PREGNANCY OUTCOMEIN WOMEN PRESENTING WITH OBSTRUCTED LABOUR IN A RURAL HOSPITAL, KENYA

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Abstract

Background: *Obstructed labour still remains a life – threatening catastrophe all over the world but mostly in the developing countries. This, entirely preventable labour complication carrying a very high maternal and neonatal morbidity and mortality is an indicator of the inadequacy and poor quality of obstetric care. Obstructed labour is a major cause of maternal and perinatal morbidity and mortality accounting for an estimated 8% of maternal deaths (4).*

Objective*: To determine the pregnancy outcome in mothers presenting with obstructed labour compared to other parturient undergoing emergency caesarean section.*

Study Design: *Prospective cohort study.*

Study setting: *Kakamega Provincial General Hospital, Kenya.*

Subjects and Methods: *The study group comprised of 135 mothers with obstructed labour while the comparison group also comprised of 135 mothers. Data collected was analyzed in SPSS version 15.0. Data analysis entailed the use of descriptive statistics such as frequency distributions and cross tabulations using the chi-square statistics.*

Results: *The prevalence of obstructed labour was 6.8%. Women with obstructed labour had low educational and socioeconomic status compared to the comparison group (p 0.032, 0.05). While 90% of mother with obstructed labour had attended antenatal clinic only 49% had intended to deliver in hospital. Factors that contributed to the delay in presenting to hospital included; lack of funds (27%), husband or mother in-law refusal to give consent for hospital delivery (26%), lack of transport or ambulance at the primary and secondary level facility (17%). Obstructed labour was associated with significant maternal morbidities; ruptured uterus 6%, obstetric hysterectomy 5.2% (p 0, 0015), uterine tears 14.8% (p 0.000), post partum haemorrhage 14.9% (p 0.000), wound sepsis 43% (p 0.0001) and puerperal sepsis 26.7% (0.000).Obstructed labour was also associated with significant fetal morbidities; stillborns 18.5% (p 0.0001), low Apgar score 30%, newborn unit admission 26.6% (p 0.0001) and neonatal sepsis 16.5% (p 0.0001).*

Conclusion: *There is need to improve the educational and socio-economic status of the women. Restructuring of Maternal child Health services should be done with particular attention to increasing community awareness on safe obstetric care, promotion and improvement of appropriate technology, counselling skill to health care providers through training, structured and quality health talks to the antenatal clients on safe obstetric care.. Provision of accessible and effective safe obstetric care through partnership with the community is paramount.*

INTRODUCTION

Obstructed labour is one where in spite of good uterine contractions; the progressive descent of the presenting part is arrested due to mechanical obstruction (1). Even in the 21st century, obstructed labour still remains a life – threatening catastrophe all over the world but mostly in the developing countries. Obstructed labour, is entirely a preventable labour complication, carries a very high maternal and neonatal morbidity and mortality, which is an indicator of the inadequacy and poor quality of obstetric care (1,2).Fortunately, advances in obstetric care have made obstructed labour nearly obsolete in the developed world. However, this problem continues to plague thousands of women each year, accounting for about 8% of all maternal deaths in developing countries (1).WHO has estimated that approximately 40,000 women die each year as a result of obstructed labour and an additional 73,000 suffer from the persistent and devastating consequences of obstetric fistula (4). It is a major cause of obstetric fistula (5).Worldwide, obstructed labour occurs in an estimated 5% of pregnancies (5, 7). Obstructed labour figure is an underestimation of the problem, because deaths due to obstructed labour are often classified under other complications associated with obstructed labour (such as sepsis, postpartum haemorrhage or ruptured uterus (3). It is a major cause of perinatal mortality, accounting for 100-180 deaths/1000 live births 8,9). Perinatal mortality is highest in the developing countries, particularly in Africa (6). Perinatal mortality is an important indicator of obstetric care, health status and socio-economic development. Fetal death from asphyxia is common in obstructed labour. Delayed management of obstructed labour causes obstetric fistula in surviving women, which if not treated, may make them outcasts from their community for the rest of their lives. Obstructed labour also causes significant maternal morbidity in the short term (notably infection) (10).

