Ruptured uterus
ANC-	Antenatal
VVF-	Visio-vaginal Fistula
WHO	- world Health Organization
SPSS-	Statistical package for social science
TAH	- Total Abdominal Hysterectomy
STAH-	Subtotal Abdominal Hysterectomy
C S	- Cesarean section
GA-	Gestation age General anesthesia
NRH	- Nekemte referral Hospital
MD	- Maternal Death
MMR-	Maternal Mortality Rate
PD	- Prenatal Death
PI	- Principal Investigator
OB GYN-	Obstetrician & Gynecologist
PNMR	Prenatal Mortality Rate
CFR	Case Fatality Rate
CPD	Cephalo-pelvic disproportion

BTL	Bilateral tubal ligat
TAH	Total abdominal hysterectomy
Hgb	Hemoglobin
HOHS	Hours of Hospital Stay
COR	Crude odd ratio
AOR	Adjusted odd ratio
HE	Health education
TBH	Traditional birth attendant

Chapter one

1.1 Background

Since time of immemorial, indigenous people in Africa and other parts of the world have relied on prayers, rituals and scarifies to God, in order to control obstetric accident and maternal mortality.¹¹¹

Uterine rupture is a tear in the wall of the uterus which commonly occurs in the lower segment of the uterus. The tear could be anterior, posterior, lateral or combination of these. It could be transverse, vertical or combination of these. In most cases, it occurs in the intra -partum or ante partum period. Uterine rupture typically is classified as either: (1) *complete* when all layers of the uterine wall are separated, or (2) *incomplete* rupture the uterine wall is separated but the visceral peritoneum is intact. Incomplete rupture is also commonly referred to as *uterine dehiscence*.

The most common cause of uterine rupture is separation of a previous cesarean hysterectomy scar. With decreasing interest in a trial of labor following a prior cesarean delivery, rupture of unscarred uterus may now be associated with up to half of cases of uterine rupture. Other common predisposing factors to uterine rupture are previous traumatizing operations manipulations such as curettage, perforation, or myomectomy. Excessive or inappropriate uterine stimulation with oxytocin a previously frequent cause has become uncommon.¹²¹ prior to developing hypovolaemic shock, symptoms and physical findings in women with uterine rupture may appear bizarre unless the possibility is kept in mind. For example, hem peritoneum from a ruptured uterus may result in diaphragmatic irritation with pain referred to the chest—directing one to a diagnosis of pulmonary or amniotic fluid embolism instead of uterine rupture. The most common sign of uterine rupture is a no reassuring fetal heart rate pattern with variable heart rate decelerations that may evolve into late decelerations, bradycardia, and death.¹²¹ With rupture and expulsion of the fetus into the peritoneal cavity, the chances for intact fetal survival are dismal, and reported mortality rates range from 50 to 75 percent.

Fetal condition depends on the degree to which the placental implantation remains intact, although this can change within minutes. With rupture, the only chance of fetal survival is afforded by immediate delivery, most often by laparotomy. Otherwise, hypoxia from both placental separation and maternal hypovolemia is inevitable.

If rupture is followed by immediate total placental separation, then very few intact fetuses will be salvaged. Maternal deaths from rupture are uncommon.

One of the major causes of maternal and prenatal mortalities is rupture of the uterus. This obstetrics hazard is also associated with short term maternal morbidities such as bladder rupture, foot drop, psychological trauma, anemia and in the long term because of the surgical intervention, the woman may be sterilized which can lead to divorce and loss of economic support .

Generally fetal/maternal outcome of uterine rupture depends on duration of rupture, the speed with which the hypovolemia is corrected, appropriate antibiotics started, type of rupture and surgical intervention done.¹²¹

1.2 Statement of the problem

Attempts to imitate the success story of Western countries in lowering maternal mortality drastically have failed in Africa because the poor majorities still do not have access to basic life saving obstetric care; hence the persistent unacceptable high maternal mortality and morbidity from pregnancy and child birth related obstetric complication. 111

Globally, at least 585, 000 women die each year by complications of pregnancy and child birth 131 More than 70% of all maternal deaths are due to five major complications: hemorrhage, infection, unsafe abortion, hypertensive disorders of pregnancy, and obstructed labor.14| The poor health and nutrition of women and the lack of care that contributes to their death in pregnancy and child birth also compromise the health and survival of the infants and children they leave behind. It is estimated that nearly two-third of the 8 million infant deaths that occur each year largely from poor maternal health and hygiene, inadequate care, inefficient management of delivery, and lack of essential care of new-born 131

Ethiopia is one of the developing countries where maternal and prenatal mortality rates are still very high. The maternal mortality ratio in Ethiopia is one of the highest in sub-Saharan African, 676/100,000 live births according to Ethiopian 2011 DHS data and the prenatal mortality is also high. From the causes of maternal death 75% are direct and hemorrhage accounts 28% of maternal death. 151

