ASSESEMENT OF PREVALENCE, OUTCOMES AND ASSOCIATED RISK FACTORS OF OBSTETRIC HYSTERECTOMY: AT TARCHA GENERAL HOSPITAL, TARCHA, SOUTHERN, ETHIOPIA.

By:

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A THESIS SUBMITTED TO THE COORDINATING OFFICE OF GRADUATING STUDIES, COLLEGE OF PUBLIC HEALTH AND MEDICAL SCIENCE, JIMMA UNIVERSITY; IN PARTIAL FULFILLMENT OF THE REQUIREMENT DEGREE OF MASTER IN INTEGRATED EMERGENCY SURGERY (OBSTETRICS, GYNECOLOGY AND GENERAL SURGERY).

Aug, 2014

Jimma, Ethiopia

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ABSTRACT

INTRODUCTION: ***Obstetric hysterectomy is indicated when patient's life is at risk, related to significant maternal mortality and morbidity and it is also a potentially lifesaving procedure. In developed countries, the reported incidence of emergency hysterectomy is below 0.1% of the total normal deliveries performed, while in developing countries, the incidence rates are as high as 1-5/ 1000 of all the deliveries performed.***

OBJECTIVES: the aim of the study was to assess prevalence, outcome and associated risk factors of obstetric hysterectomy at Tarcha General Hospital: from April 2000 to April 2006 EC.

METHDS AND MATERIALS: A facility based retrospective cross sectional review of obstetric records was reviewed over a period of seven years (April 2000 to April 2006 EC). Study was conducted from March2006 to Jun 2006 EC. All women treated at Tarcha General Hospital for the indication of obstetrics hysterectomy were included in the study. Data was collected with structured format by five trained data collectors. Results were analyzed using Statistical Package for the Social Sciences (SPSS) version 16.0. For all statistical significance tests the cutoff value set is P<0.05 and binary logistic regressions were used to estimate the crude odds ratios of maternal outcome.

RESULTS- The mean (±SD) age of the patients was 30.09± (0.61) years; a total of 9875 confinements and 65cases of OH was undertaken during the study period to give an incidence of 6.6/1000 deliveries with a maximum numbers of patients (n=20, 27.4 %) in the age group of >35yrs and mean age and parity of 3-4 (46.5%). Ruptured uterus (n=53, 81.5%), morbid adherent placenta (n=4, 6.2%).), uterine atony 3(4.6%) sepsis and perforated uterus secondary to destructive delivery (n=5, 7.7%) were the commonest causes for this life saving surgery. Out of the 65 hysterectomies performed, 48 (73.8%) were total hysterectomy and 17(26.2%) were subtotal hysterectomy. There were six maternal deaths (9.2%). Patients who had no ANC follow up visits (OR=7.5, CI=2.64-21.28) were statistically associated with unfavorable maternal out come.

CONCLUSION AND RECOMMENDATION: The incidence of OH and maternal death in Tarcha General Hospital was high. Good maternal care, ANC follow up, active management of labor, early recognition of complications and timely referral will go a long way in ensuring for a better outcome.

KEY WORDS: Obstetric Hysterectomy, Incidence, Maternal death, complication and associated risk factors.

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Acronyms

ANC Antenatal Care

APH Ante Partum Hemorrhage

BEmOC Basic Emergency Obstetric Care

CEmOC Comprehensive Emergency Obstetric Care

CD Caesarean Delivery

DIC Disseminated Intravascular Coagulopathies

EmOC Emergency Obstetric Care

EDHS Ethiopian Demographic and Health Survey

OH Obstetric Hysterectomy

GA Gestational Age

GTD Gestational Trophoblastic Disease

HIV Human Immune Deficiency Virus

HMIS health management information system

ICU Intensive Care Unit

IEOS Integrated Emergency Obstetrics and Gynecology and General Surgery

LUSCD Lower uterine Segment Caesarian Delivery

MMR Maternal Mortality Rate

NGO Non Governmental Organization

OR Operating room

PGE2 Prostaglandin group E2

PPH Post Partum Hemorrhage

SNNPRS Southern Nations Nationalities and Peoples Regional State

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Chapter One: Background

Introduction

Obstetrical hysterectomy refers to the surgical removal of the pregnant or recently pregnant uterus. The term includes hysterectomy with the pregnancy in-situ, as well as operation related to the complication of delivery (1,2)Emergency hysterectomy during normal vaginal deliveries or caesarean deliveries is performed when all other measures to control maternal hemorrhage have become futile(1- 6). Although the operation is referred to as "cesarean hysterectomy," peripartum or obstetric hysterectomy is a better classification (1).

Obstetrics hysterectomy, although rare in modern obstetrics, but is one of the life saving surgical procedures in the world (3,7). Hemorrhage resulting from uterine rupture and atony has become rare events in the developed countries but this continues to be a major problem in developing countries (3,6). Newer drugs like prostaglandins, better antibiotics and availability of blood transfusion have brought down the incidence of obstetric hysterectomy (8). In the past, the most common indications for emergency peripartum hysterectomy were uterine atony and uterine rupture (3,4,9). More recent reports list placenta accrete as the most common indication which is most likely related to the increased number of cesarean deliveries observed over the past two decades (8,10,11). Placenta accrete is a major cause of obstetric hemorrhage and loss of reproductive organ (11). The most important risk factor of placenta accretes were previous caesarean section - placenta previa-multiparity (4). Caesarean deliveries and repeat caesarean in woman with placenta pravia increase the risk of Emergency peripartum hysterectomy (2).

The procedure of obstetric hysterectomy was originally devised more than 200 years ago as a surgical attempt to manage life threatening obstetric hemorrhage and infection. In the last few decades, uncontrolled hemorrhage has become a major indicative factor, causes such as uterine atony, ruptured uterus and placenta previa vary from one area to another or influenced by standards of practice and quality of antenatal care (2,10,11).

Obstetric hysterectomy is a procedure performed to save the lives of the patients and to give them good quality of life thereafter. It is more common in developing countries like ours, for

example because of high incidence of unbooked and improperly supervised deliveries outside the hospitals and patients are usually present very late in a moribund state due to different reason (1,5,10,12).

1.1 Statement of the Problem

Obstetric hysterectomy is indicated when patient's life is at risk and related to significant maternal mortality and morbidity. Despite its significant association with increased maternal morbidity and mortality, it is a potentially lifesaving procedure (3,4,8,13).

Obstetric hysterectomy is a major surgical venture invariably performed in the setting of life threatening hemorrhage during or immediately after abdominal and vaginal deliveries. Despite advances in medical and surgical fields, post partum hemorrhage continues to be the leading cause of maternal morbidity and mortality (12 ,14). The procedure is the most dramatic operation in modern obstetrics and is generally performed when all conservative measures have failed to achieve haemostasis in the setting of life threatening hemorrhage (14). The unplanned nature of the surgery and the need for performing it expeditiously, compound matters. Moreover the acute loss of blood renders the patient in a less than ideal condition to undergo emergency surgical intervention. However recognizing and assessing patients at risk and appropriate and timely intervention would go a long way in ensuring a better outcome in this otherwise difficult situation (8,13).

