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Original Article

The maternal and neonatal mortality and morbidity caused by PROM in a Tertiary care hospital in Bangladesh

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ABSTRACT

Objective: *The main goal of this study is to discover the impact of PROM on fetal outcome and add to the knowledge pool of obstetricians in order to ensure proper management of PROM to reduce the mortality and morbidity associated with it.* ***Methods:*** *This was a cross-sectional study carried out in the Department of Obstetrics and Gynecology in Bangabandhu sheikh mujib medical university, Dhaka from February 2008 to July 2008. This study was carried out on 50 pregnant women. All cases of PROM/PPROM above 28 weeks of pregnancy were admitted in Bangabandhu sheikh mujib medical university during the study period were included in this study.* ***Results:*** *Mean age of the patients found to be 25.13 years. In this study 61% cases with PROM were primigravida and 39% cases were multigravida. Gestational age in majority of the patients, 71.7% were >37 weeks. In misoprostol induction 61.7% had vaginal delivery and 38.3% had LSCS. In oxytocin augmentation 74.6% had normal vaginal delivery and only 25.4% had LSCS. Maternal morbidity rate was 34%. The fetal morbidity rate was 38% and mortality was only 5%.* ***Conclusion:*** *PROM can be avoided by identifying risk factors, which is an important management strategy. Steroids for fetal lung maturity, antibiotics to avoid fetal and maternal infection, timely induction and/or augmentation of labor, and expert NICU assistance will all help to speed up delivery, reduce hospital stay and infection, and reduce maternal and perinatal morbidity and death.*

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INTRODUCTION

Premature rupture of membrane (PROM) occurs when the membrane ruptures spontaneously before labor begins. It is one of the most prevalent pregnancy problems that has a significant impact on the mother's health. PROM affects 2.7% to 17% of all pregnancies, but it occurs spontaneously in the majority of instances [1]. The fetal membranes normally rupture during the active phase of labor, but PROM happens before the uterine contractions begin. When a ruptured membrane develops after 37 weeks of pregnancy, it is referred to as term PROM, but when it occurs before 37 weeks, it is referred to as preterm PROM. Prolonged rupture of membranes occurs when the membranes are ruptured for more than 24 hours before to delivery. About 30% of all premature births and their sequelae are caused by PROM [2].

The prevalence of early rupture of membranes varies slightly over the world, which could be attributed to differences in the populations investigated. PROM affects roughly 3% of all pregnancies and affects about 5% to 10% of all deliveries. Approximately 70% of PROM cases occur in full-term pregnancies, although more than 50% of cases in referral centers may occur in preterm pregnancies. About one-third of all premature births are caused by PROM [3]. PROM is a leading cause of perinatal death and morbidity. PROM has a wide range of consequences, from maternal and newborn death and morbidity to national economic loss due to pharmacological costs, hospitalization, time away from work, and health-care costs [4]. Chorioamnionitis leading to endometritis, puerperal pyrexia, and wound infection are all examples of maternal morbidities. Increased obstetric interventions, such as instrumental births and caesarean sections due to fetal distress or in coordinated uterine movement, can result in additional morbidities [5,6]. PROM is linked to a number of risk factors, including black race, poorer socioeconomic position, smokers, previous STI history, previous preterm delivery or abortion, polyhydramnios, and multiple pregnancy. Many factors influence fetal and maternal outcomes, including gestational age, treatments (antibiotics, steroids), labor duration, and the development of intrapartamchorioamnionitis [7].

In the absence of clinically apparent intra-amniotic infection, fetal distress, or placental abruption, the main goal of conservative therapy in PPROM above 28 weeks has been to prolong pregnancy to lower the risk of preterm [8,9]. As a result, the decision to forsake expectant womb treatment with PPROM in favor of delivery necessitates a careful comparison of the possible danger in expectantly treated pregnancies vs the gestational age-related risk for infant morbidity and mortality associated with purposeful delivery. Despite the fact that the majority of cases are idiopathic and unpreventable, diligent monitoring, prompt management, and a solid neonatal setup can considerably minimize fêto maternal morbidity and mortality.

