#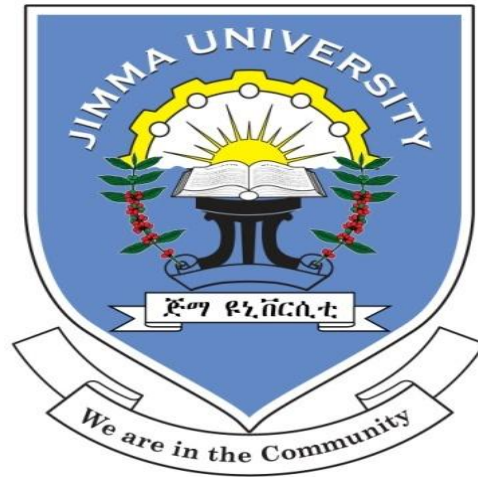 PATTERN AND MANAGEMENT OUTCOMES OF UTERINE RUPTURE CASE; A FIVE YEARS RETROSPECTIVE HOSPITAL BASED STUDY IN METU KARLE HOSPITAL SOUTH WEST, ETHIOPIA.

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ARESEARCHTHESIS SUBMITTED TO JIMMA UNIVERSITY COLLEGE OF PUBLIC HEALTH AND MEDICAL SCIENCES IN PARTIAL FULFILMENT OF MASTER OF SCIENCE IN INTEGREATED EMERGENCY OBSTETRICS AND SURGERY

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**PATTERN AND MANAGEMENT OUT COME OF UTERINE RUPTURE:
A FIVE YEARS RETROSPECTIVE HOSPITAL BASED STUDY IN METU
KARLE REFERAL HOSPITAL SOUTH WEST, ETHIOPIA**

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Abstract

BACKGROUND: Uterine rupture causes high maternal and perinatal mortality in many rural setting in the world. Ethiopia is one of the less developed countries where maternal and perinatal mortality rates are still very high. The occurrence of ruptured uterus varies in different part of the world in developed world the frequency has dropped significantly nevertheless it is still major public health problem in developing countries in general and Africa particular. Uterine rupture has the unique potential to impact negatively on Millennium Development Further studies might provide specific interventions to reduce the high prevalence.

OBJECTIVE: To assess the Pattern and management outcome of uterine rupture in metu Karl hospital.

 METHODE: Five years facility based cross-sectional retrospective study was conducted Metu Karle Hospital. In this study the chart of mother diagnosed of uterine rupture in the hospital within study period were included. Data were collected using structured questioners by trained data collectors. The collected data were checked for its Completeness, entered, edited, cleaned and analyzed by SPSS version 16.0 and presented with table and chart. . For all statistical significance tests the cutoff value set is P<0.05.

RESULT; Between Jan 2010 –Jan 2014 129 case of uterine rupture were registered in Metu Karle referral hospital out of that only 109 case are included in the study , Over the study period 8987 total hospital delivery, 7585(84.3%) vaginal delivery and 1402 (15.7%) caesarean delivery .the hospital incidence of uterine rupture case was 1.4% The parity ranges from 1-9 were as 31 (28.4%) were grand multipara, while 97(89%) had had two prior successful deliveries and 12(11%) were who had no delivery before. The mean parity was 3.8(SD 2.3). Only 33(30, 3%) mothers had antenatal care any were. 96(88.1%) were complete uterine rupture and 13(11.9%) were incomplete rupture. There were 6(46.1) intra operative death maternal death and 7(53.9%) post operative death , making case fatality rate of uterine rupture 11.9% total maternal death 13 , There were 104(95.4%) of neonatal death and 5(4.6%) of neonate were alive, those delivered with instrument and previous uterine scar

 Conclusion; Complete uterine rupture and anterior lower segment rupture were, by far the commonest patterns of uterine rupture by site and type respectively.

Recommendation; Blood accessibility was important factor on maternal mortality on this study. So I suggest both local and regional government should consider about blood bank construction and creating awareness on miss understanding developed   on blood donation by using media and community leader
KEYWORDS: pattern, maternal outcome

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ACKNOWLEDGEMENT

ACRONYMS

ANC ….. Antenatal care

BTL ----- Bilateral tubal ligation

CPD----- Cephalo pelvic disproportion

C/S ……. caesarean section

EDHS --- Ethiopian demographic health survey

HGB …… hemoglobin

GA … gestational age

GC ….. Gregorian calendar

NGO …. Nongovernmental organization

MKH … Mettu Karl hospital

MDG … Millennium development goal

TOLAC….Trail of labor after caesarean section

TAH …….total abdominal hysterectomy

SAH……..subtotal abdominal hysterectomy

CHAPTER: INTRODUCTION

Since time immemorial, indigenous people in Ethiopia and other parts of the world have relied on prayers, rituals and sacrifices to gods to control obstetric. (1). One of the Major causes of maternal and perinatal mortalities is rupture of the uterus (2-4).

Uterine rupture associated with long term morbidities such as vescicovaginal fistula, rectovaginal fistula, bladder rupture, foot drop, psychological trauma and because of the surgical intervention, the woman may be sterilized which can lead to divorce and loss of Economic support (5).The occurrence of ruptured uterus varies in different parts of the world. In the developed world the frequency has dropped significantly (6-8). Nevertheless, it is still a major public Health problem in developing countries in general and Africa in particular. (9-11). Hospital-based study in Ethiopia reported that it is a common obstetric cause of maternal and fetal mortalities. The same study reported that uterine rupture occurred one in every 38 deliveries (2).

This sudden catastrophic event has different causes. Unlike in the developed world where oxytocin stimulation and scarred uterus are the major causes (6,8), in less developed countries feto pelvic disproportion causing obstructed labor is the major cause of uterine rupture (9-11). Different modes of management are practiced, namely repair of the uterine tear, total abdominal hysterectomy and subtotal abdominal hysterectomy. The preference of management and outcome varies in different centers (10) Lack of financial and human resources in remote areas pave the way for unskilled delivery, obstructed labor and subsequently uterine rupture. The occurrence of obstetric fistula and psychological trauma mark the end of a happy womanhood and the very beginning of seclusion a. considering the suffering and agony pregnant women go through, it is an indictment on society if proactive interventions are not put in place to make pregnancy and delivery safe

This retrospective study will be done to address the frequency of ruptured uterus and the associated maternal and perinatal morbidities and mortalities. To my knowledge no study was made regarding this obstetric problem from this part of the country, though similar studies are done elsewhere in Ethiopia. This report may address the issue more and can be important in the development of preventive strategies. The major objective of this retrospective study is to determine the frequency, cause and management outcome of ruptured uterus in illuababora zonal.

1.2 Statement of the Problem

Ethiopia is one of the less developed countries where maternal mortality rate still very high .the maternal mortality ratio in Ethiopia is one of the highest in sub Saharan African 400-700/100,00 live birth and perinatal mortality is also high(10).

The occurrence of ruptured uterus varies in different part of the world in developed world the frequency has dropped significantly nevertheless it is still major public health problem in developing countries in general and Africa particular.) Uterine rupture stands as a single obstetric accident that exposes the flaws and inequities of health systems and the society at large due to the degree of neglect that it entails. Again, it has the unique potential to impact negatively on Millennium Development Goals 4 and 5. (12, 13, and 14).

The study done in northern Ethiopia reported that uterine rupture occurred one in every 38 deliveries (15,). Postoperatively, out of the total patients cured 8 (16.7%) had wound infection, 6 (12.5%) vescicovaginal fistula, 5 (10.4%) urinary tract infection and 2 (4.2%) pneumonia. There were 6 maternal deaths (11.1%) and 53 fetal deaths (98.1%). During the same study period, there were 25 total direct obstetrics maternal deaths in the hospital. Maternal death due to uterine rupture was therefore responsible for 24% of obstetric maternal deaths Ruptured (15).

