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MATERNAL AND PERINATAL OUTCOME IN PRETERM PREMATURE RUPTURE OF MEMBRANES

Obstetrics & Gynaecology

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ABSTRACT

Background: This is a prospective observational study carried out in department of Obstetrics and Gynecology, in ASRAM Medical college, Eluru to determine the factors influencing fetal and maternal outcome, prognosis and complications in preterm premature rupture of membrane cases.
Methods: The present study is a prospective observational study of perinatal and maternal outcome in 50 cases of preterm premature rupture of membranes in between 28 to 37 weeks of gestation with singleton pregnancy, from December 2018 to November 2019. Patients with medical complications like anemia, pre-eclampsia and eclampsia, diabetes mellitus, vascular or renal disease, polyhydramnios, multiple gestations, uterine or fetal anomalies etc. are excluded from the study. Detailed history, general physical examination, abdomen and pelvic examination were carried out.
Results: In this study, 54% of cases are primigravida and 46% of cases are multigravida. Patients belonging to low socioeconomic status accounts for 60%, and middle socioeconomic status for 38%. Perinatal morbidity is seen in 70% and most common causes are RDS(18%), sepsis(22%) and hyperbilirubinemia (26%).Twenty-three neonates(46%) were delivered by caesarean section. The main indications for caesarean being fetal distress(43.4%).
Conclusions: PPROM is one of the important causes of preterm birth that can result in high perinatal morbidity and mortality along with maternal morbidity. The most common cause of perinatal mortality in early PPROM is prematurity and its complications. In late PPROM perinatal outcome is good.It is suggested that timely diagnosis and management of PPROM is critical to optimize perinatal outcome and minimize neonatal morbidity.

KEYWORDS

PPROM, Latency period, Perinatal morbidity

INTRODUCTION:

Premature rupture of membranes is defined as spontaneous rupture of amniotic membrane before the onset of uterine contractions or prior to the onset of labour with release of amniotic fluid. If the membrane rupture occurs before 37 weeks of gestation it is termed as preterm premature rupture of membranes (PPROM).[1] According to RCOG, preterm is after 24^{+0} weeks and before 37 weeks.

According to WHO-extreme preterm is less than 28 weeks, Very preterm from 28-32 weeks, Moderate to late preterm is from 32-37 weeks.

Preterm premature rupture of membranes (PPROM) occurs in 3% of pregnancies and is responsible for approximately one third of all preterm births (Bartfield 1998; Goldenberg 1998).[2,3] The incidence of preterm premature rupture of membrane averages from 0.7 to 2.1% and accounts for about 20 to 40% cases of PROM before 37 weeks of gestation.

Although preterm premature rupture of membrane complicates about 2-4% of singleton pregnancies and 7-20% of twin pregnancies, it is associated with 60% preterm deliveries and 10% of perinatal death. Preterm PROM is an important cause of perinatal morbidity and mortality, particularly because it is associated with brief latency from membrane rupture to delivery, perinatal infection, and umbilical cord compression due to oligohydramnios.

Latent period: It is the time interval between the rupture of membranes and the onset of uterine contractions.

Prolonged Prom: It is the term used when more than 24 hours have elapsed before the labour ensues.

High rupture of membranes: It is the rupture of amniochorion at a site distant from internal os and spontaneous cessation of leakage can occur.

Kappy and Khupel defined PROM as rupture of the membranes with atleast 2 hours of latent period before active labour.[4] The membranes may either rupture at term (>37 weeks) when it is called term PROM or before 37 weeks of gestation when it is referred to as preterm PROM (PPROM).

PPROM is associated with increased risk of chorioamnionitis, unfavourable cervix, dysfunctional labour, increase in caesarean rates, postpartum haemorrhage and end ometritis in mother. In fetus increased occurrence of hyaline membrane disease, intraventricular haemorrhage, sepsis, cord prolapse, fetal distress and increased fetal wastage. Risk of fetal death is 1-2%. The longer the time interval between the rupture of membranes and onset of labour, greater is the risk of ascending infections and chorioamnionitis. Thus, earlier the gestational age at the time of PPROM, longer the latency and more the complications.

PPROM is an obstetric conundrum with significant maternal morbidity and neonatal morbidity and mortality, a careful consideration of various factors and individualization of cases is necessary for appropriate management. In planning the management of PPROM, several issues need to be considered. Prematurity is the principal risk to the fetus while infectious morbidity is the primary maternal risk. Chorioamnionitis with PPROM is responsible for significant maternal and neonatal morbidity including early onset neonatal sepsis, bronchopulmonary dysplasia, intraventricular haemorrhage and periventricular white matter injury.