In third world countries leading causes of maternal deaths like Post Patrum Hemorrhage (PPH) secondary to uterine atony, uterine rupture and infected uterus are the major indications for obstetric hysterectomy: other indications include abortion complications, Gestational Throphoblastic Disease (GTD) and morbid placental adherence (3,10.15). Obstetric hysterectomy (OH) is usually the last resort in the obstetrician's armamentarium to save the life of the mother (16). Prompt decision making and excellent surgical skills with a speedy intervention are the bedrock of this life saving procedure (6,8,12).

Prevalence of Obstetric hysterectomy (OH) in modern obstetrics is rising due to increase in rate of Cesarean section all over the world, leading to morbidly adherent placenta (11,17). Other reasons for Obstetric hysterectomy are grand multi parity which can lead to uterine atony, uterine rupture and coagulopathy, presence of large leiomyomas, or bleeding from lacerated uterine vessel which is not treatable by more conservative measures (3,4,5).

Hysterectomy also may be appropriate for women with postpartum uterine infection unresponsive to antibiotic therapy. In majority of the cases, Obstetric hysterectomy is performed as an emergency procedure which leads to further morbidity to the patient (3,8).

In developed countries, the reported incidence of emergency hysterectomy is below 0.1% of the total normal deliveries performed, while in developing countries, the incidence rates are as high as 1-5/ 1000 of all the deliveries performed (6,8).

Ethiopia is one of the countries with the highest maternal mortality which is estimated at 676 deaths per 100,000 live births (EDHS 2011) (18). Majority of maternal deaths take place during childbirth and the immediate postpartum period. The major causes of maternal mortality and suffering are due to direct obstetric complications (18).

In no other gynecological or obstetrical surgery is the surgeon in as much a dilemma as when deciding to resort to an emergency hysterectomy (8). On one hand it is the last resort to save a mother's life, and on the other hand, the mother's reproductive capability is sacrificed (8). Most of the time, the operation is carried out when the condition of the patient is too critical. So, it is a very difficult decision and requires good clinical judgment (8). The rapidly deteriorating hemodynamic parameters warrant early transfusion and resuscitation to withstand the surgical procedure and anesthesia. Proper timing, meticulous care and requires a highly experienced and skilled medical team to solve any complication(1,3,8,10,13).

The Obstetric hysterectomy (OH) has high maternal morbidity & mortality. In young women not only leads morbidity but also psychological implications especially when their parity is low (2,19). Decision making on these issues in emergency is equally difficult for the obstetrician as it is for patients and their relatives. The complications included complications related blood transfusion, febrile episodes, perinatal death, injuries of nearby structures like urinary bladder, ureter, bowel, surgical site infection, DIC, ileus, vaginal cuff bleeding and adnexectomy. This leads to prolonged Hospital stay (6).

The reason for undertaking this research study is based on the fact that in areas with a high rate of maternal mortality and morbidity from poor access to Comprehensive Emergency Obstetric Care (CEmOC), knowing the prevalence, indications and pregnancy outcomes of

operative delivery particularly obstetric hysterectomy (OH) is crucial. Therefore this study is aimed at providing information on the prevalence, indications, outcomes and associated risk factors of Obstetric hysterectomy (OH) in Tarcha General Hospital that plays a vital role in reducing maternal mortality and morbidity resulting from complications related with pregnancy that needs urgent surgical intervention. In addition to this, there is no research done on the assessment of prevalence, indications, outcomes and associated risk factors of Obstetric hysterectomy (OH) in this Hospital. As a result the information on this issue will help the hospital Staff to know the trends, common indications and outcomes of pregnancy after obstetric hysterectomy (OH) as well as the managers to allocate their resources on the most common priority areas. The study result will also help other stakeholders (NGOs) working in this line. The best practices in the Hospital may also help other researchers, Zonal health departments, Southern Nations Nationalities and Peoples Regional State (SNNPRS) and the country at large.

Chapter Two: Literature Review

The commonest indications for emergency hysterectomy in developing countries which are cited in the literature are uterine rupture and atonic uterus (1-4,6,8,9,13,19,20)). However, due to the increase in the number of caesarean deliveries over the past two decades, placenta accreta has emerged as the most common indication for this operation in developed countries. Currently, poor antenatal care is still the major hindrances in developing countries towards the control of these correctable causes of maternal morbidity (8).

Maternal mortality is a major public health problem, particularly in sub-Saharan Africa, where half (50.4%) of all maternal deaths worldwide occur (18). One objective of the Millennium Development Goals is to reduce maternal mortality by 75% between 1990 and 2015 GC. In 2005, the maternal mortality ratio in sub-Saharan Africa, estimated at 900 maternal deaths per 100 000 live births, was by far the highest in the world (18).

The reported incidence of emergency obstetric hysterectomy varies between 0.2 and 5.4 in 1000 deliveries (3,4, 5,8,13,14,16,21). In general, the average incidence is put at 1 in 1000 deliveries; the higher incidence is being reported from the developing world while developed countries generally report lower rates (6,11,16). The high incidence of obstetric hysterectomy in the developing world may be due to her phenomenon of unbooked emergencies and the earlier recourse to hysterectomy due to the lack of `adequate cross matched blood and other blood products which limit the time available for examining the effectiveness of other conservative procedures (6).

The most common indication for obstetric hysterectomy is hemorrhage but the underlying causes vary from series to series (1,3,4,6,16). In the developing world, preventable factor such as uterine rupture or uterine atony is the most common indication for peripartum hysterectomy (1,3,4,6,8,9,13,19). The common causes of uterine rupture in this part of the world include prolonged obstructed labour, rupture of a previous caesarean scar, injudicious use of Oxytocin and trauma from instruments or manual removal(6).

Older studies from the developed countries also showed uterine rupture or uterine atony as the most common indication for peripartum hysterectomy. In these countries uterine rupture

has been reduced to a rarity by large scale utilization of modern obstetric care while uterine atony has also been reduced by use of potent uterotonic agents (6).

With rising caesarean section rate and marked reduction in the incidence of uterine rupture and atony, recent studies from the developed world have shown that placenta accreta has replaced uterine rupture and atony as the most common indication for peripartum hysterectomy (10,14,20). This is due to the rising incidence of placenta previa or accreta associated with the increasing number of women with previous caesarean section (2,22).

If an antenatal diagnosis or strong suspicion of placenta accreta is made, the patient should therefore be counseled about the likelihood of peripartum hysterectomy (4). With the rising caesarean section rate also in the developing countries, placenta accreta is becoming superimposed on the prevalent preventable indication such as uterine rupture and atony (2,3,10,20). Unfortunately placenta accreta is less amenable to conservative management when compared to uterine rupture and atony (14).

In the era of modern antibiotics, sepsis is not a common reason for emergency hysterectomy. However, it still may be necessary in cases with extensive uterine sepsis; in which antibiotic treatment fails to control the infection may rarely require hysterectomy (2,3).