Maternal death is rare and often not considered, especially when the classic signs are not present.161 A ruptured uterus is a life threatening obstetric complication that remains a major public health concern in low-income countries, particularly in Africa. It is a significant cause of maternal and prenatal morbidity and mortality.171 Uterine rupture is among one of the most preventable obstetric complications that carries grave risks to the mother as well as for her baby. Even if women survive, the future reproductive potential is reduced or lost forever. WHO intensifies its efforts to maternal health care focusing specifically on the reduction of

Maternal mortality by strengthen the system of primary health care giving a priority of maternal and child health care through formally trained traditional birth attendants and community health agent. In spite of these efforts, there are many mothers who died as well as

Suffer from obstetric complication .18|l Ethiopia, design a pioneer health extension program strategy in 2003 formally trained female health extension workers and deployed at community level (2 HEW at rural Keble),improving maternal and new born health through community involvement by transferring knowledge into skill at home hold level in rural community and showed a little change but maternal mortality is still unacceptably high.

The major objective of this retrospective study was to assess the incidence and management outcome of ruptured uterus at Nekemte Referral Hospital since maternal mortality is high in this region and The leading cause is hemorrhage at country level of which uterine rupture is one of the cause of hemorrhage .Uterine rupture is more prevalent and it is the leading one cause of maternal mortality related to hemorrhage. Nevertheless there are limited research done at country level and from the region as well that is why I am doing this paper.

Chapter two

2.1 Literature review

According to WHO (2005) incidence of unscarred uterine rupture in developed countries are extremely low (0.006%) review study in developed world showed only one report give uterine rupture in women without previous C/S scar (example in Israel 0.01%, in Nigeria 19%, Ethiopia 25%). While study in Netherland reported increased risk of uterine ruptured in developed countries following trial of labor (TOL) with previous C/S scar; 1 in 1660 deliveries for Ireland and between 1 in 1148 and 1 in 2250 deliveries for USA. TOL in previous uterine scar and use of uterotonic agent are common cause for uterine rupture and account for 0.56% with fewer maternal deaths. (1.6%).¹⁹¹

A recent report from four developing countries Bangladesh, Ethiopia, Ghana and Nigeria found that about 75% of cases of uterine rupture occurred in unscarred uterus. It contributes to maternal case fatality rate ranges from 1% to 13% and over all prenatal mortality 74% to 92%. With ready access to obstetrics services including C/S for obstructed labor (OL) and provision of family planning, rupture of unscarred uterus should be rare. A six year (1991 to 1997) review in Nigeria at Kaduna University teaching hospital, had shown that frequency of uterine rupture was 1 per 137 delivery with mean age of women is 30.5 years. This study also shows the highest rate of uterine rupture in GMP women (women with Para 5 or more) and CPD (63.4%) the leading cause of uterine rupture and shock (22%) the commonest clinical features at presentation in unscarred uterus. The overall maternal and perinatal deaths were 22% and 88% respectively. A seven years review of uterine rupture in Kole-BU Teaching Hospital, Accra Ghana, from 1995 to 2001 by Adanu et al. revealed that there are 193 cases of uterine rupture in total deliveries during study period (82061 deliveries), 75% had not previous uterine scar, and prolonged obstructed labor (33.3%) is the commonest cause of uterine rupture. Almost 70% women underwent TAH, perinatal mortality rate is high (74.3%) similar to Nigeria but maternal case fatality rate (CFR) 1.0%.^{110, 111}

In Emanuel Ethiopia set up, 8 years (1993-2001) retrospective uterine rupture review was done in Adigrat Regional Hospital, Tigray Regional State, Northern Ethiopia, by Emanuel, et al. This study shows that a total of 54 cases of uterine rupture and 5980 hospital deliveries were recorded for a ratio of 1:110. CPD (53%) was the leading cause of rupture followed by mal-presentation mal-position (25.9%), and previous uterine scar (11.2%) and instrumental deliveries (3.7%). According to this study, 94.4% of rupture were in multiparous women and the highest rate were for women aged between 25-35 years, 94.4% of the rupture were in multi parlous women the highest rate were for women aged between 25 to 35 yrs, and only 17% of them had ANC follow up. TAH is the commonest preferred surgical management and accounts 37%, wound infection were commonest post operative complication cited. And also the study revealed maternal and perinatal case fatality rate to be 11.1%, the mean duration of and 98% respectively, and the mean duration of labor for all cases of uterine rupture was 58.7 hours and 79.6 for those died. 1121

A retrospective study done USA in 12 years periods from January 1, 1983 to December 3, 1994 showed that cases of intra partum unscarred uterine rupture make an incidence is 1 in 16,849 deliveries. In this study ten cases of uterine rupture occur during labor, oxytocin 40%, grandmulti parity 20% and mal presentation 20% are common cause of rupture. Acute abdominal pain 60% followed by maternal tachycardia 50% and hypotension 20 are common manifestation at presentation .In this study there is no maternal or prenatal death, as a result of excellent obstetric facilities and management .1131

