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Original Research Article

Incidence, causes and feto-maternal outcomes of obstructed labour in a tertiary health care centre

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ABSTRACT

Background: Obstructed labour is one of the most common preventable cause of maternal and neonatal morbidity and mortality in developing countries. This study was undertaken to assess the incidence, causes and feto-maternal outcomes of obstructed labour.

Methods: This prospective study was carried out in the Department of Obstetrics and Gynaecology at Patna Medical College and Hospital, Patna, Bihar, India over a period of one year from February 2012 to February 2013. The 228 patients diagnosed to have obstructed labour were studied.

Results: Out of 2556 deliveries conducted during this period, 228 cases of obstructed labour were found constituting an incidence of 8.9%. Majority of the patients were unbooked (89.47%), between 21-30 years of age (90.35%) and with parity 3 or more. The most common cause of obstructed labour was malposition (45.61%) followed by cephalopelvic disproportion (43.85%) and malpresentation (8.7%). caesarean section was the most common mode of delivery. In 21.92% of cases ruptured uterus was diagnosed pre-operatively among which, 2.63% has scar rupture and in remaining cases rupture was in unscarred uterus due to obstructed labour diagnosed intra-operatively. PPH was seen intra-operatively in 17.54% of cases and bladder trauma in 3.5% of cases. Most common post-operative complications were paralytic ileus (52.6%) followed by severe anaemia (48.2%) and infections (23.68%). Only 0.8% patients developed vesico-vaginal fistula as a late sequela of obstructed labour. The maternal mortality was 3.5% and perinatal mortality was 39%.

Conclusions: In present study, the incidence of obstructed labour is very high. Good antenatal care, education of primary health care providers and traditional birth attendants on dangers of obstructed labour and the need for early referral is suggested to reduce the incidence of this condition.

Keywords: Caesarean section, Maternal mortality, Obstructed labour, Perinatal mortality, Ruptured uterus

INTRODUCTION

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: haemorrhage, infection, unsafe abortion, hypertensive disorders of pregnancy, and obstructed labour.¹ Among these, obstructed labour is one of the most common preventable causes of maternal and

neonatal morbidity and mortality in developing countries.² It affects 3-6% of laboring women globally. The number of maternal deaths as a result of obstructed labour 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.³ The common causes of this condition are cephalopelvic disproportion, foetal malposition and malpresentation. Recognising the causes of obstructed

labour is important to prevent the complications. Delayed and neglected management of obstructed labour causes significant maternal morbidity mainly due to infection and haemorrhage and in the long term leads to obstetric fistulae, skeletal and neurologic complications. Maternal mortality from obstructed labour is largely the result of ruptured uterus or puerperal infection whereas perinatal mortality is mainly due to asphyxia.

Patna Medical College and Hospital, Patna, Bihar, India is a tertiary care hospital where most of the cases are unbooked and belonged to rural areas and are usually referred from primary health centre, private clinic at village or directly from their home where their delivery is usually being conducted by unskilled persons or persons who are unaware of risk factors of obstructed labour and risk involved with injudicious use of syntocinon and have no knowledge of labour monitoring and early detection of obstruction. Due to poor transport facilities and long distance most of the cases are usually brought late in labour with ruptured membrane, infected and in state of exhaustion and sometimes with rupture uterus. Therefore, the present study was conducted to assess the incidence, causes and outcomes of obstructed labour at Patna Medical College and Hospital, Patna, Bihar, India.

METHODS

This was a prospective study carried out in the Department of Obstetrics and Gynaecology at Patna Medical College and Hospital, Patna, Bihar, India over a period of one year from February 2012 to February 2013.

