

Obstructed Labour in Eastern Nepal

Neena Chuni

ABSTRACT

Objective : Obstructed labour is the second major cause of maternal deaths accounting for 16% of all maternal deaths in Nepal. The aim of this study was to find the incidence, causes, complications, management outcomes, maternal and perinatal morbidity, and mortality resulting from obstructed labour and to recommend prevention strategies.

Design : Retrospective observational study.

Setting : University Teaching Hospital Patients : All patients in obstructed labour between December 1998 to November 2003.

Result : The incidence of obstructed labour was 8.7%. Primigravidas accounted for 43.5% cases and 18.9% were teenage mothers. 96% women had not received antenatal care while 88.9% were referred from peripheral health facilities. 58.9% women had been in labour for more than 36 hours. Cephalopelvic disproportion emerged as the commonest cause (65.3%), followed by malpresentation (28.4%). 57.1% of women came with intrauterine fetal death; and 8.4 % had ruptured uterus, all of these were in shock. 82.1% patients underwent caesarean section, and 5.8% obstetric hysterectomy. There were 82 maternal deaths (6.8%). Septicaemia accounted for 44.6% maternal deaths followed by hypovolemic shock (24.4%). Maternal morbidity was 91.8% and perinatal mortality 71.3%.

Conclusion : The incidence of obstructed labour, maternal and perinatal morbidity and mortality are high even amongst the developing countries. Health education on the importance of antenatal care, proper supervision during labour, training on the use of partogram and timely referral can reduce the incidence of this preventable catastrophe.

Keywords : obstructed labour; maternal mortality; obstetric hysterectomy.

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INTRODUCTION

Obstructed labour results from failure of descent of the fetal presenting part in the birth canal for mechanical reasons, inspite of good uterine contractions, which is not timely managed; and leads to various maternal and fetal complications. [1,2]. The incidence of obstructed labour and its complications have been minimized in the developed world because of good nutritional status, facilities for transport and communication, widespread health coverage and availability of trained health personnel along with optimal utilization of antenatal and intrapartum care. [2,3,4,5].

Globally, approximately 80% of maternal deaths are due to direct obstetric complications: primarily haemorrhage, sepsis, complications of abortion, preeclampsia, eclampsia and prolonged or obstructed labour. [6]. Obstructed labour is a highly preventable

entity often resulting from neglected obstetric care. More than 529,000 women die every year from pregnancy related causes and more than 99% of these deaths take place in the developing countries. [7].

Nepal has one of the highest maternal mortality rates. The Human Development Report for 2004 by the United Nations Development Programme (UNDP) estimates the figure to be 740 per 100,000 births. Obstructed labour is the second leading cause of maternal deaths, after postpartum haemorrhage, accounting for 16% of all maternal deaths in Nepal. [8]. Pelvic organ prolapse and vesicovaginal fistulas are important resultant longterm morbidities affecting the quality of life. The aim of this study was to determine the incidence, causes, clinical presentation, management modalities, complications, maternal and fetal outcome in cases of obstructed labour and to recommend preventive strategies.

Materials and Methods

A five year retrospective analysis of case records from 1 December, 1998 to 31 November, 2003 was undertaken at BP Koirala Institute of Health Sciences in Eastern Nepal. Being a tertiary center and a post-graduate teaching institution, it receives patients from remote hilly areas most of which are inaccessible by road. Patients often walk several hours to reach the nearest health care facility, after having had complicated or mismanaged labour and are then referred to secondary or tertiary units of care.

1213 patients with obstructed labour admitted during the study period were analysed in terms of incidence, age, parity, antenatal care, duration of labour and condition at the time of admission. The causes of obstructed labour, management modalities, complications, hospital and ICU stay and maternal and perinatal morbidity and mortality were determined.

Results

There were 1213 cases of obstructed labour out of a total of 13,987 deliveries during the study period giving a hospital based incidence of 8.7%. 661 patients (54.5%) were between 20-30 years of age and nearly a fifth (242) of them were teenage mothers (19.9%). Primigravidas accounted for 43.5% cases and 5.3% were grand multiparas. Majority of the cases (88%) belonged to rural areas and were of low socioeconomic status (92%). 964 patients (96%) had not received any antenatal care. Only 40 patients had some form of antenatal care, of these 4 were booked antenatal cases of our hospital; but, chose to deliver at home and presented with obstructed labour.