In the modern era, lower segment caesarean section (LSCS) under good antibiotic coverage has a very low mortality and morbidity and seems to be the best option (3). The approach to improving maternal and perinatal health in developing countries has shifted to safe motherhood programmes that focus on improving care during labour including strengthening emergency obstetric services. Having a health worker with midwifery skills present at delivery is now seen as one of the most critical interventions for making motherhood safe (11).

This study intended to look at the prevalence of obstructed labour, the maternal and perinatal outcomes of mothers that presented with obstructed labour and compare these outcomes with mothers who presented to the same unit and underwent emergency caesarean section for fetal or maternal indication.

MATERIAL AND METHODS

The study was done in a maternity ward of a rural hospital, Kakamega provincial General Hospital, Kenya. The determination of sample size was based on the magnitude of the general outcomes i.e. perinatal mortality and maternal mortality. The study group comprised of 135 mothers with obstructed labour while the comparison group comprised of 135 mother undergoing caesarean section due to other factors. The study population was mothers admitted in labour. Mothers who were admitted to the maternity unit with obstructed labour as specified in the diagnostic criteria of obstructed labour during the study period were eligible for recruitment to the study group but only those who consented to participate in the study were recruited and assigned to this group.

These mothers were recruited at admission in labour ward and followed up through to the postnatal ward till discharge home form hospital and their maternal and fetal outcomes were determined and analysed. Selection of patients to the study group was every consecutive mother with obstructed labour who consented to participate in the study while that to the comparison group included every next consenting patient admitted after the study group client and who met the specified criteria.

The principal researcher followed up the patients selected to participate in the study and two midwifes trained on the study concept during their admission period. The maternal and fetal outcomes and other measurable parameters were obtained and entered in the structured questionnaires. Other data on the total occurrence of specific measurable outcomes were collected. The specific maternal and fetal outcomes and other measurable outcomes are presented in the study results.

Data collected was entered, cleaned and analysed in SPSS version 15.0. Data analysis entailed the use of descriptive statistics such as frequency distributions and cross tabulations using the chi-square statistics. P values less than 0.05 were taken as statistically significant. Descriptive statistics for parametric and non-parametric was performed.

Results

Table 1; Socio – demographic characteristics

This table shows the social demographic characteristics of the mother in both groups.

Characteristics	**Study, n & %**	**Comparison, n & %**	**P-value**
Age			
≤19	**36 (26.7)**	35 (25.9)	
20-24	**37 (27.4)**	53 (39.3)	
25-29	**25 (18.5)**	20 (14.8)	0.257
30-34	**22 (16.3)**	18 (13.3)	
≥35	**15 (11.1)**	9 (6.7)	
Marital status			
Single	**23 (17.0)**	17 (12.6)	
Married	**112 (83.0)**	117 (86.7)	0.366
Divorced	-	1 (0.7)	

Education			
Primary	**105 (77.5)**	54 (40.0)	
Secondary	**23 (17.0)**	60 (44.4)	0.032
College	**5 (3.7)**	17 (12.6)	
None	**2 (1.5)**	4 (3.0)	
Occupation Of The Mother	**89 (65.2)**	96 (71.1)	
Housewife	**3 (2.2)**	8 (5.9)	
Casual	**16 (11.9)**	4 (3.0)	
Self employed	**5 (3.7)**	13 (9.6)	0.05
Professional	**22 (16.3)**	14 (10.4)	
None			
Parity			
Primigravida	**51 (37.8)**	58 (43.0)	
Multipara	**51 (37.8)**	60 (44.4)	0.043
Grandimultipara	**33 (24.4)**	17 (12.6)	

From this table it can be shown that the age distribution was similar among mothers in both groups with 59.6% being aged between 15 and 24 years. Mothers who were married accounted to 84.8% with no significant difference in the two groups. Majority of the mothers (97.7%) had at least primary level of education. Among the mothers in the study group, 77.5% of had primary education while 44.4% in the comparison group had secondary education (p 0.032), which is significant. Majority of the mothers 65% in the study group versus 71% in the comparison group were housewives.

As for occupational status 18.2% had some form of employment in both groups.. There was no significant difference in the two groups among the primipara and multipara but among the study group, 24.4% were grandimultipara against 12.6% (p 0.043) in the comparison group, which is statistically significant.

