

"A Prospective Study Of Maternal And Persinatal Out Come In Prelabour Rupture Of Membranesinterm Gestation(≥ 37 weeks)"

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Background and objectives: Pre-labour Rupture of Membranes (PROM) is an enigmatic condition associated with high risk of maternal and Perinatal Morbidity and Mortality. The function of the amniotic fluid is mainly protective. It assists in maintaining an even temperature, acts as a buffer against external injuries checks the ascending infections, and during labour, acts as a dilating wedge in the cervix, so long as the amnion remains intact. This occurs in 5-20% of all labours. The membranes may rupture either 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). PROM is one of the most common clinical problem where a normal pregnancy can turn into a high risk situation. A careful consideration of various factors and individualization of cases is necessary for appropriate management.

Materials and Methods: A prospective study of maternal and perinatal outcome in pre-labour rupture of membranes in term gestation(≥ 37 weeks). This Study was done at Government maternity hospital, Hanamkonda, Warangal from June -2019 to September-2020. Total number of deliveries during this period was-7564. The total number of cases with pre-labour rupture of membranes (PROM) at term gestation were-212 and the INCIDENCE of pre labour rupture of membranes (PROM) at term gestation was 2.8%.

Results: Maximum women were in the age group of 20-29 years 89.6%. The mean age was 23.6 years with standard deviation of 3.3 years. In present study 62.3%(132 cases) were unbooked, 37.7%(80 cases) were booked. For perinatal morbidity the chi square statistic is 19.1123 and the p- value is 0.000012 which is statistically significant at ($p < 0.05$). 61.3% in the study were primi gravida. 38.7% in the study was multigravida. 74.1%(157- cases) belonged to low socio economic status. 25.9% (55- cases) belonged to middle socio economic status. Among primigravida 8.5% (11-cases) had bishop score of 0-2 and 62.3%(81-cases) had bishop score 3-4, and 29.2%(38 cases) had a score of 5-6. Maximum women delivered between 12-24 hours of PROM in both primi & multi. 73.8% of primigravida cases delivered between 12-24 hours of PROM, 74.4% of multigravida cases delivered between 12-24 hours of PROM. 56.6% of women had vaginal delivery. Instrumental delivery was noticed in 2.8% Rate of cesarean section was 40.6%. 58.97% of maternal morbidity occurred with PROM to delivery interval of greater than 24 hours. 61.11% of Fetal morbidity with PROM to delivery interval greater than 24 hours duration. 60% of Perinatal mortality was with PROM to delivery interval of > 48 hours.

Interpretation and Conclusion: PROM is an enigmatic condition associated with high risk of maternal morbidity, perinatal morbidity and mortality. It complicates 5-10% of all pregnancies. Complications increase with decrease in gestational age and increase in the latent period. Women should be educated about the possibility of PROM and the need to report at the earliest. And they should be educated about complications of prolonged PROM. Thus a team approach, early recognition of premature rupture of membranes and their associated complication and appropriate. Management of situation helps in reducing the problems caused by PROM to a great extent.

Keywords: PROM, Maternal outcome, Perinatal outcome.

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I. Introduction

Pre-labour Rupture of Membranes (PROM) is an enigmatic condition associated with high risk of maternal and Perinatal Morbidity and Mortality.

Pre-labour rupture of membranes (PROM) is defined by the American College of Obstetrics and Gynecology (Gunn et al., 1970)¹ as spontaneous rupture of membranes prior to the onset of regular uterine contractions.

The function of the amniotic fluid is mainly protective. It assists in maintaining an even temperature, acts as a buffer against external injuries, equalizes pressure, allows free movements of the fetus, prevents

adhesions between the amnion and the fetal skin, provides passive immunity of the foetus in the form of gamma globulin antibodies, checks the ascending infections, and during labour, acts as a dilating wedge in the cervix, so long as the amnion remains intact.

Pre labour rupture of membrane is one of the most common complication of pregnancy that has a major impact on neonatal outcome³This occurs in 5-20% of all labours. Indian studies (Bhalerao and Desai, 2000; Bhide, 2001) report an incidence of PROM in 7-12% of all labours. The longer the time interval between rupture of membranes and onset of labour the greater is the risk of ascending infection and chorioamnionitis. This risk may assume grave proportions in patients undergoing caesarian section. The membranes may rupture either 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).

Prolonged PROM: It is the term used when >24 hours have elapsed before labour ensues.

High rupture of the membranes: It is due to the rupture of the amniochorion at a site distant from the internal os.

