



ORIGINAL RESEARCH PAPER

Obstetrics & Gynaecology

A PROSPECTIVE STUDY OF ANALYSIS OF MATERNAL AND NEONATAL OUTCOME FOLLOWING PRETERM PRELABOUR RUPTURE OF MEMBRANE

KEY WORDS: Preterm, prelabour, antenatal steroids, chorioamnionitis, respiratory depression

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ABSTRACT

Preterm rupture of membrane is defined as rupture of fetal membrane prior to 37 weeks of gestation in absence of uterine contraction complicates 3-4.5% of pregnancies globally. This condition is associated with high neonatal mortality and increased risk of long and short term neonatal morbidity. Altered membrane morphology including marked swelling and disruption of collagen network is triggered by bacterial products, pro- inflammatory cytokines. Activation of matrix metaloproteinase have been implicated in mechanism of preterm prelabour rupture of membrane. The propagation of bacteria is an important contributing factor not only in preterm prelabour rupture of membrane also adverse neonatal and maternal outcome after preterm prelabour rupture of membrane. Inflammatory mediator likely play a causative relation in both disruption of fetal membrane integrity and activation of uterine contractions. The management of preterm prelabour rupture of membrane requires balancing the potential neonatal benefit from prolongation of pregnancy with risk of intra- amniotic infection and its consequences for mother and infant. Antenatal administration of single course of corticosteroids before 34 weeks of gestation is associated with neonatal period of decreased respiratory distress syndrome (RBS). Intra ventricular haemorrhage (IVH), necrotising enterocolitis (NEC) and death and in possibly childhood with reduction of cerebral palsy and increased psychomotor development index and intact survival. Because of very favourable benefit risk balance antenatal administration of single course of corticosteroids is recommended for woman at risk of preterm delivery before 34 weeks.

INTRODUCTION

Prelabor rupture of the membrane (PROM) is the term used to Describe rupture of fetal membrane before initiation of uterine contraction. Term pregnancies are affected 8% of pregnancies, while preterm pregnancies are affected 3% of all pregnancies. PROM at term is linked to harmful maternal and perinatal outcomes include placental abruption, cord compression, cord prolapse, increased chance of caesarean delivery, and infection in both the mother and the newborn.¹⁻² Preterm PROM (pPROM) raises the risk of intra-amniotic infection in the mother, postpartum infection, umbilical cord compression and prolapse, oligohydramnios, placental abruption, necrotizing enterocolitis, respiratory distress syndrome, and foetal death. Preterm newborns' neuro developmental disabilities, early-onset sepsis, and severe intraventricular haemorrhage are all linked to chorioamnionitis.³⁻⁴ The latent period, which is inversely associated with gestational age, is the time between the PROM and the start of spontaneous labour. Approximately 70% of women with PROM who go into labour on their own at term do so within 24 hours, 85% within 48 hours, and over 90% within 72 hours of the membranes rupturing. At term, 6%–10% of pregnant women with PROM are at risk of acquiring an intra-amniotic infection (chorioamnionitis), and this risk multiplies with continuous rupture of membranes. An increased risk of chorioamnionitis and postpartum endometritis is connected with prolonged rupture of membranes (PROM), which is defined as PROM lasting longer than 24 hours. If the membrane rupture lasts for 24 hours to 48 hour more during at term pregnancy, there is risk of a newborn infection increases by

2.25 times.⁵⁻⁶ PROM is hypothesised to have multiple etiological factors. The pathophysiologic mechanisms causing this condition are not fully known. Strong uterine contractions during labour might exacerbate PROM, which is a condition that develops at term as a result of the chorioamniotic membranes deteriorating. In between 20% and 50% of pregnant women, microbial invasion of the amniotic cavity and increased placental inflammation can result in pPROM. Additionally, the potential contribution of a genetic susceptibility to pPROM has been suggested. The function of prothrombin generation in pPROM caused by *Ureaplasma Parvum* microorganism induced rupture of

amniotic membranes was described by Fengetal.⁷⁻¹⁰ Despite advancements in antenatal care delivery, there is significant worry over increased trends in unfavourable outcomes related to pPROM.

AIMS AND OBJECTIVES

Primary Objective:

1. To study the maternal and fetal outcome with PPRM
2. Corticosteroids and prognosis of fetus..
3. To study risk of chorioamnionitis in PPRM.
4. To study the risk and outcome of PPRM in high risk pregnancies

Secondary Objective:

1. To determine timing of delivery after rupture of membrane and mode of delivery.
2. To study antepartum/Intrapartum/Postpartum complication in pregnancy with PPRM.
3. To assess neonatal wellbeing after corticosteroids and prophylactic antibiotics.

