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RETROSPECTIVE CASE STUDY OF UTERINE RUPTURE: A THREE YEAR AND NINE MONTHS RETROSPECTIVE DOCUMENTARY REVIEW AT MENDEFERA ZONAL REFERRAL HOSPITAL, ERITREA

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ABSTRACT

Introduction: Maternal deaths are clustered around labour, delivery, and the immediate postpartum period, with obstetric hemorrhage being the main cause of death. Uterine rupture is one of the main causes of maternal deaths. Uterine rupture refers to complete spontaneous disruption of the uterine wall which is usually accompanied by bleeding and sometimes by extrusion of part or the entire fetal-placental unit. **Objective**: To determine the incidence, causes, and management of uterine rupture and the characteristics of the women in this condition. **Methods**: Retrospective documentary review study of all mothers with ruptured uterus, at Mendefera zonal referral hospital from January1st 2013 to September 30, 2016 was applied. The study was conducted to know the incidence of ruptured uterus and its cause, main surgical intervention, and case fatality rate in the hospital. Patient identification performed through review of pre - recorded log book and clinical card of each mother admitted to maternity ward. Medical records were reviewed and relevant maternal information was recorded starting with socio-demographic characteristics and going through obstetrics, gynecological and surgical history. Statistical analysis of data was done using STATA 9. **Results**: A study of 35 uterine rupture cases managed over three years and 9 months period in Mendefera zonal referral hospital was reported. During the study period the total number of deliveries in the Mendefera zonal referral hospital was7255 giving an incidence of 0.48% or 1 in 207 deliveries. Majority (87.5%) of the uterine rupture cases were living outside Mendefera city .The mean age, gravidity and parity were 32, 5, and 3, respectively. Of these 35 cases 8 (22%) had history of previous caesarian section. The most frequent risk factor for uterine rupture was prolonged or obstructed labor that accounted 24 (68.6%). The main surgical intervention was a repair which accounts for 97% of the cases. The perinatal mortality and case fatality rate were 97% and 2.9%, respectively. **Discussion and Conclusion**: The prevalence of uterine rupture in Mendefera zonal referral hospital was high, when it is compared to the developed countries. The commonest cause for the rupture was prolonged or obstructed labor. Therefore, the study recommends a meticulous and systematic approach in preventing prolonged and obstructed labor in all health facility is needed to reduce the occurrence of these gravely ill consequences.

KEYWORDS

Prevalence of uterine rupture, Health facility and Retrospective.

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INTRODUCTION

Uterine rupture is tearing of the uterine wall during pregnancy or delivery. Symptomatic uterine rupture generally refers to complete spontaneous disruption of the uterine wall (serosa, myometrium, decidua), which is usually accompanied by bleeding and sometimes by extrusion of part or the entire fetal-placental unit[1,2,4]. Maternal deaths are clustered

around labour, delivery, and the immediate postpartum period; with obstetric hemorrhage being the main cause of death[6]. The risk of a woman dying as a result of pregnancy or childbirth during her lifetime is about one in six in the poorest parts of the world compared with about one in 30,000 in Northern Europe.

The occurrence of uterine rupture varies in different parts of the world; it is rare in high-income countries, whereas it remains as a public health problem in developing low income countries, mainly in Africa. As it is documented in different studies the causes of uterine rupture are different within and among low income developing and developed countries. An observational study conducted in rural India documented that maternal mortality rate associated deaths due to uterine rupture as 30 percent[8]. Another population-based cohort study that was conducted in Netherlands in 2009, also recorded the risk of perinatal death after uterine rupture as 8.7 percent[9]. A systemic review study of maternal mortality and morbidity due to uterine rupture that was done for less developed countries in 2005, also documented a much higher findings, ranging from74 to 92 percent[2].