Obstetric hysterectomy may be either subtotal or total. A subtotal hysterectomy is thought to be technically easier and associated with shorter operating time, less blood loss, less urological injury and low morbidity (23). It is therefore preferred in situations where maternal instability mandates a more expeditious procedure (20,23). Moreover in developing countries where homologous blood is often not available, pelvic pathologies are extensive and clinical presentation of patients is worse, subtotal hysterectomy may be preferred (17,23).

Total hysterectomy is therefore recommended if the patient is in good condition and when there is placenta previa or placenta previa accreta involving the cervix (6).It has therefore been recommended that the decision on the type of hysterectomy should be individualized. With the increasing rate of placenta previa accreta, the need to do total hysterectomy will be on the increase (6,20).

The most frequent complication of obstetric hysterectomy is excessive blood loss and need for transfusion. Only part of this blood loss is attributable to the procedure itself. The extensive blood loss is related mainly to the primary indications for hysterectomy and delay in deciding to carry out hysterectomy (6).

Blood transfusion is therefore the most common adjunct therapy (6).The next most frequently reported complication is urological injury which affects the bladder or the ureters (6,7). The reported incidence of urological injuries with peripartum, hysterectomy is between 4.6% and 12.5% (6).

Less commonly reported complications include bowel injuries, laceration of the large pelvic vessels or infundibulo-pelvic ligaments (6,7,9). The post operative morbidity of obstetric hysterectomy is high. The post operative complications include bleeding, wound sepsis/dehiscence, urinary tract infections, ileus, anemia, prolonged duration of hospital stay and/or injury after urinary tract infection. Occasionally pulmonary embolism occurs. Many complications such as bleeding, infections and fistula may require relaporotomy or reoperation for proper management (6,9,22).

Obstetric hysterectomy is associated with increased mortality. Maternal mortality associated with obstetric hysterectomy is decreasing in the developed world but it is high in the developing countries. Identifiable causes of mortality include persistent hemorrhage, disseminated intravascular coagulopathy renal failure and septicemia (6,17,23).

2.2 *Conceptual Framework*

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

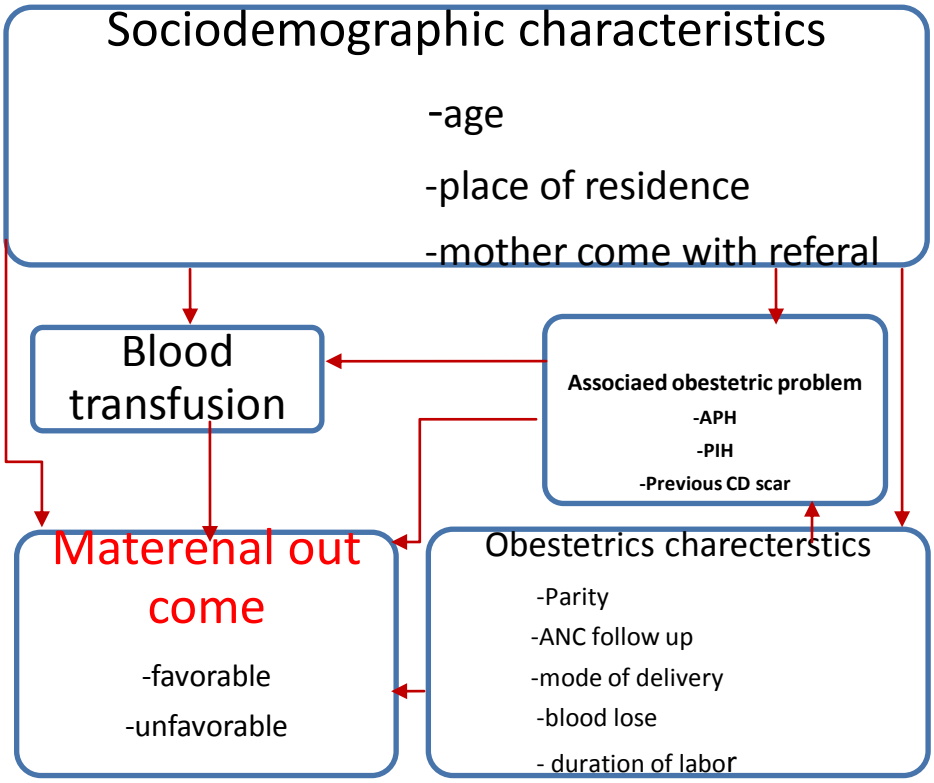

Figure 1.1: Conceptual framework: Factors affecting maternal outcome of obstetric hysterectomy (as reviewed from different literatures).

2.3 Significance of the Study

This proposal aims at providing information on the assessment of Obstetric hysterectomy (OH) that plays a vital role in reducing maternal morbidity and mortality. Even though there are few studies exploring assessment of Obstetric hysterectomy (OH) in Ethiopia, there has not been a single study in this study area. Therefore, at the end of this study, precise & reliable data on the rate of Obstetric hysterectomy (OH), the leading indications for Obstetric hysterectomy (OH), pregnancy outcomes & postoperative complications following Obstetric hysterectomy (OH) in Tarcha General Hospital will be obtained. As a result the information on this issue will help the hospital Staff to know the prevalence, common indications and outcomes of pregnancy after Obstetric hysterectomy (OH) as well as the managers to allocate their resources on the most common priority areas. The study result will also help other stakeholders (NGOs) working in this line. The best practices in the Hospital may also help other researchers, Zonal health departments, SNNPRS and the country at large.

Chapter Three: Objectives

3.1 General Objective

- To assess prevalence, outcome and associated risk factors of obstetric hysterectomy for maternal outcome at Tarcha General Hospital: from April 2000 to April 2006 EC.

3.2 Specific Objectives

- To determine the prevalence of obstetric hysterectomy in Tarcha General Hospital.
- To determine outcomes of obstetric hysterectomy in Tarcha General Hospital.
- To identify post operative complications or associated risk factors of obstetric hysterectomy in Tarcha General Hospital.

Chapter Four: Methods and Materials

4.1 Study Area and Study Period

All obstetric hysterectomies performed at Tarcha general Hospital, Dawro Zone, and SNNPR, from April 2000 to April 2006 EC inclusive was reviewed. The Tarcha General Hospital integrated service is located south west of Addis Ababa 489km along the Jimma road, 498km along the wolayta road and 282km far from Hawasa which is capital city of SNNPRS in the Southern region of Ethiopia Dawro Zone and tarcha city administration. The service has been operative since 1995E.C. Dawro Zone has total population 573,077 & 4436km2 area i.e. 129 inhabitants per square kilometer. The total number of population in the catchment area is 850,000. Out of this the number of women in the reproductive age group (15-49year) is 131808 and the expected number of deliveries per year is 20,289. There are 18 Health Centers, 175 health posts, 7 private clinics, and 6 rural drug venders from 5 woredas and tarcha town using the Hospital as referral center. The nearest Hospitals are Jimma university specialized Hospital in Jimma, 145km away, and Wolayta referral Hospital, 117km away, Arba minch referral hospital , 236km away , Hawasa referral hospital, 282km away.