In general, apart from the education level and occupational status of these mothers, there was generally no significant difference between the two groups in terms of sociodemographic characteristics.

Table 2; Antenatal Clinic Attendance, Indented Place of Delivery and Factors That Contributed To Delay in Presenting To Hospital.

Characteristics	Study, n & %	Comparison, n & %	P-value
Antenatal clinic attendance	**90.4%**	94.1%	0.318
Reasons for not attending clinic			
Husband/mother in-law objected	**77%**	37.5%	0.047
Lack of funds	**46%**	62.5%	0.758
Unaware of need	**30%**	37.5%	0.567
Long distance to health facility	**7.6%**	0	0.316
Intended place of delivery			
Home	**25%**	9.6%	
TBA	**26%**	13.3%	0.0000
Hospital	**49%**	77.1%	
Family member refused	**84 (24%)**	22 (12%)	0.000
Lack of funds	**90 (27%)**	40 (23%)	
Lack of ambulance from health centre	**56 (17%)**	70 (38%)	0.000
Hospital staff perceived bad attitude	**64 (19%)**	30 (16%)	0.056
Health facility far away	**37 (11%)**	20 (11%)	0.151

From this table, the antenatal clinic attendance was 90.4% of mothers with obstructed labour but with 94.1% in the comparison group, which was not significant. Reasons given for not attending antenatal clinic among mothers with obstructed labour included, husband/mother in – law objected (77% versus 37%) – significant, lack of funds (46% versus 62%), unaware of need (30% versus 37%) and the long distance to the health facility (7.6%).

As for the chosen place of delivery by mothers in both groups majority of the mothers 49% in the study group versus 77.1% in the comparison group had intended to deliver in hospital, 25% in the study group verses 9.6% in the comparison had intended to deliver at home while 26% in the study group versus 13.3% in the comparison group had intended to deliver with the traditional birth attendant (P 0.000) which was statistically significant.

Factors that contributed to the delay in presenting to hospital among mothers in both groups included, lack of funds (27% versus 23%), family member refusal to give consent for hospital delivery (26% versus 12%), lack of ambulance or transport facilities (17% versus 37%) and perceived community perception of health care providers bad attitude towards patients (16% versus 18%).

Table 3: Maternal outcomes

This table shows the maternal morbidity in the two groups.

Maternal outcomes	**Study, n & %**	**Comparison, n & %**	**P-Value**
Intrapartum findings and complications			
Bladder oedema	**61 (45.5)**	0	0.000
Ruptured uterus	**8 (6.0)**	1 (0.7)	0.017
Infected uterus	**8 (6.0)**	0	0.04
Uterine tears	**27 (20.0)**	2 (1.5)	0.000
Bladder injuries	**2 (1-5)**	0	0.217
Perineal tears	**1 (0.7)**	0	0.315
Intra operative interventions			
Obstetric hysterectomy	**7 (5.2)**	0	0.016
Bladder repair	**2 (1.5)**	0	0.217
Transfusions	**20 (14.9)**	10 (7.4)	0.05
Postpartum outcomes			
Postpartum haemorrhage	**20 (14.8)**	6 (4.4)	0.004
Wound sepsis	**58 (43.0)**	16 (11.9)	0.000
Obstetric fistulas	**3 (2.2)**	0	0.82
Puerperal sepsis	**36 (26.7)**	18 (13.3)	0.06
Deep venous thrombosis	**3 (2.2)**	2 (1.5)	0.652
Lower limb nerve palsies	**10 (7.4)**	0	0.001
Depression/psychosis	**9 (6.7)**	2 (1.5)	0.031
Wound dehiscence	**15 (11.2)**	0	0.000
Burst abdomen	**3 (2.2)**	0	0.082
Referral for specialized treatment	**3 (2.2)**	0	0.082
Maternal death	**0**	0	0