228 patients were included in the study. Patients with features of obstructed labour attending the obstetrical emergency or developing obstructed labour in the institution were included in this study. A complete general and obstetrical examination was done. Detailed obstetrical history regarding her age, parity, socio-economic status, booking status, past obstetrical history, past medical and surgical history, time of onset of labour pain, duration and nature of labour pain, details of referral history and management given were recorded. On general examination pulse rate, blood pressure, temperature, features of dehydration or shock, state of exhaustion if there was noted. By clinical examination (per abdominal and per vaginal), diagnosis of cephalopelvic disproportion, malposition, malpresentation, obstruction in birth canal, baby status whether live or dead, overdistended bladder, hematuria, rupture of uterus, super moulding of foetal head, and Bandl's ring was made.

Two wide bore intravenous cannula introduced, blood samples obtained and sent for complete hemogram, random blood sugar, liver function test, kidney function test, serum electrolyte, blood grouping and cross matching and arrangement of at least one unit of blood was done. Urinalysis was done for sugar, ketone and albumin. Fluid electrolyte balance and correction of

dehydration and keto-acidosis was done by rapid infusion of ringer lactate solution. High vaginal swab was taken and sent for culture and sensitivity and broad-spectrum antibiotic was started. Urgent delivery was planned either by caesarean section or by vaginal delivery and continuous bladder drainage was given for 10-14 days after delivery to prevent vesico-vaginal fistula. These cases were followed until discharge from the hospital for foetal and maternal outcome.

RESULTS

During the one year of study period, there were a total of 2556 deliveries. Out of which, 228 cases were diagnosed to have obstructed labour and hence the incidence of obstructed labour in our institution was 8.9%.

Table 1: Baseline characteristics of patients.

Age (years)	Number of cases (n= 228)	Percentage of cases
<20	10	4.38%
21-25	110	48.24%
26-30	96	42.10%
≥31	12	5.26%
Gravida		
1	22	9.64%
2	30	13.15%
3	84	36.84%
≥4	92	40.35%
Residence		
Rural	217	95.17%
Urban	11	4.82%
Socio-economic status		
poor	101	44.29%
Average	97	42.54%
Good	30	13.15%
Booking status		
Booked	24	10.52%
Unbooked	204	89.47%
Duration of labour (hours)		
<12	48	21.05%
12-24	118	51.75%
>24	62	27.19%

Majorities of patients with obstructed labour were in the age group of 21-25 years (48.24%) followed by 26-30 years (42.10%). The incidence of obstructed labour was found more in women with parity 3 or more (40.35%). In the present study, most of the patients (95.17%) were of rural origin while 11 cases (4.82%) belonged to urban areas. Two hundred four Patient (89.47%) were unbooked and these patients were usually being handled by Dais at home or by inexperienced personnel at private clinic or primary health centre and gave history of prolonged labour and receiving drugs in the form of injection and i.v. infusion. One hundred one patients (44.29%) belonged to poor socio-economic status. All

patients who were admitted through the emergency department gave history of prolonged labour mostly between 12-24 hours of duration (51.75%) prior to admission (Table 1).

Table 2: Causes of obstructed labour.

causes of obstructed labour	No. of cases (n=228)	Percent
Cephalopelvic disproportion	100	43.85
Malposition	104	45.61
Deep transverse arrest	20	8.7
Persistent occipito-posterior	44	19.29
Face presentation	30	13.1
Brow presentation	10	4.3
Malpresentation		
Transverse lie	20	8.7
Foetal abnormalities		
Hydrocephalus	4	1.75

The commonest cause of obstructed labour was malposition (45.61%) followed by cephalopelvic disproportion (43.85%). Malpresentation mainly shoulder presentation was seen in 20 cases (8.7%). Foetal abnormality was found mostly severe hydrocephalus in 1.75% of cases (Table 2).

Table 3: Mode of delivery.

Mode of delivery	No. of cases (n=228)	Percent
Caesarean section	156	68.42
Forceps delivery	8	3.5
Ventouse extraction	10	4.38
Laparotomy (repair of rupture uterus)	8	3.5
Laparotomy (subtotal hysterectomy)	42	18.42
Craniotomy	4	1.75

Majority of the patients were delivered by caesarean section (68.4%). Eight cases (3.5%) delivered vaginally by outlet forceps and in 10 cases (4.38%) ventouse extraction was done for deep transverse arrest. In 42 cases (18.42%) caesarean hysterectomies were performed due to ruptured uterus which could not be repaired. In 8 cases (3.5%) ruptured uterus was repaired among which 6 cases had previous one caesarean section and were admitted in emergency with obstructed labour. Destructive operation in the form of craniotomy was done in 1.75% of cases (Table 3).