The Hospital has 86 beds. In addition, 1 Labor Bed and 2 Delivery Beds that are often used as overflow beds. Normal deliveries return home within 24 hours or stay in the Postnatal Room when necessary. The obstetric/gynecology post operative cases go to the obstetric/gynecology Ward. Maternity and Gynecological services are the main surgical procedures done. Elective and emergency surgical services are performed. There are, 1 obstetrician/gynecologist, 1 surgeon, 5 GPs, 3 Health officer, 3 pharmacists, 5 druggists, 55 nurses, 4 laboratory technologist, 5 lab technicians, 10 midwifery, 3 anesthetist, 3 emergency anesthesia trainers, 2 radiographer & 54 administrative staffs and Total of 157 staffs.

Study was conducted from March 2006 to Jun 2006 EC.

4.2 Study Design

A facility based retrospective cross sectional study was employed.

4.3 Population

4.3.1 Source Population

All pregnant women delivered and treated for obstetric indication at Tarcha General Hospital from April 2000 to April 2006 EC.

4.3.2 Study Population

All women who had been diagnosed & treated as OH at Tarcha General Hospital from April 2000 to April 2006 EC were included in the study.

4.4 Sample size

All women treated at Tarcha General Hospital for the indication of obstetrics hysterectomy from April 2000 to April 2006 EC was included in the study.

4.5 Inclusion and Exclusion Criteria

4.5.1 Inclusion criteria

All women for whom emergency hysterectomy was performed from April 2000 to April 2006 EC for any indication during pregnancy, labor and perpeurium was included in the study.

4.5.2 Exclusion criteria

Women whose charts were lost or grossly incomplete were not included in the study.

4.6 Study Variables

4.6.1 Dependent Variables

-Maternal outcome

4.6.2 Independent Variables

Age	Duration of labor
Parity	blood transfusion
Address	Mode of delivery

Gestational age (GA)	Associated obstetric problem
Antenatal follow up	Mode of delivery
Indication of hysterectomy	maternal complication of OH (peri operative)
Types of hysterectomy	Duration of procedure
Estimated blood loss	
Distance from home to hospital	

4.7 Data Collection Method and Procedure

4.7.1 Data Collection Instrument

Data sources was seven years (April 2000 to April 2006 EC) and was collected from March 1, 2006-April1, 2006EC from log-books by reviewing of the labor ward, maternity ward and major operations, Patient charts, discharge and death reports. A monthly and morning report was also reviewed.

First card number of women who had OH during the study period was identified from Operating Room (OR) logbooks, and then their charts had been retrieved from card office.

Finally documents from patient cards were entered in to a structured format by five trained year one and year two IEOS students.

4.8 Data Processing and Analysis

The data was collected by using standard checklists, entered, cleaned and analyzed using SPSS version 16.0. Socio-demographic characteristics, obstetric profile of patient undergone OH and maternal outcome were studied. Hysterectomy for any indication during pregnancy, labor and perpeurium was included. The study also included hysterectomy done for complication following pregnancy termination such as perforation and sepsis. Each cases record was analyzed in detail and all cases were performed with emergency bases.

Data was summarized and presented by frequency tables, graphs and other summary statistic. Bivariate analysis was used to check association between dependent and independent variables. All variables that would be had significant association with p-value <0.25 in the bivariate analysis was the candidate for multivariable logistic regression. Multivariable

logistic regression model was fitted to identify factors affecting the maternal out come. P-value less than 0.05 were considered as statistically significant. The degrees of association between dependent and independent variables was assessed using OR at 95% CI.

4.9 Data Quality Assurance

To assure the quality of data, data collectors were trained before the actual study period. Regular supervision and follow up was made by principal investigator. In addition, regular check up for completeness and consistency of the data was made on daily basis. Possible correction or careful omission was done during the actual study. Consultation from research advisor and potential resource persons was sought.

4.10 Operational Definitions

Obstetric hysterectomy - Hysterectomy performed that fulfils indication of hysterectomy during pregnancy, labor, and perpeurium and abortion complication.

Maternal death: is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

Maternal outcome -Maternal condition after hysterectomy which can be good/favorable maternal outcome or poor/unfavorable maternal outcome

Poor/unfavorable maternal outcome: includes mothers who developed post-operative complications after hysterectomy.

Good/Favorable maternal outcome: mothers with smooth post-operative condition after hysterectomy.

Associated obstetric problems – Maternal conditions like previous CS, PPH/APH, sepsis (pelvic infection) and others like trauma and previous fistula repair that are identified before the procedure.

Definition of key terms

Gestational Age –The duration of pregnancy in weeks which is calculated based on Last Normal Menstrual Period (LNMP) and/or duration of amenorrhea claimed by the mother and/or by Physical Examination (PE).

Mode of delivery –obstetric procedure to attend delivery of the baby like vaginal delivery, CS, laparatomy and destructive delivery.

Sepsis (pelvic infection) - clinically diagnosed chorioamnionities, endometrities and pelvic peritonitis.

4.11 Ethical Consideration

Ethical clearance was obtained from ethical review committee of Jimma University, College of public health and medical sciences and official letter of co-operation was given to Tarcha General Hospital. Confidentiality had been kept for relevant information taken from the Hospital medical records. Charts and medical records of patients were revised only for the purpose of interest of the study. Information about the study had been told to the departments of hospital, labor and delivery, maternity ward, Operating Room (OR) and card office.

4.12 Data Dissemination

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

Chapter Five: Result

During the seven years period (April 2000-April 2006 EC) a total number of 9875 confinements were conducted at Tarcha General Hospital including vaginal deliveries 9153(92.7%) and CS 657 (6.6%) (Table I). 65 cases of obstetrics hysterectomy done for obstetric indication were analyzed.

Table 1: Data of obstetric interventions at Tarcha General Hospital from April 2000 -April 2006 EC.

Mode of delivery	Number (N)	Percentage (%)
Vaginal delivery	**9153**	**92.7**
CS	**657**	**6.7**
Obstetric hysterectomy	**65**	**0.6**
Total number of delivery	**9875**	**100**

5.1 Socio –Demographic Characteristics

Age _The age of the patients ranged from 22-41 years with a mean of 30.09 (SD =0.61) years (Table2). The Highest frequency was age group of 25-29yrs 26(40 %), followed by 16(24.6%) cases in the 30-34 yrs age groups (figure 1).

Table: age wise distribution of patients who undergone OH at Tarcha General Hospital for the indication of obstetrics hysterectomy from April 2000- April 2006.E.C**.**

Age	Number of pts	frequency	Cumulative %
15-19	0	0	**0**
20-24	6	9.2	**9.2**
25-29	26	40.0	**49.2**
30-34	16	24.6	**73.8**
35-39	12	18.5	**92.3**
40-44	5	7.7	**100.0**
≥45	0	0	**100.0**
total	**65**	**100**	

Address _Based on the address taken from patient's chart, 55.4% of cases were within 100 KM radius of the hospital including patients came from Tarcha town.