Intrapartum findings and complications

Among the mothers who were found to have ruptured uterus, 6% were in the study group versus 0.7% in the comparison group (p 0.017), which is significant. Uterine tears during surgery occurred in 20% among those in the study group verses 1.5% (p 0.000) in the comparison group, which is significant. Obstetric hysterectomy had to be performed on 5.2% (p 0.016) of mothers with obstructed labour while 14.9% (p 0.05) of mothers in the study group had blood transfusion, which is significant. Among the mothers with obstructed labour, 14.8% (p 0.004) had postpartum haemorrhage, 43% (P 0.0001) wound sepsis, 2.2% (p 0.82 obstetric fistulas, 26.7% puerperal sepsis, 2.2% (p 0.652) DVT, 7.4% (p 0.001) lower limb nerve palsies, 11.2% (p 0.0001) wound dehiscence, 2.2% (p 0.082) burst abdomen and 2.2% (p 0.082) were referred for specialized treatment. There were no maternal deaths.

In summary from this study obstructed labour was significantly associated with increased maternal morbidities.

Table 4; Fetal Outcomes

This table shows the fetal outcomes in the two groups.

Fetal outcomes	Study, n & %	Comparison, n & %	P - value
Sex of baby			0.102
Male	91 (67.0)	78 (57.8)	
Female	44 (32.6)	57 (42.2)	
State of baby			
Alive	110 (81.5)	130 (96.3)	
Stillborn	25 (18.5)	5 (3.7)	0.000
FSB	15 (60.0)	5 (100.0)	
MSB	10 (40.0)	0	0.083
Birth weight			
< 2.5	1 (0.7)	14 (10.4)	
2.5 – 3.5 kg	71 (52.6)	83 (61.5)	
3.5 – 4kg	40 (29.6)	26 (19.3)	0.000
>4kg	23 (17.0)	12 (8.9)	
Apgar score			
<5	5 (4.5)	3 (2.3)	
5-7	28 (25.5)	9 (6.9)	0.000
>8	77 (70.0)	118 (90.8)	
Other interventions and outcomes			
Resuscitation	62 (56.4)	31 (23.8)	0.000
Immediate infant death	7 (6.4)	3 (2.3)	0.111
New-born unit admission	29 (26.6)	7 (5.3)	0.000
Neonatal sepsis	18 (16.5)	3 (2.3)	0.000
New-born unit deaths	3 (2.8)	2 (1.5)	0.502
Live infants from NBU	28 (25.2)	5 (3.8)	0.000

Live births were 81.5% (p 0.0001) while 18.5% were stillborn among mothers with obstructed labour, which was significant. Among the stillborn, 60% were fresh stillbirths.

In terms of birth weight, 46.7% had fetal weight > 3.5kg in the study group as compared to 28.2% in the comparison group. As for the Apgar score, 30% of the fetus among mothers with obstructed labour had Apgar score of ≤7 versus 9.2% in the comparison group.

Other fetal morbidities among the mothers who presented with obstructed labour included 56.4% (p 0.0001) of the newborns requiring resuscitation, 26.6% (p 0.0001) being admitted to the newborn unit, 16.5% (p 0.0001) developing neonatal sepsis, immediate infant deaths of 6.4% (p 0.111) and the newborn unit deaths of 2.8% (p 0.502).

From the above table, obstructed labour was significantly associated with adverse fetal out comes i.e. stillbirth, low Apgar score, need for resuscitation of newborns, unit admission, immediate infant death and neonatal sepsis.

Table 5; Duration of Hospital stay.

This table shows the duration of the hospital in both groups.

Duration of hospital stay in days	Study, n & %	Comparison, n & %	P-value
Less than 4 days	0	12 (8.9)	
4-7 days	61 (45.2)	114 (84.4)	
8-14 days	63 (46.7)	8 (5.9)	0.000
More than 14 days	11 (8.1)	1 (0.7)	

From this table it can be shown that 54.8% of mothers with obstructed labour had prolonged hospital stay of more than 8 days versus 6.6% in the comparison group.

Obstructed labour was significantly associated with longer hospital stay.

Table 6: Duration of labour, fetal and maternal outcomes in both groups.