In developed countries, the main cause is a previously scarred uterus as compared to low income developing countries, which are commonly caused by grand multi - parity with obstructed labor as a primary cause. However, uterine rupture is commonly resulted due to multiple factors. A two-year review study of uterine rupture that was conducted in 2010, in a regional hospital in Ghana and a case- control study on uterine rupture that was done in 2013, at a teaching hospital in Uganda documented some of the most common causes of uterine rupture such as grand multiparty, advanced age, fetal macrosomia and abnormal placentation[2,4,5]. The incidence of uterine rupture was reported to range from 0.3 to 11 per 1000 deliveries, with the incidence being higher in developing countries. In 2001, the incidence of uterine rupture was reported as 4.8 per 1000 deliveries for Ilorin, Nigeria where as it was recorded lower than the above for Canada with 0.3 per 1000 deliveries in 2002[10].

Rupture of a previously unscarred uterus is usually a tragic event that results in an extensive damage to the uterus and sometimes excessive bleeding that can even lead to maternal and perinatal death,. Sometimes the damage of the uterus can go beyond the repair and in such case hysterectomy becomes the only choice. Such an obstetric accident is also closely associated with morbidity such as bladder rupture, vesico-vaginal and recto-vaginal fistula, foot drop and psychological trauma[2,4]. The main cause of uterine rupture in developed countries is previously scarred uterus, whereas in developing low income countries grand multiparty with obstructed labour is the primary cause of uterine rupture[10]. Repair of uterine rupture is done with sterilization following active resuscitation of the mother and or the child; commonly an intensive and quality surgical procedure is employed to avoid maternal mortality[10,11].

Therefore, this retrospective study was aimed at establishing the incidence of uterine rupture, causes, maternal and fetal outcomes and modes of management at Mendefera zonal referral hospital. The results of the study will help in looking at management and health care planning gaps for improving the quality of health care in reducing maternal and perinatal mortality.

Objectives

To determine the incidence, causes, and management of uterine rupture, and to assess the characteristics of women and case fatality rate at Mendefera Zonal Referral Hospital from January 1st 2013 to September 30, 2016.

MATERIAL AND METHODS

Study setting and design

Retrospective documentary review study was conducted at Mendefera zonal referral hospital on mothers who were admitted with the diagnosis of uterine rupture, fromJan 1st 2013 to Sept 30 2016. The hospital is a zonal referral hospital situated within the Mendefera city, Eritrea. This oby-gyne department is responsible for treatment and follow-up of all procedures related to obstetrics and gynecologic problems. The hospital includes an emergency obstetric care that offers 24-hour

emergency maternity services. Due to its strategic location, it offers obstetrics services mainly to mothers from southern and south- western part of the country. It is the only National Fistula Hospital that provides health services for mothers who have an obstetric fistula in the country.

Study participants and study period

All mothers who were admitted with the diagnosis of uterine rupture at Mendefera zonal referral hospital, from Jan 1st 2013 to Sept 30 2016 were included.

Data collection

Primarily patient identification was performed through review of pre-recorded log book and patient card describing each patient who was admitted to Maternity ward with the diagnosis of ruptured uterus. Medical records were reviewed and pertinent maternal information was recorded starting with socio-demographic characteristics and going through obstetrics, gynecological, medical and surgical history. The collected data were cleaned and checked for completeness and reliability before data entry.

Data Processing and Analysis

The study used STATA 9 for Statistical analysis of the data collected.

Ethical Consideration

The study obtained permission from Ministry of Health ethical and research committee, and Mendefera zonal referral hospital. Each participant's record was checked. The procedure of the study was very confidential the cards of the participants were reviewed and recorded by a medical doctor who works as an Oby-gyne specialist in the hospital, in order to maintain confidentiality of the information.

RESULTS

This documentary review study included 35 uterine rupture cases that were managed over three years and 9 months period in Mendefera zonal referral hospital. During the study period the total number of deliveries in Mendefera zonal referral hospital was 7255 with an incidence of 0.48 percent or1 in 207 deliveries. The results of the study indicated that, the mean age, gravidity and parity were 32, 5, and 3, respectively. The minimum and maximum age of the study group was ranging between 18 to 42 years; with the majority (n=22) of the cases being in the age group of 26-35years that accounts 63 percent of the total cases with uterine rupture. The range of the parity was between 0 to 9.The highest incidence of uterine rupture (26%) was observed in women who were Para 5 or more; secondly, the greatest number of uterine rupture occurred in women who were Para 2 and 4 (Table No.1 and 2). In 4 (11%) of the cases the rupture was also occurred in primigravida mothers.

