Outcome of Hysterectomy and Associated Risk Factors in Gelemso Zonal Hospital of Western Hararge, Ethiopia

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Abstract: Hospital based five years retrospective crosssectional study was conducted during August to September 2014 with the objective of determining outcome of hysterectomy and associated risk factors at Gelemso Zonal Hospital. Data was collected by using a structured questionnaire from 521 patients who underwent hysterectomy from August 1, 2010-July 31, 2014. The study revealed 8.4% maternal death, out of which 152 women operated for emergency hysterectomy and about 32 (21.1%) had outcome of death but 12 (3.3%) out of 369 on elective hysterectomy respectively. Ruptured uterus (84.9%), atonic PPH (11.2%) and adherent placenta (3.3%) were the commonest causes for emergency hysterectomy while uterovaginal prolapsed (UVP) (75.7%), myoma (11.9%) and tumors (7.0%) were found to be the commonest indication of elective hysterectomy. Out of total hysterectomies performed, majority (96.9%) were total hysterectomies. Factors associated with poor maternal outcome were antenatal care (ANC), previous mode of delivery, hysterectomy schedule, intra-operative complication and post-operative complication. The observation evidenced that incidence of hysterectomy and maternal death was high suggesting that good obstetric care, ANC follow up, active management of labor, early recognition of complications and timely referral needs to go a long way in ensuring a better outcome.

Key words: Hysterectomy • Maternal • Outcome • Risk factors • Gelemso • Hospital

INTRODUCTION

Each year, 210 million women become pregnant, of whom 20 million will experience pregnancy-related illness and 500,000 will die as a result of the complications of pregnancy or childbirth. In 1987, the World Health Organization (WHO) launched the Safe Motherhood Initiative, which aimed to reduce maternal morbidity and mortality by 50% by the year 2000. The initiative did not succeed but maternal health continues to be a major focus of WHO effort. The current WHO initiative is to reduce maternal mortality by 75% of the 1990 level by 2015. The number of maternal deaths as a result of obstructed labor and/or rupture of the uterus varies between 4% and 70% of all maternal deaths, amounting to a maternal mortality rate as high as 410/100,000 live birth [1]. Emergency obstetric hysterectomy (EOH) is a life-saving procedure which is often performed to treat some obstetric complications, as a last resort, to prevent maternal mortality and morbidity [2].

Obstetric hysterectomy can save many maternal lives; however, the decision to embark on this life-saving operation, especially in the younger age group and low parity could present a great dilemma to the surgeon [3].

Emergency obstetric hysterectomy is more common in developing countries because of high incidence of unbooked and improperly supervised deliveries outside the hospitals and lack of skilled health professionals [4, 5]. In 2011, pregnancy-related complications resulted in an estimated 273,500 maternal deaths globally, or close to 775 deaths per day. Regrettably, up to 90% of these deaths are preventable if diagnosed and treated in a timely manner. Maternal mortality is a tragedy in any country, yet some face a much greater burden than others. Ninety-nine percent of maternal deaths occur in developing countries and 65% occur in just 11 countries: Afghanistan, Bangladesh, the Democratic Republic of the Congo, Ethiopia, India, Indonesia, Kenya, Nigeria, Pakistan, Sudan and Tanzania [6].

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The most severe complication of hemorrhage is maternal death, whose risk is estimated to be approximately 1 in 100,000 deliveries in developed countries and this risk is as high 1 in 1,000 deliveries in developing countries [8].

Worldwide reports revealed striking difference among prevalence rate of hysterectomy ranging from 1:361 to 1:3000 deliveries depending upon inherent characteristics of concerned obstetric population and standards of available maternal, family planning services and their utilization. Uterine rupture is a leading indication of emergency peripartum hysterectomy in the third world countries accounting for 58% to 72% cases. For the developed nations, picture is quite opposite and main indication (50%) is abnormal placenta (previa, accrete) [9].

In third world countries leading causes of maternal deaths like Post-Partum Hemorrhage (PPH) secondary to uterine rupture, uterine atony and infected uterus are the major indications for hysterectomy: other indications include abortion complications, Gestational Trophoblastic Disease (GTD) and morbid placental adherence. Emergency obstetric hysterectomy (EOH) is usually the last resort in the obstetrician's armamentarium to save the life of the mother. Prompt decision making and excellent surgical skills with a speedy intervention are the bedrock of this life saving procedure [10].

Ethiopia is one of the countries with the highest maternal mortality which is estimated at 676 deaths per 100,000 live births. 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 [11].

Unfortunately, in the third world like ours, mothers and their offspring are still dying of easily preventable but rapidly fatal pregnancy related causes; considered to be disease of the 19th century in the developed world [12].

In Ethiopia there is no studies have been conducted on maternal outcome and associated risk factor hysterectomy. By considering the existing scarcity of information about hysterectomy outcome, the current Hospital based study was planned to be under taken to measure outcome and associated risk factor for hysterectomy in GZH through five years retrospective record review.