Uterus is a common obstetric hazard in under developed countries. There is a wide gap on the ratio of ruptured cases to deliveries attended between studies from a previous report from a hospital-based study in Ethiopia. (15)

Considering the suffering of pregnant women goes through, proactive interventions are not put in place to make pregnancy and delivery safe.

This study may address the issue more and can be important in the development of preventive Strategies. The major objective of this retrospective study is to determine the Frequency, cause and management outcome of ruptured uterus at a zonal hospital.

1.3 Significance of the Study

Obstetric related death is the main concern currently from those obstetric related death uterine rupture contribute a major part. However, the study area there is no information on rate of uterine rupture and management outcomes. Therefore, with this regard this study will fill the existing information gap. Consequently, the findings of this study will provide the hospital, and Nongovernmental Organization (NGOs) with relevant information about the pattern, magnitude, associated risk factors for maternal death and maternal mortality and morbidity of uterine rupture for future planning of appropriate strategies and also can be used by program implementers as an input towards improving quality of obstetric care and with their ultimate goal of reducing maternal mortality.

Chapter Two: Literature Review

2.1 The prevalence and risk factor of uterine rupture

Study done in Adigrat Hospital, A total of 54 cases of ruptured uterus and 5,980 hospital deliveries were recorded for a ratio of 1:110. Causes of rupture were: Cephalo pelvic disproportion (53.7%), malpresentation and malposition (25.9%), instrumental (3.7%), pitocin induced (3.7%), uterine scar (11.2%) and placenta percreta (1.8%) (15).

Analysis of ruptured uterus done in Debre Markos there was a total of 1830 deliveries and seventy uterine rupture cases. Frequency of occurrence of uterine rupture was 3.8% or one in 26 deliveries (16).

In study done in Shashemene General Hospital two thousand one hundred eighty five deliveries were conducted over the study period. The frequency of occurrence of uterine rupture was 2.6% or 1 in 38 deliveries. There were 9 deaths giving a case fatality rate of 15.8% (2).

A total of 83 cases of uterine rupture out of 10940 deliveries were recorded giving an incidence of uterine rupture of 1 in 131 deliveries. Predisposing factors for uterine rupture were previous cesarean section delivery(OR 5.3 95% CI 2.7-10.2), attending < 4 antenatal visits (OR 3.3 95% CI 1.6-6.9), parity ≥ 5(OR 3.67 95% CI 2.0-6.72), no formal education (OR 2.0 95% CI 1.0-3.9), use of herbs (OR15.2 95% CI 6.2-37.0), self referral (OR 6.1 95% CI 3.3-11.2) and living in a distance >5 km from the facility (OR 10.86 95% CI 1.46-81.03). Predisposing factors for uterine rupture were previous caesarean section (OR 5.3; 95% CI 2.7-10.2), attending <4 antenatal visits (OR 3.3; 95% CI 1.6-6.9), parity ≥5(OR 3.67; 95% CI 2.0-6.72), no formal education (OR 2.0; 95% CI 1.0-3.9), use of herbs (OR 15.2; 95% CI 6.2-37.0), self referral (OR 6.1; 95% CI 3.3-11.2) and living in a distance >5 km from the facility (OR 10.86; 95% CI 1.46-81.03), lack of partograph use (OR 19.57; 95% CI 2.65-144.8) and referral from facility(OR 6.14; 95% CI 3. 37–11.2) In Western Uganda(17).

Out of the total number of deliveries in Yemen During the period (N=5547), 60 cases had uterine rupture giving a hospital incidence of one in 92 deliveries (1.1%). Forty-three cases (71.7%) with unscarred uterus and 17(28.3%) had a previous cesarean scar. Poor antenatal and intra-natal care

were the main contributing factor (93.3% had no prenatal visit, 95% presented to the hospital late after long period of obstructed labor at home). Grand-multiparty was encountered in 69.8% of cases with unscarred uterus and 41.2% of cases with a previous scar (p<0.05) (18).

Study done In Saudi Arabia the incidence of ruptured uteri was calculated to be 0.03%. Total deliveries included in the study were 152,426. There were 46 cases of ruptured uteri and 44 were available for study. Twenty-two (52%) ruptured uteri occurred in patients with previous caesarean scars, of which 10 occurred in women with previous four or more caesarean sections. In 12 cases (27%), uterine rupture occurred due to oxytocin (19).

Meta-analysis of pooled data from 25 studies in the peer-reviewed medical literature published from 1976-2012 indicated an overall incidence of pregnancy-related uterine rupture of 1 per 1,416 pregnancies (0.07%). When the studies were limited to a subset of 8 that provided data about the spontaneous rupture of unscarred uteri in developed countries, the rate was 1 per 8,434 pregnancies (0.012%) (20).

Congenital uterine anomalies, multiparity, previous uterine myomectomy, the number and type of previous cesarean deliveries, fetal macrosomia, labor induction, uterine instrumentation, and uterine trauma all increase the risk of uterine rupture, whereas previous successful vaginal delivery and a prolonged inter pregnancy interval after a previous cesarean delivery may confer relative protection. In contrast to the availability of models to predict the success of a vaginal delivery after a TOLAC, accurate models to predict the person-specific risk of uterine rupture in individual cases are not available.

A Two-Year Review of Uterine Rupture in a Regional Hospital done in Ghana Total deliveries were 5085 with 4172(82%) spontaneous vaginal delivery and 911(17.9%) caesarean sections. Uterine rupture occurred in 41 cases for a ratio of 1:124 Grand multipara with five or more deliveries represented 41.5% while those with two prior successful deliveries represented 31.7%. The mean parity was 3.8 (SD 2.3) under antenatal care, 85.4% had at least four visits. The most frequent clinical presentation while the use of local herbal concoction with suspected uterotonic activity 24(58.5%), feto pelvic disproportion 4 (9.8%) and malpresentation 5(12.1%) were the most significant causes (21).

According prospective study in Nigeria, Liaquat University of Medical & Health Sciences, from January 2008 to December 2008 There were 15cases (0.74%) of uterine rupture The cause of uterine rupture was; Previous caesarean section scar in 33(35.1%) cases, obstructed labor in 25(26.6%) cases, oxytocin uses in17 (18.1%) cases, Grand multi parity in 11(11.7%) cases, forceps delivery in3(3.2%) cases, Breech extraction in 3(3.2%) cases, manual removal of placenta in1(1%) cases and retained second (10).

Systematic review covering all the available data on this morbidity found that in most countries prevalence rates are in the 0.1%−1.0% range. The median prevalence rates of uterine rupture in community- and hospital-based studies were 0.05% and 0.31%, respectively. In women who had had a previous caesarean section, the prevalence of ruptured uterus was about 1%.For developed countries, the data available indicate that the prevalence of uterine rupture for women with previous caesarean section is in the region of 1%, whereas for women without previous caesarean section, based on one large report, it is extremely rare (<1 per 10,000). Overall, the rates are below 1 per 1000. Efforts to reduce morbidity and mortality from uterine rupture should be focused on reducing primary caesarean section rates and optimizing care for women with previous caesarean section (17, 18).

For less and least developed countries, uterine rupture is a more prevalent and serious problem. The most important shortcoming of the data available is the lack of differentiation between uterine rupture with and without previous caesarean section. Overall, most rates ranged between 0.1% and 1%. Reports from Nigeria, Ghana, Ethiopia and Bangladesh indicated that about 75% of cases of uterine rupture were associated with unscarred uterus (20).

