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STUDY OF RISK FACTORS AND FETO-MATERNAL OUTCOMES IN PREMATURE RUPTURE OF MEMBRANE (PROM): A SINGLE CENTRE PROSPECTIVE OBSERVATIONAL STUDY

Dr. Shital U. Lad*[1], Dr. Umesh P. Lad[2], Dr. Mangala A. Shinde[3]

[1]Assistant Professor, Dept. of Obstetrics and Gynaecology, Vilasrao Deshmukh Government Medical College, Latur.
[2]Associate Professor, Dept. of Physiology, Vilasrao Deshmukh Government Medical College, Latur.
[3]Professor and Head, Dept. of Obstetrics and Gynaecology, Vilasrao Deshmukh Government Medical College, Latur.

***Corresponding Author: Dr. Shital U. Lad**
Assistant Professor, Dept. of Obstetrics and Gynaecology, Vilasrao Deshmukh Government Medical College, Latur.

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ABSTRACT

Introduction: Premature rupture of membrane (PROM) is a common obstetrics problem and one of the most common clinical condition which can turn a traditional pregnancy in to a high-risk pregnancy. This study was conducted to study aetiology and feto-maternal outcome of PROM in our tertiary care teaching institute. **Methods and Material:** In this study 150 cases were enrolled as per the inclusion and exclusion criteria of the study protocol. Detailed obstetrics history was taken, cases were managed as per the clinical indications and set protocols outcome was recorded using the proforma and statistically analysed. **Results:** Incidence of PROM in our study is 8.5%. Reported incidence was more in primigravida (64.6%) and Gestational age more than 36 weeks. Though etiology is idiopathic (52%) some major associated risk factors were Infection (22.7%), History of PROM in previous pregnancy (14.6%) history of coitus (9.4%) were the major risk factors. 62% cases were delivered vaginally and 36% needed LSCS. Purpureal pyrexia and wound infection were the two major maternal complications followed by PPH and Chorioamnionitis. 8 % cases Respiratory Distress and only 4.6 % cases suffered from Birth asphyxia. **Conclusion:** PROM is a common obstetric condition, early intervention and timely treatment leads to better feto-maternal outcomes.

KEYWORDS: PROM, Birth asphyxia, feto-maternal outcomes.

INTRODUCTION

Premature rupture of membranes also known as pre-labor rupture of membranes (PROM), In PROM amniotic sac ruptures before the onset of labor with painless gush or a steady leakage of fluid from the vagina.[1] It is common obstetric problem and one of the most common clinical events where a traditional pregnancy can turn into a high-risk situation for mother as well as foetus.[2] PROM is associated with many complications like preterm labor, prolonged labor, dry labor, chorio-amnionitis (CAM), congenital pneumonia, neonatal infection and even death of neonate might occur. PROM is a major cause for prematurity which leads to increase perinatal morbidity and mortality.[3] Studies conducted in developing countries reported incidence of PLROM is around 18-20%. PROM occurs in 1-5% of all pregnancies and it is responsible for approximately 30-40% of all preterm birth.[4,5]

Fetal complications of prematurity and its recognized sequel like, respiratory distress syndrome, intraventricular hemorrhage, necrotizing enterocolitis are the major complications. Other fetal complications due to long standing oligohydramnios in PPROM, before 26 weeks are skeletal and craniofacial abnormalities and pulmonary hypoplasia.[5,6]

Black race, lower socio-economic status, smokers, past history of STI, previous preterm delivery or abortion, polyhydramnios and multiple pregnancy, procedures such as circlage, amniocentesis are reported risk factors of the PROM. The aetiology is multifactorial and evidence suggests that PROM is related to membranes dysfunction on a molecular level, collagen dysfunction and programmed cell death in fetal membranes.[7,8,9]

Maternal outcome is dependent on many factors, such as gestational age, history of interventions (antibiotics, steroids), duration of labour, development of intrapartam chorioamnionitis. Even though most cases are idiopathic and unpreventable, close monitoring with timely intervention and good neonatal setup, can contribute significantly to reduce fêto maternal morbidity and mortalities. Present study was designed to know the

etiology, neonatal and maternal outcome of premature rupture of membranes in both term and preterm pregnancies.

