

Obstructed Labour in Adigrat Zonal Hospital, Tigray Region, Ethiopia

Amanuel Gessesew¹, Mengiste Mesfin²

Abstract

Background: Obstructed labour is a common cause of maternal and perinatal morbidity and mortality in developing countries. There are few data from Ethiopia, although the problem is believed to be common.

Objective: To describe the frequency, causes, complications and treatment outcome of mothers with obstructed labour.

Methods: a retrospective (April 1, 1993 – March 30, 2001) review of delivery registration books, operation theatre books and patients records.

Results: Of 5,980 hospital deliveries during the study period 195(3.3%) were admitted for obstructed labour. Only 14.1% of all cases had received antenatal care, and the majority (88%) came from rural areas. Mean duration of labour was 45.4 hours for cases of obstructed labour. The most common cause of obstruction was cephalopelvic disproportion (64.9%) followed by malposition/malpresentation (32.5%). Caesarean section was performed in 88 of the 195 cases (46.1%), craniotomy in 31(16.2%), instrumental delivery in 27 (14.1%), hysterectomy in 28(14.6%) and repair of ruptured uterus in 17(8.9%). Maternal and neonatal fatality rates were 3.7% and 55.5% respectively. Serious complication increased with parity.

Conclusion: The incidence and complications of obstructed labour are remarkably high. To improve the situation better access to optimal antenatal and intrapartum care, together with early referral of high-risk patients must be facilitated. [*Ethiop.J.Health Dev.* 2003;17(3):175-180]

Introduction

Obstructed labour results from failure of descent of the fetal presenting part in the birth canal for mechanical reasons, in spite of good uterine contractions, and it leads to various maternal and/or fetal complications (1-3). This common obstetric health problems in developing countries is generally caused by either faults in the passage (maternal pelvis) or the passenger (the fetus). The passage can be the cause when it has an abnormal shape or size, and the passenger can be the cause if abnormally large, presenting abnormally, malpositioned or congenitally abnormal (3-6).

The incidence of obstructed labour varies in different countries and centers. To our knowledge there is only one recent report from Ethiopia, from Jimma, which reported 7% of all hospital deliveries had by obstructed labour (1). Several studies from other developing countries found an incidence ranging from 2 to 8% of all hospital deliveries (3-5,7-9).

Together with haemorrhage, infection and hypertensive disorders of pregnancy, obstructed labour is a major cause of maternal and prenatal mortality in developing countries (3,5,10-16). In Ethiopia it is the main contributor to maternal mortality (17,18). Genital fistula, stress incontinence, pelvic inflammatory diseases, secondary ammenorrhoea, secondary infertility, pelvic organ prolapse, and ruptured uterus are among its complications (19-24).

¹Adigrat Hospital, P.O. Box 27, Adigrat, Tigray; ²Disease Prevention and Control Department, Tigray Health Bureau, P.O. Box 7, Mekelle, Tigray

Maternal and prenatal mortality and morbidity associated with obstructed labour are almost totally prevented in the developed world because of the good nutritional status, wide health converge, adequate transportation and communication system, availability of trained health personnel, optimal antenatal and intrapartum care and other related factors (3,11,25,26).

Depending on the causes of obstructed labour and the level (station) of the presenting part, different modes of management are practiced, namely, total or subtotal abdominal hysterectomy, forceps or vacuum delivery, evisceration, decapitation, symphysiotomy and caesarian section. Well-trained health professionals are needed to reduce the associated mortality and morbidity once this problem has already developed (2).

Except for the recent study from Jimma there are few reports about this issue in Ethiopia. More studies are needed to know its incidence and associated mortality and morbidity. Based on these findings preventive strategies can be formulated. The major objectives of this study are thus to describe the frequency, cause, complication and treatment outcome of obstructed labour in a period of eight years in Adigrat Zonal hospital and to recommend prevention strategies.

Methods

Adigrat Zonal Hospital is located in the town of Adigrat which is found in the northern part of the country, about 1000 kms away from the capital city of Addis Ababa. Obstetric patients are admitted to the maternity ward which has only 13 beds. During the study period one gynecologist/obstetrician and one pediatrician were working in the hospital.