According to Study done in **USA** (; There were 13 uterine ruptures in women without previous cesarean deliveries and Three of them are due to motor accident and Ten cases during labor . The incidence of intra partum rupture of an unscarred uterus was 1 in 16,849 deliveries Associated factors included oxytocin use (four cases), prostaglandin use (three cases), use of vacuum or forceps (three cases), grand multi parity (two cases), and mal presentation (two cases)

2.2 The pattern and clinical presentation

Study done in Adigrat Hospital Presenting features include: acute abdominal pain in 48 (88.9%), tachycardia in 38 (70.4%), hypotension in 26 (48.1%), coma in 2 (3.7%),by vaginal bleeding in 22 (40.7%), palpable fetal parts in 27 (50%), abdominal tenderness in 45 (83.3%), sepsis in 10 (18.5%) and shock in 22(40.7%) .The mean hemoglobin level at admission was 9.5 gm/dl. Sixty eight percent of cases had a hemoglobin level of 10 grams/dl or below. Diagnosis was made based on signs and symptoms in 35 (64.8%). In 5 (9.3%) cases diagnosis was made by bi-manual exploration of the uterus before laparotomy. In fourteen patients (25.8%) uterine rupture was identified at laparotomy. The indication for laparotomy was ruptured uterus in 40 (74.1%) and obstructed labor in 14 (25.9%).Table 2: Presenting features of uterine rupture cases in Adigrat Zonal Hospital, 1993-2001 Presenting features Frequency (%) Abdominal pain 48 (88.9) Vaginal bleeding 22 (40.7) Tachycardia 38 (70.4) Hypotension 26 (48.1 Palpable fetal parts 27 (50.0) Sepsis 10 (18.3) Shock 22 (40.7) Coma 2 (3.70) Rupture was complete in 44 (81.5%) and incomplete in 10 (18.5%) of cases. The most common site of rupture was the lower segment of the uterus in 31 (57.4%) followed by the left lateral 13 (24.1%), posterior 4 (7.4%), upper segment 3 (5.6%) and right lateral 3 (5.6%). There were 10 (18.5%) cases with bladder rupture and all had rupture at the lower uterine segment. Three cases with fundal uterine rupture had a history of previous scar (myomectomy and classical caesarean section) and placenta percreta .The mean hemoglobin level at admission was 9.5 gm/dl. Sixty eight percent of cases had a hemoglobin level of 10 grams/dl or below.(15).

Analysis of ruptured uterus done in Debre Markos Hospital Intra operatively 62 were found to have completed and eight incomplete rupture with 54.3% anterior rupture (16).

A prospective study was conducted of 245 patients who had been admitted to Attat Hospital in rural Welkite, Ethiopia, for ruptured uterus A fetal heartbeat was detected in only 6 patients. One of the fetal heartbeat cases died in the neonatal period. The remaining 5 were healthy. 240 women suffered from complete ruptures the remaining 5 had incomplete ruptures. 8 patients also had ruptured bladders. Of the 18 patients who had a previous lower segment caesarean section, there were five incomplete ruptures of the lower segment scars and nine complete ruptures of that scar. In two patients, the lower segment scar remained intact but the uterus ruptured posterior; a further two patients had rupture of the anterior uterine wall and one of these also involved the lower uterine segment (26).

A 25-year study done in Kuwait rupture occurred at the funds in 10 cases and in the lower segment in the remaining 34. Fetal heart abnormalities were observed in all cases in which the uterus ruptured during labor. Intervention was prompted by fetal heart rate decelerations in seven cases and by severe

hemorrhage in three. Uterine rupture was associated with acute abdominal pain in six cases, maternal tachycardia in five, and severe hypotension in two (22).

A two year review of uterine ruptures Ghana**.** Clinical Presentation of Patients with Uterine Rupture sever anemia 28(68%), abdominal tenderness 27(65.5%), vaginal bleeding18 (43.9%),fetal part freely palpable 26(63.4),signs of infection 12(29.3%),shock 14(34.1%) Intra operatively, 33 clients (80.5%) had complete rupture with babies extruded from the uterus as against 8(19.5%) incomplete ruptures with babies still in the uterus (21).

Lower uterine segment was the most common site of rupture in 9 (60%) cases.
Anterior uterine wall was involved in 9 (60%) cases and posterior uterine wall in 4 (26.66%) cases. Both anterior and posterior uterine wall were involved in 2 (13.33%) cases. Rupture was transverse in 8 (53.33%) cases; it was longitudinal in 7 (46.66%) cases. Rupture was complete in 11 (73.33%) patients while it was incomplete in 4 (26.66%) cases. Bladder was involved in 2 (13.33%) cases (27).

1.3 Management pattern and feto- maternal outcome

Study done in Adigrat Hospital twenty cases (37%) had. Most patients (83.3%) were given one or more antibiotics. Postoperatively, out of the total patients cured 8 (16.7%) had wound infection, 6 (12.5%) vescicovaginal fistula, 5 (10.4%) urinary tract infection and 2 (4.2%) pneumonia. There were 6 maternal deaths (11.1%) and 53 fetal deaths (98.1%). During the same study period, there were 25 total direct obstetrics maternal deaths in the hospital. Maternal death due to uterine rupture was therefore responsible for 24% of obstetric maternal deaths (15).

Analysis of ruptured uterus done in Debre Markos Hospital Three patients had repair operation and fifty four had hysterectomy. The antibiotics used for treatment of associated infections were crystalline penicillin, ampicillin and chloramphenicol since other drugs were not available. There were 9 deaths giving a case fatality rate of 15.8%. The mean duration of hospitalization among those who survived was 13 days (Range: 6 hours to 20 days) (16).

A prospective study was conducted of 245 patients who had been admitted to Attat Hospital in rural Welkite, Ethiopia. 238 patients had the uterus repaired, six had a hysterectomy, and one was too ill for

either necrotic tissue was removed from the uterus and bladder (which was repaired) and subsequently the remains of the uterus was passed vaginally as a slough.

There were 239 stillbirths and one neonatal death. There were 13 maternal deaths (5·3%). Comparing the 13 mothers who died, with the others, the statistically significant factors were duration of labor (p<0·001), low hemoglobin (p<0·05), time since the pains stopped (p<0·05), and the time to reach hospital (p<0·05) (26).

   A two year review of Uterine Rupture   in Ghana, Major complications were: neonatal deaths 34(82.9%), maternal mortality 4(9.8%) and wound infections 15 (36.6%). Subtotal hysterectomy 10(24.4%) and total hysterectomy 18(43.8%) were preferred to uterine repair 12(23.3%) and 87.8% required at least two units of blood transfusion was given to 32 (59.3%) cases. Most patients (83.3%) were given one or more Antibiotics. (21).

Uterine rupture in pregnancy: a five-year study the bladder injuries were found in 8.77%. Repair of the uterine rent was possible in 70.18% (40/57) cases. Hysterectomy was done in 29.82% cases. Stillbirths were observed in 94.74% of women with uterine rupture. There was no maternal mortality. Repair of uterus without tubal ligation was performed in 4 (26.66%) young patients, repair with tubal ligation was done in three (20%) patients and hysterectomy was performed in 8 (53.33%) cases. Repair of bladder was undertaken in 2 (13.33%) cases. Maternal death occurred in 3 (20%) cases. Perinatal mortality was 11 (73.33%), live birth rate was 4 (26.66%) (**27**).

A 5 year review of uterine rupture in Nigeria Anterior rupture was the commonest occurring in 56(59.6%) of the case while posterior rupture in 5(5.3%).complete ruptured occurred in 82(87.2%), 52(55.3%) in unscarred uterus 30(36.6%) in scared uterus. The bladder was involved in 5(5.3%), while the large bowel involved in 2(2.1%).repair with sterilization was the least in 8(8.5%).none of patient who had repair alone died, while 2(3.9%) with repair and sterilization 1(5.3%) with subtotal hysterectomy, total hysterectomy died respectively. the majority of the patient had more than one complication anemia was the most common occurring in 53(59.6%) of patient this was due to blood loss and other complication were wound infection, prolonged hospital stay, genital tract laceration .sepsis and septicemia in order .they were 10 maternal death which case fatality rate of 10.6%, five patient died before blood transition and surgery could be arranged 2(6.5%) of the 33 booked patient died. While 8(12.7%) of 63 UN booked died 9 babies were delivery alive and survived the perinatal period the perinatal mortality was 90.4 %(10).