MATERIAL AND METHODS

Study Type: Prospective, Cross sectional, Observational

Study Duration: 18 months

Study Settings: Department Of obstetrics and Gynecology in Tertiary healthcare center

Sample Size And Sampling Technique.

290 cases fulfilling the eligibility criteria were recorded during one year at our tertiary care center. Expecting the same number of cases during the study period, sample size has been calculated using Opine, an online statistical tool for calculation of counts and measurements in descriptive and analytical studies. The incidence of PPRM varies 3-4.5 % of all pregnancies globally and 30% of preterm delivery. Considering about 5000 annual confinements, the sample size was calculated with a frequency of 4% at 99% confidence interval and margin of error 5%.

Selection Criteria For Study Subjects Inclusion Criteria:

- All pregnant women at our tertiary care hospital with PPRM less than 37 weeks of gestation (2837).

- Patient who were willing to give informed consent.

METHODOLOGY:

- The medical records of the study candidates were analyzed individually and significant information about obstetrics details were noted.

Statistical Methods and Analysis:

- Data was collected, entered and coded in Microsoft excel.
- Data was represented in frequencies and percentages; charts and graphs. Appropriate statistical tests were applied using Epiinfo version 3.1 and SPSS software version 20 for analysis.

RESULTS

We observed that 44% study subjects belonged to the age group of 26 to 30years, followed by 33% subjects who belonged to less than 25 years age group. The mean age of the study subjects was 27.8years.

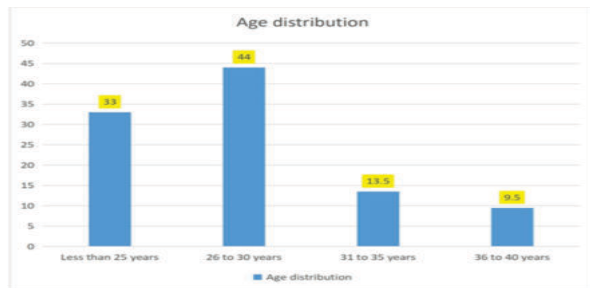


Figure 1: Age distribution

Clinical Presentation

Pain in Abdomen was the commonest findings among 75% subjects, followed by Burning Micturation among 45% and Discharge per Vaginum was reported among 43% study subjects.

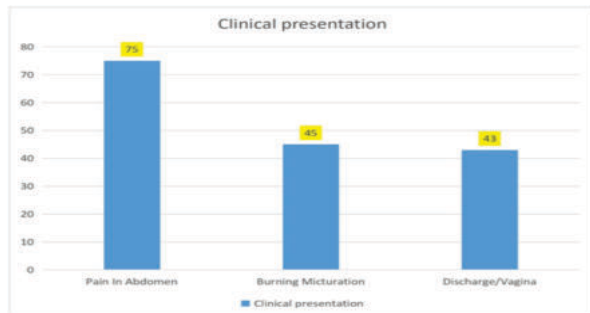


Figure 2: Clinical presentation

Surgical history

We observed that history of CERVICAL CERCLAGE was the commonest procedure observed among 8.5% subjects, followed by CERVICAL CONE BIOSY (2%), MYOMECTOMY and METROPLASTY among 1% subjects each.

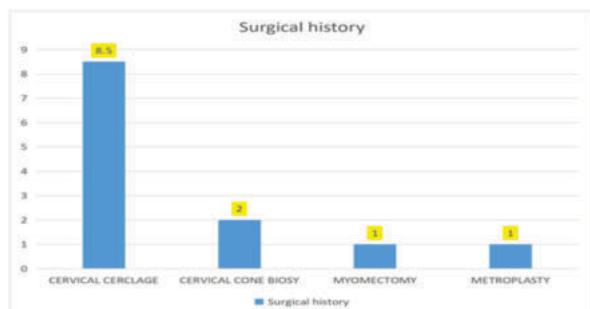


Figure 3: Surgical history

High Risk Factor

In the current study history of PRETERM BIRTH (8.5%) PREVIOUS LSCS (5.5%), UTI (5%) MULTIPLE GESTATION (6.5%) GESTATIONAL DIABETES MELLITUS (GDM) (7%), GESTATIONAL HYPERTENSION, CERVICAL CERCLAGE (4.5% each), and PLACENTAL ABRUPTION (4%) were the relatively comoner risk factors observed among study subjects.