MATERIAL AND METHODS

This is single centre prospective observational study conducted at a tertiary care teaching hospital of western India in year 2019. Total 100 cases were included in this study by following a predefined inclusion and exclusion criteria. All cases of PROM above 28 weeks of gestation admitted in labour ward were enrolled in the study using inclusion and exclusion criteria. Primi or multigravida cases with singleton pregnancy between 28-42 weeks of gestation with history of Leaking from cervix confirmed by speculum examination were included in the study. While cases with multiple pregnancies, maternal complications interfering with active management of PROM like Pregnancy Induced Hypertension (PIH), heart disease, previous LSCS, malpresentation, Diabetes Meletus, IUGR, HIV infection and cases with reported Congenital anomalies were excluded from the study.

In the enrolled cases detailed antenatal history about parity, period of gestation, menstrual history, history of risk factor, antenatal care (ANC) received and socioeconomic, History of recent coitus, urogenital infection, history of PROM/PPROM in previous pregnancy was recorded in the approved proforma. History of presenting complaints of leaking per vaginum, duration of leaking, colour of liquor was recorded. This was followed by general examination to identify nutritional status (BMI), anaemia, genital hygiene, temperature, pulse rate, blood pressure, and respiratory rate were noted. Obstetric examination was done at admission to determine gestational age, presentation, liquor volume, estimated fetal size/weight and fetal heart rate. Per speculum examination was done to confirm active leaking of amniotic fluid with pooling of amniotic fluid in the vagina, leaking with valsalva.

A cervical swab or high vaginal swab was taken. Clinical investigations done like CBC, Blood sugar, Urine R/E, CRP were done. Fatal surveillance was done using non-Stress test. Ultrasound evaluation was performed to confirm the presentation, the amniotic fluid index and gestational age. if gestational age was less than or equal to 34 weeks Steroid (Betamethasone) 12 mg 12 hours apart in two doses I/M were given for lung maturity and patients with gestational age less than 34 weeks were put on conservative management till 24 hours after the last dose of Betamethasone if no signs of chorioamnionitis were present. Pregnancy was terminated if maternal-fetal surveillance was not good. Patients were monitored with NST (32 weeks of gestation) once a day and blood counts twice in a week. Patients more than 34 weeks of gestation and Bishop's score 5 were induced at admission with PGE2 gel/Misoprostol (PGE1). Stringent monitoring of progress of Labour was done with partogram and continuous fetal monitoring. If there is no progress of labour LSCS was performed. Maternal and neonatal outcome were studied as per the study protocol. All records were collected in data sheet and the data were analyzed by descriptive statistics using the statistical package of social science(SPSS) version 20. The results expressed in descriptive statistics by simple percentage.

RESULTS

Total 1764 cases were admitted in the labour room for delivery during the study duration out of theses we have enrolled 150 cases in our study. The incidence comes to approximately 8.5% in our study population. The data was analyses with simple percentage and resented in tabulated manner major finding of the study are as in the table/Graph Number 1 to 5.

Table-1: Incidence of PROM according to parity, gestational age.