OBJECTIVE

The aim of this present study is to discover the impact of PROM on fetal outcome and add to the knowledge pool

of obstetricians in order to ensure proper management of PROM to reduce the mortality and morbidity associated with it.

METHODS AND MATERIALS

Study place and period: This was a cross-sectional study carried out in the Department of Obstetrics and Gynecology in Bangabandhu sheikh mujib medical university, Dhaka from February 2008 to July 2008.

Study population and sample size: Total number of deliveries in this hospital were 778. This study was carried out on 50 pregnant women. All cases of PROM/PPROM above 28 weeks of pregnancy were admitted in Bangabandhu sheikh mujib medical university during the study period were included in this study.

Inclusion criteria:

- Both primi and multigravid women with PROM.
- Gestational age more than 28 weeks of pregnancy duration.
- Spontaneous rupture of membrane before initiation of labour.

Exclusion criteria:

- Women who were admitted with rupture membranes with established labour
- Rupture of membranes with APH, severe pre-eclampsia, eclampsia.

Data collection: A systematic questionnaire was used to obtain data from the study population. The data was collected directly by questioning the patients and by physical examination, daily follow up of patients till their discharge and also from clinical research of the patients. The variables studied include the socio-demographic profile, the circumstances of admission, the characteristics of the pregnancy, the care and the maternal and fetal prognosis

Data analysis: Clean coded data was input into Microsoft Excel and exported to SPSS version 22 for further analysis. The descriptive statistical analysis was described using sentences, graphs, tables, frequencies, percentages, and mean and standard deviation. The frequencies of the variables were used in a descriptive analysis, and the 95 % confidence intervals (CIs) were produced. The statistical analysis was omitted from questionnaires that were incomplete. In multivariable logistic regression, statistically significant was considered at $p < 0.05$.

RESULTS

Among the 50 patients included in this study, 14% (07) were 15 to 19 years of age, 26% (13) were 20 to 24 years, majority 38% (19) were 25 to 29 years of age, 18% (09) were 30 to 34 years and only 4% (02) were 35 to 39 years old. Mean age of the patients found to be 25.13 years.

Table 1: Age distribution of the patients (n=50)

Age in years	Frequency (n)	Percentage (%)
15 to 19	07	14
20 to 24	13	26
25 to 29	19	38
30 to 34	09	18
35 to 39	02	04

In this study 61% cases with PROM were primigravida and 39% cases were multigravida. Gestational age in majority of the patients, 71.7% were >37 weeks.

Table 2: Incidence of PROM according to parity, gestational age

Variable	Frequency (n)	Percentage (%)
Parity		
Primigravida	31	61
Multigravida	19	39
Gestational age (weeks)		
28 to 36	14	28.3
≥37 to 42	36	71.7

Associated risk factors of PROM found in this study were Genital infection (46.3%), Indiopathic (28%), Previous history of PROM (15.7%) and History of coitus (10%).

Table 3: Association of PROM with maternal disease

Variables	Frequency (n)	Percentage (%)
Infection	23	46.3
Indiopathic	14	28
Previous history of PROM	8	15.7
History of coitus	5	10

Normal vaginal delivery was common mode of delivery. In misoprostol induction 61.7% had vaginal delivery and 38.3% had LSCS. In oxytocin augmentation 74.6% had normal vaginal delivery and only 25.4% had LSCS.

Table 4: Outcome with induction/augmentation in PROM

Types	Number of patients	Normal vaginal delivery		LSCS	
		Frequency	%	Frequency	%
Misoprostol induction	22	14	61.7	8	38.3
Oxytocin augmentation	28	21	74.6	7	25.4

Maternal morbidity rate was 34%. 10% patients had puerperal sepsis, 8% patients had postpartum homorrage, only 3.4% and 1.8% had chorioamnionitis & retained placenta respectively. 10% had abdominal/episiotomy infection.