Fetal outcomes	**Less than 18hrs N-%** **Study Comparison**	**19-24hrs N-%** **Study Comparison**	**Greater than 24hrs %** **Study Comparison**
Stillborn	- 5 (100%)	11 (44%) -	14 (56%) -
Immediate infant death	1 (14.3%) 3 (100%)	1 (14.3%) -	5 (71.4%) -
NBU admission	1 (3.4%) 5 (71.5%)	21 (72.4%) 1 (14.3%)	7 (24.1%) 1(14.3%)
Neonatal sepsis	1 (5.6%) 2(66.6%)	15 (83.3%) -	2 (11.1%) 1 (33.4%)
NBU deaths	- 1 (50%)	2 (66.7%) -	1 (33.3%) 1 (50%)
Ruptured uterus	- 1 (100%)	3 (37.5%) -	5 (62.5%) -
Uterine tears	- 1 (50%)	7 (25.9%) -	20 (74.1%) 1 (50%)
PPH	- 5 (83.3%)	7 (35%) -	13 (65%) 1 (16.7%)
Transfusions	1 (5%) 8(80%)	6 (30%) -	13 (65%) 2 (20%)

Hysterectomy	- -	2 (28.6%) -	5 (71.4%) -
Wound sepsis	5. (8.6%) 10(62.5%)	30 (51.7%) 5 (31.3%)	23 (39.7) 1 (6.2%)
Obstetric fistula	- -	- -	3 (100%) -
Puerperal sepsis	6. (16.7%) 13 (72.1%)	14 (38.9%) 4 (22.2%)	16 (44.4%) 1 (5.7%)
DVT	- -	1 (33.3%) 1 (50%)	2 (66.7%) 1 (50%)
Nerve palsies	- -	4 (40%) -	6 (60%) -
Burst abdomen	- -	1 (33.3%) -	2 (66.7%) -
Hospital stay more than 14days	1. (9.1%) 1 (100%)	3 (27.3%) -	7 (63.6%) -

This table shows the relationship of the duration of labour and the maternal and fetal outcomes among the mothers in both groups. The duration of labour was significantly associated with the adverse maternal and fetal outcomes. Labour duration of more than 24 hours had higher rates as follows; stillborn (56%), immediate infant death (71%), ruptured uterus (62%), uterine tears (74%), poor reversal (100%), PPH (65%), transfusion (65%), hysterectomy (71%), obstetric fistula (100%), DVT (67%), nerve palsies (60%) and burst abdomen (67%).

DISCUSSION

The prevalence of obstructed labour was 6.8% while worldwide it is estimated at 5%. While prevalence of obstructed labour in a study in Aminu Kalo Teaching Hospital in Nigeria was 8.5% (12). The magnitude of obstructed labour in our set up is similar to other regions. In this study, obstructed labour accounted for 23.4% of caesarean section performed. The age distribution in the two groups was not statistically different with majority being aged between 15 and 24 years. Majority of the mothers (84.4%) were married with no difference in the two groups. Level of education was a significant factor among mothers with obstructed labour, with 77.5% of them having a low educational status while the comparison group had 46%. In terms of occupation only 3.7% of mothers with obstructed labour, had professional occupation against 9.6% in the comparison group though generally majority of the mothers in both groups were housewives. There was no significant difference in the two groups among the primipara and multipara.

In this study 90.4% of mothers with obstructed labour attended antennal clinic compared to 94.1% in the comparison group. Reasons given for not attending antenatal clinic included, husband/mother in-law objected (45%), lack of funds (30%), unaware of need (20%) and the long distance to the health facility (5%). Whereas 49% of the mothers with obstructed labour had intended to deliver in hospital, 27% had planned to be delivered by the Traditional Birth Attendants and 25% at home. Given that over 90% of mothers with obstructed labour attended clinic once or twice, there is need to improve on the health talks given to this mothers at the Antenatal clinic on the importance of safe obstetric care at the time of delivery. Some of the reasons given for the delay in presenting to hospital during labour included lack of funds (27%) and family member refusal to give consent for hospital delivery (26%) were the major factors especially among mothers that presented with obstructed labour. Lack of ambulance or transport facilities (17%) and perceived community perception of health care providers have bad attitudes towards patients (19%) were also notable concern. Emphasis should be put on improving the social economic status of women,

community education on safe obstetric practice and improvement in the referral system through provision of accessible transport facility at the primary and secondary level facilities.

