

# PERINATAL OUTCOME OF PREMATURE RUPTURE MEMBRANE IN PREGNANCY

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## **Abstract:**

**Objective:** To find out the effect of PROM on neonatal outcome so that we can pay more attention for the correct diagnosis and management of PROM in pregnancy which can reduce the perinatal mortality and morbidity caused by PROM.

**Methods:** One hundred PROM cases were selected maintaining appropriate inclusion & exclusion criteria from the department of obstetrics & Gynaecology of BSMMU & DMCH and one hundred controlled cases were taken from the same during the period of January 2010 to December 2010. Data were analyzed with SPSS statistical program to determine the effect of PROM on neonatal health.

**Results:** In this study, 44% babies of PROM patients had various type of morbidity compare to 24% of patients with intact membrane. In PROM patients, perinatal mortality was 7% in this study compare to 5% with intact membrane. Causes of perinatal death in PROM was severe asphyxia (4%), RDS (5%) & neonatal sepsis (6%) mainly.

**Conclusion:** All fetal complications were significantly higher in PROM patients who received treatment after prolonged rupture of membrane. Appropriate antibiotic coverage in appropriate time will reduce fetal morbidity.

**Key words:** PROM, Pregnancy, foetal/neonatal outcome.

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## **Introduction:**

Premature rupture of membranes (PROM) is defined as spontaneous rupture of the membranes any time beyond 28 weeks of pregnancy but before the onset of labour. It occurs approximately 10% of all pregnancies<sup>2</sup>. Rupture of the membranes before onset of labour at a gestational age <37 completed weeks or before term which is called pre-term premature rupture of membranes<sup>1</sup>. If 24 hours elapse between the rupture of the membranes and the onset of labour, the problem is one of prolonged premature rupture of the membranes<sup>2</sup>.

Premature rupture of membranes in preterm gestations (PROM) occurs in approximately 2% of all pregnancies<sup>3</sup> and is associated with 30-40% of preterm birth with complications, which may be associated with high rate of neonatal morbidity and mortality. Premature rupture of membranes complicates 4-7% of all births and

is directly associated with short gestational length and increased perinatal and neonatal morbidity<sup>4</sup>. Premature rupture of membranes (PROM) in the midtrimester of 16 to 26 weeks gestation complicate almost 1% of pregnancies<sup>5</sup>. It can occur either with or without bleeding and infection<sup>6</sup>. Currently overall infant survival after delivery at 24-26 weeks of gestation is reported to be between 50% and 75%<sup>7</sup>. Survival rate in pregnancies complicated by PROM are comparable but decreased in the presence of infection or deformation. A small number of patient with mid trimester have extended latency period, the mean latency period ranged from 10.6-21.5 days<sup>8</sup>. The study was aimed to find out the effect of PROM on neonatal health so that we can pay more attention for the correct diagnosis and management of PROM which can reduce the mortality and morbidity caused by PROM.

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**Materials & Methods:**

One hundred PROM cases were selected of which 60 from department of Obstetrics & Gynecology of Dhaka Medical College Hospital (DMCH) & 40 cases were selected from the department of Obstetrics & Gynaecology of Bangabandhu Sheikh Mujib Medical University (BSMMU) and one hundred controlled cases were taken of which 60 from department of Obstetrics & Gynecology of Dhaka Medical College Hospital & 40 cases were selected from the department of Both hospitals are tertiary level teaching hospital where management protocol for PROM patients were similar. Fetal monitoring by CTG was available in both hospitals.

Patients with gestational age more than 28 weeks duration, spontaneous rupture of membrane before the initiation of labour and both primigravida and multigravida were included. Women who were admitted with rupture membrane with established labour, rupture membrane with anti-partum hemorrhage, severe pre-eclampsia, eclampsia were excluded from this study.

High vaginal swab was taken from all patients and send for culture & sensitivity. On admission blood sample was sent for CBC(total leucocyte count),CRP,URINE R/M/E for every patient. The gestational age of patient was determined by the menstrual history, previous antenatal records, USG and clinical examination. Data analysis was done with SPSS statistical program.

**Results:**

The present study intended to identify rupture membrane and its effect on fetus included a total of 100 patients with gestational age more than 28 weeks duration, spontaneous rupture of membrane before the initiation of labour and both primigravida and multigravida. Age of the patient ranged between 15-39 years. Majority belongs to the age group of 20-29 years. Most of the patients with premature rupture of membrane came from middle and poor socio-economic condition. Majority of the patient of PROM who came for hospital delivery had irregular antenatal check-up (50%). Thirty two percent cases had regular check-up and 18%

cases had no antenatal check-up. Forty percent of PROM patients were primi and 60% of patients were multi gravid. Fifty eight percent patients with intact membrane were primi and 42% patients were multigravid. Fifty five percent of PROM cases were at term pregnancy. At the same time 45% cases were preterm premature rupture of membrane (pPROM). Among pPROM 5% cases were < 34 weeks pregnancy. On the other hand patient in labour with intact membrane 90% were at term pregnancy and 10% were preterm. Only 2% found < 34 weeks pregnancy.

Among 100 cases of patients with PROM, 39 patients had associated diseases during present pregnancy; most common disease was UTI (56.41%) and next was lower genital tract infection (15.38%). Among patients with intact membrane (17 patients) had associated disease and common disease of which was UTI (35.29%) and hypertension was next (29.41%). Seventy percent of PROM cases had sexual contact within one week of rupture of membrane and 23% cases with intact membrane had sexual contact more then one week. Among the 100 PROM patients, 39 patients had previous history of gynecological and obstetrical problems of which previous preterm delivery and previous PROM were high.