A study in Singapore reported that the major causes of uterine rupture are previous C|S scar and oxytocin use and followed by cephalopelvic disproportion (CPD), grand multiparty is now are rare cause in Singapore .In this study over all frequency of uterine rupture is 1:6331 deliveries which when compared with that of 1;3869 deliveries (10 years before) uterine rupture e showed that a drop in uterine rupture rate by 40% ,this is due to increased rate of C|S . According to this study the common surgical management done was uterine repair with or without tubal ligation, account for 95% of patient with scarred uterus . A retrospective study in Shashamane general Hospital South shawa ,Oromia Regional state

,southern Ethiopia a three years (1989 to 1992) reviewed Chamiso B ,found that, the frequency of uterine rupture of 57 cases in this rural Hospital to be 2.6% or 1 in 38 deliveries , 54 cases were Para 3 and above, age of peak incidence occurring between 25 and 34 years (73.3%) neglected shoulder presentation (63.2%) being the commonest cause of rupture .Fifty four cases of uterine rupture underwent TAH , mean duration of hospital stay among survived was 13 days 9 ranging 6 hours to 20 days) . Overall CFR was 15.85. 1151

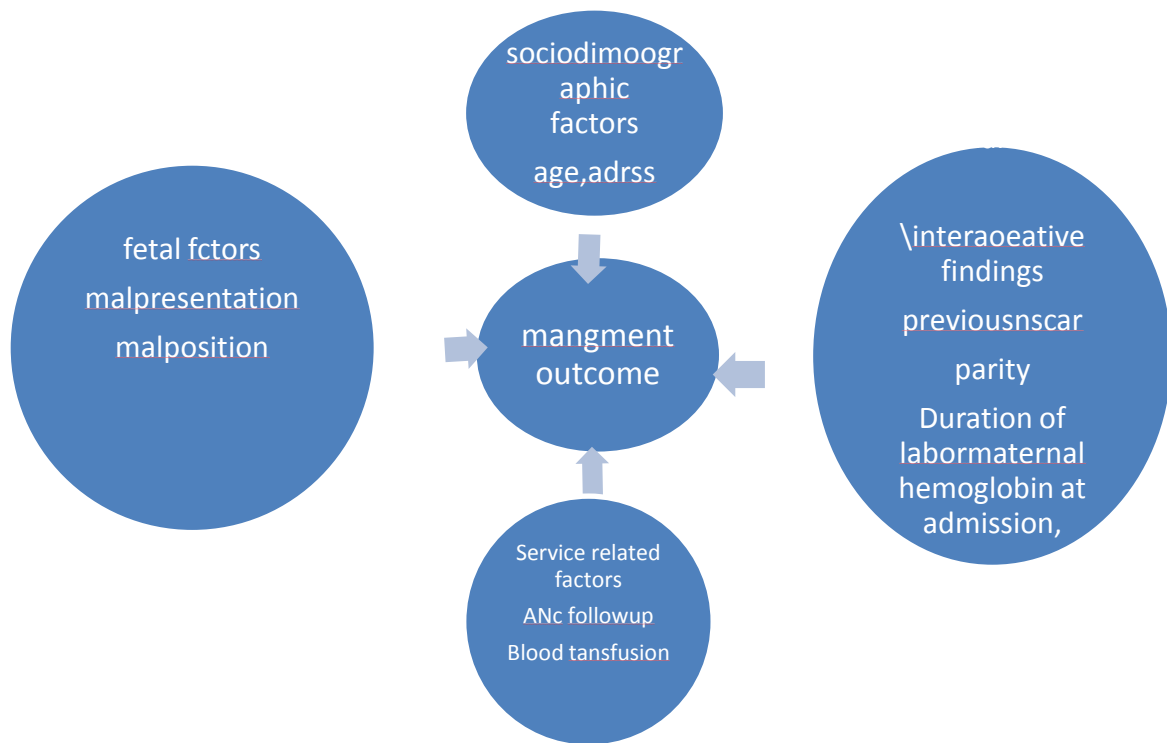
Studies about maternal mortality in teaching hospital in Addis Ababa concluded that ruptured uterus accounts 13.4%% maternal death next to abortion , 68% occurs in multi Para and all of them came from rural areas .1161

Reports of study from October 1991 to December 1992 in A.A Ethiopia among the 841 delivering case ,24 were ruptured uterus (1 in 40) .All multi Para women were from rural areas , in this series rupture accounts for 28% of maternal deaths preceded by abortion . 181

2.2 Significance of the Study

This study is designed primarily to determine the incidence, cause and management outcome of ruptured gravid uterus at Nekemte Hospital from September 2003 to September 2006 E.C. The result of the study will help the local health institution, Nekemte Referral Hospital, health centers, zonal health department, and regional health bureau; so that proper planning, implementation and evaluation of perspective health service activities will be conducted in the area. This study will also serve as baseline for further studies to be done at hospital level.

2.3 conceptual frame work



Chapter three

Objective of the study

3.1 General objective

To assess the incidence and management outcome of ruptured gravid uterus at Nekemte Referral hospital from September 2003 to September 2006 E .C.

