

## Assessing the Fetal Outcome in Premature Rupture of Membranes

Kiranmaie S

( Department of Obstetrics & Gynecology, Shanthiram Medical College, Nandyal, India)

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**Abstract:** Premature Rupture of Membranes (PROM) is one of the most common complications of pregnancy that has major impact on fetal and maternal outcomes. Effects of PROM on fetus vary depending on gestational age of fetus and duration between rupture of membranes and delivery. The aim of the present study is to assess the onset and duration of labor in PROM and to determine the effects of PROM on fetal morbidity and mortality. 100 patients with complaints of Leaking of watery fluid per vaginum after 37 complicated weeks of pregnancy with cervical dilation less than 3 cms were included in this study. The incidence of PROM is 9.8%. Most of the cases were registered under unbooked - 61%. Incidence of PROM is significantly high in Primigravida (37%). Its maximum incidence is between 20-25 years (43%). Out of 100 cases, 22 fetuses were lost giving a perinatal mortality rate of 14.6%. 32 fetuses were suffered from Asphyxia and remaining 46 fetuses were normal. The incidence of PROM which can significantly affect the mother and fetus can be reduced by early screening, adequate antenatal visits, improvement of general condition of mother and treating the associated complications.

**Keywords:** Fetal Outcome, Labor, Premature Rupture of Membranes

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### I. Introduction

During pregnancy fetus is surrounded by amniotic fluid. This fluid along with the fetus and placenta is enclosed within the amniotic membrane. Amniotic cavity protects the fetal environment from outside world. Amniotic fluid also allows umbilical cord to float, preventing it from compression.

Amniotic membranes usually rupture at the time of labor but sometimes the membranes may rupture before the onset of the labor and this is called as Premature rupture of membranes (PROM). According to William's, PROM is defined as rupture of membranes before the onset of labor. When it occurs before 37 completed weeks it is called as "preterm premature rupture of membranes (pPROM)" and when it occurs after 37 completed weeks it is "term PROM" [1].

PROM is one of the most common complications of pregnancy that has major impact on fetal and maternal outcomes. Preterm labor and thereby prematurity is the major contributing factors for perinatal morbidity and mortality [2]. PROM occurs in 1.5 - 5% of pregnancies. Among these, 20% are the cases of pPROM. PROM causes 30-40% of preterm labors [3,4]. Labor almost always follows within 24 hours in 90% of PROM's and 50% of pPROM cases.

PROM is due to multifactorial etiology, most significant maternal risk associated with PROM is chorioamnionitis [1]. Effects of PROM on fetus vary depending on gestational age of fetus and duration between rupture of membranes and delivery [5]. Due to PROM, fetus may be prone for infections, placental abruption, pulmonary hypoplasia, hyaline membrane disease, respiratory distress, fetal deformities, congenital anomalies. Risk of fetal death is 1% in those cases managed expectantly.

The aim of the present study is to assess onset and duration of labor in PROM and to determine the effects of PROM on fetal morbidity and mortality.

### II. Materials And Methods

The present study has undertaken with intention to assess the effects of PROM on fetus attending Shanthiram Medical College, Nandyal. 100 patients with complaints of Leaking of watery fluid per vaginum after 37 complicated weeks of pregnancy with cervical dilation less than 3 cms were included in this study.

Patients with preterm labor, Active labor (cervical dilatation > 3 cms), artificial rupture of membranes, intrauterine fetal deaths, non vertex presentations, multiple gestations were excluded from the study.

All the relevant data regarding patient demographic data, present complaints, Menstrual and obstetric history, significant medical and surgical history were noted. Systemic examination was done along with obstetric and per vaginal examination. Routine investigations were done. Patient consent has taken to do this study and ethical committee has approved.

Incidence, distribution according to age and parity, risk factors, position and presentation of fetus, course and duration of labor, mode of delivery, maternal complications, fetal condition immediately after birth in postnatal period were studied.

Along with assessing various determinants related to this study, care has taken towards mother and fetus during labor by different treatment approaches to reduce the complications. Patient was advised to come for regular follow up.

### III. Results

100 cases of spontaneous rupture of membranes after 37 completed weeks of gestation were studied. Total number of deliveries during the period of study were 4010. PROM was observed in 246 patients (9.8%). Among 246 PROM patients, 100 were included into the study according to inclusion and exclusion criteria. Most of the cases were registered under unbooked - 61% (Fig.1)

Incidence of PROM is significantly high in Primigravida (37%). Its maximum incidence is between 20-25 years (43%). Its incidence decreases with increasing parity. Lowest incidence is seen in P3 and above. The occurrence of PROM is more common in Malpresentations (55 cases) like breech mainly footling presentations (Table. 1). Among the vertex presentations the incidence of premature suture of membrane more in Occipito posterior presentation (28%).

Among oxytocin induced labor cases majority were responded within first six hours. Both primi and multi showed almost equal response to oxytocin drip (Table. 2). Duration of labor is shortened both for primi and multi in PROM group (Fig.2). The duration of active phase of labor is shortened but there is no change in duration of second stage in both study group and in patients without PROM.

Vaginal delivery is the commonest mode of delivery in cases with PROM (63%). However the incidence of lower segment caesarean section is also high in PROM group. There is a 4 fold increase in the incidence of caesarean section in study group. Out of 100 cases, 22 fetuses were lost giving a perinatal mortality rate of 14.6%. 32 fetuses were suffered from Asphyxia and remaining 46 fetuses were normal (Fig.3).

### IV. Discussion

PROM is one of the common and challenging obstetrical problem today. Management is one of the most controversial problems in obstetrics and has gone through various cycles of evaluation ranging from masterly in activity to immediate intervention [6].