DISTRIBUTION OF RUPTURED UTERUS MOTHERS BY AGE, GRAVIDITY, PARITY AND FETAL WEIGHT IN MENDEFERA ZONAL REFERRAL HOSPITAL, FROM JANUARY 1ST 2013 TO SEPTEMBER 30, 2016

Base line characteristics of ruptured uterus cases in Mendefera Zonal Referral Hospital, from January 1st 2013 to September 30, 2016

The mean fetal weight was 3.5kg ranging between 2.5 and to 5.5 kg, as minimum and maximum. Forty nine percent of the neonates were more than 3.5kg and 71 percent of them were males. Fetal outcome was recorded as thirty - four cases (97.1 %) who had still birth and a single case (2.9 %) born alive. Majority of the mothers (85.7%) who faced uterine rupture were living outside of Mendefera Sub Zone and 94.3 percent of them were Christian by religion (Table Nol.1 and 2).

Causes of ruptured uterus at in Mendefera zonal referral hospital, from January 1st 2013 to September 30, 2016

According to the retrospective documentary review study, obstructed labor and/ or prolonged labor was the leading cause of ruptured uterus accounting for 68.6 percent of the cases, followed by scared uterus 22.9 percent; there were also other causes such as mal-presentation, and use of misoprostol. Over all rupture of uterus occurred in 77.1 percent of the cases in unscarred uterus verses 22.9 percent in scarred uterus.

Maternal /fetal outcomes and surgical intervention in Mendefera zonal referral hospital, from January 1st 2013 to September 30, 2016

There was one maternal death and thirty- four perinatal death giving case fatality rates of 2.9 and 97.1 percent, respectively. The commonest maternal

complications were hemorrhage which leads to 100 percent blood transfusion rate, followed by vesico - vaginal fistula which accounts for 8 (23%) of the cases. Repair of the ruptured uterus with bilateral tubal ligation was the commonest surgical intervention (60%), followed by rent repairing 34.3 percent of cases (Table No.4).

DISCUSSION AND CONCLUSION

Worldwide, every year, between 340,000 and half amillion women die due to pregnancy and childbirth related complications. Majority of these deaths occurring in developing low income countries; over 90 percent of these maternal deaths occur in Sub-Saharan African countries. The incidence rate of one in two hundred seven deliveries that was found in this study is almost similar to most of African countries studies but significantly higher than that of developed countries.

The study findings showed that most of the mothers with uterine rupture (85.7%) were residents outside Mendefera city, in such cases the labour may be prolonged due to transportation or home delay. As it is indicated in the findings of the study, the major cause of uterine rupture was prolonged or obstructed labour (68.6%)which might have an association also to other social determinants that need an in - depth study. The findings for the cause of uterine rupture have similarity with studies that were done in many African countries[2-5,10,11]. As it is indicated in the findings of Mendefera zonal referral hospital uterine rupture was a major contributor to perinatal deaths. The results of the finding indicted that perinatal and maternal death attributable to uterine rupture were 97.1 and 2.9 percent. These results of perinatal deaths have similarity with the study results of south-east Nigeria in 2010, which documented 96.3 percent for perinatal deaths and a much higher maternal death 31.9 percent than the finding 2.9 percent of Mendefera, Eritrea[11].

Eight cases (23%) of the mothers with ruptured uterus had developed also vesico-vaginal fistula (VVF) as a complication that lead to urine incontinence which made a negative impact in their daily activities, sexual and psycho - social behaviors, in their family as well as in the community they live.

