

## Preterm Prelabor Rupture of Membrane And It's Fetomaternal Outcome in Patients Admitted in A Tertiary Care Center.

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### Abstract

**Background:** Preterm prelabor rupture of membranes (PPROM) is responsible for one third of all preterm births and is associated with significant maternal, foetal and neonatal risks. So the objective of the present study were to see the foeto-maternal outcome in patient with preterm prelabor rupture of membrane.

**Method:** This prospective observational study was conducted in a tertiary care hospital in a duration of six months. Total 100 cases were recruited in the study. Patients' data were recorded on a proforma. Maternal outcome was measured on the basis of presence of fever and mode of delivery. Foetal outcome was measured on the basis of weight of the baby, presence of infection (fever), APGAR score and neonatal death. Analysis was performed using SPSS-20.

**Results:** The Preterm prelabor rupture of membrane was found to be frequent in younger age group between 15–25 years, lower socioeconomic class. And history of previous one or more preterm delivery was significantly associated with PPRM. Maternal fever was also significant in the PPRM (12%) and cesarean section was 25%. Low birth weight was significant in the PPRM group. Majority of the babies born to mother were either extremely low birth weight or low birth weight, i.e., between 1–2.5 kg. Low APGAR score at the time of delivery and foetal infection (12%) was also found with the PPRM. Intrauterine fetal death was 5% and neo-natal deaths was also higher in the PPRM (11%).

**Conclusion:** In our study preterm pre labor rupture of membrane had increased maternal morbidity and neonatal morbidity and mortality. Strategies should be developed for its prevention.

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### I. Introduction

Preterm premature rupture of the membranes (PPROM) is responsible for one third of all preterm births and affects 120,000 pregnancies in the United States each year. Sub clinical intrauterine infection has been implicated as a major etiological factor in the pathogenesis and subsequent maternal and neonatal morbidity associated with PPRM.<sup>1</sup> As much as two third of the perinatal mortality and a half of long term neurological disabilities including cerebral palsy, are associated with a preterm birth.<sup>2</sup>

Infants are born preterm following spontaneous labour with intact membranes (45% of cases) preterm membrane rupture is (30%) and after labour induction or caesarean delivery for maternal or foetal indications (25%). Birth following spontaneous preterm labour and spontaneous preterm premature rupture of the membranes (PPROM) together called spontaneous preterm birth are considered a syndrome caused by multiple aetiologies, including infection/inflammation, vascular disease, uterine over distension and immunological disorders.<sup>3</sup> Objective of this study was to observe the fetomaternal outcome in patients with preterm prelabor rupture of membranes.

### II. Materials And Methods:

This is a cross-sectional descriptive type study, done in the Department of Obstetrics and Gynecology in Chattagram Maa Shishu General Hospital, Bangladesh, from April 2015 to September 2015 (6 months). Hundred pregnant women with preterm pre labor rupture of the membrane were recruited from the inpatient of the labor ward. Both primi and multi gravid women, who consented to participate in this study, whose

pregnancy duration 28 to 36 weeks 6 days ,with spontaneous rupture of the membrane ,not in active labor were included in this study. Women with pregnancy 37completed weeks, with established labor, with ante partum hemorrhage and with infection were excluded from the study. After admission, full history including duration of pregnancy, time and onset of rupture of membranes, past history of rupture of membranes, past obstetric history was taken. Rupture of the membrane was diagnosed by history of a gush of fluid from the vagina or continued leakage of fluid from the vagina and demonstration of membranes rupture has to be made by a sterile speculum examination visualizing flow of amniotic fluid from the cervical os and / or it's pooling in posterior vaginal fornix spontaneously or by fundal pressure and demonstrating alkaline PH of vaginal fluid by litmus paper. During speculum examination high vaginal swab was collected for culture and sensitivity and cervical dilatation and effacement was assessed at the same time. Gestational age was determined from LMP and from early USG scan. Pregnancy of more than 28 weeks duration was included in this study to avoid the conflict of abortion. Plan of management was decided on gestational age, cervical condition, latent period, presentation of the fetus, symptoms and signs of infection. All patients received a single course of dexamethasone consisting of two 12.5 mg I/M injection 12 hourly after admission. Few patients who showed uterine contraction short term tocolysis was given in order to allowed steroid therapy which can produce maximal effect on pulmonary maturation. Fetal surveillance was checked by daily fetal kick count and auscultation of fetal heart sound 4 hourly. All patients received prophylactic antibiotic for 7 days after admission. Inj. Ampicillin / Cephradine 500mg I/V 6 hourly for 48 hours, then this regimen was changed to oral form.