3.2 Specific objective

1. To determine the incidence of uterine rupture,
2. To identify the management outcome of ruptured gravid uterus among mothers at NRH from September 2003 to September 2006 E.C
3. To identify factors associated with management outcome of ruptured gravid uterus among mothers at NRH from September 2003 to September 2006 E.C

Chapter four

4.1 Method and materials

4.1.1 Description of the study area and period

The study was conducted in Nekemte referral hospital from September 2003 to September 2006 E.C. Nekemte referral Hospital is found in Nekemte town 331 km. from the capital Addis Ababa to the west.

The hospital is serving for a total population of about 2.1 million peoples of Nekemte town, East wollega zone, parts of west wollega zone, Horoguduru wollega zone and west shoa zone. Currently Nekemte hospital has 178 beds used for the inpatient services, as to the human resource there are total number of workers [113 health professionals and 78 administrative staffs].The hospital was expected 3030 deliveries per year(about 9090 deliveries during the study period).

The Hospital provides Medical treatment, ophthalmic treatment, Phsyatric treatment, major and minor operation, inpatient services, MCH, control of HIV, laboratory, X-ray and ultrasound, drug and pharmacy, training services and physiotherapy.(HMIS department of the hospital).There were 5417 deliveries conducted in the hospital during the study period.

4.1.2 Study design

It is a three years descriptive cross -sectional retrospective document review of uterine rupture cases managed in Nekemte referral hospital from September 2003 to September 2006 E.C

4.2 Population

4.2.1 Source population

Document of all mothers who gave birth at Nekemte referral Hospital.

4.2.2 Study population

Document of all mothers whose gave birth at Nekemte referral hospital from September 2003 to September 2006 E .C.

4.2.3 Inclusion and exclusion criteria

Mothers document operatively managed for uterine rupture and registration books of delivery in the study period was included and patient with incomplete data and lost cards are excluded from the study.

4.3 Sample Size sample& Sampling Technique

4.3.1 Sample Size sample

Document of all mothers who gave birth at Nekemte referral hospital from September 2003 to September 2006 E .C and who had uterine rupture.

4.3.2 Sampling Technique

Census of all mothers who gave birth in the three years period at NRH was done from September 2003 to September 2006 E. C. Patient cards and operating room registration books were used to review diagnosis of rupture, surgical intervention and treatment outcome during a period from September 2003 to September 2006 E.C was included.

4.4 Variables

4.4.1 Independent variables

Address, Age, ANC follows up, Gravidity, CPD, Mal-presentation, uterine scar, Duration of labor, maternal hemoglobin at admission, Type of rupture, Blood transfusion

4.4.2 Dependent variables

Incidence and management outcome of uterine rupture

4.5 OPERETIONAL DEFINITIONS

Outcome –is a maternal condition which ends up with survival, complication, or death after operative management for uterine rupture.

Good maternal condition- those mothers with uterine rupture who survived and discharged after operative management for uterine rupture.

Poor maternal condition- Those mothers with uterine rupture who did not survive or developed complication after operative management for uterine rupture.

Anemia-mother presented with uterine rupture and Hgb number less than 7g/dl and discharged after management.

Intra operative finding –findings on the ruptured uterus that could be anterior, posterior, lateral, complete or incomplete uterine wall rupture or combination of these.

Parity –Delivery of neonate (s) alive or dead with estimated Gestational Age at least 28 completed weeks irrespective of outcome

Grand multi Para –Defined as 5 or more previous deliveries after 28 completed weeks of gestation

Obstructed labor –failure to descend of the presenting part in spite of strong uterine contraction

Spontaneous uterine rupture –Rupture without iatrogenic manipulation, trauma, oxytocin drug use or without any previous scar on the uterus

4.6 Data collection instrument and technique

Data was collected from patient card, registration books, and anesthesia chart available in the hospital by checklist questionnaires using trained data collectors. First card numbers of women in the study period was identified from registration books and then their chart have been retrieved from card office.

4.7 Data entry, processing and analysis

After checking for the completeness of each collected data, each questionnaire was entered to computer using statistical packages for social sciences (SPSS). Using computer coded data collecting form for analysis purpose. To know association between variable P.value & Crude and AOR and their respective 95% confidence intervals (95% CI) were estimated using binary and multiple logistic regression models.

4.8 Data quality Assurance

Half day training was given for data collectors close supervision and checking the collected data on daily bases. Incomplete checklists was returned back to the data collector for completion .Data was not collected from incomplete medical records, to assure data quality.

4.9 Ethical consideration

An official letter was obtained from the department of integrated emergency obstetrics &gynecology, and general surgery, college of medicine and health science, University of Jimma

And submitted to Nekmte referral hospital .Confidentiality of the data was maintained and respected .Ethical clearance was obtained from Jimma University ethics review board.

