

*Research Article*

## Evaluation of Premature Rupture Of Membrane Regarding Etiology, Follow Up, Maternal And Neonatal Outcome

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### Abstract

Premature rupture of membrane (PROM) also called pre-labor rupture of membranes, is a condition that can occur in pregnancy. It is defined as rupture of membranes (breakage of the amniotic sac), commonly called breaking of the mother's water(s), more than 1 hour before the onset of labor (ACOG, 2013). The sac (consisting of 2 membranes, the chorion and amnion) contains amniotic fluid, which surrounds and protects the fetus in the uterus (womb). After rupture, the amniotic fluid leaks out of the uterus through the vagina. The aim of this work is to evaluate bacterial causative organisms of premature rupture of membrane and its effect on maternal and neonatal outcome.

**Keywords:** Premature Rupture, Membrane, Neonatal

### Introduction

Premature rupture of membrane (PROM) also called pre-labor rupture of membranes, is a condition that can occur in pregnancy. It is defined as rupture of membranes (breakage of the amniotic sac), commonly called breaking of the mother's water(s), more than 1 hour before the onset of labor (ACOG, 2013). The sac (consisting of 2 membranes, the chorion and amnion) contains amniotic fluid, which surrounds and protects the fetus in the uterus (womb). After rupture, the amniotic fluid leaks out of the uterus through the vagina (Mackeen et al., 2014). They added that If rupture occurs before 37 weeks, called preterm premature rupture of membranes (PPROM), the fetus and mother are at greater risk for complications. PPRM causes one-third of all preterm births, and babies born preterm (before 37 weeks) can suffer from the complications of prematurity, including death. Open membranes provide a path for bacteria to enter the womb and puts both the mother and fetus at risk for life-threatening infection. Low levels of fluid around the fetus also increase the risk of the umbilical cord compression and can interfere with lung and body formation in early pregnancy (Mackeen et al., 2014).

Premature rupture of membrane (PROM) complicates about 2% of pregnancies but is

associated with 40% of preterm deliveries and can result in significant neonatal morbidity and mortality (RCOG, 2010). The three causes of neonatal death associated with PPRM are prematurity, sepsis and pulmonary hypoplasia. Woman with intrauterine infection deliver earlier than non-infected woman and infants born with sepsis have a mortality four times higher than those without sepsis.(4) In addition, there are maternal risks associated with chorioamnionitis (Royal College of Physicians, 2013).

### Aim of the Work:

#### The aim of this work is:

To evaluate bacterial causative organisms of premature rupture of membrane and its effect on maternal and neonatal outcome.

### Patients And Methods

This is a prospective cohort study which was conducted on 150 pregnant females at gestational age between 28 up to  $\geq 39$  weeks attending outpatient clinics, emergency room or admitted at inpatient departments in Minia University Hospital with premature rupture of membrane (PROM). This study was done in Minia maternity University hospital from January 2014 to December 2016 and every patient was followed up from onset of PROM till two weeks after delivery.

Ethical permission was sought from a Local Research Ethics Committee (REC). According to the hospital protocol, all patients consented for data retrieval for research purpose at time of admission after ensuring the confidentiality. So the study poses no harm regarding the safety issues to the mother or the fetus. The potential benefits and inconveniences of all aspects of the study were clearly stated to the participants. Informed consent was obtained from all patients.

Patients eligible for the study had the following inclusion criteria:

Any pregnant patient whose diagnosed as PROM.

Primigravida and Multigravida.

Demonstrated Of Pre-labour rupture of membrane (>28week) up to term (≥39 weeks).

Have a single-fetus pregnancy with cephalic presentation.

**Results**

Demographic data:

The study included 150 patients with Premature Rupture Of Membrane at El-Minia maternity university hospital. Age of patients range from 19 to 38 years old; Gestational age was recorded once the patient is admitted between 28 up to 39 weeks; Gravidity of patients were between G1-G7; Parity of patients were

between P0 up to P6 with previous history of abortion arranged between (0 -3).

The results of vaginal swabs of 150pt' are divided in to two major group

About 40% (60pt') are swab -ve.

About 60% (90pt') are swab +ve.

The swab +ve results are subdivided according to organisms founded in the swab in to five groups which are:

Group (A) Beta- hemolytic StreptoCocci 12pt'.

Group (B) Beta-hemolytic StreptoCocci 22pt'.

Esherichia Coli 29pt'.

Coagulase Negative StaphyloCocci 18pt'.

Non hemolytic StreptCocci 9pt'.

Results are presented in tables from (1 to 12) and figures from (1 to 15).

**Exclusion criteria:**

Patient with:

uterine congenital anomalies, uterine fibroid.

uterine hypoplasia, Cervical incompetence or circulage, Placenta Previa.

Fetal distress (meconium).

Twins (Mechanical over-load).

Malpresentations.

Any contra Indication of PV, as cord prolapses , placenta abruption.

Other medical problems (vaginal bleeding in pregnancy, proteinuria hypertension, intrauterine growth retardation, diabetes mellitus).

**Table (1): Demographic data and patient characteristics:**

	<b>Descriptive statistics (n=150)</b>
<b>Age</b>	
Range	(19-38)
Mean ± SD	27.76±4.69
<b>Gestational Age</b>	
Range	(28-39)
Mean ± SD	34.81±2.7
<b>Gestational Age</b>	
28-32	33(22%)
33-36	78(52%)
>36	39(26%)
<b>Gravidity</b>	
IR	(2-4)
Median	3
<b>Parity</b>	
IR	(1-2)
Median	1
<b>Abortion</b>	
IR	(0-1)
Median	0

## Discussion

Premature Rupture of Membrane is defined as rupture of the fetal membranes before the onset of labor regardless the gestational age at the time of rupture, while preterm rupture of the membranes is rupture before the fetal maturity (37 weeks) (ACOG, 2013).

Causes of the Rupture membrane are multiple, so the treatment may be difficult, as it is not directed to one identifiable factor. Infections are recognized as one of the most important and potentially preventable causes of Rupture Membrane. They are thought to be responsible for up to 50% of extreme preterm births of less than 28 weeks of gestation (Hauth et al., 2004).

Infection is the single most common identifiable risk factor for PROM which can pass to the neonates during labour causing serious complication (ACOG, 2007).

Premature rupture of membranes (PROM) is associated with considerable perinatal morbidity and mortality and significant maternal morbidity (Obi and Ozumba, 2007). During the latency period, the ascent of pathogenic microorganisms from the lower genital area could create complications such as intrauterine infections (Calvin and Oyen 2007), some studies introduced PROM as a pathologic process that often occurs following membrane inflammation and infection. Bacterial infection in choriodecidual levels with brief amnion involvement has been observed after PROM (Meinert et al., 2007)

## Recommendations:

The findings of this study suggested that screening of the vaginal infections in patients complain of preterm Rupture of membrane can be a useful method for prediction of preterm labor.

It may guide in the risk assessment of pregnant women and in the decision of administration of antimicrobial treatment for the prevention of its complication.

It is useful to increase the size of study population to compare the results with other different studies.

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