METHODS AND MATERIALS

Study Area and Period: A Hospital based retrospective cross sectional study was conducted from August to September 2014 at Gelemso Zonal Hospital. Out of 141 beds in the hospital, 45 beds are in Obs/Gyn ward, of which 13 beds are in labour ward and 32 beds are in Gyn ward. Some of the services which are given by these departments are pre-operative and post-operative in patient services, abortion care and safe abortion services, labour and delivery services, PMTCT services, ART services for all pregnant women and Obstetric/Gynaecologic Ultrasound services.

Study Design: Hospital based retrospective cross sectional study to determine the outcome and associated risk factor for hysterectomy.

Source Population: All women who underwent hysterectomy for obstetric and gynecological indication at GZH from August 1, 2010 to July 31, 2014 G.C.

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Sample Size Determination: sample size was determined using a single population proportion formula.

\[ n = \frac{(Z_{\alpha/2})^2 p (1-p)}{d^2} \]

where:

- \( n \) = Required sample sizes
- \( Z_{\alpha/2} \) = Critical value for normal distribution at 95% confidence level which equals to 1.96 (z value at \( \alpha = 0.05 \))
- \( P \) = 50% (0.5) is used to take the maximum sample size since the prevalence is not known
- \( d \) = An absolute precision (margin of error 5%).

\[ n = \frac{(1.96)^2 (0.5) (0.5)}{(0.05)^2} = 384 \]

\[ n = 384 + 19 (5\% \text{ non-response}) = 403 \]

Sampling techniques: All five years records of mothers who underwent a hysterectomy which is 521 in number found on registration books, cards and operation log books was included in the study irrespective of the calculated sample size (403). The cards were accessed by using card number and name, collected from record room and all necessary data were reviewed using checklists.
**Data Collection:** The data was collected from registration books, cards and operation log books by using a structured data entry format prepared for this purpose. Data was collected by three nurses in the hospital particularly working in the operation room and Gynecology and obstetric department after appropriate training and orientation was given. Meanwhile the completeness of the data was checked every day by four second year integrated emergency obstetrics and gynecology and general surgery (IESO) students.

**Data Processing and Analysis:** Data was coded and entered by EPI data and transferred to SPSS version 20 computer programs for analysis. Socio-demographic and obstetric profile of patients who underwent hysterectomy was summarized and presented by descriptive analysis. Bi-viriate and multi-variable analysis was also done to see the relationship between the dependent and independent variables. All independent variables with \( p \) value less than 0.05 were entered into binary logistic regression to control all possible confounders.

**RESULTS**

**Socio-Demographic Characteristics of the Patient:** A total of 548 (4.84%) hysterectomies were done during the study period. Amongst these 369 (70.8%) were elective hysterectomy whereas 152 (29.2%) were emergency hysterectomy which gave an incidence of 1.58%. Twenty seven patients all who underwent emergency hysterectomy for an indication of ruptured uterus were not included in the study because of incomplete or lost cards. The final analysis was done for 521 patients who underwent hysterectomy. Out of 521 patients who underwent both elective and emergency hysterectomies, majority 474 (91.8%) were from urban area while the rest 47 (9.0%) were from rural areas. Regarding the age distribution of the women, majority 359 (68.9%) were above 35 years of age and the least 5 (1%) belonged to the age group of less than 18 years. The mean and inter quartile age of the patients was 37.4 and 58 respectively.

**Obstetric and Gynecological Profile of the Patient:** Out of 521 women whose obstetric and gynecological profile had reviewed, majority 325 (62.4%) had no Antenatal care (ANC) follow up, 122 (86.5%) underwent EOH had prolonged labour greater than 24 hours. Elective hysterectomy was done for majority of the cases with the commonest indication of UVP 280 (75.7%) and the rest 152 (29.2%) was operated as an emergency hysterectomy.
Intra Operative and Post-Operative Complication: Based on the information documented in the charts hypovolemic shock, septic shock and bladder injuries was the commonest intra-operative complication (49 (9.4%), 17 (3.3%), 7 (1.3%)) respectively. About 44(8.4%) women who were operated for emergency hysterectomy had an average blood loss of 2liters or more which necessitate emergency blood transfusion. Sepsis, wound infection and fistula 56 (10.7%), 72 (13.8%), 19 (3.6%) were the

Table 3: Factors Associated with maternal outcome in Gelemso Zonal hospital, Ethiopia, in 2014