 Study done in Yemen on uterine rupture, complete rupture was reported in 48 cases (80%), hysterectomy was carried out for 33 cases (55%), repair for 23 cases (38%), and repair plus bilateral tubal ligation for 4

cases (7%). Five cases (8.3%) needed additional surgical intervention in the form of repair of ruptured bladder (3 cases), and repair of bladder injury (2 cases). Vesico-vaginal fistula developed in 2 cases (3.3%). Fifty-three cases required blood transfusion (88%). Hospital stay ranged between 1-17 days (mean 6.2, SD 3.6). There was one maternal death (1.7%) and 49 (81.7%) perinatal deaths (18).

Rupture of the pregnant uterus a 21-year review in Doha, Qatar fetal heart abnormalities were observed in all cases except one in which the uterus ruptured during labor. Abdominal hysterectomy was performed in 15 cases (65.2%). The remaining eight patients had suture repair, two of them had suture repair with sterilization and the other six cases (26.1%) had suture repair without sterilization. Five of them became pregnant and were delivered by cesarean section (28).

Diagram .1 Conceptual frame works

OBSTATRIC AND CLINICAL FACTORE

DURATION OF LABOR

DURATION OF OPREATION

,sepsis

hemoglobin level before

PARITY

SERVICE   FACTOR

REFERAL LINK

blood transfution

ANC FOLLOW UP

MANAGEMENT OUTE COME

MATERNAL OUTECOME

GOOD

POOR
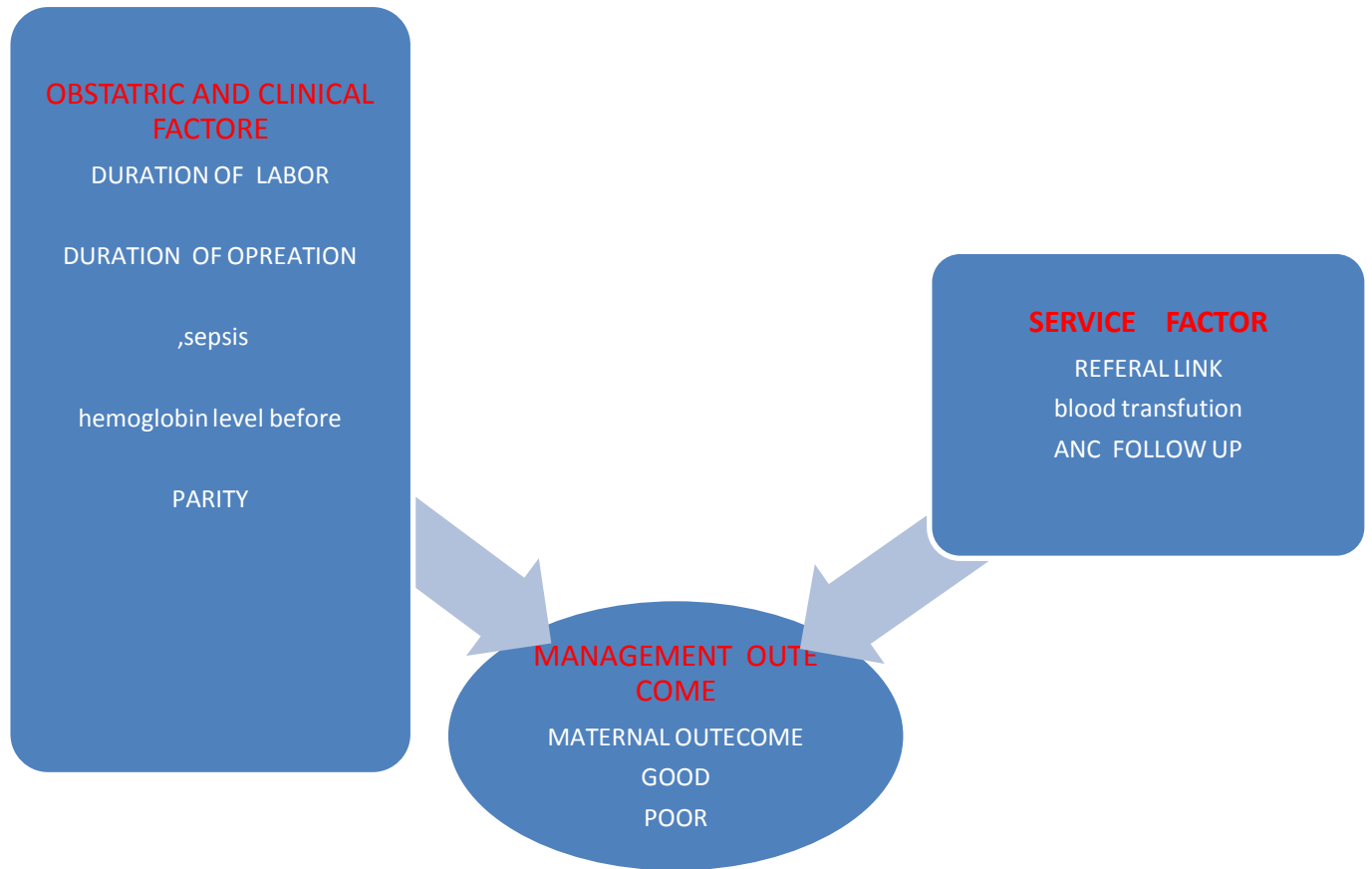
CHAPTER THREE: OBJECTIVE

3.1 General objective

To assess the pattern and management outcome of uterine rupture at Mettu Karl referral Hospitals from September 2010 - January 2014GC.

3.2. Specific objectives

1. To determine the hospital frequency of occurrence of uterine rupture at MKH.
2. To identify the factor associated with uterine rupture at MKH.
3. To describe clinical pattern of uterine rupture at MKH.
4. To assess clinical management maternal and perinatal outcome after uterine rupture at MKH.

CHAPTER FOUR: METHODS AND MATEREIALS

4.1 Study area.

Mettu Karl Hospital is one of the General 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 RasTeferi 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 293 ,one general surgeon, one , including two emergency surgeon, one internist, 11 general practitioners, 8 health officers, 4 anesthetists, 1 dental surgeon, 11 midwife ,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. ,

4.2 Study period

The Study was conducted from sep/2/2013GC –April /5/2014GC on cases managed between Jan /1/2010 -Jan /1 /2014GC.

4.3 Study design

Hospital based cross-sectional retrospective study design was conducted.

4.4 Population

4.4.1 Source population

All mother who were delivered at MKH Hospitals from Jan /1/.2010-Jan /1/2014GC.

4.4.2 Study Population

All mother chart who were admitted with the diagnosis of uterine rupture at MKH from Jan 2010-Jan 2014GC.

4.4.3 Sample Size

All mother who were admitted with the diagnosis of uterine rupture at MKH from Jan 2010-Jan 2014GC.

4.5 Data collection and measurement

4.5.1 Variables

Independent variables - Age, parity, presence of ANC, duration of labor, referral link and duration of operation, hemoglobin level before operation, and blood transfusion.

Dependent variables

  Management outcome of mother diagnosed uterine rupture.

4.5.2 Data collection instrument and pretesting

The data for the study was collected using pre-tested check list which will have socio-demographic variables, obstetric history and outcome of uterine rupture. The check lists are prepared in English.

   Pre- test

Before the actual data collection, the questionnaire will be tested on 5% of the total study population. Then possible modification was made on the check lists using the findings of the pre-test.

