



Original Article

Risk Factors and Outcome of Obstructed Labour: A Study in Rajshahi Medical College Hospital, Rajshahi, Bangladesh

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Abstract

Introduction: Obstructed labour is one of the major causes of maternal mortality (8%) in Bangladesh. It is also responsible for high rate of maternal and fetal morbidity, if we can identify causes of obstructed labour, determine the outcome & complications in our country it may be helpful to find out the way to prevent this disease.

Objective: The purpose of the present study was to determine the risk factors as well as to assess the outcome of obstructed labour.

Methods: This study is a prospective observational study has been done in Department of Obstetrics and Gynaecology in Rajshahi Medical College Hospital, Rajshahi, Bangladesh during July 2016 to December 2018. Hundred patients who were admitted with obstructed labour during study period were included in this study. A detailed history included socio-demographic feature, obstetric history, features of obstruction, intrapartum events were recorded to detect risk factors. Condition of patients, mode of delivery, preoperative and postoperative complications, maternal and fetal outcomes were recorded.

Results: This study was one hundred (100) cases with features of obstructed labour were selected. The highest frequency was found among the unbooked, primigravid patients that were illiterate or only having primary education level. 84% in primi-gravidae and 10% in multi gravidae had come from medium socio-economic group and only 2% in case of primigravidae came from good economic classes. Revealed that 56% in primigravidae and 68% in multi gravidae of study population did not cross primary education level. the causative factors of obstructed labour, 46% in primigravidae and 42% multi gravidae cases were due to cephalopelvic disproportion with varying degrees of contracted pelvis, 52% in primigravidae and 58% multi gravidae cases caused by malpositions and malpresentations, 2% in primigravidae was due to cervical fibroid. The medical causes of obstructed labour in the study population were cephalopelvic disproportion 42-46%. One patient died due to post-partum hemorrhage among 10(10.0%) cases.

Conclusion: In this study the incidence of obstructed labour was very high. The commonest cause was cephalopelvic disproportion followed by fetal malposition and malpresentation.

Key words: Obstructed labour, cephalopelvic disproportion, prenatal Morbidity.

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Introduction: In almost all developing countries, maternal mortality remains one of the five leading causes of death among reproductive age women, it is an important public health problem not only because of the large number of such mortality, but

also because of the traumatic effect of such an event on the family and the community as a whole. Each year more than half a million women (529,000 estimated in 2000) die from preventable pregnancy-related causes. An estimated 99% of

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such deaths occur in developing countries. Obstructed labour is a life-threatening obstetric complication associated with significant maternal and fetal morbidity and mortality. It is one of the most common preventable causes of maternal and perinatal morbidity and mortality in developing countries. For example, in Bangladesh obstructed labour was found to be the third most common cause of maternal mortality in one study. The causes of the maternal mortality in Bangladesh are abortion (21%), postpartum hemorrhage (25%), obstructed labour (8%), puerperal sepsis (11%), eclampsia (16%) and other obstetric cases (19%). Obstructed labour was the cause of 11.3% of maternal deaths in a report from Bangladesh.¹ The cause of obstructed labour in Ethiopia cephalopelvic disproportion was responsible for 80.6%, shoulder presentation for 11.5% and other Representation the remaining. Most obstructed labour was due to cephalopelvic disproportion. There was a nine-fold increase in the perinatal death rate when the patients were anaemic but most perinatal deaths were due to delays in seeking available obstetrical care. A study done by², BSMMU in Bangladesh (2002) where the incidence of obstructed labour was 5.22% and 56% of them in the age group between 21-30 years. 54% patient was primigravida and 46% were multiparous. Only 34% populations were under antenatal checkup (regular/ irregular). The medical causes of obstructed labour in her study were cephalopelvic disproportion in 33%, representation in 26%, malposition in 41%, 92% cases needed LSCS, craniotomy 1% and subtotal hysterectomy 7%. Still born and asphyxiated baby were 38% and 50% respectively. In India focused up to the obstructed labour cases that the incidence of labour was 72.8% in the group between 21-30 years.³ 98.57% patients came from lower socioeconomic class. Still born was 24.29% cases and maternal death was 2.85% cases. In their study on obstetrics- past and present, focused upon the disparity between developed and developing countries in levels of maternal and perinatal mortality.⁴ In her study incidence of obstructed labour was 3.59% Mode of delivery were LSCS in 85%.⁵ Craniotomy in 9% and evisceration in 4% maternal outcome was WF in 7% and puerperal