AIMS & OBJECTIVES:

The objective of present work was to study the maternal and perinatal outcome in women admitted with preterm premature rupture of membranes (PPROM), between 28weeks and 36weeks+6days.

PATIENTS AND METHODS-

It is an observational prospective study conducted at ASRAM medical college, Eluru. The study group includes patients admitted with PPROM in labour room between 28weeks and 36weeks+6days from December 2018 to November 2019.

INCLUSION CRITERIA-

All pregnant women with a singleton pregnancy between 28-37 weeks of gestation admitted with PPROM.

EXCLUSION CRITERIA-

1.Multiple pregnancies
2.Intrauterine growth restriction.
3.Uterine anomalies
4.Fetal anomalies

5.Fibroid uterus
6.Pregnancy induced hypertension
7.Gestational diabetes mellitus
8.Antepartum haemorrhage

METHOD OF DATA COLLECTION:
Detailed history was taken including age, booking, socio economic status, time of onset of draining, amount of fluid lost, colour, odour, association with pain, bleeding per vagina and perception of fetal movements, history of previous similar episodes in other pregnancies and history suggestive of incompetent os.

General examination was done. Height and weight were noted. Pulse,BP, temperature was noted. Systemic examination included cardiovascular, respiratory and CNS systems.

Obstetric examination: Height of uterine fundus, lie, presentation, engagement of presenting part, condition of uterus-contracted or relaxed. Uterine tenderness was looked for sign of chorio amnionitis. Fetal heart sound was auscultated, rate, rhythm were noted.

A sterile speculum examination was done, amniotic fluid pooling in posterior fornix noted. Ultrasonography was done in each case to assess gestational age, growth parameters, presentation, exclusion of congenital anomalies and liquor columns for amniotic fluid index.

Investigations like total count, differential count and C- reactive protein were done.

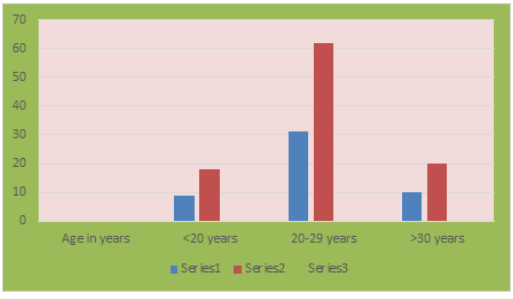
Conservative management was done in all early PPROM (28weeks to 33weeeks+6days) patients till the onset of spontaneous labour or till the maternal or fetal indication for delivery ensues such as chorioamnionitis, meconium stained amniotic fluid, abruption, cord prolapse, fetal distress and/or advanced labour on admission. All late PPROM (>34weeks) patients were induced if not getting into spontaneous labour. Patients were hospitalized until delivery & were advised bed rest. Two doses of betamethasone 12 mg IM 24 hours apart were given to the mothers <34weeks to enhance fetal lung maturity. Prophylactic antibiotics injection Ampicillin 2 gm IV every 6 hourly for 48 hours followed by oral (PO) therapy with amoxicillin 250 mg every 8 hours and enteric-coated erythromycin base 333 mg every 8 hours for 10 days or until the woman is in established labour (which ever is sooner). Maternal monitoring to detect chorioamnionitis was done by monitoring pulse rate, temperature, abdominal tenderness, colour and smell of liquor and cardiotocography.

Mothers were watched for third stage complications like PPH, retained placenta, and followed up in puerperal period. Foul smelling lochia and febrile illness postnatally were specifically asked for. Episiotomy and caesarean section wounds were followed up regularly and wound infections are looked. Maternal complications like puerperal sepsis, urinary tract infections and respiratory infections were noted. Neonates were monitored for the complications of birth injuries, signs of asphyxia, meconium aspiration and sepsis. Mother and babies were followed up till their stay in the hospital.

RESULTS AND DISCUSSION:

Table 1-: Analysis Of Pprom According To Maternal Age-

Age in years	No of cases	percentage
<20 years	9	18
21-30 years	31	62
>30 years	10	20

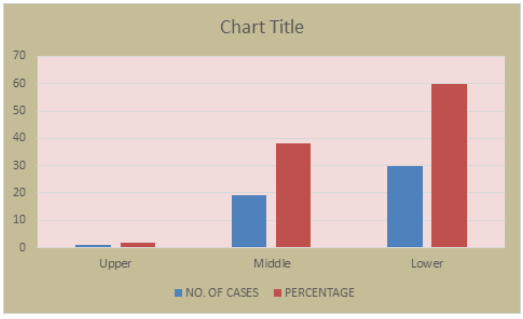


Graph 1: **Analysis Of Pprom According To Maternal Age-**

From the above table it can be observed that highest number of cases were found in the age group of 20- 29 years i ,e 62% compared to study by Ok eye etal[5](58.2%), and 58.8% in the study conducted by Noor S etal[6]