Table 5: Maternal morbidity in relation with PROM.

Types of morbidity	Frequency (n)	Percentage (%)
Puerperal sepsis	5	10
Postpartum hemorrhage	4	8
Chorioamnionitis	2	3.4
Retained placenta	1	1.8
Wound infection	5	10

In case of perinatal morbidity respiratory distress and septicemia were the two major morbidity which was 9.2% and 8.5% respectively. The fetal morbidity rate was 38% and mortality was only 5%.

Table 6: Perinatal morbidity and mortality in relation with PROM.

Types of morbidity	Frequency (n)	Percentage (%)
Asphyxia	4	7.6
Respiratory distress syndrome	5	9.2
Neonatal jaundice	3	7.3
Septicemia	4	8.5
Transient tachypnoea	1	1.9
Fetal death	2	5

DISCUSSION

Premature rupture of membranes is a common pregnancy issue that has a significant impact on both the foetal and mother outcomes. It is one of the most prevalent clinical situations in which a normal pregnancy turns into a high-risk situation for both the mother and the fetus. Mean age of the patients found in our study was 25.13 years. Our data are comparable to that of Yasmina A et al, in Morocco in 2017 who reported an average age of 28.21 years [10]. In this study 61% cases with PROM were primigravida and 39% cases were multigravida. Increased sexual activity and vaginal infection are the most common among primigravida, according to Akhter et al [11].

In the current study, majority of the study subjects were above ≥37 weeks of gestational age. Similar findings were found by Adeniji AO, Atanda OA, and Biswas T et al in connection to gestational age [12,13]. Preterm PROM was found to be present in 28.3% of the children in this investigation. Dan forth [14] found a 30% incidence of preterm PROM in his study. Although it is commonly accepted that PROM is complex, the findings of this study demonstrate that the most common reasons are genital infection (46.3%), indiopathic (28%), previous history of PROM (15.7%), and history of coitus (10%).Shehla Noor [15] found that 30.6 % of PROM patients had a history of coitus two weeks before delivery, while Devi Anjena [16] found that 40% of PROM patients had a history of coitus two weeks before delivery. In 22% of cases, a positive genital tract culture was discovered. E.Coli was the most frequent organism among them.

The vaginal delivery rate was 61.7 % in the misoprostol-induced group, while the caesarean section rate was 38.3 %. 74.6 % in the oxytocin augmentation group gave birth vaginally, while 25.4 % had a caesarean section. which is identical to Sita Ram Shrestha et al's study [17]. Maternal mortality was not found in our study. Maternal morbidity rate was 34%, which is higher in comparison to a study by vermillion et al [18] but similar to study reported by Yoon et al [19]. Among 50 cases 7.6% neonate suffered from birth asphyxia, 9.2% babies suffered from respiratory distress syndrome, 8.5% fromsepticemia, 7.3% from neonatal jaundice,1.9%transient tachypnoea. S.Akhter et al [20] study shows similarfindings RDS 11.1%, septicemia 6.7% and perinatal mortality 4.5%.

CONCLUSION

To reduce maternal and perinatal morbidity and mortality, it is critical to assess the risk of PROM and diagnose it early. Antibiotic and steroid treatment for women with PROM reduces maternal and newborn morbidity considerably. Active care is required to allow for delivery within 24 hours after PROM, which improves mother and newborn outcomes. Early searching, adequate antenatal visits, and improvement of the mother's general condition, identifying risk factors, treating associated complications, correct diagnosis of PROM, and induction of delivery (>34 weeks) that

gives a high rate of successful vaginal deliveries without a rise in neonatal and maternal morbidity should be the main objectives of the Obstetrician. Premature birth and the sophistication of the Newborn Special Care Unit (NBSCU) may be more directly linked to neonatal problems than PROM.

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