sepsis in 18% postpartum haemorrhage 17%. Perinatal death was 45% and MMR was 3% due to obstructed In Bangladesh maternal mortality rate is still very high, about 3.2 per thousand live births. Even in the 21st century, obstructed labour still remains-life threatening catastrophe all over the world mostly in the developing countries like Bangladesh. Obstructed labour is one of the major causes of maternal death in our country (8%). 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 results from unfavorable relation between maternal pelvis and fetus. Every pregnancy and labour are risky and need careful supervision supported by health facilities to avoid maternal and fetal demise. In our country 30% people live in rural areas where most deliveries 90% are conducted at home, TBAs conduct 63% of deliveries of which 38% are conducted by untrained TBAs and 25% by trained ones (SIRPFRHT 1995). The effect of these deliveries is reflected in the form of high maternal and fetal mortality and morbidity in our country. A community-based survey on health status of pregnant women in Kushtia 1997 reveals that (67%) of teensne village girls are becoming pregnant below the age of 18 years and facing the disaster of unsafe delivery. This adverse maternity situation is aggravated 5y malnutrition. Thus, when such malnourished teenage girl becomes pregnant before their pelvis are adequate for childbirth they fail in the curse of obstructed labour. In Rajshahi Medical College Hospital, Rajshahi, Bangladesh about 1-2 patients is admitted with obstructed labour every day. The number is relatively high as it is tertiary level hospital and patient from different areas with labour complication are referred here for proper management. The causes of obstructed labour are not only the medical causes but also have some social causes. The medics; causes are mainly Cephalopelvic disproportion, malposition, representation, big pelvic tumor, congenital malformations of the fetus (hydrocephalus). Poverty, social and cultural prejudices, gender-based violence, lack of education and less access

to essential health care facilities also contribute to obstructed labour. In Bangladesh a majority of women who escaped from death due to obstructed labour suffer from very distressing morbidities. Obstructed labour is an important cause of obstetric fistula like V.V.F, R.V.F, ruptured uterus, vaginal stenosis and prolapse uterus. Obstructed labour also brings a major impact on fetal outcome. They may die in utero, are delivered with severe asphyxia. When they are delivered in rural areas at home with no facility for immediate resuscitation, neonatal death may occur perinatal mortality (52 per 1009 birth) is still high in Bangladesh and majority is due to birth asphyxia. The sequence of perinatal asphyxia is cerebral palsy, mental retardation. Extensive thinking and interventions are going on particularly about the community-based activities for improving maternal and neonatal health. The common cause of obstructed labour is cephalopelvic disproportion, malposition and malpresentation. The most important maternal morbidities are postpartum hemorrhage, wound infection, puerperal sepsis, abdominal distension, ruptured uterus as well as VVF. Fetal outcomes are still birth, asphyxia, neonatal jaundice and umbilical sepsis. The purpose of the present study was to determine the risk factors, socio-demographic factors as well as outcome of obstructed labour. Due to poor transport facilities most of the patients were brought late in morbid state.

Materials and Methods: This study is a prospective observational study has been done in Department of Obstetrics and Gynaecology in Rajshahi Medical College Hospital, Rajshahi, Bangladesh during July 2016 to December 2018. Hundred patients who were admitted with obstructed labour during study period were included in this study. One hundred and five cases with features of obstructed labour were selected as per inclusion and exclusion criteria in a consecutive method. A detailed history included sociodemographic feature, obstetric history, features of obstruction, intrapartum events were recorded to detect risk factors. Conditions of patients, mode of delivery, preoperative and post-operative complications, maternal and fetal