The general status of the mothers at admission in both groups was not significantly different, with 19% among obstructed labour and 12% in the comparison group being admitted in poor general status. As for the fetal status at delivery, 47.4% had fetal distress while 14.8% had intrauterine fetal death (p 0.001) among those with obstructed labour compared to 48% and 2.2% with fetal distress and intrauterine fetal death respectively in the comparison group.

Health education to mothers during the antenatal clinic should focus on encouraging them to present to hospital early in labour to prevent complications.

Obstructed labour has been noted to be associated with increased maternal and fetal morbidities (6,11). This study found that mothers who presented with obstructed labour were significantly associated with adverse maternal morbidities compared to those in the comparison group, which correlates with other literatures. In this study, 6% of the mothers with obstructed labour had rupture of the uterus, with 66.7% of this occurring among the grand multipara. Concurrently, 5.2% (p 0.016) of these mothers had obstetric hysterectomy.

Of the mothers with obstructed labour in this study, 2.2% (p 0.82) developed obstetric fistula. Previous studies indicates higher incidence of obstetric fistula among the nulliparous, especially in countries where childbearing starts at an early age. In a study by Mabeya in Rural District in Kenya, obstructed labour was the major cause of Vesical Vagina Fistula with 90% the patients being under the age of 20 years (13).

Other maternal morbidities among mothers who presented with obstructed labour included 20% of sustaining tears of the uterus intraoperative, which necessitated repair; 14.8% (p 0.004) had postpartum haemorrhage with 14.9% (p 0.05) being transfused. Wound sepsis accounted for 43% (p 0.0001), 26.7% had puerperal sepsis, 2.2% (p 0.652) DVT, 7.4% (p 0.001) lower limb nerve palsies, 11.2% (p 0.0001) wound dehiscence and 2.2% (p 0.082) burst abdomen.

There were no maternal deaths in this study. In a study at university teaching hospital Nigeria, obstructed labour accounted for 33% of wound infection and 27% of puerperal sepsis (14).

The adverse perinatal outcomes were significantly higher among mothers who presented with obstructed labour, 81.5% (p 0.0001) were live births while 18.5% were stillbirths. In stillbirths, 46.7% had fetal weight > 3.5kg as compared to 28.2% in the comparison group. Among the fetus, 30% had Apgar score of ≤ 7 versus 9.2% in the comparison group. In the obstructed labour, 56.4% (p 0.0001) of the newborns required resuscitation and 26.6% (p 0.0001) were admitted to the newborn unit.

In obstructed labour, neonatal sepsis developed in 16.5% (p 0.0001) while 6.4% (p 0.111) were immediate infant deaths and 2.8% (p 0.502) being newborn unit deaths. Previous study by Kavoo et al, identified prolonged labour/obstructed labour as a particularly important factor for perinatal deaths occurring within the first 24hors after hospital delivery in Kenya, while labour complications were associated with perinatal death in almost 40% of deliveries in another rural district hospital in Kenya (2,15).

Duration of hospital stay was longer among mothers with obstructed labour with 54.8% of them having prolonged hospital stay of more than 8 days versus 6.6% (p 0.000) in the comparison group which is statistically significant. This had a higher cost implication to the mother and the healthcare system.

Duration of labour was significantly associated with the adverse maternal and fetal outcomes. Labour duration of more than 24 hours had increased risk of adverse outcomes i.e. stillborn (56%), immediate infant death (71%), ruptured uterus (62%), uterine tears (74%), poor reversal (100%), PPH (65%), transfusion (65%), hysterectomy (71%).

Emphasis should be put on safe obstetric practice and use of partograph to prevent prolonged labour.

CONCLUSION

The prevalence of obstructed labour was 6.8%. Women with obstructed labour had low educational and socioeconomic status compared to the comparison group. While 90% of mothers with obstructed labour had attended antenatal clinic only 49% had indented to deliver in hospital. Factors that contributed to the delay in presenting to hospital included; lack of funds (27%), husband or mother in-law refusal to give consent for hospital delivery (26%), lack of transport or ambulance at the primary and secondary level facility (17%).Obstructed labour was associated with significant maternal morbidities and fetal morbidities. The study recommends on improvement on accessibility and availability of efficacious and safe obstetric care through educating the community on importance of hospital delivery and safe obstetric practices.

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