This antibiotic was continued for seven days if patient remain undelivered. Maternal monitoring to detect the sign of chorioamnionitis was done by recording of pulse, blood pressure, temperature, fundal height, abdominal tenderness, color and smell of liquor and fetal conditions four hourly. Patients with features of chorioamnionitis which included maternal temperature above 100.4 F, maternal tachycardia, fetal tachycardia (fetal heart rate >160 beat/minute), uterine tenderness, foul smelled vaginal discharge and maternal leucocytosis (>16000/ $\mu$ L) was taken as the indication of termination of pregnancy. Patients with features of chorioamnionitis were given broad spectrum antibiotics in parental route during labor. Antibiotic was given to the baby after delivery in such cases. All the neonates were referred to neonatal ward for further management according to the hospital protocol. Without chorioamnionitis, a conservative approach was taken, advice for bed rest with bathroom facilities, to wear a sterile pad which was inspected every four hourly to detect any change of color of liquor and also to document amount of loss. If patient developed signs and symptoms of infection or conservative approach failed then pregnancy was terminated by induction, augmentation or caesarian section. The labor was induced with misoprostol or augmented with oxytocin drip if there was no contraindication or underwent caesarean section. Data were collected by standard questionnaire from the allocated patients. All data was checked and edited after collection. Then data was entered into computer and analyzed with the help of SPSS-20 software program

### III. Results:

This study was conducted among 100 cases of PPRM in a tertiary care hospital. Results are presented as below.

<b>Table-1: Maternal demographic variables</b>	<b>Frequency</b>	<b>Percentages</b>
<b>Variables</b>		
<b>(Age (Years)</b>		
15-25	50	50%
26-35	30	30%
36-45	20	20%
<b>Gestational age</b>		
Up to 30 weeks	23	23%
31 to 35 weeks	39	39%
36 to 37 weeks	38	38%
<b>Socioeconomic Status</b>		
<b>Lower</b>	25	25%
<b>Lower middle class</b>	45	45%
<b>Upper middle class</b>	17	17%
<b>High</b>	13	13%
<b>Maternal Education</b>		
Nil	15	15%
Primary/Middle	45	45%
Matric and above	40	40%
<b>Parity</b>		

Nil	33	33%
Para 1	21	21%
Multipara (2-5)	34	34%
Grandmultipara (>5)	12	12%
<b>Gravidity</b>		
Primigravida	33	33%
2nd Gravida	18	18%
Multigravida (3-5)	35	35%
Grandmultigravida (>5)	14	14%

Table 1 showing majority(50%) were within 15 – 25 years, 39% had gestational age 31-35 weeks, 45% were from lower middle class, 45% completed primary education, most had nil parity and majority(35%) were multigravida.

**Table 2: Maternal clinical variables**

Variables	Frequency	Percentages
<b>Fever</b>		
No	88	88%
Yes	12	12%
<b>Previous Pelvic Examination</b>		
Yes	67	67%
No	33	33%
<b>Preterm deliveries</b>		
Nil	78	78%
One	12	12%
Two	8	8%
More than 2	2	2%
<b>Type of Delivery</b>		
Vaginal Delivery	65	65%
Assisted Delivery	10	10%
Caesarean Section	25	25%

Table 2 showing 12% patients had fever, 67% had history of previous pelvic examination, 78% had no history of preterm delivery and 25% cases delivered by cesarean section .