4.5.3 Data collection procedure

Data collected from patient record cards, registration books and anesthesia charts available in the hospital by check list questionnaires using trained data collectors.

First card number of women in the study period was identified from registration books (logbooks), and then their charts have been retrieved from card office. Finally documents from patient cards were entered in to a structured format by four midwives.

 4.6 Inclusion& Exclusion criteria

 The patients chart operatively managed for uterine rupture and the registration book of deliveries in study period was included and patient with incomplete data (information) or patients whose card lost excluded from study.

4.7 Data processing and analysis

The collected data was checked for its completeness, entered using data and exported to SPSS-16 database program for analysis after edition. Frequency distributions of both dependent and independent variables will be worked out and the association between independent and dependent variables will be measured and tested using binary logistic regression multiple . To determine factors for uterine rupture and its outcome, multivariable logistic regressions were used. A 95 % confidence interval and 5% level of precision will be utilized to check for association between variables. Finally, the data will be described and presented using tables and charts.

4.8 Ethical considerations

Letter of ethical clearance obtained from Research Ethical Committee of Jimma University. Letter of permission will be obtained from MKH administration office, Records will be returned back to record office after the data collection. Name was not used and information was used only for study purpose.

4.9 Data quality assurance

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

4.10 Data Dissemination

The result of the study submitted to the collage of public health and medical science of Jimma University, MKH Hospital and other responsible bodies. The result will be presented during thesis defense in the collage of public health and in different seminars, meeting, conferences and workshops. Moreover, efforts will be done to publish the findings of the study and disseminated through different journals and scientific publications.

Operational definition

Pattern of uterine rupture

- ➢ Clinical presentation; both symptom and sign of uterine rupture stated in chart
- ➢ Type of uterine rupture; complete or incomplete
- ➢ Site of uterine rupture; lower uterine segment, anterior, posterior, right or left lateral and fundal.
- ➢ Choice of surgical intervention ; TAH ,SAH and repair with and without BTL
- ➢ Diagnosis uterine rupture made by; sign and symptom, bimanual examination and laparotomy

Instrumental delivery: Is the delivery of the fetus using instruments (forceps or vacuum).

Case fatality: Death of mother related to uterine rupture and its complication.

Maternal outcome -Maternal condition after uterine rupture which can be dead or discharged improved.

Prolonged hospital stay - mother operated for uterine rupture stay in ward more than 7 day.

Arrival death -mother diagnosed uterine rupture died before operation.

Incomplete rupture –the myometrium wall breached but the peritoneum is intact.

Complete rupture - both myometrium and peritoneum wall ruptured.

Blood transfused –mother which transfused two unit of blood**.**

 CPD   -mother presented with caput and molding of fetal head.

 Frequency of occurrence;   Total number of ruptured mother divided by total number of delivery mother in metu Karle hospital**.**

Referred mother; mother diagnosed of uterine rupture come to metu referral hospital with referral paper.

Good outcome   - mother diagnosed of uterine rupture and discharged assessment of improved.

Bad outcome – mother diagnosed of uterine rupture and death confirmed either intra operatively or post operative

CHAPTER FIVE: Result

Between Jan 2010 –Jan 2014 GCE 129 in Metu Karle referral hospital 8987 total hospital delivery, 7585(84.3%) vaginal delivery and 1402 (15.7%) caesarean delivery , 129 case of uterine rupture were registered out of that only 109 case are included in the study , 10 case were excluded by exclusion criteria because of missed cards and incomplete data. Card retrieval rate of the study was (84.5%). the hospital incidence of uterine rupture case was 1.43%

5.1 Socio-Demographic Characteristics

The ages of mothers ranged between 18 and 40 years majority of cases 35(32.1%) belongs to in the age group of 25-29 years followed by the age group , 20-24, 30-34 and >35 years [**Mean**=27.74&**SD**=5.28] and there were 1 cases with uterine rupture in the age group less than 20 years. Most case were from out of metu town out were referral hospital in place 99(90.8%)

Table-1: **Socio-demographic characteristic of patient with uterine rupture in** MKH **from Jan 2010- Jan 2014GC.**

Age distribution in years	Frequency	%
<20	1	0.9
20-24	28	25.6
25-29	35	32.1
30-34	24	22.0
>35	21	19.4
Residence		
Metu	99	90.8
Out of Metu	10	9.2

5.2 Obstetrics profile

The parity ranges from 1-9 were as 31 (28.4%) were grand multipara, (women with five or more previous deliveries) while 97(89%) had had two prior successful deliveries and 12(11%) were who had no delivery before. The mean parity was (**Mean 3.8 &SD 2.3).** Only 33(30, 3%) mothers had antenatal care any were.

Among patient with uterine rupture, 98 (89.9%) of patient were stayed in labor for more than 24hours, 6 (5.5%) patients stayed in labor for 12 -24 hours and 5 (4.5%) patient stayed in labor for less than 12 hours the mean duration of labor for all case of rupture uterus was (**Mean 28.61 & SD 14.2)** the duration ranges from 4 hr to 120hr. (**Mean 3.8 &SD 2.3).**

Table-2: **Obstetrics profile of uterine rupture in** METU KARLE **General Hospital from Jan /1/**2010-Jan/1/ 2014GC.

Parity	Frequency	%
Nulliparus	**12**	**11.0**
I-IV	**66**	**60.6**
>IV	**31**	**28.4**
ANC follow up		
Yes	**76**	**69.7**
No	**33**	**30.3**
Mother with referral paper		
Yes	**43**	**39.4**
No	**66**	**60.6**
Duration of labor		
<12 hrs	**5**	**4.5**
12-23 hrs	**6**	**5.5**
>24hrs	**98**	**89.9**

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5.3 Clinical Feature

The hospital frequency of occurrence of uterine rupture case was 1.43%.The most common patient complain was of cessation of contraction100 (91.7%)   followed by abdominal pain 94 (86.4%), and vaginal bleeding 56(51.4%). The common physical finding among patient with uterine rupture were 99(90.8%) of patients absent fetal heart beat and followed by easily palpable fetal part 82(77.1%),   and cofounding diagnosis alongside uterine rupture were hemorrhagic shock 76(69.7%), and 12(11%) of patients were with sepsis.
For all (100%) of patient hemoglobin before operation was done 18(16.5%) of patient were with hemoglobin greater than 7mg/dl and 91(83.5%) were bellow or equal to 7mg/dl

The common cause of uterine rupture among patient with uterine rupture were **obstructed labor** 60(55%) flowed by **malpresentation** 37(33.9%), **previous uterine scar** 5(4.6%), 7(6.42%) of patients associated **with destructive delivery** respectively, 1(.9%) o patients associated with **augmentation a**nd **induction** and 1(.9%) of patient after instrumental (Forceps) delivery. 4(3.7%) were detected during manual exploration of uterus. Diagnosis was made based on sign and symptom in 84(77. %) patients and in 10(9.1%) patients' diagnosis was made manual exploration of uterus before laparotomy and in 13 (11.9%) patients' diagnosis was made after laparotomy.
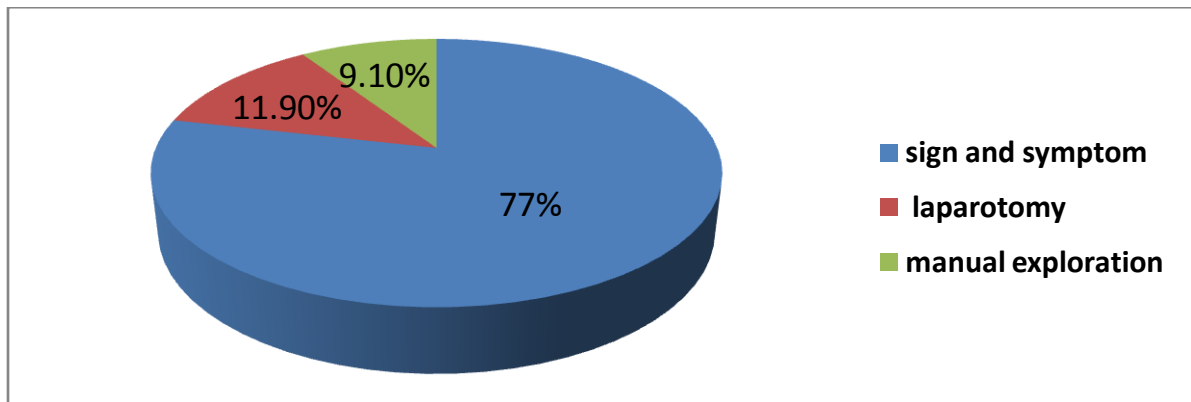
FIG 1; the way of uterine rupture diagnosed at METU KARLE HOSPITAL from Jan 2010-Jan 2014