5.2 Obstetric Profile of Patients

Parity_ The parity of the patients ranged from 2-8 with a mean of 5.18 (SD .15) (Fig. 1).Among the patients who underwent emergency hysterectomy, 34 cases (46.6%) were of para 3-4 and 20(27.4%) cases were Para 5 or above.

ANC follow up_ 41 (63.1%) of cases had no ANC follow up.

Gestational age- The gestational age at time of admission was between 37-42 weeks in 53(81.5%) of patients, 11(16.9%) patients were with unknown gestational age

Duration of hospital stay before operation- among 65 cases of OH 49(75.4%) cases were stayed in the hospital less than 4 hrs before operation.

Mode of delivery- 54 (83.1%) cases had laparatomy for the indication of ruptured uterus53 (81.5%), 10(15.2%) had normal vaginal delivery secondary to morbid adherent placenta 4(6.2%), PPH due to atony 3 (4.6), sepsis 3(4.6%) and one patient was delivered by destructive delivery.

Associated obstetric problems- Sepsis (pelvic origin) 7(10.6%) was the major obstetric problem that patients had before hysterectomy followed by PPH 5(7.6%), previous CS scar 4(6.1%), pregnancy induced hypertension 3(4.5%), morbid adherent placenta 3(4.5%) and APH 3 (3.5%) (Figure2).

Duration of labor –44(64.4%) cases were laboring for more than 48 hrs.

Table 2 - Obstetric profile of the patients undergone obstetric hysterectomy at Tarcha General Hospital from April 2000- April 2006(n=65).

Variables	Number(N)	**Percentage (%)**
Gestational age in weeks		
37-42	53	81.5
>42	1	1.5
unknown	11	16.9
Parity		
2	1	1.5
3	5	7.6
4	13	19.7
≥5	46	69.7
Mother came with referral		
Yes	45	**69.7**
No	20	**30.3**
Distance		
<100kms	40	61.5
≥100kms	25	38.5
Duration of hospital stay before operation in hrs		
≤4hrs	49	75.4
>4hrs	16	24.6
Mode of delivery		
Vaginal delivery	10	**15.4**
CS	54	**83.1**
Others *	1	**1.5**
ANC follow up visit		
Yes	24	**36.9**
No	41	**63.1**

*others include destructive delivery

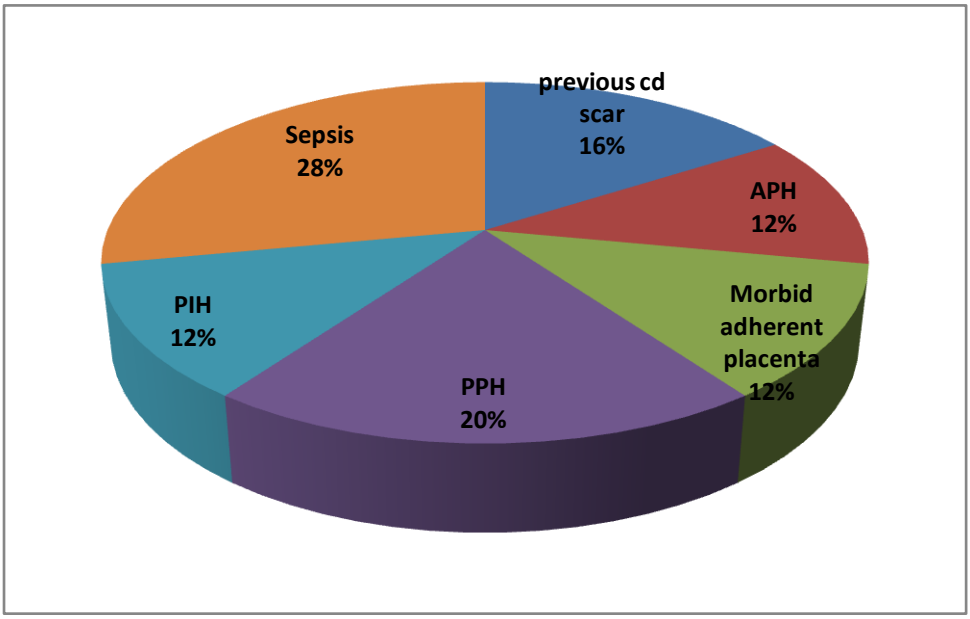

Figure 2 – Associated Obstetric problems for whom the patients underwent obstetric hysterectomy at Tarcha General Hospital from April 2000- April 2006(n=25).

Incidence and indication of OH

Over the study period, 65 cases of obstetric hysterectomies were performed at Tarcha General Hospital. The frequency of obstetric hysterectomy therefore was 6.6/1000 deliveries.

Ruptured uterus 53(81.5%) was the commonest indication for the procedure followed by morbid adherent placenta 4(6.2%), PPH secondary to uterine atony 3(4.6%), Post partum uterine sepsis (infected uterus) 3(4.6%) and uterine perforation secondary to destructive delivery 2(3.1%). Total abdominal hysterectomy 48(73.8%) was the commonly performed procedure in this study than subtotal hysterectomy 17(23.2%). The average duration of procedure takes 2.03hrs with a minimum duration of 45 minutes and maximum of 4hrs.