Patient records, delivery room registers and operating theater books were reviewed retrospectively to gather information about patients admitted for obstructed labour from April, 1, 1993 through March 30, 2001. A uniform questionnaire was used to collect

information about age, parity, antenatal care, causes complications, treatment and maternal and neonatal outcome. Classification was according to standard definitions. Obstructed labour is defined as failure of descent of the fetal presenting part for mechanical reasons in spite of adequate uterine contractions, and not managed timely. Mothers were said to have antenatal care when they visited a health institution at least once during the pregnancy. A patient with at least one previous delivery past 28 completed weeks of pregnancy is classified as multigravida, and grandmultipara when the number of previous similar deliveries was at least five. Perinatal mortality refers to a still birth or neonatal death within one week of life. The EPI-INFO Version 6 statistical package was used to analyze the data.

Results

Between April 1, 1993 and March 30, 2001, 195 cases of obstructed labour were admitted to the labour ward of Adigrat Zonal Hospital. During the same period there were 5,980 hospital deliveries, and 525 mothers had caesarean section for various indications. Thus 3.3% hospital deliveries presented with obstructed labour. Four patients had incomplete or lost records and were not included in further analysis.

The majority of cases (88%) came from rural areas, and only 14.1% (27) had attended ANC at least once. Distribution by age and parity is shown in Table 1. Age ranged from 16 to 46 years (mean 28.8 ± 7.6); and 11% were teenagers. Parity ranged from 0-15. Of multigravid mothers, 24.1% were grand multipara. The n=mean duration of labour was 45.4 hours (± 1.7 , range 20-144).

Causes of obstructed labour by parity are shown in Table 2. Cephalopelvic disproportion was identified as a cause in 124 patients (64.9%), and malpresentation/ malposition in 62 (32.5%). Malpresentation alone was found in 50 patients (26.2%): breech in 4.2%, shoulder in 18.3% and brown in 3.7%. Twelve cases were caused by malposition alone: 5

Table 1: Age and parity of patients with obstructed labour in Adigrat Hospital, 1993-2001

Age (years)	Parity			Total (%)
	0	1-4	≥5	
<20	18	3	-	21 (11)
20-24	19	14	-	33 (17.3)
25-29	10	36	7	53 (27.7)
30-34	5	17	6	28 (14.7)
35-39	1	18	12	31 (16.2)
≥40	2	2	21	25 (13.1)
Total (%)	55 (28.8)	20 (47.1)	46 (24.1)	191 (100)

(2.6%) were mento posterior 4 (2.1%) were persistent occipito posterior and 3 (1.5%) were deep transverse arrest.

The different modes of management were: caesarean section 88 cases (46.1%), craniotomy 31 (16.2%), forceps 18 (9.4%), vacuum 9 (4.7%), repair of ruptured uterus 17 (8.9%), total abdominal hysterectomy 16 (8.4%),

subtotal abdominal hysterectomy 10 (5.2%), and caesarean hysterectomy 2 (1%). The indications for hysterectomy were ruptured uterus in 26 cases (92.9%) and extended tear during caesarean section in 2 (7.1%). Of the total 525 cases requiring caesarean section during the study period, 88 (16.8%) were done for obstructed labour.

Table 2: The causes of obstructed labour in Adigrat Zonal Hospital, 1993-2001.

Causes	Parity			Total (%)
	0	1-4	≥5	
CPD	35 (18.3)	69 (36.1)	20 (10.5)	124 (64.9)
Malpresentation/malposition	20 (10.5)	18 (9.4)	24 (12.6)	62 (32.5)
Fetal congenital abnormality	0	2 (1)	2 (1)	4 (2.1)
Myoma	0	1 (0.5)	0	1 (0.5)
Total (%)	55 (28.8)	90 (47.1)	46 (24.1)	191 (100)

Table 3 shows the maternal and fetal complications associated with obstructed labour. One hundred nine cases (27.8%) had serious maternal or neonatal complications. Chorioamnionitis was the commonest cause of maternal sepsis (9.4%), followed by puerperal sepsis (8.4%), peritonitis (1%) and septic shock (1%). The mean weight of the neonates was 3250 (±429) grams (range 2000-4800). Five minute Apgar score at birth was 0 (still birth) in 96 neonates (50.3%), 1-3 in 36 (18.8%), 4-6 in 29 (15.2%), and 7-10 in 30 (15.7%). Maternal death rate was 3.7%, and 106 (55.5%) neonates died within seven days of life or were still born.