4.10. Plan for utilization and dissemination of result

The result of the study will be communicated to different stake holders in different format including face to face presentation, publishing of the study findings in a peer reviewed journal and presentation in scientific meeting will be conducted, in Jimma University

Chapter five

5.1 Result

5.2 Socio demographic characteristics

In the study period, 7254 cases were attend in Nekemte Referral hospital out of these 5417 were vaginal deliveries, 2624 were caesarean delivery(C/S) and 213 laparatomy for uterine rupture. The age of ruptured uterus cases were from 18-45 years of age, out of these <20 years were 7(3.3%) 20-27age were 76(35.7%), 20-45age were 206(96.7%) , among these more than 35 years old were 30(14%).All the deaths were seen in age greater than 20 years. The residential Address of 7 was from urban area which is (3.3%) and 206(96.7%) cases were from rural area. No death was seen in urban.

Table 1 Age & residential distribution of total ruptured uterus cases in Nekemte referral Hospital from September 2003 –September 2006 E.C.

Variables	Variables	Frequency	percent
Age	<20years	7	3.3
	20-27 years	76	35.7
	28-35years	100	46.9
	>35 years	30	14
Residency	Urban	7	3.3
	Rural	206	96.7

5.3 Obstetric history

The Presenting features in study subjects were abdominal pain in all cases 213(100%), vaginal bleeding in 96 ((44.6%), palpable fetal part in 204(95.8%), cessation of uterine contraction in 204(95.8%), 13(6.1%) bladder rupture and shock in 79(44.4%) cases, shock in 93(43.6%), Hgb<7g/dl 140(65.7%) and .7g/dl 73(39.3%)

Table 2: Presenting features and complication of uterine rupture in Nekemte Referral Hospital in Nekemte Referral Hospital from September 2003 to September 2006 E.C.

Variables	Frequency	Percent
Abdominal pain	213	100
Vaginal bleeding	96	44.6
Palpable fetal part	204	95.8
Cessation of contraction	204	95.8
Shock	93	43.6
Hgb <7g/dl	140	65.7
Hgb>7g/dl	73	39.3
Bladder rupture	13	6.1

5.4. Incidence of uterine rupture

As shown in the above table (2) with card retrieval rate of 96% 213 cases of uterine rupture observed during the study period which was 2.9% of the total cases.

5.5 Management of uterine rupture and management outcome

The type of surgical intervention for uterine rupture cases were repair 98(46%), repair with BTL 54(24.8%), subtotal hysterectomy 6(2.8%) and total abdominal hysterectomy 55(26.6%).

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The common post-operative complications observed in the uterine rupture cases were anemia 116 (54.5%), vesico vaginal fistula in 7(3.3%), burst Abdomen in 7 (3.3%), and wound site infection in 12(5.6%) , hemorrhagic shock 42(19.7%)and septic shock 24(11.3%),

Table 3 Management outcomes of uterine rupture at Nekemte Referral Hospital from September 2003 to September 2006 E.C.

Variables	Frequency	percent
Repair with BTL	54	25.3
Sub- total hysterectomy	6	2.8
TAH	55	25.8
Repair	98	46

189 (88.7%) cases of the mothers with uterine rupture were cured and 24(11.3%) were died. The causes for maternal deaths were hypovolemic shock in 18 (8.5%), septic shock in 6(2.8%) of the total cases&the rest 54(35.4) had different complications.

Table:4 Total management Outcome of uterine rupture at NRH from September 2003 to September 2006E.C

Variable	Frequency	Percent
Good	78	33.8
Poor	141	66.2
Total	213	100

Table 5:Complication of uterine rupture Outcome of uterine rupture at NRH from September 2003 to September 2006 E.C

Septic shock	24	11.3
Hemorrhagic shock	42	19.7
Death	24	11.3
Survived	189	88.7
VVF	7	3.3
Wound infection	12	5.6
Burst abdomen	7	3.3

5.6 Factors associated with uterine rupture& management outcome

The primi- gravid were 17(8%), and 196(92%) were multi Para. 22 deaths multi gravida but only 2 deaths observed in primi gravida mothers

During the study period 201(94.4%) cases had no ANC follow up and only 12(5.6%) cases of ruptured uterus had ANC follow up.

None of the cases were augmented or induced, and 18(9.5%) cases had previous C/S scar, and the rest 195(91.5%) had no scar

124(58.2%) cases were transfused with compatible blood group and 89(41.8%) of the cases were not transfused. 23(25.8%) deaths seen in none transfused cases while only one (0.8%) was observed in transfused group.190(89.6) and cases had anterior uterine rupture and the rest23(11.4) with lateral uterine rupture.

Table 6: Gravity, ANC follow up, blood transfusion, type of rupture, duration of labor, types of rupture, blood transfusion and uterine scar at Nekemte Referral Hospital from September 2003 to September 2006 E.C.