INCIDENCE OF PROM: It is variable. According to Gunn et al. (1970) it varies between 2-18%. Bourgeois et al. (1988) gave an incidence of 7.35%. Aktar et al. reported an incidence of 3.3%. In the study by Swati Pandey (2000)⁵ it was 7.71%. So the present study is to analyze the maternal and perinatal outcome in pre labour rupture of membranes at term gestation (≥ 37 weeks).

AIM AND OBJECTIVES

To evaluate Maternal and Perinatal outcome in cases of Pre labour rupture of membranes in pregnant women in term gestation.

II. Material And Methods

This PROSPECTIVE STUDY consists of an analysis of labour outcome in women with pre-labour rupture of membranes at ≥ 37 completed weeks.

SOURCE OF DATA: This study was done from the Department of Obstetrics & Gynecology, KAKATIYA MEDICAL COLLEGE, Warangal under Government Maternity hospital, Hanamkonda.

STUDY PERIOD: OCTOBER 2019 to SEPTEMBER 2020.

INCLUSION CRITERIA: All pregnant women with gestational age ≥ 37 weeks with confirmed diagnosis of prelabour rupture of membranes.
Primi, multi, grand multi.

EXCLUSION CRITERIA:

1. Pregnant women with any medical disorder such as PIH/ECLAMPSIA/ Sev. ANEMIA/DIABETES MELLITUS
2. Pregnant women with gestational age <37 weeks.
3. Pregnant women with bleeding per vagina
4. Pregnant women with absolute indication for LSCS Ex: CPD
5. Pregnant with previous LSCS.

III. Methodology

A detailed history was taken including age, booking & socio-economic status, time of onset of draining, amount of fluid lost, its colour, odour, association with pain or bleeding per vagina and perception of fetal movements.

Detailed obstetric and menstrual history was taken. General examination was done at the time of admission which included vital signs especially temperature and maternal pulse. Presence of pallor and pedal oedema were looked for. Height and weight were noted. Systemic examination included cardiovascular, respiratory systems and CNS systems.

In the obstetric examination, following were noted. Height of uterine fundus, lie, presentation and position of fetus, engagement of presenting part, condition of uterus whether acting or relaxed. Uterine tenderness was looked for as a sign of chorioamnionitis. Fetal heart sound was auscultated and its rate, rhythm were noted.

A sterile speculum examination was done and the condition of vagina and cervix noted. Liquor draining from the OS was observed. Cervical swab was taken and sent for culture sensitivity. A single pelvic examination was done to note the Bishop's score, adequacy of pelvis, assessment of CPD and to rule out cord prolapse. All the cases were subjected to detailed Ultrasonographic assessment. Investigations like total WBC count, differential count and C-reactive protein were

Done. Prophylactic antibiotics were given if duration of rupture of membranes ≥ 12 hrs or at any time if clinical signs of chorioamnionitis were present. If labour doesn't start spontaneously within 6-8 hrs then it will be induced with prostaglandins or accelerated with oxytocin. Time of induction was noted. The labour of each case was closely monitored with the help of partograph. Fetal monitoring was done by continuous electronic fetal monitoring (CTG). Maternal pulse, blood pressure, fetal heart rate and its variations were checked frequently. Progress of labour was monitored. If there was any evidence of fetal jeopardy or any other obstetrical complications, labour was cut short by instrumental delivery or cesarean section as required. Induction to delivery interval and PROM to delivery interval, Mode of delivery were noted.

Soon after delivery, APGAR score at 1 and 5 minutes, birth weight, sex, congenital anomalies, signs of asphyxia, meconium aspiration, sepsis and other associated complications were recorded. The babies were followed up in the postnatal period. Any Neonatal morbidity and mortality were noted. Both mother and the baby were followed-up during puerperal period.

IV. Observations And Results

A prospective study of maternal and perinatal outcome in pre-labour rupture of membranes in term gestation (≥ 37 weeks). This Study was done at Government maternity hospital, Hanamkonda, Warangal, from June -2019 to September-2020. Total number of deliveries during this period was-7564. The total number of cases with pre-labour rupture of membranes (PROM) at term gestation were-212 and the INCIDENCE of pre labour rupture of membranes (PROM) at term gestation was 2.8%.