The proportion of patients with maternal or fetal complications did not differ significantly by urban/rural residence, or history of antenatal care. Fetal death, ruptured uterus, and ruptured

bladder increased with parity, as shown in Table 4.

Table 3: Maternal and fetal complications of obstructed labour, in Adigrat zonal Hospital, 1993-2001

Complication	Number (%)
Maternal:	
Maternal sepsis	38 (19.9)
Vesico vaginal fistula	17 (8.9)
Recto vaginal fistula	2 (1)
Post partal haemorrhage	9 (4.7)
Ruptured uterus	43 (22.5)
Ruptured bladder	11 (5.8)
Hysterectomy	28 (14.7)
Maternal death	7 (3.7)
Fetal:	
Fetal asphyxia	65 (34)
Fetal birth injury	14 (7.3)
Still birth	96 (50.3)
Neonatal death within 7 days	10 (5.2)

Table 4: Maternal and fetal complications by parity, Adigrat zonal Hospital, 1993-2001

Complications	Parity			P-value
	0	1-4	≥5	
Fetal death (%)	40	47.8	67.4	<0.05
Ruptured uterus (%)	1.8	21.1	50	<0.001
Ruptured bladder (%)	0	3.3	17.4	
Total N	55 (28.8)	90 (47.1)	46 (24.1)	191 (100)

Discussion

In our study, obstructed labour accounted for 3.3% hospital deliveries, within the range reported for other countries; but lower than a recent study in Jimma Hospital, Ethiopia, which was 7%. (1,3-5,7-9). Our hospital-based data may underestimate the actual incidence because only limited numbers of pregnant women deliver in the hospital in our area, and many rural communities have limited access to care.

The causes of obstructed labour in all patients taken together in this study are consistent with earlier reports which found CPD to be the commonest cause followed by malpresentation and malposition (3-6). In grand multipara, however, malpresentation was more common than CPD. The lax abdomen following repeated pregnancies may predispose grand multiparous women to malposition and malpresentation.

Various authors have reported that obstructed labour is one of the major causes of perinatal and maternal mortality (10-16). Our study similarly shows both high maternal death rates (3.3%) and perinatal death rates (55.5%). In addition to death, injury to the mother and fetus has been reported by different authors (19-25), and our findings are consistent with these studies. Major complications of obstructed labour in the study hospital are vesico-vaginal fistula, rectovaginal fistula, ruptured uterus, ruptured bladder, perinatal asphyxia and fetal birth injury.

Earlier reports show the incidence of this problem to be high in developing countries where mothers had low ANC coverage, came from remote areas, and spent long time in

labour. Most of our patients came from rural areas, had very low antenatal coverage, and spent much time in labour. We found that neither residence nor ANC were significantly associated with the development of complications, once the problem developed. Duration of labour was the most important factor which was significantly associated with maternal and perinatal morbidity and mortality. The fact that grand multipara were more commonly associated with ruptured uterus and ruptured bladder may be either due to the relatively prolonged duration of labour or fibrosed and thinned out uterine myometrium from repeated pregnancies.

Even in a population where fetopelvic disproportion is common, obstructed labour can be totally prevented if there is optimal obstetric care (25,26). Prevention of this catastrophic obstetric health problem is a key factor in the overall effort to reduce maternal and perinatal mortality. Good nutrition is essential for the development of normal pelvis (the passage) but it takes long time to attain this goal (3). However at the short term by providing optimal obstetric care to the community the incidence of obstructed labour can be reduced. In addition its prompt management is also important to minimize the associated maternal and perinatal morbidity.

An important potential intervention for prevention of obstructed labour in our area is ANC. In this study, overall coverage during the 8-year study period was only 14%, which is much lower than current coverage in Tigray Region which is 35% (27). The number of cases is too low for a sub-group analysis by year, but it is reasonable to assume that early recognition and referral of high-risk mothers

could lead to fewer complications. The other crucial factor for the prevention of the complications of obstructed labour in this study is the duration of labour. Prompt diagnosis, early referral and availability of transport system may reduce the duration of labour and associated complications.

We recommend a comprehensive study to look into the problem of obstructed labour, and also improving managerial and technical procedures in handling obstructed labour cases in the health system.

