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Research Article

Prevalence and Management Outcome of Obstructed Labor among Mothers Who Gave Birth Between January, 2013 and December, 2015 in Metu Karl Referal Hospital, Ilu Ababora Zone, South West Ethiopia

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Abstract

Background: Obstructed labor is a major cause of both maternal and newborn morbidity and mortality. It affects 3 - 6% of laboring women globally. The number of maternal deaths as a result of obstructed labor is 8% globally but this number varies in developing country, it ranges 4 - 70% of all maternal deaths and it is also associated to high prenatal mortality rate. It is common problem in resource limited countries like Ethiopia. The aim of this study was to determine the prevalence and management outcomes of obstructed labor among mothers who gave birth between January, 2013 and December, 2015 in Mettu Karl Referral Hospital South West Ethiopia.

Method: A three years Hospital based cross-sectional study design was used. Then the data checked for its consistency and completeness, coded, edited, and fed in to EpiData V.3.4 and transported to SPSS version 20.0 windows, for data processing and analysis with Descriptive, Bivariate and Multivariate logistic regression. On binary logistic regression analysis, a p-value < 0.25 were used as a candidate for multivariate logistic regression analysis. Statistical significant associations were tested at a p-value of < 0.05.

Result: A total of 316 cases of obstructed labor were observed out of 7764 deliveries conducted in Mettu Karl Referral Hospital, with the incidence of 4.1% (40.7 per 1000 deliveries). Most of the cases accounting for 250 (79.1%), 188 (59.5%) and 171 (54.1%) were referred from health center, visited the Hospital after 24 hours of labor and came from a distance of more than 50 kilometers respectively. Majority 291 (92.1%) of cases come from rural area and 209 (66.1%) of cases in the age group of 20 - 29 years, and 180 (57%) had at least one ANC follow up. Caesarian section 164 (51.9%) were the commonest mode of delivery. The commonest maternal complication observed were sepsis 234 (79.1%) followed by surgical site infection 87 (27.5%) and uterine rupture 76 (24.1%). Regarding the perinatal 185 (58.5%) had serious neonatal complications observed, among them 111 (35.1%) were Still birth while 205 (64.9%) were alive at birth.

Conclusion: obstructed labor is still common and main cause of operative delivery.

Keywords: *Obstructed Labor; Uterine Rupture; Asphyxia; Mettu karl Hospital*

Introduction

Labor is considered obstructed when the presenting part of the fetus cannot progress in to the birth canal, despite strong uterine contractions. Neglected obstructed labor is a major cause of both maternal and newborn morbidity and mortality, and long term complications [1].

Obstructed labor is an important cause of maternal death in communities in which childhood under nutrition and early marriage is common resulting in small pelvis, and in which there is no easy access to functioning health facilities with the capability of carrying out

operative deliveries. Obstructed labor also causes significant maternal morbidity mainly due to infection and hemorrhage and in the long term leads to obstetric fistulae, skeletal and neurologic complications. Fetal death from asphyxia is also common [2].

Globally, at least 585, 000 women die each year by complications of pregnancy and child birth. More than 70% of all maternal deaths are due to five major complications: hemorrhage, infection, unsafe abortion, hypertensive disorders of pregnancy, and obstructed labor [3].

Obstructed labor affects 3 - 6% of laboring women globally but in developing countries different studies showed incidences of obstructed labor varying from as low as o.8% in Nigeria, 10.5% in Uganda and as high as 12.2% in prospective study done at Jimma University Specialized Hospital [2-5].

Obstructed labor also causes significant maternal morbidity mainly due to infection and hemorrhage and in the long term leads to obstetric fistulae, skeletal and neurologic complications. There are many factors that affect the outcome of pregnancy from the onset of any obstetric complication. The outcome is most adversely affected by delayed treatment [6].

The obstruction can only be alleviated by means of an operative delivery, either caesarean section or destructive instrumental delivery. It is also the major cause of still birth and perinatal asphyxia [3,5].