Table-2: Analysis Of Pprom According To Socio Economic Status

SOCIO ECONOMIC STATUS	NO. OF CASES	PERCENTAGE
Upper	1	2
Middle	19	38
Lower	30	60



Graph-2: Analysis Of Pprom According To Socio Economic Status

In this study patients with low socio economic status are 60% and middle socio economic status are 38% which is comparable with the study by Swathi Pandey[7] in which lower and middle socio economic status people are 61% and 39% respectively and 68.2% in the study conducted by Sheela etal[8]

Studies have shown that defect in amniotic membranes occur due to low socio economic status associated with factors like malnutrition, poor hygiene, stress , recurrent genitourinary infection and anaemia.

ANALYSIS OF UNBOOKED AND BOOKED CASES-
Unbooked and booked cases in this study were 35(70%)and 15(30%) respectively. In a similar study done by Anjana Devi[9]unbooked cases were 52%.

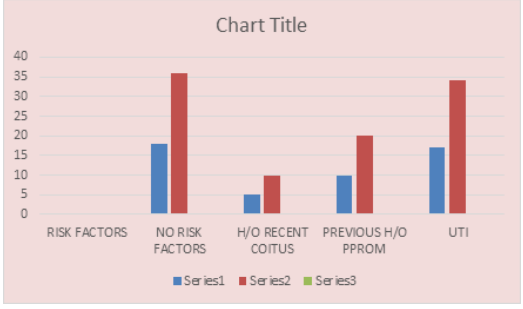
In unbooked cases there is lack of antenatal care leading to lack of identification of recurrent risk factors like PPROM, preterm delivery. Urogenital tract infections are also not detected and treated due to lack of antenatal care.

ANALYSIS OF OBSTETRIC SCORE-
Percentage of primi gravida in this study are 54% and multi gravida are 46%.

In a similar study done by Swathi Pandey[7] primipara were 52% and multi para were 48%,Primipara were 55.9% and multipara were 44.1% in the study conducted by Fatemeh Tavassoli[10] Iran, in a study conducted by GhandhiM etal[11] 60.7% were primigravida.

Table-3: Analysis Of Risk Factors Associated With PPROM

RISK FACTORS	NUMBER	PERCENTAGE
NO RISK FACTORS	18	36
H/O RECENT COITUS	5	10
PREVIOUS H/O PPROM	10	20
UTI	17	34



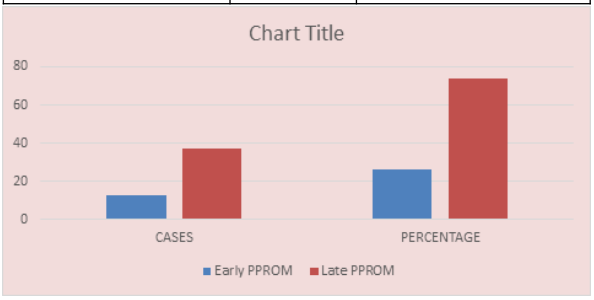
Graph 3: Analysis Of Risk Factors Associated With PPROM

In the present study 36% of subjects had no risk factors. The commonest risk factor is UTI(34%), previous H/O PPROM(20%),

H/O recent coitus(10%).In the study conducted by Gunn et al12 also showed similar results.

Table-4: Distribution Of Early And Late PPROM

	CASES	PERCENTAGE
Early PPROM	13	26
Late PPROM	37	74

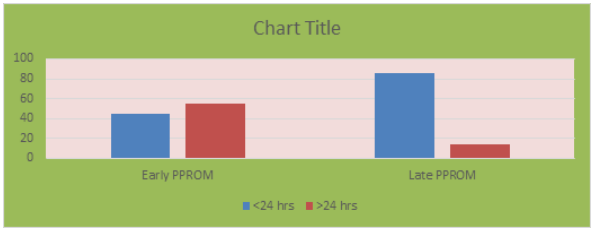


Graph-4: Distribution Of Early And Late PPROM

In the present study 74% had late PPROM(34 weeks- 36 weeks 6 days), and 26% cases had early PPROM(28 weeks -33 weeks 6 days), this correlates with study done by Shweta Patil13.

Table 5: Distribution Of Latency PERIOD

Latency period	Early PPROM	Late PPROM
<24 hrs	45	86
>24 hrs	55	14



Graph 5: Distribution Of Latency Period

55% of early PPROM and 14% of late PPROM has prolonged latency period (>24 hrs).