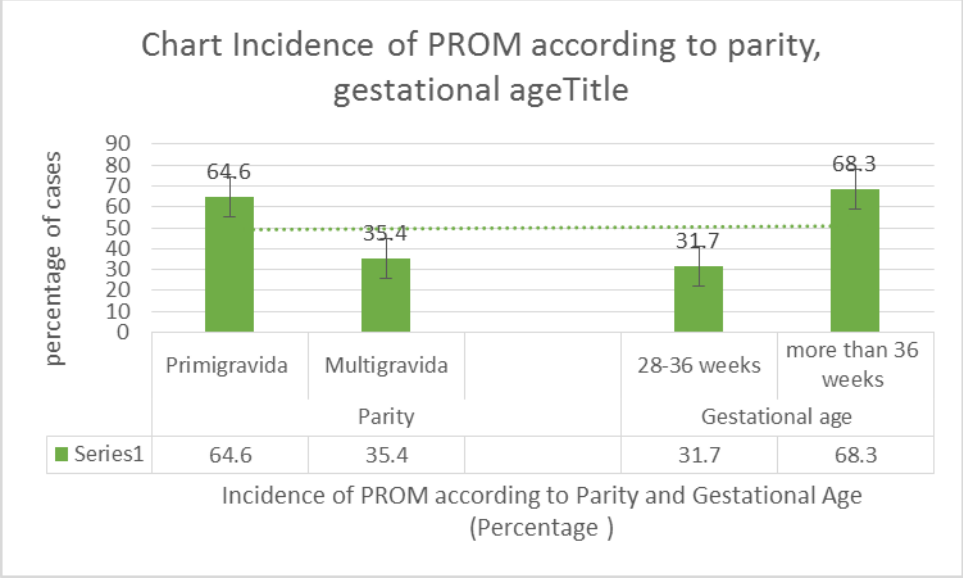
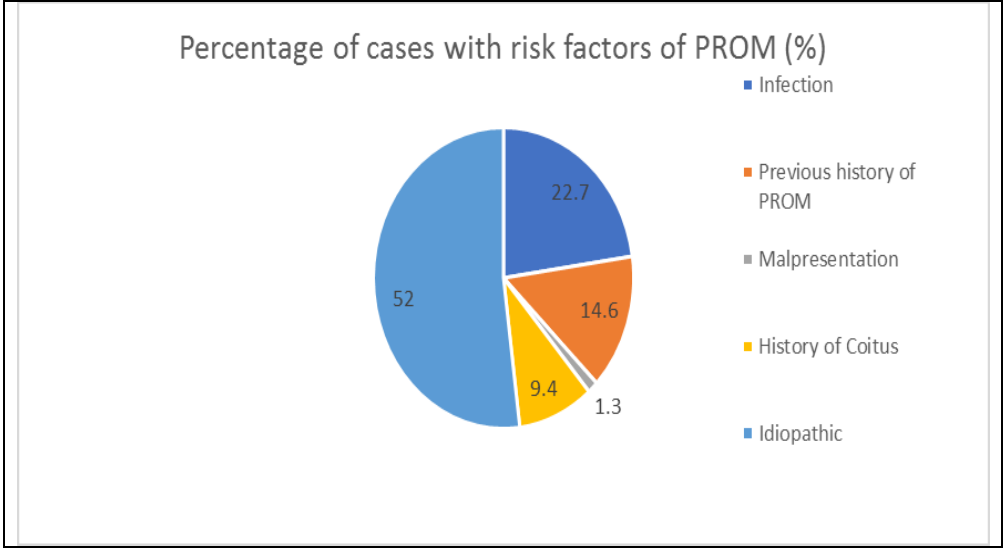


Table /Graph -2: Incidence of risk factors of PROM in the study population

Risk factors	Number of cases (n=150)	Percentage (%)
Infection	34	22.7
Previous history of PROM	22	14.6
Malpresentation	2	1.3
History of Coitus	14	9.4
Idiopathic	78	52



Table/ Graph-3 Mode of delivery in the cases of PROM in study population

Type of Induction/Augmentation	Number of deliveries (n=150)	Normal labour (n=93)		LSCS (n=57)	
		Number	Percentage	Number	Percentage
Induction with Misoprostol	71 (47%)	41	58%	30	42%
Augmentation with Oxytocin	79 (53%)	52	66%	27	34%

Table-4: Maternal morbidity in relation with PROM.