Methods and Material

Retrospective cross-sectional study was conducted from January 1, 2013 to December 30, 2015 in mettu Karl hospital. This hospital established 1932 by Sweden missionary and RAS TEFERI.IT 600 kilometer away from Addis in south west Ethiopia. It provide health care service for 1.7 million people.

All mother s that were diagnosed obstructed lab and managed in the hospital were included in as study subject. Patients whose charts were in complete and missed part excluded from the study.

Data were collected using questionnaire and check list which contains socio-demographic characteristics of the patients, estimated distance from the hospital, clinical features of obstructed labor, the mode of delivery and outcome on the mother and baby. Data were collected trained midwife and first year integrated emergency surgical officers in department of obstetrics and gynecology from patients' records, logbook in labor ward and operation theater.

Data was analyzed using SPSS for windows version 20.0 software. Descriptive statistics was run to describe independent and dependent variables. The association between dependent and independent variables were determined by odd ratio. Binary and Multivariable regression analysis was done to see the strength of association and determine independent predictor of maternal and perinatal outcome. Unfavorable outcome: Those mothers who developed complication once they were diagnosed as obstructed labor.

Unfavorable outcome: Those neonates who developed complication once obstructed labor was diagnosed.

Ethical clearance was obtained from Jimma University medical sciences faculty ethical review committee and permission to conduct the study was obtained from JUSH. Information kept confidentially.

Result

During three years study period, in Mettu Karl Referral Hospital (MKRH) total delivery attended were 7764 out of these, 350 (4.5%) with Obstructed Labor registered, out of these only 316 cases are included in the study, 34 cases were excluded by exclusion criteria. The chart retrieval rate was 90.3% in this study.

Socio-Demographic characteristics

During the 3 years study period, there were a total of 7764 deliveries of which 350 were diagnosed to have obstructed labor (4.5%).

Thirty-nine (12.3%) of the obstructed labor cases were teenagers and the majority, 209 (66.1%) in the age group of 20-29 years, came from rural area 291 (92.1%), and Prime Para accounting for 169(53.5%), (Table 1). The mean age 25 years with standard deviation 4.6 year.

Socio-Demographic data	Variables	Values	Percent (%)
Maternal Age	15 - 19	39	12.3
	20 - 24	138	43.7
	25 - 29	71	22.5
	30 - 34	38	12.0
	35 - 39	25	7.9
	40 - 44	5	1.6
Address	Urban	25	7.9
	Rural	291	92.1
Parity	Prim Para	169	53.5
	II-IV	137	43.4
	> IV	10	3.2

Table 1: *Distribution of cases with obstructed labor in relation to Age, parity and residence in MKRH from January, 2013 to December, 2015.*

136 (43.1%) of the obstructed labor cases did not have any antenatal care while 56.9% of cases obstructed labor cases were no antenatal follow up. Most of the cases 250 (79.1%), 188 (59.5%) and 153 (48.4%) were referred from health centers, visited MKRH after at least 24 hours of labor and came from a distance of more than 50 kilometers, respectively (Table 2).

Health service related factor	Variables	Number	Present (%)
ANC Follow up	Had at least one follow up	180	57.0
	Had no follow up	136	43.1
Referral	Self	37	11.7
	Health Center	250	79.1
	Hospital	29	9.2
Distance from MKRH	< 10 km.	10	3.2
	10 - 50 km.	135	42.7
	51 - 100 km.	153	48.4
	> 100km.	18	5.7
Duration of labor	< 12 hours	3	0.9
	12 - 24 hours	125	39.6
	> 24 hours	188	59.5

Table 2: *Distribution of cases with obstructed labor in relation to utilization and access to health services, MKRH, January, 2013 to December, 2015.*

Maternal Clinical Management Outcome

In two hundred eighty-nine cases (91.7%) had serious maternal complications. Among this sepsis was the commonest complication accounts 234 (74.1%). Followed by surgical site infection 87 (27.5%) and uterine rupture 76 (24.1%). Then fistula 52 (16.5%) out of

these 44(13.9%) were VVF and 8(2.5%) were have both VVF and RVF, and then PPH 35(11.1%) and Dehiscence 26(8.5%). See Table 3 and Figure 2.