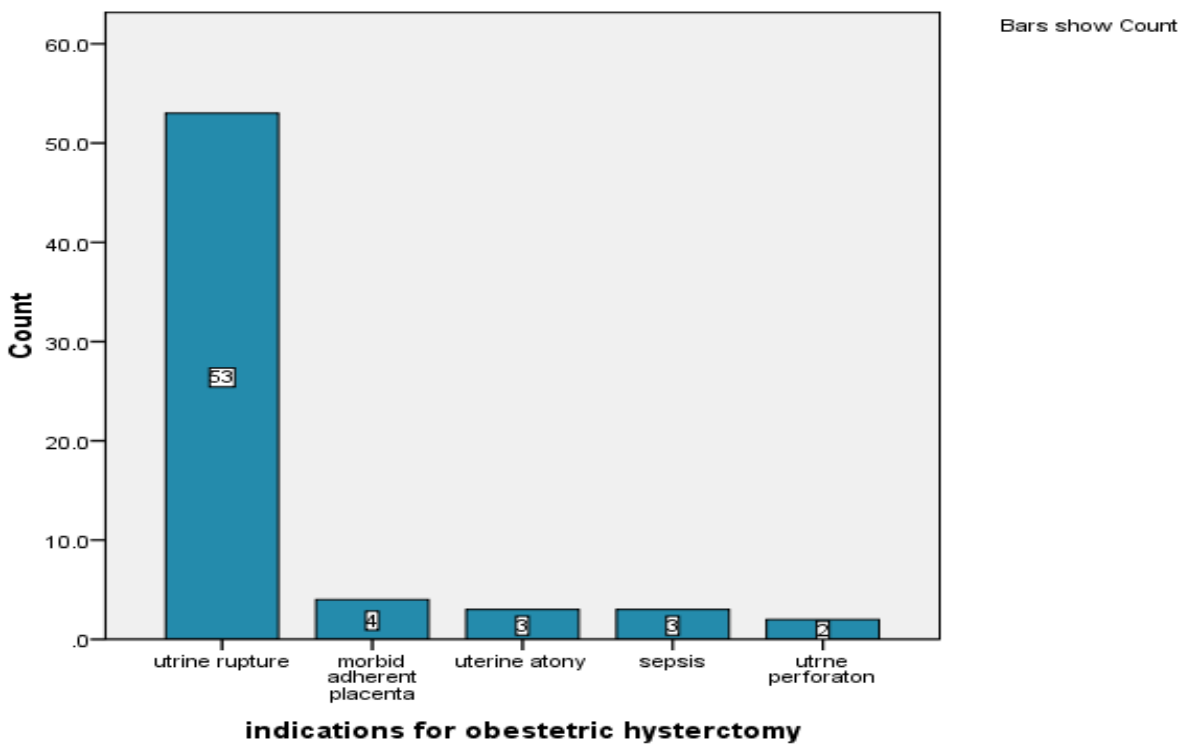

Figure 3: Indications for OH at Tarcha General Hospital for the indication of obstetrics hysterectomy from April 2000- April 2006.E.C.

Intra and post operative complications

Based on the information documented in the charts hypovolumic shock 39(64.3%) was the commonest intra operative complication followed by septic shock 11(16.9%), bladder injuries10 (15.4%), fistula1 (1.5%).In this study, all bladder injuries were repaired. Anemia 50 (90.8%) was the commonest post operative complication followed by Sepsis 17(26.2%), wound infection and/or dehiscence 18(27.7%) were the post operative findings.

Table 3: Intra op and post op complications of OH at Tarcha General Hospital from April 2000- April 2006.E.C.

complication	Number (n)	%
Intra operative		
Hypovolumic shock	39	64.3
Septic shock	11	16.9
No complication	15	24.6
Postoperative		
Anemia	59	90.4
sepsis	10	15.4
Wound infection and or dehiscence	6	9.2
No complications	7	10.8

5.3 Maternal Outcome

There were six maternal deaths (9.2%), two patients died of respiratory failure secondary to Multi Organ Failure (MOF) secondary to septic shock, two patients died of anesthesia complication and two patients died of cardio respiratory failure secondary to hypovolumic shock. The rest were discharged within 8-15 days 46 (70.8%) 22 days13 (20%) and 7 days 6(9.2%), Sepsis and wound infection was the commonest cause for prolonged duration of hospital stay.

5.4 Factors Associated with Maternal Outcome

5.4.1 Assessment of risk factors for obstetric hysterectomy on maternal outcome (favorable and unfavorable)

When the association between the dependent variable (maternal outcome) and independent variables assessed, the results revealed that there was association between maternal outcome and age groups between 35-39yrs (COR =11.3, p-value=0.039); 18(52.9%)patients with age groups between 35-39yrs who had unfavorable outcome when compared to patients whose age was less than 30years 6 (17.6%). Mothers who came with referral had significant association maternal outcome (COR=4.2, P valve =.024); 16(80%) who were not referred had unfavorable outcome when compared to those who referred 4(20%) and ANC follow up visit shows an association with maternal outcome (COR=15.7, P valve =.000); 33(86.8%) of patients had no ANC follow up visits had unfavorable maternal outcome when compared with those who had 5 (13.2).

The study shows duration of hospital stay before operation (COR =4.2, p-value=0.042); 13(81.2) of patients with morbidity had stayed ≥4 hrs in the hospital before operation when compared to patient who stayed < 4hrs 3(18.8%). Duration of procedure also had an association with maternal outcome (COR =4.2, p-value=0.002); 28(84.8) patients who underwent duration of operation for >1hr has unfavorable maternal outcome when compared to who were operated with in 1hr 5 (15.2%).

The study shows a significant association in maternal outcome and intra operative complication; among those who those who had septic shock 26(55.3), and among those who had hypovolumic shock 21(80.8) of patients had unfavorable maternal outcome, when compared to those patients who had no complication 1(5.6) and 12(31.6) respectively. There was also a strong association in maternal outcome and estimated blood lose (COR 8.4, p-value=0.001); among patients who had shock due to blood lose 28(73.7%) had unfavorable maternal outcome.

The study also shows a significant association in maternal outcome and duration of labor (COR 3.5, p-value=.024); among those who labored for > 24hrs of labor duration 30(68.2%)

had unfavorable maternal outcome, when compared to those who had favorable outcome 14(31.8%).

Finally a result shows an association between maternal outcome and blood transfusion (COR 6.1, p-value=.002); among those who were not transfused 22(81.5%) had unfavorable maternal outcome, when compared to among those who had favorable outcome 5(18.5%).

Table 4: Binary logistic regression of socio demographic factors with maternal outcome of OH (N=65) at Tarcha General Hospital from April 2000- April 2006.E.C.

	Maternal outcome			
	Favorable N (%)	**Unfavorable N (%)**		
variables			P value	COR(95% CI)
Age				
20-24	5(83.3)	1(16.7)		1
25-29	7(58.3)	5(41.7)		1
30-34	6(37.5)	10(62.5)		1
35-39	8(30.8)	18(69.2)	**.039**	11.3(1.1-112.5)
Comes with referral				
Yes	23(51.1)	22 (48.9)		
No	4 (20)	16(80)	**. 024**	**4.2 (1.2- 14.5)**
ANC follow up				
Yes	19(70.4)	8(29.6)		
No	5(13.2)	33(86.8)	**.000**	**15.7(4.5-54.8)**

Table 5: Binary logistic regression analysis of risk factors for maternal outcome who underwent OH (N=65) at Tarcha General Hospital from April 2000- April 2006.E.C

variables	Maternal outcome		P value	COR(95% CI)
	Favorable	Unfavorable		
	N (%)	N (%)		
Duration of labor				
≤ 24hrs	13(61.9)	8(38;1)		1
>24hrs	14(31.8)	30(68,2)	**.024**	**3.5 (1.2-10.3)**
Hospital stay before operation				
<4hrs	24(49)	25(51)		1
≥4hrs	3(18.8)	13(81.2)	**.042**	**4.2 (1.1-16.5)**
Duration of procedure				
<1hr	22(68.8)	10(31.2)		1
≥1hr	5(15.2)	28(84.8)	**.000**	**11.4 (3.4-38.5)**
Estimated blood lose				
No shock	20(74.1)	7(25.9)		1
shock	10(26.3)	28(73.7)	**.001**	**8.4 (2.4-28.9)**
Mother transfused				
yes	22(57.9)	16(2.1)		**1**
no	5(18.5)	22(81.5)	**.002**	**6.1 (1.9-19.4)**
Intra operative hypovolumic shock				
Yes	21(80.8)	5(19.2)	**.000**	**9.1 (2.8-29.9)**
No	12(31.6)	26(68.4)		1
sepsis				
Yes	26(55.3)	21(44.7)	**.004**	**21 (2.6-171.4)**
No	1(5.6)	17(94.4)		1
Bladder injury				
Yes	26(48.1)	28(51.9)	**.040**	**9.3 (1.1,77.7)**
No	1(9,1)	10(90.9)		1

5.4.2 Binary Logistic Regression of Maternal outcome

Multivariate binary logistic regression was made for each independent variable with the dependent variables , finally ANC follow up visits, duration of procedure of operation and intra operative complication(hypovolumic shock) becomes significant with p-value <0.05 with maternal outcome.