Maternal morbidity	Number of cases	Percentage % (n=150)
Post partum haemorrhage (PPH)	3	2%
Chorioamnionitis	2	1.33%
Puerperal pyrexia	12	8%
Wound infection abdominal/Episiotomy	6	4%

Table-5: Perinatal morbidity and mortality in relation with PROM

Perinatal morbidity and mortality	Number of cases	Percentage % (n=150)
Birth asphyxia	7	4.6%
Respiratory distress syndrome	12	8%
Septicaemia	8	5.33%
Neonatal Jaundice	5	3.3%
Seizure	2	1.3%
Transient Tachypnoea in new-born	3	2%
Fetal death	5	3.3%

DISCUSSION

This was a single center prospective Observational Study conducted in a Teaching hospital. Our hospital is Government run medical college in Western India, complicated cases from peripheral maternity units are referred to our hospital for specialty care and management. In our study total 150 diagnosed cases of PROM were enrolled and we studied maternal and perinatal outcome of these cases as per the study protocol. Incidence of PROM in our study is 8.5%. our findings are in coherence with the finding of studies conducted in the Indian subcontinent.[2,3,10,11]

The Incidence of PROM was comparatively more in the Primigravida and patients with gestational age more than 34 weeks our findings are similar to the findings reported by Lovereen S *et al* and as per the study conducted by Akhtar *et al* there are increased chances of sexual activity and vaginal infection in the primigravida than multigravida.[3,12]

Although there is wide agreement that the etiology PROM is idiopathic, there are other identifiable risk factors associated with PROM, in our study the majority of cases were vaginal Infection in 22.7% followed by history of previous PROM in 14.6% there was history of coitus in 9.4% cases and malpresentation in 1.3% cases. Our findings are similar to the finding of other researchers.[2,3,10,11] Though we have not studied the microbiological data in this study other researchers found that the E.Coli was the most common organism found in these case but there are studies which says that the E.Coli as the most common organism isolated from genital tract so that might be an incidental findings.[14]

In our study about 62% cases were delivered vaginally and 36% required a LSCS there our incidence is similar to the reported ration of the Vaginal delivery and the LSCS in other studies.[2,3,10,11] The rate of LSCS in higher in our study as our hospital is a tertiary care referral center and a teaching hospital so the cases coming are in late stages of labor and they are associated with other medical conditions. Purperal pyrexia and wound infection are the two major maternal complications followed by PPH and Chorioamnionitis our results are in coherence with other studies.[2,3,10,11,15,16] we are of the opinion that the liberal use of antibiotics in cases of PROM have kept the rate of sepsis under 8%, so we advocate use of antibiotics in these cases.

Perinatal outcomes of our study are also encouraging as there were only 8 percent cases Respiratory Distress and only 4.6 percent cases suffered from Birth asphyxia. This might be due to compulsory administration of steroids in the case reported with gestational age less than 34 weeks. This protocol is advocated by many previous studies and found to be effective in our study population too.[2,3,10,11,15,16] Apart from these major respiratory morbidities other morbidities reported in perinatal outcome are septicemia in 5.33 percent, neonatal Jaundice in 3.3 percent, seizures in 1.3 percent, fetal mortality was 3.3% cases. Our findings are similar to the other studies.[2,3,10,11,15,16]

CONCLUSION

PROM is very common complication of pregnancy in the developing countries in the Primigravida and gestational age more than 36 weeks. Though the etiology is idiopathic in nature other major associated risk factors are vaginal infection, history of PROM in previous pregnancy and coitus in last trimester. Majority of cases can be delivered vaginally by observant management using Oxytocin and Misoprostol for augmentation and induction of labor but there is always need to be ready to shift the patents for LSCS. It's recommended that the cases of PROM shall be treated in a well-equipped maternity Hospital and shall be referred in time from the Primary health facilities to higher centers. purpureal pyrexia was major maternal complication and followed by wound infection. Respiratory distress syndrome, birth asphyxia and septicemia are the major perinatal complications in babies born in cases of PROM. Timely referral, adequate antibiotic cover, administration of steroids in pregnancies complicated with PROM less than 34 weeks ensures good outcome.

Limitations – This was a single center study in a limited number of patients a long term prospective or retrospective study might confirm or reject finding of present study.

Conflict of Interest –NIL.
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