Singh S etal[14] reported that 56% of early PPROM and 20% of late PPROM had prolonged latency period.In a study conducted by Gunvat etal[15] 44% of late PPROM had prolonged latency.

Analysis According To Mode Of Delivery-

Out of 50 cases of PPROM, 23 cases (46%) cases delivered by lower segment caesarean section, 22 cases(44%) delivered normally, and 5 cases (10%) delivered by operative intervention. In a study conducted by Tahir s et al[16]the rate of caesarean section was 20%.

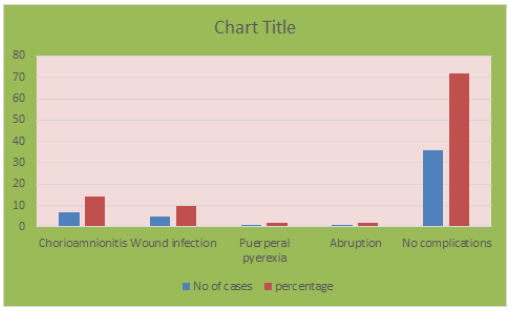
Table-6: Distribution Of LSCS Cases As Per Indications-

INDICATIONS FOR LSCS	NUMBER	PERCENTAGE
Previous LSCS	8	34.7%
Fetal distress	10	43.4%
CPD	2	8.69%
Failed induction	3	13.04%

In the present study most common indication for LSCS was fetaldistress(43.4%),followed by previous LSCS(34.7%), failed induction(13.04%), CPD(8.69%) respectively.In the study conducted by Swathi Pandey7fetal distress was most common indication for LSCS

Table-7: Analysis Of Maternal Complications In PPROM

Maternal complications	No of cases	percentage
Chorioamnionitis	7	14
Wound infection	5	10
Puerperal pyerexia	1	2
Abruption	1	2
No complications	36	72

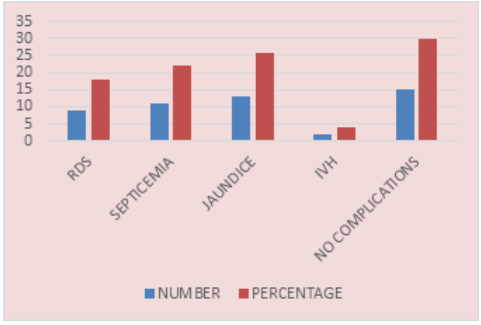


Graph-6: Analysis Of Maternal Complications In PPROM

In the present study no maternal complications are seen in 36cases(72%),chorioamnionitis is seen in 7 cases(14%), wound infection is seen in 5 cases(10%), puerperal pyerexia is seen in 1 case(2%), abruption is seen in 1 case(2%). In the study conducted by Okeye4 maternal morbidity is seen in 20% of cases, which almost correlates with our study(28%).

Table-8: Analysis Of Neonatal Complications In PPROM

NEONATAL OMPLICATIONS	NUMBER	PERCENTAGE
RDS	9	18
SEPTICEMIA	11	22
JAUNDICE	13	26
IVH	2	4
NO COMPLICATIONS	15	30



Graph-7: Analysis Of Neonatal Complications In PPROM

In the present study perinatal morbidity is 70%, in which RDS accounts for 18%, septicemia accounts for 22%, jaundice accounts for 26%, Hyperbilirubinemia accounts for 26%.In this study it is observed that as duration of PPROM increases, perinatal mortality and morbidity also increases. The study by Russel shows that danger of infection to both the mother and fetus increases with the duration of PPROM. In the study conducted by Arul kumar, the common cause of perinatal morbidity after32 wks of gestation are RDS, Perinatal asphyxia and infection[17].

CONCLUSION:

Present study concluded that most common maternal morbidity associated with PPROM was chorioamnionitis, that of neonatal morbidity was prematurity and its complications. In current study, of the patients with PPROM most of them were between 21-30years.Incidence of PPROM was more common in primigravidas. LSCS was done more commonly for fetal distress and failed inductions.

Common maternal morbidity observed in present study was chorio amnionitis. It was more common among the patients with prolonged latency and induced deliveries. Perinatal morbidity observed in our study were due to prematurity and not the PPROM per se. commonest complication encountered was RDS which was more common in early PPROM. Other complications like neonatal jaundice, sepsis was more or less equally common among early and late PPROM.

Sepsis was more common in patients with prolonged latency period, also contributes to perinatal mortality, whereas RDS was more common in patient with short latency period.

In early PPROM conservative management to prolong pregnancy is

recommended under strict monitoring for evidence of chorioamnionitis. At the earliest evidence of chorioamnionitis, termination irrespective of gestational age is warranted. In late PPROM termination is advised as conservative management shall add to the fetal and maternal morbidity due to sepsis.

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