88.9% patients were referred from peripheral health facilities with a diagnosis of obstructed labour because of lack of availability of specialist, anaesthesia or blood bank facilities. Of these, 58.9% patients had been in labour for more than 36 hours and 73% had rupture of membranes of more than 24 hours duration. In 76% patients the interval between referral and admission was more than 10 hours.

Almost all the patients had tachycardia (96.5%), were dehydrated (90.4%) and 66% had ketoacidosis at the time of admission. (Table 1). 98 patients (8%) were in shock; all of these had ruptured uterus and 338 patients (27.8%) had developed chorioamnionitis.

Significantly, 693 patients (57.1%) had absent fetal heart activity confirmed by an ultrasound done on admission but the most significant finding was ruptured uterus in 102 patients (8.4%). Majority of the cases of ruptured uterus (65.6%) were seen in grand multiparas. (Table 3). 64 patients also had bladder rupture (5.3%).

Cephalopelvic disproportion emerged as the most common cause for obstructed labour (65.3%); followed by malpresentation (28.4%) of which the maximum number presented with transverse lie (19.1%). (Table 2).

The different modes of management were: caesarean section in 996 patients (82.1%) and instrumental delivery in 79 patients (6.5%); destructive operations were performed on 22 patients (1.8%); all for hydrocephalus. 70 patients (5.8%) underwent an obstetric hysterectomy for ruptured uterus; 8 patients (0.7%) had caesarean hysterectomy for intractable atonic postpartum haemorrhage and 6 patients (0.5%) underwent bilateral internal iliac ligation (Table 3). Bladder injuries were repaired in two layers and urine was continuously drained for 10 days. None of these patients developed vesicovaginal fistula.

There were 82 maternal deaths (6.8%). (Table 4). Septicaemia was the leading cause, accounting for 39 out of 82 deaths (47.6%), followed by hypovolemic shock (24.4%) and disseminated intravascular coagulation (18.3%). Morbidity in some form was seen in 1114 (91.8%) women. Wound sepsis was high (66.9%) and 251 patients (22.5%) needed secondary suturing for complete dehiscence of the abdominal wound. 45.9% patients had pyrexia and 15.9% needed blood transfusions. A significant number of patients developed vesicovaginal fistula (12.4%) (Table 4). Mortality was highest (51 out of 82 maternal deaths) among grandmultiparas (Table 3).

132 patients (10.9%) were admitted to the intensive care unit and average duration of stay in the hospital

was 13 days. Bed sores and wound sepsis contributed to the longest duration of hospital stay.

There were 704 still births and 161 neonatal deaths; perinatal mortality was 71.3%. The mean birth weight of the neonates was 3350 ± 320 gms. Five minute Apgar score at birth was 0 (still birth) in 704 neonates (55.9%), 1-3 in 181 (14.9%), 4-6 in 214 (17.6%) and 7-10 in 114 (9.4%).

Overall, obstructed labour contributed significantly towards maternal and perinatal morbidity and mortality. 3105 caesarean sections were performed during the 5 years study period, out of which 996 were for obstructed labour (32.1%). Out of a total of 148 cases of ruptured uterus, 102 cases (68.9%) were due to obstructed labour. A significant number of maternal deaths, 82 out of 331 were due to obstructed labour or its sequelae of ruptured uterus (24.8%) and 704 out of 1305 still births (53.9%) during this 5 year period were attributed to obstructed labour.

Discussion

Obstructed labour is a common cause of maternal and perinatal morbidity and mortality in developing countries. Although cases with obstructed labour are common in Nepal, data on this problem are not easily available. The Ministry of Health of Nepal has estimated that nearly 4,500 women die every year from pregnancy related complications, mostly due to lack of skilled birth attendants and the absence of emergency services and equipment in rural health centers in Nepal. [9]. The majority of maternal deaths occur at home, 11% on the way to a health facility and 11% in health facilities, 90% of which occur in a rural setting. Therefore, the incidence of 8.7% for obstructed labour and 6.8% for maternal deaths in our study may be an underestimation of the actual incidence.