Table 1: High Risk Factor

High Risk Factor	Number of subjects	Percentage
HISTORY OF PRETERM BIRTH	17	8.5
HISTORY OF PREVIOUS LSCS	11	5.5
URINARY TRACT INFECTION (UTI)	10	5
MULTIPLE GESTATION	13	6.5
GESTATIONAL DIABETES MELLITUS (GDM)	14	7
GESTATIONAL HYPERTENSION	9	4.5
CERVICAL CERCLAGE	9	4.5
ABRUPTIO PLACENTA	8	4
ECLAMPSIA	6	3
ABRUPTIO PLACENTA WITH PREECLAMPSIA	5	2.5
ANAEMIA	5	2.5
RHD WITH MR WITH INTRAUTERINE GROWTH RESTRICTION	3	1.5
SEIZURE DISORDER	2	1
SYSTEMIC LUPUS ERYTHROMATOSIS (SLE)	2	1
THROMBOCYTOPENIA	3	1.5
CERVICAL CONE BIOPSY	4	2
CERVICAL FIBROID	2	1
CHOLESTASIS OF PREGNANCY	2	1
CHRONIC HYPERTENSION	3	1.5
FEVER WITH CHILL	3	1.5
H/O PPROM IN PREVIOUS PREGNANCY	2	1
INTRAUTERINE GROWTH RESTRICTION (IUGR)	1	0.5
METROPLASTY	2	1
ACUTE FATTY LIVER OF PREGNANCY (AFLP)	2	1
UTERINE ABNORMALITIES	7	3.5

Obstetric history

In the current study majority of the subjects were primigravida (43.5%), followed by gravida 2 (28%), gravida 3 (22.5%).

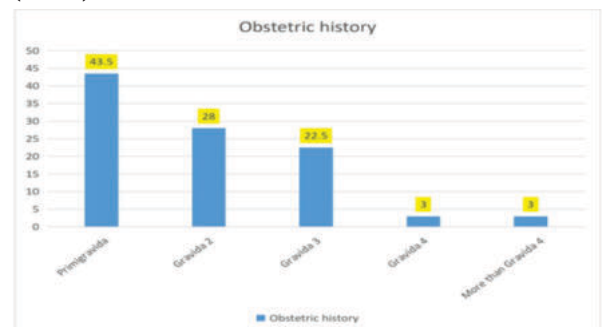


Figure 4: Obstetric history

Onset Of Labour

We observed that onset of labour was spontaneous among

34% subjects, induction needed among 24%, augmentation needed among 16.5% subjects, caesarian section was conducted among 13% study subjects.

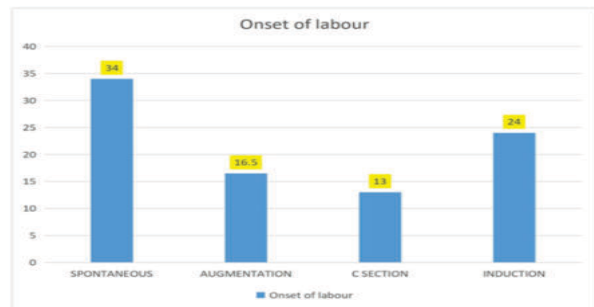


Figure 5: ONSET OF LABOUR

Steroids and Antibiotics

In the present study we observed that steroids were started and completed among 58% subjects, and antibiotics were administered among 62.5% before delivery and among 37.5% study subjects, antibiotics started after delivery.

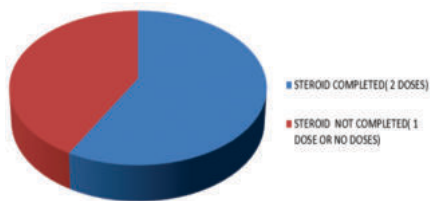


Figure 6: Steroid doses

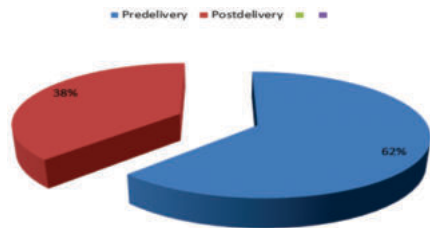


Figure 7: Antibiotic cover

Maternal factors

When we assessed maternal factors, majority of the study subjects presented between 33 to 36 weeks of gestation (57.5%), followed by 28 to 32 weeks (42.5%). Majority of the mothers had singleton delivery (91%), while 7% had twins and 2% had triplets.