Patients who had no ANC follow up visits were 7.5 times higher more likely to have an unfavorable maternal outcome as compared with those who had ANC follow up visits (AOR=7.5, 95% CI of (2.64-21.28).

Patients who had hypovolumic shock of intra operative finding were 16 times higher more likely to have an unfavorable outcome as compared with those who had no intra operative complication (OR=16.1, 95% CI of (2.1-120.6).

Patients who had duration of procedure more than one hour were 9.5 times higher more likely to have an unfavorable outcome (OR=**9.5**, 95% CI of **(1.3-67.2)(Table 6).**

Table 6: Bivariate & Multivariate logistic regression analysis of risk factors for maternal outcome who underwent OH (N=65) at Tarcha General Hospital from April 2000- April 2006.E.C

Variables		**Maternal outcome**				**P value**
		Favorable N (%)	**Unfavorable N (%)**	**COR(95%ofCI)**	**AOR(95%CI)**	
ANC FOLLOW UP	Yes	24(77.4)	7(22.6)		1	
	No	1(50)	1(50)	15.7(4.5-54.8)	9.4(1.2-70.95)	.030
Hypovolumic shock	Yes	21(80.8)	5(19.2)	9.100(2.8,29.9)	16.1(2.2-119.8)	.007
	No	12(31.6)	26(68.4)		1	
Duration of procedure	<1hr	22(68.8)	10(31.2)		1	
	≥1hr	5(15.2)	28(84.8)	11.4 (3.4,38.5)	9.5(1.3-67.2)	.024

CHAPTER SIX: DISCUSSION

Obstetric hysterectomy is a radical, life saving operation that is mostly done for indications that are life-threatening for the patient. Quick decision making and performing the operation speedily are the two most important surgeon related factors that affect the maternal outcome (7). The present study was undertaken to analyze maternal mortality, morbidity and associated factors.

The ages of the patients ranged from 22-41 years with a mean of 30.09 (SD =0.61) years. It is consistent the study finding Lamba & Gupta(mean age=30.05yrs) (16). The Highest frequency of parity was at age group of 25-29yrs 26(40 %), followed by 16(24.6%) cases in the 30-34 yrs age group. These was a similar trend observed by (Kashani & Azarhoush, 2012)(6) and the result showed the youngest woman was of 22 years of age and the oldest was 39 years old by Anita & Kavita, 2005(8).

Parity distribution shows which ranged from 2-8 with a mean of 5.18 (SD .15) which is almost similar to Ethiopian's rural total fertility rate 5.5 ("Ethiopia Demographic and Health Survey Preliminary Report," 2011). A 34 cases (46.6%) were of para 3-4 and 20(27.4%) cases were Para 5 or above which shows most of cases were multiparus. This is consistent with other studies(Alsayali & Baloul, 2000)& (Kashani & Azarhoush, 2012) (1,4) that indicate these variables as risk factors which is similar with other studies. The incidence of this radical and life saving surgery was more in patients who were multipara (8).

In this study 41 (63.1%) of cases had no ANC follow up. This result is very close to study done by Anita & Kavita, 2005 (73.1%)(8).Effective antenatal care identification of patients at risk, enhancement of blood transfusion facilities, together with improvement of surgical skills are important to reduce the morbidity associated with the operation(1).

An association was seen between duration of procedure >1 hr and maternal outcome (OR=9.5, 95% CI of (1.3-67.2).Clinical condition, lack of obstetrician, surgery were done by three month trainee general practitioners, being exposed for long time to anesthesia drugs were some of the reasons for the delay. OH being performed by an experienced surgeon is reported to significantly reduce the operating time, number of units of blood transfusion and hospital stay(14) . In situations where conservative treatment is likely to fail or has failed, there should be no further delay in performing OH as delay leads to increase in blood loss,

transfusion requirement, operative time, DIC, and increased possibility of admission to ICU(14). In my study, 38(58.5%) patients were transfused. This is very low as compared to study done by *Masheer S & Najmi N*. showed blood transfusion was in 92% of patients, 20 % of whom also developed coagulopathy (22).And there was also statistical association between intra operative complication of hypovolumic shock and maternal outcome (OR=16.1, 95% CI of (2.1-120.6). The reason was lack blood transfusion due to lack of blood bank and the patient's relatives were refusing to donate blood as reviewed from patient's chart.

In developed countries, the reported incidence of emergency hysterectomy is below 0.1% of the total deliveries performed, while in developing countries, the incidence rates are as high as 1-5/ 1000 of all the deliveries performed(3,6). The incidence of OH in my study was 6.6/1000 deliveries which is high but consistent with the incidence of OH quoted by Ambiye and Venkatraman was 678/1000 (9) and the reported incidence of OH varies from 0.24 to 8.9 per 1000 deliveries in different countries (14). The primary reason for this higher incidence was due to the fact that very low institutional delivery at Tarcha General Hospital which was very low(6.9%) as compared with (EDHS, 2011) result of facility based delivery in urban residences was 50% and increased number of referred cases may increase the incidence of OH. The study result was 62(95.4%) of the cases were referred from other health institution to this hospital.

The commonest indication of OH in my study was uterine rupture 53 (81.5%). This very high incidence of ruptured uterus was reported by Archana *et al* (75%)(7). Among cases of uterine rupture four cases had previous one CS scar, one case had history of trauma and majority of cases had prolonged duration of labor 44 (64.4%). It can be explained by most of the patients came to this hospital delayed in moribund condition after complication occurred and majority of rupture uterus cases were late referrals from rural areas. This explanation is in similar with the study reported in (Lamba & Gupta, 2012) (16) ; majority of rupture uterus was caused by obstructed labor due to cephalo pelvic disproportion & mal presentation. In some studies a previous history of caesarian delivery (CD) increases the risk for hysterectomy by increasing the incidences of factors such as placenta previa/accreta and uterine rupture (2).

Morbid adherent placenta 4(6.2%) was the second most common indication of obstetric hysterectomy in this study. Similarly Morbid adherent placenta was the second commonest finding reported in (2, 4 and 5) but with a high incidence (16%, 28.6% and 26.3%)

respectively. The lower incidence in my study can be due to the large proportion of uterine rupture was seen. Less common indication was PPH secondary to uterine atonies were 3(4.6%) cases of and developed following vaginal delivery. Post partum hemorrhage 3(4.6%), postpartum sepsis (infected uterus) 3(4.6%) and perforated uterus secondary to destructive delivery 3(3.1%) which is slightly lower than a study done by (Kashani & Azarhoush, 2012)4(18%).sepis3(4.6%) and uterine perforation1(3.1%) were the less common indication for the procedure in this study .which is almost in line with (Kant Anita, Wadhwani Kavita) study (4.8%) and 2.4% respectively. Emergency hysterectomy in young women not only leads to high morbidity, but also has serious psychological implications, especially when their parity is low. Decision-making on these issues in emergency is equally difficult for the obstetrician as it is for patients and their relatives [2].