The Demographic Health Survey has revealed that 48% of pregnant women received some form of antenatal care and only 14.3% of them had four or more antenatal check ups, which are recommended by the National Maternity Care Guidelines produced by the Ministry of Health of Nepal. Most deliveries in Nepal occur at home and only 9% at health facilities. [10].

The incidence of obstructed labour in our study was 8.7%; which is higher than the incidence range of 2 to 8% reported from other developing countries. [2,3,11-15]. A study from central India has reported an intraoperative rupture incidence of 5.9% [21] and another from eastern India has reported no case of ruptured uterus in retrospective study of obstructed labour [23]; whereas studies from several African

countries have reported significantly higher rates of 14-22%. [19,22].

88.9% patients were referred from peripheral health facilities due to lack of specialist and anaesthesia facilities, and in majority (76%), the referral admission time was more than 10 hours. These factors explain the higher incidence of rupture uterus in our study. Lack of skilled birth attendants is a common problem in developing countries. Nepal continues to experience imbalance in the health workforce due to shortage of personnel and geographical maldistribution. [18]. Shortages are especially severe in rural areas, since health professionals are often concentrated in cities.

Nearly a fifth (19.9%) of the patients were teenage mothers; majority of the patients belonged to rural areas and were of low socioeconomic status (92%) and had not received any antenatal care (96%). Various studies have shown that poor access to health facilities due to geographical inaccessibility, lack of resources and limited health infrastructure, women's low status in the society, poor communication system in rural Nepal and shortage of trained health professionals are important barriers to health services utilization. [16,17].

The causes of obstructed labour are consistent with earlier studies, cephalopelvic disproportion was responsible for most cases, followed by malpresentation. [1,19,20]. In a study from Central India, Chhabra et al have reported malpresentation as the commonest cause (53.2%) followed by cephalopelvic disproportion (41.1%). [21].

Caesarean section rates were higher (82.1%) compared to studies from other developing countries. [20,22,23]. Only twenty two patients (1.8%) underwent craniotomy as a destructive procedure; all for hydrocephalus. No other type of destructive operation was performed for lack of familiarity with the procedure; which explains the relatively higher rate of caesarean section in our study. Several other studies have reported higher rates of destructive operations. [11,22,23]. 693 patients (57.1%) presented with a dead fetus. In this group, caesarean section was performed in 553 patients (79.8%). Destructive operations in dead or moribund fetuses have been found superior to caesarean sections in some studies. [24,25]. Considering the high rate of wound sepsis (66.9%) in our study and need for secondary suturing of the abdominal wound, destructive operations by experienced operators in carefully selected cases may be a better alternative.

Maternal mortality rate of 6.8% in our study is higher than that reported by other studies from developing

countries [19,22,23]. Septicemia was the leading cause for maternal deaths, followed by hypovolemic shock. Several studies have reported sepsis as a leading complication of obstructed labour. [11,19,20,26]. The high rates of septicemia, chorioamnionitis and wound sepsis in our study correlates with the long duration of rupture membranes of more than 24 hours duration in 73% patients. Multiple vaginal examinations perhaps without proper aseptic precautions, by untrained birth attendants could be a major cause of the high rate of septicemia which in turn emerged as the biggest contributor to maternal mortality. Hypovolemic shock contributed to 24.4% maternal deaths; most of these patients had ruptured uterus and irreversible shock, and could not recover despite massive blood transfusions. Lack of availability of specific blood components in our center was a major limiting factor and there were 15 deaths due to disseminated intravascular coagulation.

A total of 138 patients developed vesicovaginal fistula which can be correlated with a large number of them being in labour for over 36 hours. Perinatal mortality was 71.3%, which is slightly higher than two studies from Ethiopia and Nigeria [1,20,22], but significantly higher compared to a studies from Central India. [21,23].