Variables	Labels	Frequency	Percent
Gravity	Primi	17	8
	Multi	196	92
ANC follow up	Attended	12	5.6
	Not attended	201	94.4
Uterine Scar	Yes	18	9.5
	No	195	91.5
Rupture	Anterior	190	89.6
	Lateral	23	11.4
labor	>18hours	213	100
	<18hours	0	0
Blood	Transfused	124	58.2
	Not transfused	89	43.8

The causes of uterine ruptures were CPD in 113(55.1%), mal presentation 82(38.5%), previous C/S scar 18(9.5%). No rupture with pitocine augmentation or induction in all cases

Table 7:Causes of uterine rupture at Nekemte Referral Hospital from September 2003 to 2006 E.C

Cause of rupture	Frequency	percent
Previous C/S scar	18	9.5
CPD	113	53.1
Mal presentation	82	38.5
Total	213	100

5.7 Factor associated with maternal outcome

On binary logistic regression analysis septic shock, hypovolumic shock, and blood transfusion, and anemia significantly associated with maternal outcome at $P \leq 0.05$.on binary logistic regression analysis were selected as candidates and further entered multiple logistic regression analysis Blood transfusion, Septic shock anaemia and hypovolumic shock are independent predictors of maternal outcome in uterine rupture , in which blood mothers those had blood transfusion has statistically significant association with management outcome of uterine rupture. (COR= 6.0160, 95% CI: 2.979-12.149, P-value<0.001& (AOR= 34.386, 95% CI: 11.386-428.381,P value<0.00). Those mothers who do not transfused with blood were 34 times more likely to have poor outcome as compared to those who had transfusion.

Presence of hypovolumic shock has significant association with management outcome of uterine rupture. (COR=3.068 ,95% CI: 1.680-5.604 ,P Value<0.001 &AOR=1.680-5.604,95%CI: 0.002-0.040,P value<0.001).This indicates those mothers who presented with hypovolmic shock were 67%times likely to developed poor outcome as compared to those without hypovolmic shock.

Septic shock has statistical association with management outcome of uterine rupture. (COR=0.072, 95% CI: 0.010-0.547 ,P value<0.011&AOR=0.016, 95% CI:,0.001-0.175).Those mothers with septic shock were 9.9% less likely to develop poor outcome. Anemia has significant association with management outcome of uterine rupture.(COR=0.092,95% CI:0.046-0.148,P value<0.001& AOD=0.010,95% CI :0.003-0.040,P value<0.001).This indicates that mothers presented or complicated with anaemia were 10% more likely to developed poor outcome .

Table 8:Determinant variables and management outcomes of ruptured uterus at Nekemte referral Hospital from September 2003 to September 2006 E.C.

Variable	Label	Maternal outcomes		COR/95% CI/P	AOR/95% CI/P
		Good	Poor		
Blood transfusion	Yes	101(47.4%)	23(10.8%)	1	1
	No	88(41.3%)	1(0.5%)	6.02(2.9-12.1)/ <0.001	69.5(11.4-42.8)/<0.001
Septic shock	Yes	18(8.5%)	6(2.8%)	1	1
	No	171(80.2%)	18(8.5%)	0.072(0.01-0.5)/ 0.011	0.01(0.001-0.2) 0.001
Anaemia	Yes	14(6.7%)	102(48.9%)	1	1
	No	58(27%)	39(18%)	0.09(0.05-0.15)/< 0.001	0.01(0.003-0.04) <0.001
Hypovolumic shock	Yes	50(23.4%)	60(28.1%)	1	1
	No	22(10.3%)	81(38%)	3.07(1.7-5.6)/ <0.001	0.014(0.002-0.04) <0.001

Significant at p-value \leq 0.05 * 1 is reference

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Chapter six

6 .1 Discussion

A ruptured uterus is a life threatening obstetric complication that remains a major public health concern in low-income countries, particularly in Africa. It is a significant cause of maternal and prenatal morbidity and mortality. Many hospital based studies in developed and developing countries show a very wide variability of rupture among deliveries attended (1:34). [7] There is a wide gap on the ratio of ruptured cases to deliveries attended between our study(1 in 34) from other studies1 in 1660 deliveries for Ireland and between 1 in 1148 and 1 in 2250 deliveries for USA.[9] These is be due to inaccessibility to health facilities and lack of awareness for institutional deliveries

In Emanuel Ethiopia set up, 8 years (1993-2001) retrospective uterine rupture review was done in Adigrat Regional Hospital, Tigray Regional State, Northern Ethiopia, by Amanuel, et al. This study shows that a total of 54 cases of uterine rupture and 5980 hospital deliveries were recorded for 1:110. A retrospective study in Shashamane general Hospital South shawa ,Oromia Regional state ,southern Ethiopia a three years (1989 to 1992) reviewed Chamiso B ,found that, the frequency of uterine rupture of 57 cases in this rural Hospital to be 2.6% or 1 in 38 deliveis,54 Reports of study from October 1991 to December 1992 in A.A Ethiopia among the 841 delivering case ,24 were ruptured uterus (1 in 40)[8,12.15] . Since most victims were usually women from rural areas, the ratio of rupture to delivery attendance is not a good indicator for comparison with studies from of different localities, because in our set up currently institutional delivery is very low in Ethiopia.

Since their total delivery is significant in relation to our figure the occurrence of ruptured uterus is 1 in 34 hospital based deliveries which is higher than that of Ireland 1 in 1148 ,USA 1in 2250. In Adgrat 1 in 110, in Addis Ababa 1 in 40 and in Ethiopia 1 in 25. Majority of patients in our study had received no Antenatal care and their booked status was not well known it was not well registered in referral papers and charts.