Poor maternal outcome related to young age 5 to 6 times in young age between 15 - 24 years group and old after 35 years. Other associated factor for poor maternal outcome in this study duration of labor more than 24 hours.

Maternal complication	Values	Present (%)
Uterine rupture	76	24.1
Sepsis	234	74.1
Surgical site infection	87	27.5
Fistula	52	16.5
PPH	35	11.1
Dehiscence	26	8.2

Table 3: *Distribution of complication in cases of obstructed labor, MKRH, January, 2013 to December, 2015.*

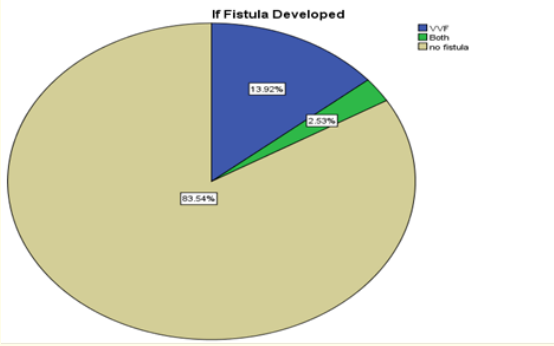

Figure 1: *The types of Obstetrics fistula as sequence of obstructed labor.*

The commonest type intervention was C/S in 185 (58.5%) of the patients, followed by laparotomy in 91 (28.8%) and destructive delivery (craniotomy and evisceration) in 36 (11.4%) (Figure 2).

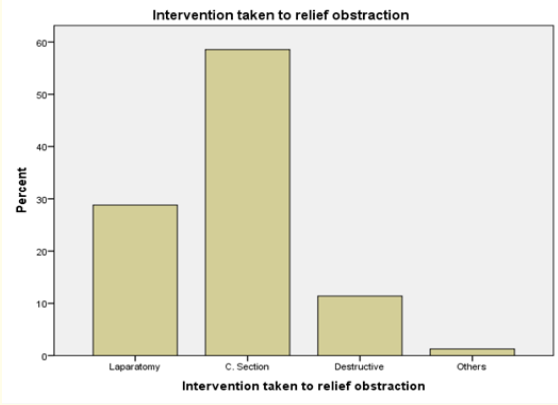

Figure 2: *The common intervention for obstructed labor in Metu Karl refferal hospital.*

Perinatal Clinical Management outcomes

Regarding the perinatal outcome 185 (58.5%) had serious neonatal complications observed during study period. Among them 111 (35.1%) were Still birth while 205 (64.9%) were alive at birth. From alive birth 186 (58.9%) had low Apgar score in the first minute (< 7). The 5th min. Apgar score was normal for 154 (48.7%) of the alive born. The rest had birth trauma 152 (48.1%), Aspasia 127 (40.2%), and Neonatal sepsis 58 (18.4%). The weight of the 246 (77.8%) of the newborns was in the normal range (2500-3999 grams), whereas 70 (22.2%) of them were (> 4000 grams) (Table 4).

Perinatal outcome	Variables		Values	Percent (%)
Perinatal status	At the time of arrival	Alive	205	64.9
		Dead	111	35.1
	After intervention	Alive	185	58.5
		Dead	20	6.3
APGAR Score	1st min.	> 7	186	58.9
		7 - 10	19	6.0
	5th min.	> 7	51	16.1
		7 - 10	154	48.7
Weight of new born	2500 - 3999		246	77.8
	< 4000		70	22.2
Sex of new born	Male		197	62.3
	Female		119	37.7
Neonatal complication	Yes		185	58.5
	No		20	6.3
Final status of the neonate	Discharged Improved		173	54.7
	Dead		143	45.3

Table 4: *Distribution of cases with OL in relation to perinatal outcome in MKRH from January, 2013 to December, 2015.*

Factors associated with favorable maternal clinical outcome of obstructed labor

Descriptive statistics and Binary and Multi logistic regression was done to determine factors associated with favorable clinical outcome between the dependent variable (maternal management outcome) and independent variable (Age, Residence, and ANC follow up, Source of referral, Duration of labor and Distance from MKRH), and neonatal management outcome with (weight of the baby, APGAR score and intervention taken to relive obstruction).