For the patient diagnosed by laparotomy the indication for laparotomy was   suspected uterine rupture in 5(38, 5%) patients, in 5(38, 5%) patients was PPH and in 3(23%) obstructed labor

Table-3: Clinical feature, , cause (associated factor) and pre-operative evaluation of patient with uterine rupture in METU **KARLE HOSPITAL** from **Jan 2010-Jan 2014GC**

Clinical feature	Frequency	%
cessation of contraction	100	91.7
Abdominal pain	94	86.4
Vaginal bleeding	56	51.4
Physical finding		
Absent fetal heart beat	99	90.8
Easily palpable fetal part	82	77.1
Cofounding diagnosis		
Shock	76	69.7
Sepsis	12	11.0
Resuscitation before operation		
Yes	83	76.71
No	36	23.29
Cause of uterine rupture		
Obstructed labor	60	55.0
Malpresentation	37	33.9
Previous uterine scar	5	4.6
Destructive delivery	7	6.2
Pitocin	1	.9
Morbid adherent placenta	1	.9
Hemoglobin level before operation		
<7mg/dl	91	16.5
>=7mg/dl	18	16.5

5.4 Intra and Post operative condition:

Among patient with uterine rupture 96(88.1%) were complete uterine rupture and 13(11.9%) were incomplete rupture. The common site of rupture was anterior and lower segment 54(49.5%) of patients followed by left lateral rupture 25(22.9%) of patients, right lateral rupture in 9(8.2%) patients, in 8(7.3%) of cases were with posterior rupture and 2(1.8%) of cases with fundal rupture. There were 26(23.9%) of cases with bladder rupture which exclusively related to lower uterine segment rupture and 83(76.1%) of cases were without bladder rupture. Intra operatively **the procedures takes 25-190minutes (mean=87.27&SD=32.50)**.Blood was transfused for 83(76.1%) of cases and drainage was put in places for 65 (59.1%) of cases).

FIG 2 Site of uterine rupture in number at METU KARLE HOSPITAL from Jan 2010-Jan2014
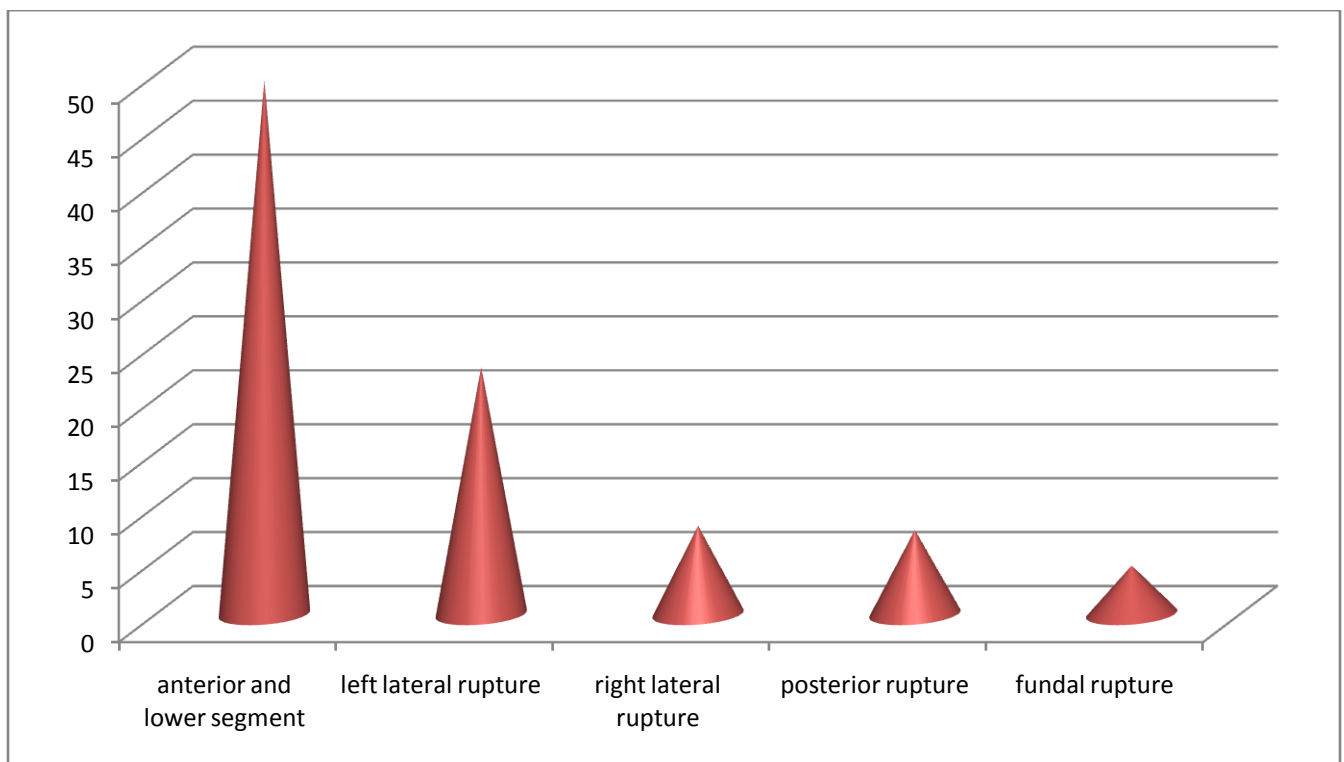
Table 4 intra operative conditions of uterine rupture mother in **METU KARLE HOSPITAL JAN 2010   JAN 2014**

Type of rupture	Frequency	%
Complete rupture	96	88.1
Incomplete rupture	13	11.9
Site of rupture		
Anterior lower segment	54	49.5
Left lateral	29	22.6
Right lateral	9	8.2
Posterior	8	7.3
Fundal	5	4.6
Type of procedure		
TAH	80	90.7
Repair without BTL	9	8.3
Repair with BTL	11	10.1
Subtotal abdominal hysterectomy	1	.90
Bladder injury		
Yes	26	23.9
No	83	76.1
Drainage put in place		
Yes	85	59.6
No	44	40.4
Blood transfusion		
Yes	83	76.1
No	26	23.9

Post operatively intravenous antibiotic duration   24hr only up to 25 days (mean 8.86), Hospital stay ranges from   1 to 25 days mean hospital stay 11.27. Based on information documented on charts post operative complication; pelvic collection (sepsis) 12(11%) and pneumonia each 4(3.4%) of cases followed by urinary tract infection 28(25.7%) of cases, 11(14.7%) of cases had wound infection, 9(8.3%) of cases had vescicovaginal/ rectovaginal fistula and 35 (32.1%) of patients had no documented complication

Table 5 post operative complication of mother diagnosed   uterine rupture **METU KARLE Hospital JAN 2010 JAN -2014.**

Complication	Frequency	%
Fistula	9	8.2
	7	77.7
VVF	2	23.3
RVF		
Urinary Tract infection	28	25.6
sepsis	12	11
Wound infection	9	8.3
pneumonia	12	3.4
No complication documented	35	32.1

5.5 Maternal and Neonatal Outcome

There were 6(46.1%) intra operative death maternal death and 7(53.9%) post operative death , making case fatality rate of uterine rupture 11.9% total maternal death 13 . Relaparotomy for an indication of pelvic collection.10 (79.6%) of patients were discharged within seven days and 31(58.5%) of patients were stayed in hospital for 7-17 days. . There were 104(95.4%) of neonatal death and 5(4.6%) of neonate were alive, those delivered with instrument and previous uterine scar.