There were six maternal deaths (9.2%) similar result have been reported in (Ambiye and Venkatraman reported maternal motility of 9.3%); two patients died soon after the operation from irreversible hemorrhagic shock due to ruptured uterus, two patients died of due to cardio respiratory failure due to anesthesia related complication and two patients died due to Multi Organ Failure (MOF) secondary to septic shock. The rest were discharged; 46 (70.8%) within 8-15 days, 13 (20%) within 16-22 days and 6(9.2%) within 7 days. Sepsis and wound infection was the commonest cause for prolonged duration of hospital stay. With similar reasons for possible cause of death was reported by (Lamba & Gupta, 2012)[16] There is a relationship between the decisions to perform the hysterectomy, the amount of blood loss and the likelihood that the hysterectomy will be complicated by coagulopathy, severe hypovolemia, tissue hypoxia, hypothermia and acidosis which further compromises the patient status. Proper timing and meticulous care may reduce or prevent maternal complications(16).

Total hysterectomy was the commonly performed surgery in my study (76.7%). Total hysterectomy is the recommended surgical method of OH due to the potential risk of malignancy developing in the cervical stump and the need for regular cytology and other associated problems such as bleeding or discharge associated with the residual cervical stump(6) . Currently, the proportion of subtotal hysterectomy performed for OH ranges from 53% to 80% (8) . That was the commonly performed procedure in their series. Which may be due to the instability of maternal condition requiring a simpler and speedy procedure with

lesser degree of hemorrhage but in my study it was most probably the surgeons own decision based on the clinical situation of the patient and the surgeon's surgical experience(16).

Hypovolumic shock (24.6%) was the commonest intra operative complication followed by septic shock (10.9%) and which was found to be the risk factors for maternal outcome and has significant statistical association (OR=16.1, 95% CI of (2.1-120.6). There were 5 cases of bladder injury in addition to uterine rupture in this study with almost similar report in (9). In this study, bladder injuries10 (15.4%), fistula1 (1.5%). all bladder injuries were repaired. This is consistent with study finding by(Tallab Fassil)(16%) (7).Anemia 50 (90.8%) was the commonest post operative complication followed by Sepsis 17(26.2%), wound infection and/or dehiscence 18(27.7%) were the post operative findings which is consistent with other study findings Lamba & Gupta, 2012 & Tallab Fassil)(7,16).

Post operative sepsis and wound infection were the commonest postoperative complication in this study which was also the finding in (Naureen Javed, Sumera Tahir).This can be explained by with resultant hypovolumic shock from massive obstetric hemorrhage, which was the commonest intra operative complication in this study. which is similar with other findings in different studies(6,12).

6.2 Strength of the Study

As to my knowledge this research is the first research performed in the hospital to this area of interest

6.2 Limitations

- Time constraints
- Very low institutional delivery rate at the Hospital.
- Important outcome indicators were not included in the study because there was incomplete documentation and inappropriate chart keeping in Tarcha General hospital
- As my study was retrospective, associated psychological and other long term post operative problems which are associated with this surgery was not included.
- Lack of literatures with similar topic in developing countries.

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Chapter Seven: Conclusion and Recommendation

7.1 Conclusions

As revealed by this study:

- The incidence of OH in Tarcha General Hospital is high.
- Maternal mortality rate was 6.6/1000 deliveries.
- Ruptured uterus was the commonest causes of OH in this study.
- All of the patients undergone OH for the indication of uterine perforation secondary to destructive delivery.
- Total abdominal hysterectomy was the commonest type of procedure performed in this study.
- Hypovolumic shock and post operative sepsis were the commonest complications
- Duration of procedure >1 hr, ANC follow up visits & intra operative hypovolumic shock statistically associated with maternal outcome.
- Good maternal care, active management of labor, early recognition of complications and timely referral will go a long way in ensuring for a better outcome

7.2 Recommendations

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

- I recommend proper chart keeping and complete documentation for the professionals at Tarcha General Hospital.
- Increase antenatal care coverage.
- Obstetrics hysterectomy in young women not only leads to high morbidity, but also has serious psychological implications, especially when their parity is low. As my analysis was retrospective, future investigators can also include patient associated psychological problems and other long term complication which are associated with this surgery
- Shortening of surgery time for better maternal outcome.

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ANNEX 2:

To assess the prevalence, indications, outcomes and post-operative complications of obstetric hysterectomy at Tarcha general Hospital: A seven years (2000-2006 EC) retrospective cross sectional study.

I Socio-demographic characteristics of patients

1. Age ----------
2. Card number ----------
3. Address ----------
4. Distance in kms from home to hospital(from address)----------

II Obstetric profile of patients undergone OH

5. Parity ----------
6. Gravidity ----------
7. GA if, 1 =37-42wks, 2 =<36wks ,3 =.>42wks, 4=unknown
8. ANC follows up, if applicable
    1. Yes
    2. No
9. Duration of labor in days----------
10. Duration of hospital stay before operation in hours----------
11. Duration of hospital stay after operation in hours----------
12. Mother came with referral from other health institution
    1. Yes
    2. No
13. Mode of delivery
    1. SVD
    2. Instrumental delivery (forceps or vacuum)
    3. CS
    4. Laparatomy
    5. Vaginal breech delivery
    6. Destructive delivery
14. If mode of delivery is CS
    1. Emergency
    2. Elective

15. Indication for CS----------

16. Associated obstetric problems

    a. previous c/s scar; mention type and number----------
    b. APH; mention type----------
    c. Morbid placental adherence; mention type----------
    d. PPH; mention cause----------
    e. PIH; mention type----------
    f. Augmentation or induction; PGS or OOxytocin
    g. Sepsis secondary to pelvic infection-
    h. Others----------

17. Indication of emergency hysterectomy

    1. Uterine rupture
    2. Morbid placental adherence
    3. PPH due to uterine atony
    4. Sepsis
    5. PPH due to genital tract laceration
    6. Uterine perforation
    7. Others mention----------

18. Type of hysterectomy performed

    1. Total
    2. Subtotal

19. Duration of procedure in hours ----------

20. Estimated blood loss in ml----------

21. Mother transfused

    1. Yes
    2. No

22. If yes, units transfused----------

III Maternal outcome

23. Intra or post operative complication

    a. shock;
    b. sepsis secondary to pelvic infection
    c. surgical site infection and / or dehiscence

d. fistula ; mention if iatrogenic
e. bladder injury ; mention if iatrogenic----------
f. Ureteric injury mention if iatrogenic----------
g. others; specify----------

24. Maternal progress;

1. favorable
2. unfavorable

If, Death; mention day and immediate cause----------

DECLARATION

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

Name: _____

Signature: _____

Name of the institution: _____

Date of submission: _____

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

Name and Signature of the first advisor _____

_____

Name and Signature of the second advisor _____

_____