Conclusion

Duration of labour, in cases with obstruction, is the single most important factor associated with maternal and perinatal morbidity and mortality. Even in a population where fetopelvic disproportion is common, obstructed labour can be totally prevented if there is optimal obstetric care [4,5,22]. Training postgraduates in destructive operations on carefully selected cases in dead or severely malformed fetuses would avoid unnecessary caesarean sections and the morbidity associated with this procedure especially in infected cases.

Reducing the incidence of this preventable condition necessarily means imparting health education on the importance of antenatal care, improving the socioeconomic conditions, providing family planning advice to reduce grandmultiparity and making health services affordable. Adequate training of health care providers, proper supervision during labour, training on the use of the partogram so as to detect cases of prolonged labour at the earliest; and quality emergency obstetric care and referral system are required to prevent this avoidable condition.

TABLE 1 **Maternal condition at admission**

Clinical feature	n = 1213
Tachycardia	1170 (96.5%)
Dehydration	1097 (96.5%)
Ketoacidosis	801 (66 %)
Shock	98 (8%)
Pyrexia	69 (5.7%)
Sepsis (chorioamnionitis)	338 (27.8%)
Bandl's ring	711 (58.6%)
Uterine inertia	528 (43.5%)
Absent fetal heart	693 (57.1%)
Rupture uterus	102 (8.4%)
Vulval edema	128 (10.6%)
Bruised lacerated vagina	102 (8.4%)
Overdistended bladder	879 (72.5%)
Haematuria	326 (26.9%)
Ruptured bladder	64 (5.3%)

TABLE 2 **Causes of obstructed labour**

Cause	n = 1213
Cephalopelvic disproportion	793 (65.3%)
Malpresentation	345 (28.4%)
Transverse lie	232 (19.1 %)
Breech	61 (5%)
Brow	35 (2.9%)
Face (mentoposterior)	17 (1.4%)
Malposition (occipitoposterior)	42 (3.5%)
Congenital malformation	29 (2.4%)
Hydrocephalus	22 (1.8%)
Fetal ascites	7 (0.6%)
Pelvic mass (cervical fibroid)	4 (0.32%)

TABLE 3 **Mode of management n=1213**

Caesarean Section	996 (82.1%)
Instrumental delivery	79 (6.5%)
Destructive operation	22 (1.8%)
Obstetric Hysterectomy for ruptured uterus	70 (5.8%)
Repair of uterus with Tubal ligation	32 (2.6%)
Caesarean Hysterectomy for Atonic PPH	8 (0.7%)
Internal Iliac Artery Ligation for atonic PPH	6 (0.5%)

Maternal complications by parity

Complication	0	Parity 1-4	≥ 5	Total
Ruptured uterus	-	35 (34.3%)	67 (65.6%)	102
Ruptured bladder	-	17 (26.5%)	47 (73.4%)	64
Maternal Death	2 (2.4%)	29 (35.4%)	51 (62.1%)	82

TABLE 4	Maternal outcome	n=1213
Mortality		82 (68%)
Causes		n=82
	Septicaemia	39 (47.6%)
	Hypovolemic shock	20 (24.4 %)
	Disseminated Intravascular coagulation	15 (18.3%)
	Pulmonary Embolism	6 (7.3%)
	Amniotic Fluid Embolism	2 (2.4%)
Morbidity		82 (68%)
Causes		n=1114
	Wound sepsis	745 (66.9%)
	Pyrexia	512 (45.9 %)
	Burst abdomen	251 (22.5%)
	Bed sores	209 (18.8%)
	Postpartum haemorrhage	194 (17.4%)
	Vesicovaginal fistula	138 (12.4%)
	Pyoperitoneum	127 (11.4%)
	Urinary infection	106 (9.5%)
	Septicaemia	103 (9.2%)
	Broad ligament haematoma	73 (6.6%)
	Deep vein thrombosis	86 (7.7%)
	Acute renal failure	32 (2.9%)
	Acute Respiratory Distress syndrome	30 (2.7%)
	Rectovaginal fistula	26 (2.3%)

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