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References

1. Gaym A. Obstructed labour at a district hospital. *EMJ* 2002;40(1):11-18.
2. Philpott R.H. Obstructed labour. *Clinics in Obstetrics and Gynecology*. 1982;9(3):625-640.
3. Konje JC, Ladipo OA. Nutrition and obstructed labour. *Am J Clin Nutr*. 2000; 72(1):291-297.
4. Konje JC, Obisesan KA, Ladipo OA. Obstructed labour in Ibadan. *Int J Gynaecol Obstet*. 1992;39:17-12.
5. Rush D. Nutrition and maternal mortality in the developing world. *AM J Clin Nutr*. 2000;72(1):212-240.
6. Clark SL, Devore GR, Platt LD. The role of ultra sound in the aggressive management of obstructed labour second-dary to fetal malformation. *AM J Obstet Gynecol*. 1985;152(8):1042-4.
7. Khan S. Obstructed labour: the preventable factor. *J Pak Med Assoc*. 1995;45(10):261-3.
8. Durtta DC, Pal SK. Obstructed labour. *J Obstet Gynaec Ind*. 1978;28:55.
9. Bhaskar Rao K. Current practice of Obstetrics and Gynaecology. The Federation of Obstetrics and Gynecology, India. 1992;132.
10. Alla Habadia GM, Ambiya VR. Obstructed labour. *J Obstet Gynea Ind*. 1991;41:634.
11. Wall LL. Dead mothers and injured wives: the social context of maternal morbidity and mortality among the Hausa of northern Nigera. *Stud Fam Plann*. 1998;29(4):341-59.
12. Vork FC, Kyanamina S, Van Roosmalen J. Maternal mortality in rural Zambia. *Acta Obstet Gynecol Scand*. 1997;76(7):64-50.
13. Adetoro OO. Maternal mortality: A 12 year survey at the university of Ilorin teaching hospital, Nigeria. *Int J Gynaecol Obstet* 1987;25(2):93-8.
14. Khan AR, Jahan FA, Begum SF. Maternal mortality in rural Bangladesh: Jamalpur district. *Stud Fam plan*. 1986;17(1):7-12.
15. Alauddin KM. Maternal mortality in rural Bangladesh: the Tangail district. *Study Fam Plann*. 1986;17(1):13-21.
16. Hartfield VJ, Woodland M. Prevention of maternal death in Nigeria village *Int J Gynaecol Obstet*. 1980;18(2):150-2.
17. Kwast B.E. Rochat RW. Maternal mortality in Addis Ababa. *Stud Fam Plann* 1986;17(6):288-301.
18. Kwast BE, Liff JM. Factors associated with maternal mortality in Addis Ababa, Ethiopia. *IJEPI*. 1988;17(1):115-121.
19. Arrowsmith S, Hamlin EC, Wall LL. Obstructed labour injury complex. *Obstet Gynecol Surv*. 1996;51(9):568-74.
20. Kelly J. An epidemiological study of vesico vaginal fistula in Addis Ababa. *World Health statistics Quarterly* 1995; 48(1):15-17.
21. Wall LL. Birth trauma and the perliv floor *J Women Health* 1999;8(2):149-55.
22. Danso KA, Martey JO, Wall LL. The epidemiology of genitourinary fistula. *Int Urogynecol J Perliv Floor Dysfunct*. 1996;7(3):117-20.
23. Chamiso B. Rupture of the pregnant uterus in Shashemene Hospital. *E M J*. 1995;33 (4):251-527.

24. Gessesew A, Mesfin M. Ruptured uterus-eight year retrospective analysis of causes and management outcom in Adigrat Hospital, Tigray Region, Ethiopia. Proceeding of The XIIIth Annual Public Health Conference, 2002.
25. Gessesew A, Mesfin M. Genito-urinary and rectovaginal fisula in Adigrat Hospital, Tigray, Ethiopia. Proceeding of The XIIIth Annual Public Health Conference, 2002.
26. Olaniran N, Offiong S, Ottong J, et al. Mobilisation of the community of utilize obstetric services, Cross River State, Nigeria. *Int J Gynecol Obstet.* 1997;59(2): 181-9.
27. Villar J, Bergsjo P. Scientific basis for the content of routine antenatal care. *Acta Obstet Gynecol Scand.* 1997;76(1):1-14.
28. Tigray Regional Health Bureau Annual Report 2000. Mekelle, Tigray 2000.