Table 6: Binary logistic analyses for selected variables and management outcome of uterine rupture at **Mettu Karl Hospital Jan 2010 Jan -2014**

Variable	Maternal out come		COR of 95% CI	P value
	Good (%)	Poor (%)		
Duration of labor				.001**
Less than 24 hr	9(8.2%)	5(4.5%)	0.166(0.45,.0614)	
Greater than or equal to 24 hr (1)	87(79.8%)	8(7.3%)		
Sepsis				
With of sepsis at admission (1)	12(11%)	7(6.4%)		
Without sepsis at admission	84(77.1%)	6(5.5%)	0.64(0.16,0.264)	0.01**
Hemoglobin level before operation				
Hgb below 7mg/dl (1)	83(76.1%)	8(7.3%)	.251(0.71,0.884)	
Hgb above and equal to 7mg/dl	13(11.9%)	5(4.5%)		0.045
ANC follow up				
No ANC attendant(1)	74(67.4%)	10(9.1%)		. .99
ANC attended	22(20.1%)	3(2.7)		
Referral from H.C				
Without referral (1`)	54(49.5%)	12(11%)	9,33(1.67,7.46)	.035*

With referral	36(33.2%)	8(7.3%)		
Intra operative duration				
Intra operative duration greater than 90 min (1)	79(72.4%)	8(7.3%)		
Intra operative duration less than 90 min	21(19.2%)	5(4.5%)	.57(0,15 .0,24)	001**
Relaparotomy				.084
No Relaparotomy	88(80.7%)	6(5.5%)		
Relaparotomy done(1)	12(11%)	3(2.7%)		
Blood transfusion				
Blood transfused	16(14.6%)	7(6.4%)	.17(0.53,0.6)	.005*
Not blood transfused (1)	77(70.6%)	6(5.5%)		

Binary logistic analysis was done to show the association between management outcome of mothers with uterine rupture and independent variable as the above Table; 6 show that (ANC, referral, blood transfusion duration of labor, sepsis, hemoglobin level, interpretive duration and Relaparotomy)

.This result show those mothers who transfused have 83% more likely to have good outcome than not transfused mother, (P<0.05 COR 0.17(0.53, 0.6)

That mother came after 24hr of labor onset to hospital have 16% less likely to have good outcome.

Those mother with intra operative duration greater than 90 min have 57% less likely to have good management outcome (P<0.O5 COR .57(.015, 2.24)

Those mother came after with referral from health center to hospital have 9 times more likely to have good outcome (.P<0.5) 9.33(1.6, 7.74)   9

Those mothers with hemoglobin below 7mg/dl have more75% more likely to have good outcome **.**25(0.71, 0.884).

Table 7; multiple regressions on independent variables and management out come at METU KARLE HOSPITAL JAN 2010-JAN 12014

Variable	Maternal out come		COR of 95% CI	AOR of 95%CI	P value
	Good (%)	**Poor (%)**			
Duration of labor					
Less than 24 hr	5(4.5%)	6(5.5%)			.479
Greater than or equal to 24 hr (1)	91(83.4%)	7(6.4 %)	0.16(0.16,0.26)	.461(.54,3.92)	
Sepsis					
With of sepsis at admission (1)	12(11%)	7(6.4%)		1.67(0.31.910)	
Without sepsis at admission	84(77.1%)	6(5.5%)	0.047(0.11,.194)		**.039***
Referral from H.C					
Without referral (1)	54(49.5%)	12(11%)	9,33(1.67,7.46)	7.2(1.78,7.4)	**.0.015***
With referral	36(33.2%)	8(7.3%)			
Intra operative duration					
Intra operative duration greeter than 90 min (1)	79(72.4%)	8(7.3)			
			.57(,15..224)	.20(.29,.45)	**.004***

Intra operative duration less than 90 min	21(19.2)	5(4.5%)			
Blood transfusion			.17(.53,.6)	1.12(.23, .230)	**.020***
Blood transfused	16(14.6%)	7(6.4%)			
Not blood transfused (1)	77(70.6%)	6(5.5%)			

Numerous association were found to be significant in binary regression analysis than multi approach was applied to determine which factor more explain and estimate management out come with independent variable of mother with uterine rupture .intra operative time (P=.04 AOR 0.2(.29 ,.45) , blood transfusion (P=.02 AOR 1.24(.23 ,.230) , Sepsis f (P=.039 AOR 1.67(.31 ,0.91) and referral(P=.015   AOR 7.2(1.78 ,7.4) found to be are statistically significant association multivariate regression respectively .

CHAPTER SIX: DISCUSSION

Ruptured uterus is a common obstetric hazard in under developed countries. In this study the frequency of occurrence for uterine rupture is 1.4 % which is the same trend with our country and other developing countries.(2,15,17,18). There is a wide gap on the ratio of ruptured cases to deliveries attended between our study and a previous report from a hospital-based study in other developed countries. The ratio difference might be due to differences in delivery service coverage, number of pregnant women near hospitals and other factors affecting health service utilization. This result shows that there is significant association between management outcomes and referral form institution. The result of this study binary logistic analysis shows that there no significant association between the management outcome of mother with uterine rupture and ANC follow up (P>0.05), discrepant with study done in Uganda (OR 6.1 95% CI 3.3-11.2)   (17) this may be smaller sample size of this study.

Those mother came after with referral to hospital have 9 times more likely to have good outcome (.P<0.5) 9.33(1.6, 7, 74) which is similar to study done in Uganda (OR 6.1 95% CI 3.3-11.2) (17). Self referred mother in majority were triad home deliver for long time this significance because of first deafly.

In this study the most common causes were obstructed labor 60(55%) flowed by malpresentation 37(33.9%) , previous uterine scar 5(4.6%), 7(6.42%) of patients associated with destructive delivery, 1(.9%) o patients associated with augmentation and induction and 1(.9%) of

patient after instrumental (Forceps) delivery 4(3.7%) comparable with other studies done in our country .(2,15) Similar to other studies in studies done in Ethiopia and Ghana Multiparity, lack of antenatal were common found among the cases of uterine rupture. The parity ranges from 1-9 were as 31 (28.4%) were grand multipara, (women with five or more previous deliveries) while 97(89%) had had two prior successful deliveries and 12(11%) were who had no delivery before. The mean parity was 3.8(SD 2.3). Only 33(30, 3%) mothers had antenatal care any were (15)

The common presenting features of cases at admission in this study were cessation of contraction100(91.7%) of patient were presented with followed by and abdominal pain 94 (86.4%) ,prolonged labor 74(67.9%) and vaginal bleeding 56(51.4%). The common physical finding among patient with uterine rupture were 99(90.8%) of patients absent fetal heart beat and followed by easily palpable fetal part 82(77.1%), the common cofounding diagnosis alongside uterine rupture were hemorrhagic shock 76(69.7%), and 12(11%) consistent with this studies (7, 15)

In this study Hemoglobin before operation was done; 18(16.5%) of patient were with hemoglobin greater than 7mg/dl and 91(83.5%) were below or equal to 7mm/dl .which is discrepant with study done in Adigrat Ethiopia this may be related to smeller ample size of the study done in Adigrat which is half of this study . (15) On the other hand there is significant association between management outcome of mother with uterine rupture and Relaparotomy procedure (P<0.5) which is consistent to study done in Attat hospital (p<0.5) (26)