Cervical effacement was 0-30% in majority (68%) of PROM patients on admission. Cervical Dilatation was <2 cm in majority (75%) of PROM patients on admission. Majority of the term PROM patient (80%) developed labour pain within 24 hours (95%) within 72 hours of rupture membrane. Ten patients had no onset of labour pain.Among the preterm PROM 35-50% goes in labour within 24 hours. Onset of labour was spontaneous in 46% of cases and induced in 31% of cases. Sixty two percent of patients delivered within 24 hours of ruptured membrane, 25% delivered within 48 hours and 13% after 48 hours of ruptured membrane. Preterm premature rupture of membrane is more common in multigravid among preterm delivery, caesarian section (LUCS) is more common in primi-gravid women.

**Table- I**  
*Perinatal Outcome*

Outcome	No. of Babies of PROM patient (n-100)	No. of Babies of intact membrane Patient (n-100)
No complication	56	76
Hyaline membrane disease	10	03
Pulmonary hypoplasia	06	01
Neonatal jaundice	10	05
Birth asphyxia	05	06
Foetal deformities(facial & skeletal deformities due to severe ,prolonged oligohydramnios)	04	03
Congenital malformation	01	01
Still Birth	01	01
Perinatal death(mainly due to prematurity & its complications)	07	04

In this study, 56% babies of PROM patients had no abnormality and 44% had various types of morbidity compare to 24% of patients with intact membrane. In PROM patients, perinatal mortality was 7% in this study compare to 5% with intact membrane. Causes of perinatal death in PROM was severe asphyxia, RDS & neonatal sepsis mainly. However, in patients with intact membrane, main causes of death were prolonged obstructed labour and fetal distress.

### Discussion

Premature rupture of membranes is one of the common complications of pregnancy that has a major impact on foetal and maternal outcome. It is one of the commonest clinical events where a traditional pregnancy can turn into high risk situation for the mother as well as the foetus.

In this study, conducted in BSMMU & DMCH shows the hospital incidence of PROM as 12.25%. Fifty five percent of PROM cases occur in term pregnancy and 45% occur in preterm pregnancy. These results are of no difference in comparison to other studies 6-19 percent<sup>2</sup>, 5-10 percent<sup>38</sup> and 2.7-17 percent<sup>36</sup>. Dr. Tasnim S<sup>30</sup> in her study showed hospital incidence of PROM as 8.12% at DMCH in 1995 which is almost similar to my study result. In this study mean age of PROM was found 25 ± 4

years, which is similar to other study by Michael Moretti et al<sup>31</sup>, Begum A Chowdhury<sup>32</sup> and Dr. Tasnim S<sup>30</sup>. In this study the incidence of PROM was 60% in multigravid while that of 40% in primigravid. Begum A Chowdhury<sup>32</sup> showed incidence of PROM in multigravida is about 70% and Michael Moretti et al<sup>31</sup> showed that of 71% which are similar to my study result.

Regarding perinatal outcome, out of 100 PROM cases 55% babies were mature & 45% babies were premature<sup>13</sup>. Three percent babies had weight below 2 kg, 64% of babies had weight between 2-3.5 kg and 7% of babies had weight above 3.5 kg. In control group 94% babies were mature, 6% babies were premature, 3% babies had birth weight below 2 kg, 60% babies had birth weight between 2-3.5kg and 37% babies had birth weight above 3.5 kg which is nearly similar to the study of Begum D<sup>34</sup>. In this study, 56% babies of PROM patients had no abnormality and 44% had various type of morbidity compare to 24% of patients with intact membrane which is almost similar to the study of Taylor J & Garite TJ<sup>18</sup>.

In PROM patients, perinatal mortality was 7% in this study compare to 5% with intact membrane. Causes of perinatal death in PROM were severe birth asphyxia, RDS & neonatal sepsis mainly. However, in patients with intact

membrane, main cause of death were prolonged obstructed labour and fetal distress. In present study both perinatal mortality and morbidity were lower than the previous studies of Begum A Chowdhury<sup>32</sup>, Tasnim S<sup>30</sup>, Begum D<sup>34</sup>. This may due to improved neonatal care in BSMMU and also in DMCH.

### Conclusion

PROM in pregnancy causes serious hazard to the fetus. The clinical course of PROM is usually characterized by increased fetal morbidity & mortality. prevention of PROM requires identification of women at risk of PROM & adequate means of treatment. most important high risk factors are previous preterm delivery due to PROM, vaginal bleeding during pregnancy, maternal smoking, taking more than three cup of coffe per day in 1<sup>st</sup> trimester, repeated genital infections & recurrent UTI, history of LEEP (loop electrosurgical excision procedure) or laser procedure in the cervix for the treatment of cervical intraepithelial neoplasia. The ultimate goal of management must be towards the safe perinatal outcome. When patients present with prolonged rupture of membranes, chance of infectious morbidity is higher. Earlier the patient reach to the hospital with least intervention outside, better the outcome. Appropriate antibiotic coverage in appropriate time will reduce fetal infectious morbidity. Proper health education, motivation of patient, improved health hygiene, regular antenatal care, adequate maternal and child care services, improved transport system are needed for reduction of perinatal morbidity and mortality.

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