The same findings were reported by Emanuel et al, Adgrat regional Hospital, and Tigray Regional State from Ethiopia [12]. Antenatal care is an essential step in the early detection of high-risk patients in whom hospital deliveries are mandatory.

Good antenatal care (ANC) from a trained provider is important to monitor the pregnancy and reduce morbidity and mortality risks for the mother and child during pregnancy and delivery. The 2011 EDHS results show that 34 percent of women who gave birth in the five years preceding the survey received antenatal care from a trained health professional at least once for their last birth.

Similar to other studies from developing countries the most common causes of uterine rupture were cephalopelvic disproportion, malpresentation and malposition. Multiparty, lack of antenatal care and rural residence were common factors found among the cases. The study revealed that most uterine rupture cases were due to obstructed labor. The problem might be exacerbated by poor access to health care services, delayed referral and poor transportation facilities [12, 13, 14].

From the developed nations the leading cause was previous scar rather than cephalopelvic disproportion these will be due to high caesarean section rate which is around 20-30% as compared to ours which is almost <2 % in our country. Besides obstetrics performance can be detected and timely intervention can be provided in the developed world [9, 10, 11, 14]. The common presenting features of cases at admission in our study were consistent with other studies [13]. However, 14(6.6%) of uterine rupture cases were missed and diagnosis was made during laparotomy. This shows that presentation can be vague and diagnosis depends on high degree of suspicion and awareness. One must constantly be considering the total clinical picture, and lack of vaginal bleeding should not make one consider any less the diagnosis of ruptured uterus. The uterus should be explored manually after delivery in cases with a risk of uterine rupture such as after destructive delivery, when there is brisk uncontrolled bleeding.

The type of surgical intervention depends on various factors. When the patient was in hypovolemic or septic shock, there was clean lower uterine segment rupture simulating lower uterine segment caesarean section and in unexperienced surgeon repair or sub-total hysterectomy was preferred. The availability of blood for transfusion and the wish for the future child bearing capability were also important factors to determine the decision in additions to these the site of uterine rupture the occurrence of the edge of uterus if it is too much necrotic and if there is also extensive tear that involve the vagina were factors that determine decision Similar to our study the commonest mode of surgery in most hospital based studies for ruptured uterus was repair followed by repair with BTL and total abdominal hysterectomy [8,15,16]. Total abdominal hysterectomy was preferred in the hands of experienced surgeon, relatively reassuring maternal condition and when adequate resuscitative measures were taken. in certain hospital based studies total abdominal hysterectomy was the primary choice. While others reported different modes of management depending on the factors [12]

During the study period there were 24 maternal deaths from cases of ruptured uterus which accounts 12.2% during the study period. The case fatality rate which is 6.7% was approximated to Gahanna and Nigerian which is 1% to 13%[10, 11]. Studies about maternal mortality in teaching hospital in Addis Ababa concluded that ruptured uterus accounts 13.4% maternal death next to abortion, 68% occurs in multi Para and all of them came from rural areas .[16].Reports of study from October 1991 to December 1992 in A.A Ethiopia among the 841 delivering case, 24 were ruptured uterus (1 in 40) .All multi Para women were from rural areas ,in this series rupture accounts for 28% of maternal deaths preceded by abortion . [8]This similarity of maternal death due to rupture implies that there is similar health care system in our country and developing countries.

Hypovolemic shock 18(8.5%)which the commonest cause of maternal death followed by septic shock 6(2.8%) in our study. It is preventable and treatable by increasing the access for transportation from the onset ,basic emergency obstetrics training to middle level health professionals ,increase the access of blood transfusion ,using the modern anti shock garment(NASG) and appropriate and on time decision before operation and out way the type of operation that needs for the situation that happen intra operatively.

The case fatality rate for infants in our study was 100% which was almost similar to that of the Adigrat study and higher than that of Gahanna and Nigeria which is 74% to 92%.|10.11|. This is due to the cause of uterine rupture was due to scar dehiscence was high in relation to spontaneous uterine rupture which was significant in our study from these we can learn that when the gap b/n the occurrence of uterine rupture to the time of intervention is low the mortality rate of infants will be decreased since the follow up and labor management practice was good.

Chapter seven

7.1 Conclusion

Significant numbers of uterine rupture cases seen in Nekemt referral hospital with overall incidence rate of 2.9%. almost one-third (66.2%) of mothers with uterine rupture and managed at Nekemt referral hospital have poor management outcome. Blood transfusion, Septic shock and anaemia are independent predictors of maternal outcome in uterine rupture in Nekemt referral hospital

7.2 Recommendation

Since majority (64.2%) of mothers with uterine rapture and non ANC attendant have poor outcome, Nekemt zonal health department should strengthen and ensure ANC services utilization and referral system in the zone

Nekemt referral hospital should strengthen the existing blood supply system

Finally large scale prospective study is recommended to identify maternal, socio-economical and socio-cultural determinants of uterine rupture

Limitations

Mothers who live in rural part of the Ethiopia gave birth at home.