outcomes were recorded. After obtaining written informed consent patients with features of obstructed labour were enrolled consecutively in this study. Both prime and multi-gravida patients admitted with obstructed labour and developing this condition after admission was included. Patients having hypertension, convulsion or other medical diseases were excluded. A detailed history including obstetric history, socio-demographic history, any medical disease, details of intrapartum events were recorded. Demographic factors like age, socio-economic condition, educational status and obstetrical history like parity, previous mode of delivery and previous outcome of baby were recorded. During admission, the general condition of mothers was assessed as well as the fetal lie, presentation, position and heart sound were recorded. Pelvic examination was carried out to assess the cervical dilatation, state of liquor amni, position, presentation, and pelvic assessment, degree of caput, moulding, and uterine rupture. Destructive operations included craniotomy was done in dead fetus with cephalic presentation with full cervical dilatation. APGAR score at 5 minutes of 7 and above was taken as normal while scores less than 7 were taken as birth asphyxia. Conditions of the patient, preoperative and postoperative findings, mode of delivery, associated complication (both mother and fetus) were recorded. At post-partum period data regarding maternal outcome were recorded which included abdominal distension, postpartum hemorrhage, foul smelling discharge, fever, character of wound, burring micturition, urinary incontinence. Fetal condition was evaluated by the nature of feeding, development of jaundice, umbilical condition, and features of neonatal infection.

Data processing and tabulation: Data processing and tabulation by hand tabulation, calculations were done on scientific calculation. Comparison between primigravidae and multigravidae were made using Chi-square test or unpaired students't' test as applicable. A p value <0.05 was taken as minimum level of significance. The statistical analysis was done in Windows SPSS version 19.0.

Results

This study was one hundred (100) cases with features of obstructed labour were selected. The medical causes of obstructed labour in the study population were cephalopelvic disproportion 42-46%. Maternal outcome were healthy 32-40%, mortality 4% and morbidity 56-64%, perinatal outcome was healthy 54-62% & mortality 38-46%. Incidence of obstructed labour in our hospital during this study period was 2.65% Out of 120 cases, 100 cases were included on this study. They are divided into primigravidae 50 cases and multigravidae 50 cases.

Table-1: Incidence of obstructed labour

Total number of deliveries	Total number of cases of obstructed labour	Percentage (%)
4525	120	2.65

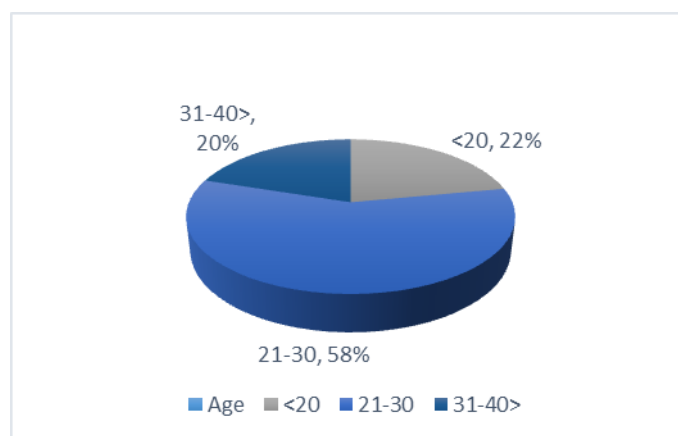


Figure-1: Age distribution of patients.

Table-2: Socio-economic status of the patient (n=100)

Socio economic status	Primigravidae n = 50	Multi gravidae n = 50	P value
Poor	42 (84)	45 (90)	> 0.05ns
Medium	7 (14)	5 (10)	
Good	1 (2)	nil	

Figure-1 showed that 22% of the study populations were in the age group of up to 20 years. 58% in the group 21-30 years and 20% in the group of 31-40 years. [Table-2] revealed that maximum study population i.e. 84% in primigravidae and 90% in multi gravidae had come from poor socio economic group and only 2% in case of primigravidae came from good economic classes. Socioeconomic conditions: Poor: whose monthly income is below 5,000 BDT. Middle Class: whose monthly income is 5,000-20,000 BDT. Good: whose monthly income is 20,000 – 60,000 BDT.