In 21.92% of cases ruptured uterus was diagnosed pre-operatively among which, 2.63% has scar rupture and in remaining cases rupture was in unscarred uterus due to obstructed labour diagnosed intra-operatively. Both atonic and traumatic PPH was seen intra-operatively in 17.54% of cases. In 5 cases (2.19%) rupture uterus was

associated with rupture bladder and iatrogenic bladder injury was seen in 1.3% of cases. Many patients had more than one post-operative complication. Paralytic ileus was the most common post-operative complications which were seen in 52.6% of cases. The next most common complication was severe anaemia as a sequel to PPH (48.2%). Abdominal wound infection was seen in 40 cases (17.5%). Long term complication like vesico-vaginal fistula was reported in 2 cases (0.8%). Maternal mortality in our study was 8/228. Six deaths occurred following ruptured uterus resulting in hypovolemic shock and 2 patients had died due to septicemia (Table 4).

Table 4: Complications of obstructed labour.

Complications	No. of cases (n=228)	Percent
Pre-operative/ intra-operative complications		
PPH (atonic + traumatic)	40	17.54
Ruptured uterus	50	21.92
Injury to bladder	8	3.5
Post-operative complications		
Paralytic ileus	120	52.6
Abdominal wound infection	40	17.5
Severe anaemia	110	48.2
Shock	6	2.6
Puerperal sepsis	6	2.6
Urinary tract infection	8	3.5
Vesico-vaginal fistula	2	0.8
Mortality	8	3.5

One hundred fifty-four (67.54%) were live born and 74 cases (32.45%) were still born. Fifteen neonates (9.74%) died within first week of life due to neonatal complications. Perinatal mortality was 39% (Table 5).

Table 5: Perinatal outcome.

Parameters	No. of cases (n=228)	Percent
Live birth	154	67.54
Still birth	74	32.45
(n=154)		
Asphyxia	66	42.85
Neonatal sepsis	26	16.88
Neonatal jaundice	28	18.18
Neonatal mortality	15	9.74

DISCUSSION

Obstructed labour is a life threatening obstetrical complication associated with significant maternal as well as foetal morbidity and mortality.⁴ Early recognition and immediate intervention is important to prevent the associated complications and to improve maternal and foetal outcome. Several interventions, such as use of partograph to monitor labour and provision of emergency obstetrical care services have been proposed to reduce the

incidence of obstructed labour and its sequelae. But, still prevalence remains high in the developing countries. Perhaps there may be other factors and variables that seem to make obstructed labour a persistent and intractable condition unresponsive to interventions targeted at health facilities in developing countries.

The incidence of obstructed labour in the present study was 8.9%. This high incidence was due to poor antenatal care, illiteracy, unawareness of risks of labour, lack of communication and low socioeconomic condition of the patients. In this respect, our study was comparable with the study done at Aminu Kalo Teaching Hospital in Nigeria where incidence was 8.5%.⁵ However, it was higher than the study conducted in eastern Nigeria which was 4.7% and lower than the studies conducted in Jimma University Specialized Hospital, which was 12.2%.^{6,7} Maximum cases of obstructed labour were found in the age group of 21-25 years followed by 26-30 years. Rao BK reported maximum cases of OL in the age group of 21-23 years.⁸ Sarkar et al observed majority of cases of OL in 18-21 years of age group.⁹ Gupta et al found that 72.8% of such cases to occur in age group of 20-23 years.¹⁰ This is due to custom of early marriage (14-16 years) among uneducated people living in rural area and high fertility in this young age group which is responsible for maximum confinement to occur at relatively younger age group and may explain the high incidence of OL in these age groups.