Maternal as well as fetal outcome deteriorates with increase in duration after rupture of membranes and delivery [7]. Preterm premature rupture of fetal membranes is an important cause of perinatal morbidity and mortality etiology being multifactorial, major cause being membrane damage

Incidence of PROM is significantly high in Primigravida (37%). Its maximum incidence is between 20-25 years (43%), similar to study of BS Kodanky et al [8]. Many studies have shown that defects in membrane may arise because of poor nutritional status which is significantly influenced by socio-economic status of the patient [9]. Among oxytocin induced labor cases majority were responded within first six hours similar to study of BS Kodnaky et al [8] in which onset of labor was within 24 hours. Onset of labor after PROM by George [10] study was 12 hours. Both primi and multi showed almost equal response to oxytocin drip. The cases which responded after 12 hours were the cases with gross infection and ended up in caesarean section.

In the present study, total duration of labor is reduced in both primi and multigravida. A left shift is noted in partogram. There is a significant decrease in duration of first stage. Duration of second stage of labor is almost unaltered similar to study conducted by LA Calkins [11]. Out of 22 perinatal deaths, 12 babies had respiratory distress due to meconium aspiration syndrome. 8 babies died due to septicemia with duration more than 12 hours after rupture of membranes. one baby died due to cord prolapse with congenital hydrocephalus with meningocoele. The present study neonatal mortality rate is 10%.

Fetal morbidity and mortality rates varies, depends on various factors such as duration of PROM whether more or less than 24 hours, intrapartum sepsis or cervicovaginal infection, duration of labor, any medical or surgical complications, socioeconomic status, nutrition, coitus or travel during pregnancy. PROM cases should assess for all responsible factors and has treat appropriately.

### V. Figures And Tables

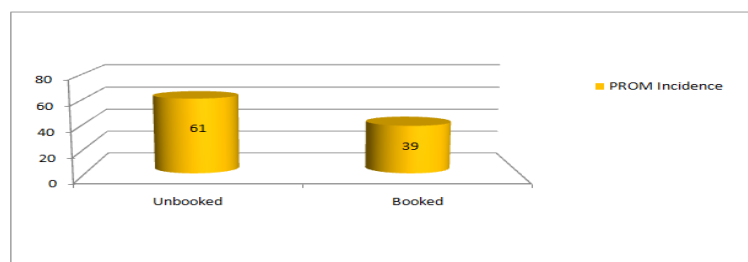


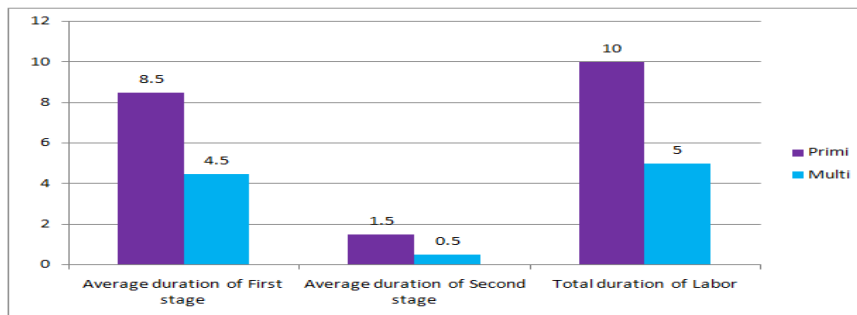
Fig No:1 Incidence of PROM among Unbooked and Booked cases

**Table No.1** Fetal presentation in PROM (n=100)

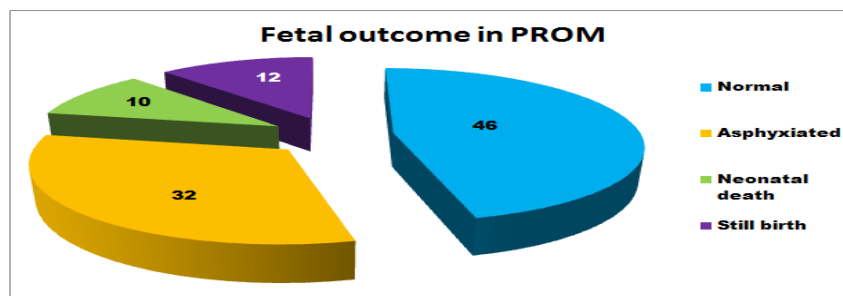
Presentation	No of cases with PROM	Percentage
Vertex	45	45 %
Occipitoposterior	28	28 %
Occipitoanterior	17	17 %
Breech	23	23 %
Face or Brow	7	7 %
Twins	20	20 %
Transverse lie	5	5 %

**Table No:2** Onset of labor in primi and multi with PROM with Oxytocin induction (n=60)

Para	Total Number of patients	Time interval in hours		
		0-6 hours	6-12 hours	12-24 hours
Primi	30	22	7	1
Multi	30	26	2	2



**Fig No.2** Duration of Labor in cases of PROM



**Fig No.3** Fetal outcome in PROM cases

## VI. Conclusion

Accurate assessment of gestational age, knowledge of maternal, fetal and neonatal complications are essential for appropriate evaluation counseling and management of a patient with PROM. Maternal and fetal prognosis is poor in unbooked cases. Maternal and fetal morbidity increases with increase in duration between rupture of membranes and delivery of the fetus, so augmentation of labor is needed. The incidence of PROM which can significantly affect the mother and fetus can be reduced by early screening, adequate antenatal visits, improvement of general condition of mother and treating the associated complications.

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