Table 3: Level of education of the patient (n=100)

Education level	Primigravidae n = 50 No (%)	Multi gravidae n = 50 No (%)	P value
Illiterate	28 (56)	34 (68)	> 0.01ns
Primary	16 (32)	14 (28)	
Secondary	5 (10)	2 (4)	
Higher	1 (2)	nil	

Table-3 revealed that 56% in primigravidae and 68% in multi gravidae of study population did not cross primary education level. [Table-4] showed that most patients were housewife 82% in case of primigravidae and 92% in multi gravidae.

Table 4: Occupation of the patient (n=100)

Occupation	Primigravidae n = 50 No (%)	Multi gravidae n = 50 No (%)	P value
Housewife	41 (82)	46 (92)	> 0.05ns
Service holder (Garments worker)	3 (6)	1 (2)	
Maid servant	3 (6)	1 (2)	
Day labourer	2 (4)	2 (4)	

Table 5: Occupation of the patient's husband (n=100)

Occupation	Primigravidae n = 50 No (%)	Multi gravidae n = 50 No (%)	P value
Service holder	7 (14)	3 (6)	> 0.05ns
Businessman	2 (4)	3 (6)	
Day laborer	28 (56)	36 (72)	
Farmer	13 (26)	8(16)	

Table-5 showed almost half 56% in primigravidae and 72% in multi gravidae of study population's husbands were daily laborer. [Table-6] showed that only 4% in primigravidae and 6% in multi gravidae patients were on regular antenatal checkup, 30% primigravidae and 34% in multi gravidae patients were on irregular antenatal check up 66% primigravidae and 60% in multi gravidae patients had no antenatal checkup.

Table 6: Antenatal checkup (n=100)

Antenatal check up		Primigravidae n = 50 No (%)	Multi gravidae n = 50 No (%)	P value
Yes	Regular	2(4)	3(6)	>0.01ns
	Irregular	15(30)	17(34)	
No		38(66)	30(60)	

Table 7: Patient referred by (n=100)

Referred by	Primigravidae n = 50 No (%)	Multi gravidae n = 50 No (%)	P value
T.B.A	11 (22)	9 (18)	> 0.00
Doctors	3 (6)	4 (8)	
Nurse	2 (4)	3 (6)	
Relative	27 (54)	25 (50)	
Midwife	7 (14)	9 (18)	

Table-7 showed that most of the patients were referred by relatives 54% in primigravidae and 50% in multi gravidae, 22% in primigravidae and 18% in multi gravidae referred by T.B.A , 14% in primigravidae and 18% in multi gravidae referred by Midwives 6% in primigravidae and 8% in multi gravidae referred by Doctors ,4% in primigravidae and 6% in multi gravidae referred by Nurse .None was by self.

Table 8: Duration of labour pain prior to admission (n=100)

Duration of labour	Primigravidae n = 50 No (%)	Multi gravidae n = 50 No (%)	P value
12-24 hours	26 (56)	23 (46)	> 0.10ns
25-48 hours	16 (32)	22 (44)	
>48 hours	6 (12)	5 (10)	

Table-8 revealed that 56% in primigravidae and 46% in multi gravidae of the study population came to hospital within 12-24 hours of labour pain, 32% in primigravidae and 44% in multi gravidae of patients came within 25-48 hours. [Table-9] show the causative factors of obstructed labour, 46% in primigravidae and 42% multi gravidae cases were due to cephalopelvic disproportion with varying degrees of contracted pelvis, 52% in primigravidae and 58% multi gravidae cases caused by malpositions and malpresentations, 2% in primigravidae was due to cervical fibroid.

Table 9: Distribution of Risk factors among obstructed labour deliveries (n=100)

Risk factors	Primigravidae n = 50 No (%)	Multi gravidae n = 50 No (%)	P value
Cephalopelvic disproportion	23	21(42)	0.00
Persistent occipital-posterior position	14	12(24)	
Deep transverse arrest	5	8(16)	
Shoulder presentation	3	3(6)	
Face presentation	2	3(6)	
Breech presentation	2	3(6)	
Cervical fibroid	1	Nil	

Table 10: Distribution of Mode of Delivery among the study population (n=100)

Mode of delivery	Frequency	Percentage
Lower segment caesarean section	77	77.0
Craniotomy	17	17.0
Laparotomy with repaired ruptured uterus	3	3.0
Subtotal hysterectomy	3	3.0
Total	100	100.0