The result revealed only age of mother had significant association (p-value < 0.05) with favorable clinical outcome of obstructed labor, those mother age between (20 - 24) years had good clinical outcome (three times) than poor clinical outcome. But; Residence, ANC follow up, Source of referral, Duration of labor and Distance from MKRH had no significant association.

Result related to neonatal management outcome only Apgar score greater than 7 in 5th minute had significant association (p-value < 0.05) with favorable clinical outcome (Table 5 and 6).

Variable		Maternal outcome		COR	AOR	P-value
Favorable		Unfavorable				
Age	15 - 19	32 (82.1%)	7 (17.9%)	2.37 (0.736,7.633)	4.55 (1.07,19.3)	0.04
	20 - 24	108 (78.3%)	30 (21.7%)	3.009 (1.189,7.619)	5.93 (1.71,20.6)	0.005
	25 - 29	65 (91.5%)	6 (8.5%)			1
	30 - 34	32 (84.2%)	6 (15.8%)	2.031 (0.607,6.799)	2.72 (0.58,12.72)	0.203
	35 - 39	17 (68.0%)	8 (32.0%)	5.098 (1.558,16.683)	8.49 (1.968,36.6)	0.004
Residency	Urban	22 (88.0%)	3 (12.0%)			1
	Rural	237 (81.4%)	54 (18.6%)	1.671 (0.483,5.785)		
Parity	0	140 (82.8%)	29 (17.2%)	0.884 (0.493,1.587)		
	I-IV	111 (81.0%)	26 (19.0%)			1
	<= IV	8 (80.0%)	2 (20.0%)	1.067 (0.214,5.325)		
ANC follow up	At least 1	149 (82.8%)	31 (17.2%)			1
	No	110 (80.9%)	26 (19.1%)	1.136 (0.638,2.022)		
Source of referral	Self	34 (91.9%)	3 (8.1%)	0.196 (0.047,0.81)	0.4 (0.07,2.19)	0.29
	HC	205 (82.0%)	45 (18.0%)	0.488 (0.208,1.142)	0.69 (0.205,2.384)	0.567
	Hospital	20 (69.0%)	9 (31.0%)			1
Distance from MKRH	10 - 50 km.	113 (83.7%)	22 (16.3%)			1
	51 - 100 km.	124 (81.0%)	29 (19.0%)	0.389 (0.132,1.148)		
	< 100 km.	12 (66.7%)	6 (33.3%)	0.468 (0.162,1.35)		
Duration of labor	12 - 24 hrs.	109 (87.2%)	16 (12.8%)			1
	> 24 hrs.	150 (79.8%)	38 (20.2%)	1.726 (1.915,3.254)	2.99 (1.12,3.99)	0.05

Table 5: *Factors associated with favorable maternal outcome among obstructed labor, in MKRH, from January, 2013 to December, 2015.*

Variables			Neonatal Outcome		COR	P-value
Favorable						
Unfavorable						
Weight in gram	2500 - 3999		129 (52.4)	117 (47.6)	0.65 (0.37,1.12)	0.124
	> 4000		44 (62.9)	26 (37.1)	1	
APGARE score	5^{th} min.	< 7	25 (49.0)	26 (51.0)	0.039 (.015,0.104)	0.00
		7 - 10	148 (96.1)	6 (3.9)	1	
Intervention taken	Laparotomy		18 (19.8)	73 (80.2)	12.16 (1.19,12.3)	0.035
	Caesarian Delivery		152 (82.2)	33 (17.8)	0.65 (0.06,6.45)	0.714
	Other		3 (75.0)	1 (25.0)	1	

Table 6: *Factors associated with favorable perinatal outcome among obstructed labor, in MKRH, from January, 2013 to December, 2015.*

Discussion

Obstructed labor is a common obstetric hazard in under developed countries. Many hospital based studies in developing countries show a very wide variability of obstructed labor among deliveries attended [2-5,9]. There is a wide gap on the ratio of obstructed labor

cases to deliveries attended between our study and a previous report from a hospital-based study in Ethiopia. The ratio difference might be due to differences in delivery service coverage, number of pregnant women near hospitals and other factors affecting health service use.