The study may not be the representative of the whole population. Possible existence of inaccurate information at the study place in the secondary data may affect the final result.

Annex: 1

References

- 1 .world Health (WHO) Maternal mortality in 2009, Estimates developed by WHO, UNICEF, UNFPA and the World Bank [cited 2010 May]: available from URL: http://www.who.int/health/publication/maternal_mortality_2009/mme-2009.pdf.
2. Kenneth J. Obstetric complication in: Judis S, Barbara L, and Mala S. 23rd ed William obstetric. New York: San Francisco, 2011. 544-545.
3. WHO, UNFPA, UNICEF, World Bank. Reduction of maternal mortality: A joint WHO/UNFPA/UNICEF/World Bank statement Geneva: WHO; 1999.
4. Starrs A. The safe motherhood action agenda: Priorities for the next decade-Report on the Safe Motherhood Technical Consultation, Colombo, Sri Lanka. October 1997. 18-23.
6. Macro Calverton, Maryland, U.S.A, Ethiopian demographic health survey preliminary report. Central statistics agency Addis Abeba. 2011
7. Gibbs CE, Locke WE. Maternal death in Texas, 1969-1973. A report of 501 consecutive maternal death from the Texas Medical Association's Committee on Maternal Health. *Am J Obstet Gynecol* 1976; 126: 687-692
8. Diallo FB, Ida N, Vangeenderhuysen, et al. [Uterine rupture at Niamey Central Maternity Reference Center, Nigeria. Epidemiologic features and prevention strategies]. *Dakar Med* 1998; 43:74-8.
9. Maternal health and safe motherhood program progress report 1991-1992 WHO Geneva, 1998
- 10 .Hofmeyer JG, Say L, Pattinson .Guime Zogw .Am .WHO systemic review of maternal morbidity and mortality: the prevalence of uterine rupture .*BGOG*, 2005, 112:1221-2812.

11. GJ. Obstructed **labor**: using better technologies to reduce mortality. *Int j Gynecol Obstet* 2008, 85:562-572.
12. Amanael M. Ruptured uterus in Adigrat Hospital. Tigray Region. Ethiopia: *Eth.J.H.D* 2002, 16 (3):241-245.
13. Adanu ,RMK SA Obed, Ruptured uterus: A seven years review of cases from Accra, Ghana *JOGC*; 25 (30).
14. Chew Sy . Uterine rupture in labor: A 10 years review *Singapore Med .J* 2006; 25:23-29.
15. Chamiso B .Ruptured of the pregnant uterus in Shashamane General Hospital. *Ethiopia Med* 2005; 33(4); 251-257
16. Yoseph S .MD and Kifle G.M.D: A six year review of MM in Black Lion Teaching Hospital, A.A, and Ethiopia *Eth.Med J*.1998;26; 115-120.

Annex 2

Questionnaires

Incidence and management outcome of uterine rupture in Nekemte referral Hospital, Oromia Regional State, Ethiopia

I. Socio-demographic characteristics

1 .Address:

A. Nekemte town B. Outside Nekemte town

2 .Age in year _____

3. ANC follow- up A. Attended . B. Not attended

4 .Gravida

A. Primi gravida B.Muligravida

5 .Was patients admitted?

A. Before rupture. B .After ruptures

6 .Duration of labor (Hours)

A. <18hrs B. >18hrs

7. Hemoglobin at admission

A. < 7g/dl B. 7-11g/dl C. > 11g/dl D. Not known

8. What was (were) the clinical condition(s) to mothers with uterine rupture at admission?

A. Abdominal pain B. Vaginal bleeding

C. Cessation of contraction D. Shock E. Easily palpable fetal parts

F. Pallor G. Diffused abdominal pain. H. Others _____

9. Possible cause(s) of uterine rupture (circle any of possibilities)

A. Cephalo-pelvic disproportion (CPD) B. Mal-presentation C. Mal-position

10. Time interval between uterine rupture and operation

A. <1hrs B. 1-2hrs C. 3-4hrs D. >5hrs

11. Maternal outcome

A. Alive B. Died

12. If died possible cause of death

13. Maternal post operative complication

A. Septic shock B. Hemorrhagic Shock

A. Wound infection B. Wound dehiscence

C. Paralytic illus. F. VVF

G. Bladder ruptures H. Foot drop I. Anemia

J. Septic shock K. Hemorrhagic shock

14. Hemoglobine at discharge A. <7g/dl B. >7g/dl

15. Type of anesthesia used: A. General B. Spinal

16. Professional competence: A. Gyn&Ob B. General Surgeon C. IEOS

17. History of previous C/S :A. Yes B. No

18. Was the labor induced or augmented? .A yes B No

19. Did the women with blood? A Yes B .No

20.Type of uterine rupture: A. Lateral B. Anterior

Name and signature of data collector_____&_____

Card number _____

Date of data collection_____

DECLARATION

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

Name of the student Gadisssa Berhanu

Signature-----

Name of the institution-----

Date of submission-----

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