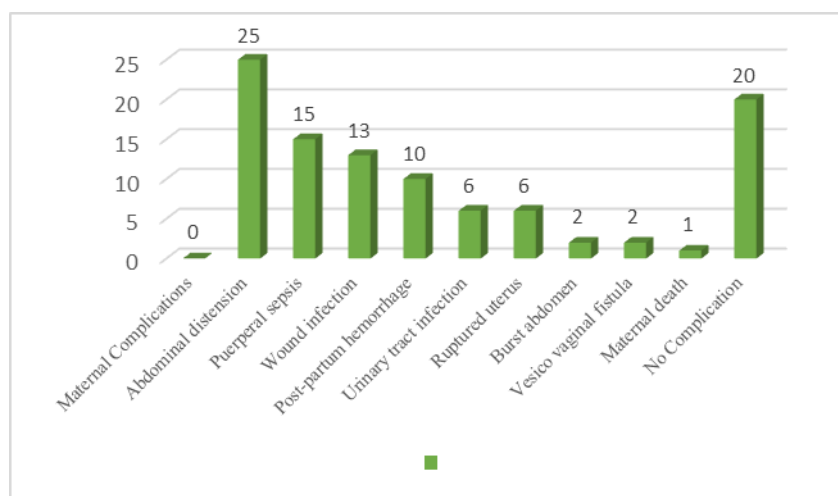
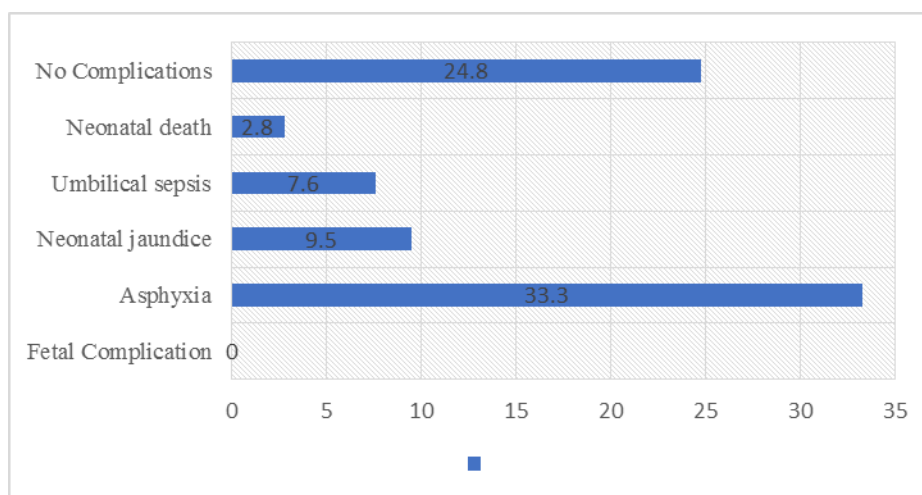
**Figure-2:** Distribution of Maternal complications among obstructed labour deliveries (n=100)

Table 11: Fetal outcome at birth (n=100)

Fetal outcome		Primigravidae n=50 No (%)	Multi gravidae n=50 No (%)	P value
Live birth	Healthy	10(20)	8(16)	>0.01ns
	Asphyxiated	32(64)	28(56)	
Still Birth		8(16)	14(28)	

**Figure 3:** Distribution of fetal Complication among the live birth (n=82)

Majority of the patients were delivered by caesarean section (77.0%) followed by craniotomy (17.0%). Caesarean hysterectomy was performed for 3(3.0%) cases out of which two cases for ruptured uterus, 1 case for postpartum hemorrhage. Repair of ruptured uterus was done for 3(3.0%) cases out of which 2 cases for scar rupture [Table-10]. Many patients had more than one complication. The most common complications was abdominal distension due to paralytic illness or peritonitis (25.0%). Six (6.0%) cases had ruptured uterus out of 2 had scarred uterus. One patient died due to post-partum hemorrhage among 10(10. %) cases [Figure-2]. [Table-11] showed that more than half of the babies 64% in primi gravidae and 56% multi gravidae were asphyxiated baby and significant no of babies 16% in primigravidae and 28% multi gravidae were still born (Maximum were fresh still born). Among the live babies 35(33.3%) cases were asphyxiated and 10(9.5%) cases developed neonatal jaundice [Figure-3].