Organisms found in high vaginal swabs and urine cultures

In this study, out of culture reports, E coli were the commonest organisms isolated (12%), followed by Klebsiella (11.5%)

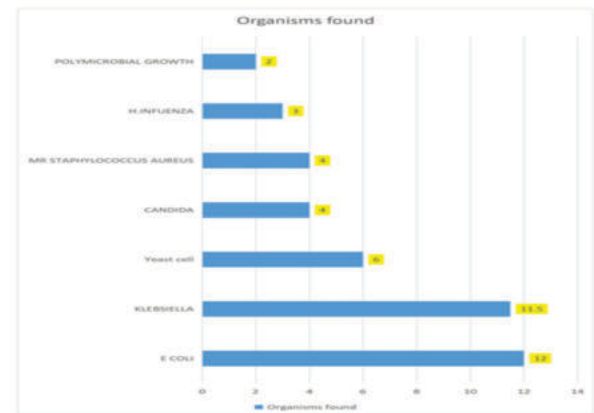


Figure 8: Organisms found in high vaginal swab cultures

Immediate and Delayed complications

Among immediate complications, MICU admission was required among 4% study subjects, acute kidney injury, HEMORRHAGIC SHOCK, DIC, and DKA was reported among 1% study subjects each respectively. Among the delayed complications, POSTPARTUM ENDOMETRITIS was the commonest complication reported among 12.5% subjects, followed by PUERPERAL SEPSIS among 7% subjects.

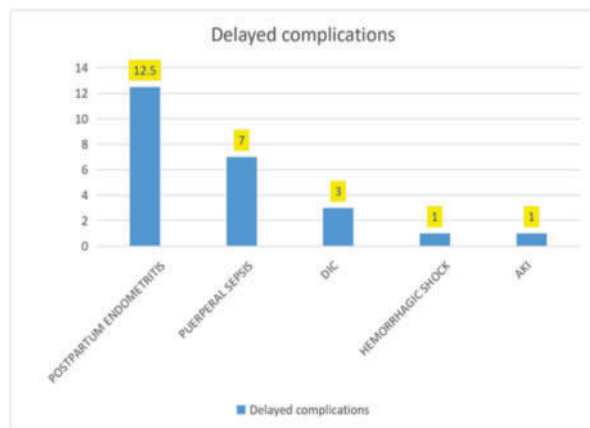
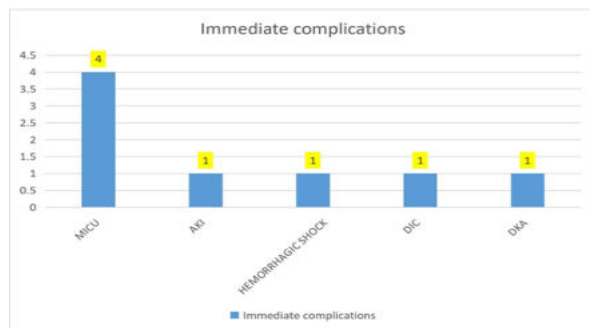


Figure 9: Immediate and Delayed complications

DISCUSSION & CONCLUSIONS

- Pain In Abdomen was the commonest findings among 75% subjects, followed by Burning Micturation among 45% and Discharge per Vaginum was reported among 43% study subjects.
- Past medical history showed preterm birth (13%), previous LSCS (7.5%), UTI (5%), GDM (5%), Fever and Placenta Previa (4% each resp) were some relatively common findings.
- Past surgical history showed h/o cervical cerclage as the commonest procedure observed among 8.5% subjects, followed by cervical cone biosy (2%), myomectomy and metroplasty among 1% subjects each.
- In the current study previous LSCS (8.5%), preterm birth (5.5%), UTI (5%), multiple gestation (6.5%) gdm (7%), gestational hypertension, cervical cerclage (4.5% each), and placenta previa (4%) were the relatively comoner risk factors observed among study subjects.
- In the current study majority of the subjects were primigravida (43.5%), followed by gravida 2 (28%), gravida 3 (22.5%).
- We observed that onset of labour was spontaneous among 34% subjects, induction needed among 24%, augmentation needed among 16.5% subjects, caesarian section was conducted among 13% study subjects.
- In the present study we observed that steroids were started and completed among 58% subjects, and antibiotics were administered among 37.5% study subjects
- In this study, out of culture reports, E coli were the commonest organisms isolated (12%), followed by Klebsiella (11.5%)
- Among immediate complications, MICU admission was

required among 4% study subjects, acute kidney injury, hemorrhagic shock, DIC, and DKA was reported among 1% study subjects each respectively. Among the delayed complications, postpartum endometritis was the commonest complication reported among 12.5% subjects, followed by puerperal sepsis among 7% subjects.

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