**Table-3: Neonatal outcome**

Variables	Frequency	Percentages
<b>Birth weight</b>		
1.0-1.5 Kg	26	26%
1.6-2 Kg	44	44%
2.1-2.5 Kg	16	16%
2.6-3 Kg	10	10%
3.1 and more	4	4%
<b>Outcome</b>		
Delivered dead	6	6%
Alive	94	94%
<b>APGAR Score</b>		
<7	25	25%
≥7	75	75%
<b>Infection</b>		
No infection	88	88%
Infection present	12	12%
<b>Perinatal death</b>		
Neonatal death	11	11%
Remained alive	89	89%

Table 3 showing 44% neonates had body weight 1.6 - 2 kg, 6 cases were delivered dead, 75% had APGAR score ≥7, infection present in 12% cases and 11% had neonatal death.

#### IV. Discussion

Spontaneous preterm birth is customarily defined as any delivery following either spontaneous preterm labour or PPRM. Even though these events are defined as distinct entities, there is considerable evidence that the risk factor for their occurrence is similar and the distinction may be largely a matter of semantics. Most preventive strategies for spontaneous preterm birth target both condition.<sup>2</sup> To date no strategies have been identified that reduce the occurrence of preterm birth after PPRM, thus most pregnancies complicated by PPRM end in preterm birth. In the previous studies it was found that preterm pre-labour ruptures of membranes (PPROM) complicates up to 2% of all pregnancies and is the cause of 40% of all preterm birth.<sup>4</sup> Preterm prelabor birth is a common incident in our setting. This high prevalence can be explained by the cultural influences of early marriages, poverty, gender discrimination resulting in low maternal weight gain and lack of birth spacing. In our study lower maternal age, and low socioeconomics class were significantly associated with PPRM as has been reported earlier.<sup>6-8</sup>

Although education was not statistically significant but is implicated as the cause of preterm birth in many studies. Patients' education might also help to reduce the incidence of preterm birth.<sup>9</sup> Previous history of miscarriages and preterm delivery was common as has been reported in other studies.<sup>10,11</sup> Two-thirds of woman in this study had gestational age between 33–36 weeks, and only one-third below 33 weeks. Wang *et al.* found that babies born at 35 week to 36 weeks and 6 days of gestation had hospital care cost that were significantly greater than term infants.<sup>12</sup> The increased neonatal morbidity associated with PPRM appears to be inversely related to gestational age.<sup>5</sup>

The perinatal morality falls with advancing gestational age from 66% at 28–31 weeks to 20% at 34–36 weeks.<sup>13</sup> Woman with PPRM after 32 weeks of gestation should be considered for delivery and after 34 weeks the benefits of delivery clearly out weigh the risks.<sup>1</sup> Caesarean section rate was 25% for this study. This is comparable with the results of Tahir S *et al*,<sup>6</sup> but is less than reported (20%) by Chales PJ<sup>14</sup> (58.7%) and Kifas Al Qa.<sup>15</sup> This difference may be due to exclusion of cases of PPRM between 24–28 weeks of gestation. At this gestation there are more chances of malpresentation hence delivery most of the time in this situation is by Caesarean section to decrease the chances of traumatic delivery. Majority of the babies born to PPRM group were in the very low to low birth weight category (70%), where as only 14% were of normal birth weight. We must admit that this is also a very huge percentage. In a way this shows the dismal health position of mother and child in our part of the world. APGAR score tells about the physical indicators of the new born. It is definitely affected by prematurity and low birth weight. Infection and perinatal mortality was significantly associated with PPRM. In recent years substantial progress has been made in understanding the relation between maternal infection and preterm birth. Up to 80% of early preterm births are associated with intrauterine infection that precede the rupture of membranes.<sup>16</sup>

For patient with preterm PROM the most likely outcome is preterm delivery within one week with its associated morbidity and mortality risk such as respiratory distress necrotising enterocolitis, intraventricular haemorrhage and sepsis.<sup>15</sup> The incidence of neonatal infection for infants born to women with PROM range from 1–2.6%.<sup>17</sup> In many studies it was found that the risk of neonatal infection was increased among mother colonised with group B streptococci, premature rupture of membranes >18 hours maternal fever during labour and prematurity.<sup>18</sup>

#### V. Conclusion

Preterm premature rupture of membranes ends in preterm birth. It is significantly associated with low socioeconomic status and presence of maternal fever. It is associated with increased neonatal morbidity and mortality and also maternal morbidity due to low birth weight, low APGAR score at the time of delivery, subsequent foetal infection and maternal chorioamnionitis.

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