The majority in this study had complete uterine rupture and commonest sites were the lower and left lateral uterine segments. On this study among patient with uterine rupture; 96(88.1%) were complete uterine rupture and 13(11.9%) were incomplete rupture (18). All the three cases with fundal uterine rupture had either previous scar or placenta percreta. Bladder rupture was exclusively associated with cases with rupture of lower uterine segment which is comparable with study done in Adigrat (15)

In this study the majority of mother treated by total abdominal hysterectomy (90%) but on other studies in Ethiopia and developing country majority were treated by ether by repair without bilateral tubal ligation or with tubal ligation and total abdominal hysterectomy below (50%) which is incomparable studies done in our country and Ghana (21, 27, 18). This may be due to

the choices of surgical intervention depended on various factors like patient condition at presentation, experience of surgeon, and wish of child bearing (29)

In this study Pelvic collection (sepsis) 12(11%) and pneumonia each 4(3.4%) of cases followed by urinary tract infection 28(25.7%) of cases, 11(14.7%) of cases had wound infection, 9(8.3%) of cases had vescicovaginal/ rectovaginal fistula. which the same trained with other studies (15, 21)

Ruptured uterus is associated with high maternal mortality, maternal morbidity, and perinatal mortality (2) In this study There were 6(5.5%) intra operative death maternal death and 7(6. 4%) post operative death , making case fatality rate of uterine rupture 11.9% total maternal death 13 with is similar to studies done in Ethiopia and Nigeria (15,10) but lower as compared to other studies done in Ethiopia and Yemen which is 1,5% (18) this may be due to socio demographic difference of study areas.

In this study There were 104(93.4%) of still birth and 5(4.6%) of neonate were alive, those delivered with instrument, previous uterine scar dehisce and placenta acreta which similar to study done in Adigrat hospital, Nigeria and Ghana (10, 21, 15)

6.1. Strength of Study
- ➢ The advantages of this retrospective study inexpensive.
- ➢ As I gate information from metu Karle hospital this research is the first research performed in the hospital to this area of interest, so can be use as a guide for next time.
- ➢ Inter personal variation was avoided since all data was collected by single person.

6.2. Limitation of Study

- ➢ Important outcome indicators were not included in the study because there was incomplete documentation and inappropriate chart keeping.
- ➢ As my study was retrospective, associated psychological and other long term post operative complication which are associated with the surgery was not included

CHAPTER SEVEN: CONCLUSSION AND RECOMMENDATION

7.1 CONCLUSSION

The hospital frequency of occurrence of uterine ruptures case at Metu Karle hospital is (1.4%) The common cause of uterine rupture are obstructed labor, and malpresentation, Associated obstetric factors are muti parity, and, ANC fallow up and institution delivery.

Majority of patient with uterine rupture were stayed in labor for more than 24 hours, these shows there is delay in receiving standard obstetric care in community or delay related to referral. The clinical presentation of uterine rupture was vague and diagnosis depends on high degree of suspicion and awareness.

Complete uterine rupture and anterior lower segment rupture were, by far the commonest patterns of uterine rupture by site and type respectively

The commonest type surgical intervention for uterine rupture was TAH. The type of surgical intervention depended on various factors like patient condition at presentation, and wish of child bearing.

Access blood transfusion is important factor in management of obstetric particularly in management uterine rupture.

Clinical factors that affects management outcome are hemoglobin level of mother before operation, presence of sign of sepsis and duration of operation.

7.2 RECOMMENDATION

Based on the findings of this study, the following recommendations were given to metu Karle Hospital, relevant governmental bodies, NGOs and other responsible bodies.

➢ Proper referral system and early identification of the high risk groups can prevent and decline the incidence of uterine rupture. So I suggest the upgrading of peripheral health centers and timely referral of high risk patients to higher centers for early admission in labor ward and quality follow up

➢ By improving institutional delivery coverage we can reduce to the level of maternal mortality which MDG goal which uterine rupture have significant ratio   .so I suggest awareness building on community by using media and community leader   on the advantages of intuitional delivery.

➢ Blood accessibility was important factor on maternal mortality on this study. So I suggest both local and regional government should consider about blood bank construction and creating awareness on miss understanding developed   on blood donation by using media and community leader.

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ANNEXS-1

Questioners

Check list to collect data on pattern and management outcome of uterine rupture in MKH on patients surgically treated from September 2009 to january2014 G.C**.**

I-socio-demographic data

1. Residence   1. Out of metu

                  2. metu

2. Maternal age _____

II-Obstetric profile of patient with uterine rupture

5. Parity   _____

6 gestational age _____

7.   ANC follows up, if applicable

1. Yes
2. No

8. Duration of labor, if applicable in hour's _____

10. Duration of hospital stay after operation in days ---------

11. Mother came with referral from other health institution

1. Yes   2. No

12. Presenting features

12. 1- Vaginal bleeding   1 - yes_____   2 - no_____

12.2 .abdominal pain   1 -yes_____2 - no_____

12.3 Cessation of contraction 1 -yes_____2 - no_____

12.4. Others_____

13. Physical finding

13. 1- absent fetal heart beat   1 -yes_____2 - no_____

13. 2-.easly palpable fetal part   1 -yes_____2 - no_____

13. 3. Prolonged labor   1 -yes_____2 - no_____

13. 4.shock   1 -yes_____2 - no_____

13. 5 sepsis   1 -yes_____2 - no_____

13.6. Others   _____

14. Cause of uterine rupture

14. 1. CPD   1 -yes_____2 - no_____

14. 2. Previous uterine scar   1 -yes_____2 - no_____

14.3. Malpresentation malposition   1 -yes_____2 - no_____

14.4. Augumentation&Induction   1 -yes_____2 - no_____

14.5. Destructive delivery   1 -yes_____2 - no_____

14.6 .Instrumental delivery   1 -yes_____2 - no_____

14.7. Morbidly adherent placenta   1 -yes_____2 - no_____

14.8. Trauma   1 -yes_____2 - no_____

    15 Diagnosis was made by

1 clinical presentation 2 manual exploration 3 laparotomy (   )

   If laparotomy indication diagnosis   --------------------

16. Hemoglobin before operation_____

17. Does patients resuscitated with fluid before   1. Yes   2.no

III- Intra operative conditions

18.   Intra operative duration in hrs_____

19 Site of uterine rupture

        1. Anterior& lower segment   2.fundal rupture

         3. left lateral rupture   4.posterior rupture

        5. Right lateral rupture

20. Type of rupture

        1. Complete rupture   2.lncomplete rupture

21. Type of procedure done

1. Total abdominal hysterectomy   2. Repair without bilateral ligation
.3. Repair with bilateral tubal ligation 1   .4. Subtotal abdominal hysterectomy

22. Rupture involved bladder

      1. Yes   2. No

22. Blood transfusion given.

      1. Yes   2.no

23. Antibiotics given for_____

24. Drainage put in place

      1. Yes   2.no

IV- Post operative condition

25. Post-operative maternal complication

    25. 1. Wound infection   1 -yes_____2 - no_____

    25. 2. Urinary tract infection   1 -yes_____2 - no_____

    25.3. Pneumonia   1 -yes_____2 - no_____

    25.4. Vescicovaginal fistula/ rectovaginal fistula   1 -yes_____2 - no_____

    25.5. Pelvic collection/sepsis   1 -yes_____2 - no_____

    25.6. No complication   1 -yes_____2 - no_____

26. Relaparotomy performed

      1. Yes   2. No

27 indications for relapratomy

28. Maternal out come

      1. Improved &discharge   2. Death

29. Neonatal out come

1. Freshly dead   2. Macerated

3. Died after deliver   4. Alive