The frequency of uterine rupture increases with maternal age as it is indicated in the findings of the study the age group between 26-30 (31.5%) and 31-35 (31.5%) years were found to be the most adversely affected; and these findings of this study are similar to other findings from Nigeria and Ghana which showed that women aged 31-35 years are most at risk of uterine rupture in pregnancy. Though the greatest number of ruptures occurred in women who were greater or equal to Para 5 (26%). The findings of the study showed that the mean parity was 3 with majority (26%) of cases being grand multipara, this finding also has similarity to the findings of a study conducted in Tanzania and Ghana[3,4].

Based on the study results, seventy seven percent of the uterine rupture occurred in unscarred uterus which has similarity to those reported from Nigeria, Ghana, Ethiopia and Bangladesh that documented as 75 percent of uterine rupture in unscarred uterus[2].

Table No.1: The mean distribution of Ruptured uterus mothers by age, gravidity, parity and neonatal weight in Mendefera zonal referral hospital, from January 1st 2013 to September 30, 2016

S.No	Variable	Number of observation	Mean	Standard deviation	Range	
					Minimum	Maximum
1	Age	35	32	5	18	42
2	Gravidity	35	5	2.6	1	12
3	Parity	35	3	2.3	0	9
4	Weight of Neonate	35	3.5	0.6	2	5.5

Table No.2: Base line characteristics of ruptured uterus cases in Mendefera zonal referral hospital, from January 1st 2013 to September 30, 2016

S.No	Variable	Frequency	Percent (%)
Address			
1	Mendefera	5	14.3
2	Others	30	85.7
Religion			
3	Christian	33	94.3
4	Muslim	2	5.7
Age			
5	<21	1	3
6	21-25	5	14
7	26-30	11	31.5
8	31-35	11	31.5
9	36-40	6	17
10	>40	1	3
Parity			
11	0	4	11
12	1	2	6
13	2	7	20
14	3	6	17
15	4	7	20
16	≥5	9	26
Fetal weight			
17	≤2.5	4	11
18	2.6-3.5	14	40
19	>3.5	17	49
Sex of fetus			
20	Male	25	71
21	Female	10	29
Total		35	100%

Table No.3: Causes of ruptured uterus in Mendefera zonal referral hospital from January 1st 2013 to September 30, 2016

S.No	Variable	Frequency (n)	Percent (%)
1	Previous cesarean	8	22.9
2	Obstructed / prolonged labor	24	68.6
3	Mal - presentation	2	5.7
4	Others	1	2.8
5	Total	35	100 (%)

Table No.4: Maternal /fetal outcomes and surgical intervention at Mendefera zonal referral hospital from January 1st 2013 to September 30, 2016

S.No	Variable	Frequency(n)	Percentage (%)
Fetal outcome			
1	Perinatal death	34	97.1
2	Alive	1	2.9
Maternal complication			
3	Death	1	2.9
4	VVF	8	23
5	Blood transfusion	35	100
Surgical intervention			
6	Repair	12	34.3
7	Repair and tubal ligation	21	60.0
8	Subtotal hysterectomy	2	5.7
Total		35	100%

CONCLUSION

In conclusion, the prevalence of uterine rupture that was seen in Mendefera Zonal Referral hospital was high, when it is compared to the developed countries. The commonest cause for the rupture was prolonged or obstructed labor. Therefore, from the study findings it is recommended that a meticulous and systematic approach in preventing prolonged and obstructed labor in all health facility is needed to reduce the occurrence of these gravely ill consequences.

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AUTHORS' CONTRIBUTION

Dawit Sereke was involved in the designing and proposal writing of the study, clinical record reviewing for data collection, data analysis, and interpretation of the study findings, report writing, report reviewing and final paper preparation.

Elias Teages Adgoy was involved in the designing and proposal writing of the study, data analysis, and interpretation of the study findings, report writing, report reviewing and final paper preparation.

Habte Hailemelekot was involved in report reviewing, and final paper preparation.

Dawit Estifanos was involved in the designing and proposal writing of the study, data analysis, and interpretation of the study findings, report writing, report reviewing and final paper preparation.

CONFLICT OF INTERESTS

All authors of the study declare that they have no conflict of interests.

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