<table>
<thead>
<tr>
<th>Variables</th>
<th>Classification</th>
<th>AOR(95% CI)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANC</td>
<td>Yes</td>
<td>0.660(0.077-5.689)</td>
<td>0.706</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>0.262(0.018-3.853)</td>
<td>0.853</td>
</tr>
<tr>
<td>Previous mode of delivery</td>
<td>SVD</td>
<td>0.1176(0.001-14.516)</td>
<td>0.383</td>
</tr>
<tr>
<td></td>
<td>CS</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Hysterectomy Schedule</td>
<td>Emergency</td>
<td>2.580(1.761-8.738)</td>
<td>0.128</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Intra-operative complication</td>
<td>Septic shock</td>
<td>10.284(1.220-86.915)</td>
<td>0.032</td>
</tr>
<tr>
<td></td>
<td>Hypovolemic shock</td>
<td>369.654(55.363-2468.529)</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Post-operative complication</td>
<td>Sepsis</td>
<td>12.287(1.378-109.963)</td>
<td>0.025</td>
</tr>
<tr>
<td></td>
<td>Wound infection</td>
<td>4.200(0.553-31.607)</td>
<td>0.164</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>3.543(0.70-178.522)</td>
<td>0.527</td>
</tr>
<tr>
<td></td>
<td>No complication</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
recorded post-operative complication. Out of total 521 of women underwent hysterectomy 44(8.4%) mother were die. Thirty eight patients died of multi organ failure secondary to hypovolemic shock secondary to intra-operative severe blood loss. Six of them were died of septic shock. The rest were discharged after improvement within an average stay of 7 to 14 days. Sepsis and wound infection was the commonest cause for prolonged duration of hospital stay (Figure 3).

Factors Associated with Maternal Outcome of Hysterectomy: To identify factors associated with maternal outcome binary logistic regression was done and five independent were found to be significant with maternal outcome. These factors were further analyzed using multiple logistic regression using enter stepwise elimination method. Mothers who had emergency hysterectomy, intraoperative complication especially those secondary to septic and hypovolemic shock and those mothers who had post-operative complications secondary to sepsis also showed a significant association with maternal outcome.

DISCUSSION

In this study emergency hysterectomy accounted for 152 (29.2%) where as elective hysterectomy was 369 (70.8%). Factors associated with maternal outcome were ANC, Previous mode of delivery, Hysterectomy.

According to this study out of 152 women operated for emergency hysterectomy about 32(21.1%) had outcome of death but 12(3.3%) out of 369 on elective hysterectomy respectively. In this study hypovolemic shock 49(67.12%), Septic shock 17 (23.28%) and bladder injuries 7(9.6%) were common intra-operative complication. The result was much higher than the study done by Najam [10] (46.34%, 10.18%,2%) which indicates hypovolemic shock, septic shock and bladder injuries respectively [10].

Regarding post-operative complication, wound infection (13.8%) and sepsis (10.7%) was the two most common post-operative complications where as Vesico-vaginal fistula, anemia and post-operative fever were other documented complications. This figure was different from the study done by Kumari and SahayPriti [15] where febrile morbidity (27.6%).

Concerning EOH, uterine rupture129 (84.9%) was commonest indication of EOH. This very high incidence of ruptured uterus was also reported by a study done by Nwobodo (93.2%) [2] and Kumari (75%) [15]. This high incidence of uterine rupture could be because most of the cases in Gelemso hospital was from rural areas and majority of them had history of prolonged labor of more than 24 hours.

Atonic PPH 17(11.2%) was the second most common indication of obstetric hysterectomy in this study. Similarly atonic PPH is the second commonest finding by a study reported at Allied teaching hospital, Faisalabad but with a high incidence (26.3%) [4].

In the current study there were no cases of emergency surgery secondary to injudicious use of oxytocin which is in contrast to the study done by Afaf R. [4] at Allied teaching hospital, Faisalabad Saudi Arabia where 13 cases were mismanaged by traditional birth attendants using oxytocin augmentation and induction which ended with uterine rupture [4].

Concerning elective hysterectomy, utero-vaginal prolapse(UVP) 280(75%) was found to be the commonest indication. Similarly utero-vaginal prolapse was the commonest finding by a study conducted in Nigeria but with a little higher incidence (82%). This might be due to the fact that many mothers in developing countries like ours prone to many risk factors such as high affinity to have had many children, poor awareness on family planning usage, malnutrition, low socio-economic status, cultural and religious influences [16].

The maternal death in this study was 8.4%.This figure is much higher than the study done by Inas [14] in Baghdad (6.45%) and Kumari and Sahay [15] in India (5.35%). This high maternal mortality rate can be also due to the difference in availability of basic emergency obstetric care, delay in referral linkage system and, blood transfusion setup, geographical features, differences in local staff’s skills and availability of different emergency interventions.

CONCLUSION

The prevalence of emergency and elective hysterectomy among mothers who were admitted to Gelemso Zonal Hospital from August to September 2014 was high with the main indication of uterine rupture, utero-vaginal prolapse respectively. In general this study revealed that significant proportion of mothers who underwent hysterectomy had an outcome of death and associated with intra-operative, post-operative and hysterectomy schedule. Hypovolemic shock and wound infection were the main intra-operative and post-operative complication mainly among mothers who were operated for emergency hysterectomy with massive acute blood
loss. Thus, good maternal care, active management of labor, early recognition of complications and timely referral will go a long way in ensuring a better outcome.

REFERENCES