Most of the studies showed the higher incidence of obstructed labour in primigravida.^{6,8,9} In present study, majority number of patients (77.19%) who had undergone obstructed labour was multiparous. A large number of involvements of multiparous women are explained by the facts that the secondary contracted pelvis is frequently found due to malnutrition coupled with prolonged lactation, larger size of babies in subsequent pregnancies and decrease abdominal and pelvic muscular tone causing abnormal fetopelvic axis resulting in malpresentation.¹¹ In the present study, mostly obstructed labour occurred in unbooked patients from rural area and those belonging to low socioeconomic group. These patients usually did not go for regular antenatal care and intra natal care and their deliveries are usually being conducted by dais at home. Due to high illiteracy rate and restricted health care facilities, large majority of patients reach hospital too late with features of obstructed labour with grave consequences.

Major etiological factors of OL in this study were malposition seen in 45.61 % of cases followed by cephalopelvic disproportion occurring in 43.85% of cases. Most of the previous studies have shown that cephalopelvic disproportion was the commonest cause of obstruction.^{8,9,12} In a series presented by Chowdery RN et al malpresentation has been seen to be the commonest cause.¹³ In a study conducted by Chhabra et al, malpresentation was responsible for 53.5% cases of

obstructed labour followed by cephalopelvic disproportion seen in 41.15% of cases.¹⁴

The basic management of obstructed labour is of course urgent delivery to prevent further distension and rupture and to salvage the foetus if it is still alive. In the present study, management was decided depending upon the age, parity, general condition of the patients, the state of the uterus and presence or absence of foetal heart sounds. In our study, lower segment caesarean section was the most common form of management done in 68.42% of cases followed by Laparotomy. In the modern era, LSCS under good antibiotic coverage has a very low mortality and morbidity rate and seems to be the best option. Destructive operation in the form of craniotomy was done in only 1.75% of cases. In contrary, Dutta et al performed destructive operation in 51.8% of cases.¹⁵

Incidence of ruptured uterus in our study was 21.92%. This incidence is quite significant and it shows the magnitude of late arrival of cases. Uterine rupture is a well-known contributor of maternal haemorrhage and sepsis, which are major causes of maternal mortality and morbidity. Both atonic and traumatic PPH was seen intra-operatively in 17.54% of cases and bladder trauma was seen in 3.5% of cases. Regarding postoperative complication, paralytic ileus was the most common complication (52.6%) followed by severe anaemia (48.2%). Infections in the form of urinary tract infection, abdominal wound infection and puerperal sepsis was seen in 23.68% of cases. Vesico vaginal fistula is well known late sequelae of prolonged obstructed labour.^{16,17} In present study only 2 patients (0.8%) developed vesicovaginal fistula because of immediate and prolonged bladder catheterization and lesser incidence of destructive operation in our study. six maternal deaths occurred in our study due to extensive uterine rupture causing massive haemorrhage and hypovolemic shock and another 2-maternal death was due to septicemia and hence incidence of maternal mortality in our study was 3.5%. Our results are comparable with Ozumba with maternal mortality was 3.2% and Puspha where the incidence of maternal mortality was 3.9%.^{6,18}

In the present study, due to delayed referral still birth rate was 32.45%. Among 154 babies born live, 66 babies were asphyxiated and required NICU care. Neonatal mortality was seen in 9.74% of cases which was mainly due to anoxia, intracranial haemorrhage and septicemia. Overall perinatal mortality was 39% comparable to 39.8% in the study conducted by Puspha.¹⁸

CONCLUSION

The prevalence of obstructed labour is still high in developing countries like India where illiteracy and ignorance result in poor antenatal attendance and underutilization of the available facilities. Most of the cases of obstructed labour are preventable provided all pregnant women obtained proper antenatal care and all

births are attended by trained personnel. Improving nutrition right from childhood, discouraging high parity and improved utilization of available facilities and government schemes will certainly contribute towards reducing incidence of obstructed labour.

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