This study had tried to look at magnitude and management outcome of obstructed labor. Including maternal and perinatal clinical outcome like complication and factors associated with favorable clinical outcome of obstructed labor in Mettu Karl Referral Hospital (MKRH). It shows the burden to the health service, the community, and the country in general.

In this study, obstructed labor accounted 4.5% of Hospital deliveries. It is much less than Jimma University Specialized Hospital (12.2%) and Uganda (10.5%) and comparable to Adigrat (3.5%), but also much higher than Nigeria (0.8%) compared to the previous studies done in this country and other African countries [3-5,9]. This low number of obstructed labor cases could be explained by increment in awareness for importance of institutional delivery.

Similar to other studies from developing countries, Multi-parity, lack of antenatal care and rural residence were common factors found among the cases. But in this study different from all other studies, those had at least one ANC follow up were greater than half of the cases (57.0%). Even though ANC is a poor measure to prevent pregnancy and delivery complications. Most of the cases had labor for more than 24 hours (59.5%) and primPara (53.5%). Majority (66.2%) of the cases was in the age group of 20 - 29 years and Teenagers were 12.3% in this study, which is comparable to study done in JUSH and Adigrat [5,9].

Similar to all other studies, cesarean section was the main way of delivery (51.9%), followed by laparotomy (27.5%) which is comparable to results, found in JUSH (54.7%), But much lower than Nigeria (85.0%). Destructive delivery was the least frequent mode of delivery compared to the other studies [3-5,9] which could be explained by the high number of cases of uterine rupture on arrival on whom destructive delivery is contraindicated.

In two hundred eighty-nine cases (91.7%) had serious maternal complications. Among this sepsis was the commonest complication accounts (74.1%), followed by surgical site infection (27.5%) and uterine rupture (24.1%). Uterine rupture is a well-known contributor of maternal hemorrhage and sepsis, which are major causes of maternal mortality and morbidity. Similarly, in the Nigerian study, sepsis was commonest complication, but in JUSH seconded most common complication [4,5]. This may be due to their late arrival to this hospital after onset of labor as compared to other study; most cases arrived after 24 hours of labor (59.7%), and the other reason could be the higher proportion of prim Para ladies in this study (53.5%) who are at increased risk of sepsis.

The results showed maternal age and source of referral had significant association with maternal favorable clinical outcome. Those age between (20-24) had good clinical outcome (four times) than those develop at least one complication compared with other age group and the women who come from home had good outcome than who referred from health center and Hospital (p-value < 0.05). On similar study done in Adigrat and JUSH favorable clinical outcome did not assessed [5,9]. Obstructed labor is associated with high maternal case fatality, maternal morbidity, and perinatal mortality 2.5%, 91.7%, and 45.3% respectively. Similar to observations from other authors, the maternal case fatality rate was high at Adigrat (3.7%), Jimma District Hospital (9.1%) and Uganda (22%). On the other hand, fetal mortality rate was found to be relatively higher than in previous reports in which fetal mortality rate ranged from 32.2% to 86.3% [3-5,8,9]. The high maternal and perinatal; morbidity and mortality that follow obstructed labor calls for an integrated effort to prevent its causes. Good ANC, Family planning services, prompt early referral of obstructed labor, availability of transportation and obstetric care are the essential factors to prevent and to decrease the maternal mortality, fetal mortality and maternal morbidity associated with it.

The perintal outcome in obstructed labor poor, 60 % new born from obstructed labor had low Apgar score. The chance of poor outcome 12 times poor when compare to delivery by cesarean delivery which similar to other studies [4,7,10-15].

One of limitation of this paper does not explain the cause of obstructed labor and maternal outcome after discharge.

The early identification of obstructed labor and referral and then intervention very important steps to prevent maternal and perinatal mortality and morbidity.

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