Discussion

In this study obstructed labour accounted for 4.2% hospital delivered within the range reported for other developed countries. In India,⁹ its incidence was found 2.5%. In Eastern Nigeria,⁶ study over a period of 5 years revealed the incidence was 4.7%.

This incidence of this study is reflective of overall health system, educational status, and poverty, lack of vigilant of obstetric care, delayed referral and poor facilities for transport of patients from remote area. Mostly obstructed labour occurred in nonbooked, primigravida, patient from rural area and those belonging to poor class, illiterate or

having primary education. Health education is suggested, especially for primigravida whose pelvis has not been tested. Educated women are likely to be economically and socially, empowered to break socio-culture and financial barrier. Duration of labour is the important factor that is significantly associated with maternal and perinatal mortality. In this study the most common cause of obstructed labour was cephalopelvic disproportion followed by mal-presentation and mal-position, which was relevant to other studies.^{7,8} In grand multipara however malpresentation was more common than cephalopelvic disproportion which was statistically significant in this study. The common mode of delivery was LUCS because of its safety. Although some still superior to LUCS in moribund cases; however studies have shown that the use of regional anesthesia has made LUCS to be safe and its outcome to be comparable to that of destructive operation in moribund cases.⁹ Among the destructive operation only craniotomy was done as it was easier to perform. The risk of developing complication with either LUCS or destructive operation was not statistically significant which showed that either method of relieving obstruction have favorable outcome in this tertiary care centre because of advent of new generation of antibiotics, better surgical method, anesthetic facilities, good preoperative and post-operative care which has made LUCS safe. Patients before discharge were counseled to book early in subsequent pregnancies and deliver in well-established health care facilities where adequate monitoring are available with facilities for caesarean section. Regarding complications of obstructed labour abdominal distension was the most common complication followed by urinary tract infection, puerperal sepsis post-partum hemorrhage. Rupture uterus is the common sequelae of obstructed labour.¹⁰ In this 5.8% cases were ruptured uterus. This was due to referral of very mismanaged patient. This study has shown that uterine rupture was uncommon among the primigravida as primigravid uterus meets obstructed labour with inertia whereas multigravid uterus meets obstruction with hypertonic uterine contraction. Urinary tract infection was due to prolonged catheterization.

Maternal mortality rate was about 1% in this study which is lower than that of other developing countries,¹¹ because of meticulous care. In this study maternal death occurred due to extensive rupture. Vesico-vaginal fistula is a well-known late sequel of obstructed labour superscript.¹² In this study VVP was developed 1.9% cases. The poor fetal outcome with perinatal mortality and morbidity was 52.2% because of prolonged labour, neonatal sepsis from multiple unsterile vaginal examination before attended 10 hospitals which is similar to other studies.^{12,13} Obstructed labour can be prevented by providing optimal obstetric care, good nutritional support as nutrition is essential for normal pelvis;⁸ however it takes long time to attain the goal. Another important potential intervention for prevention of obstructed labour was antenatal care coverage. In this study overall antenatal coverage was 18.1%. The strength of this study is that a proper predesigned questionnaire has been made for collecting data, better surgical method and good pre-operative and post-operative care. Information regarding the duration of labour was not satisfactory as labour at home and attended by untrained dais. In the absence of sophisticated fetal and maternal monitoring devices cases were evaluated clinically. The uterine activity measurement was not possible and assessment of severity of fetal distress sometimes was not accurate.

Conclusion

In this study the commonest cause of obstructed labour is the cephalopelvic disproportion, malposition and malpresentation of which shoulder presentation & breech presentation are the most common. Severe hydrocephalous is the most common fetal abnormality found in this study. To decrease these unfortunate and mostly preventable obstetrics complications, restructuring to MCH service should be done with particular attention to increase the community awareness, decentralization to maternity service, effective health care and effective referral system.

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