Table 1: Age wise distribution

Age (years)	No. of cases	Percentage
15-19	11	5.2
20-24	135	63.7
25-29	55	25.9
30-34	10	4.7
35-39	1	0.5

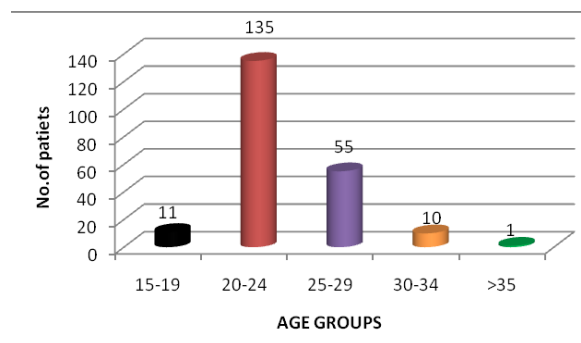


Figure 1: Age wise distribution

Maximum women were in the age group of 20-29 years 89.6%. Highest age was 36 years. Lowest age 18 years. The mean age was 23.6 years with standard deviation of 3.3 years. The Distribution of booked and un-booked cases

Table 2: Antenatal Care

	Number	Percentage
Booked	80	37.7
Un-booked	132	62.3

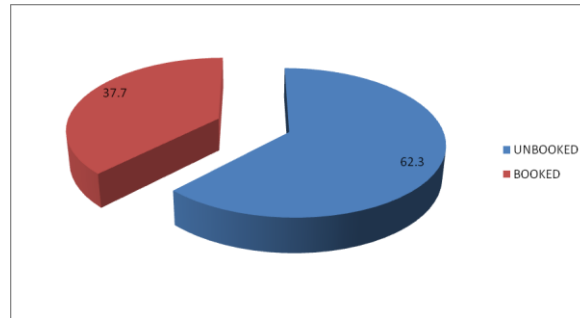


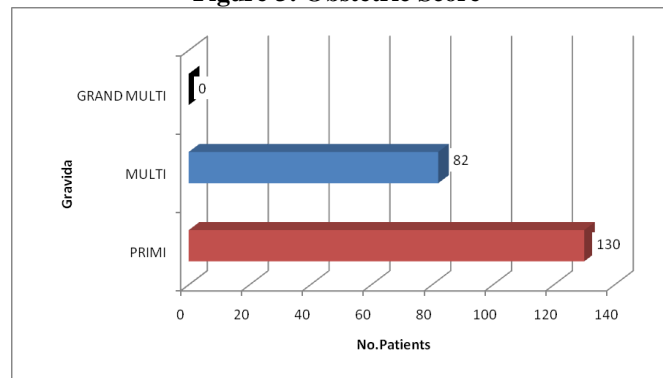
Figure 2: Antenatal Care

In present study 62.3%(132 cases) were unbooked,37.7%(80 cases) were booked.For perinatal morbidity the chi square statistic is 19.1123 and the p- value is 0.000012 which is statistically significant at (p<0.05).The distribution of gravidity is shown in Table 3.

Table 3: Obstetric Score

Gravida	Number	Percentage
Primi	130	61.3
Multi	82	38.7
Grand multi	0	0
Total	212	100

Figure 3: Obstetric Score

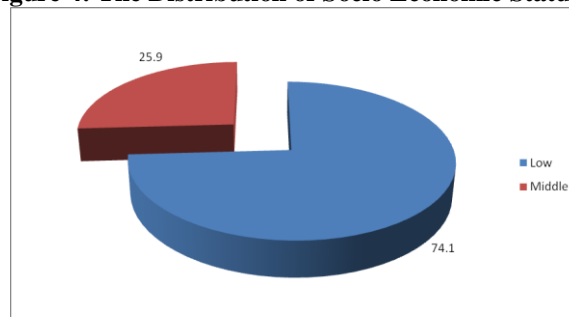


61.3%in the study were primi gravida. 38.7% in the study was multigravida. There were no grand multi cases in the study.

Table 4: The Distribution of Socio Economic-status

Socio Economic Status	Number	Percentage
Low	157	74.1
Middle	55	25.9

Figure 4: The Distribution of Socio Economic Status

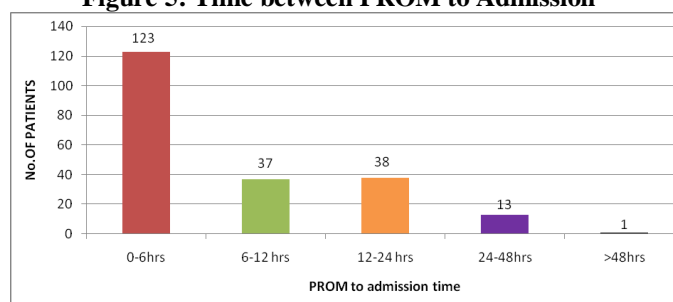


74.1%(157- cases) belonged to low socio economic status.25.9% (55- cases) belonged to middle socio economic status. There were no cases from high socio economic status.

Table 5: Time between PROM to Admission

Time in Hours	Number	Percentage
0-6	123	58.0
6-12	37	17.5
12-24	38	17.9
24-48	13	6.1
48-96	1	0.5

Figure 5: Time between PROM to Admission

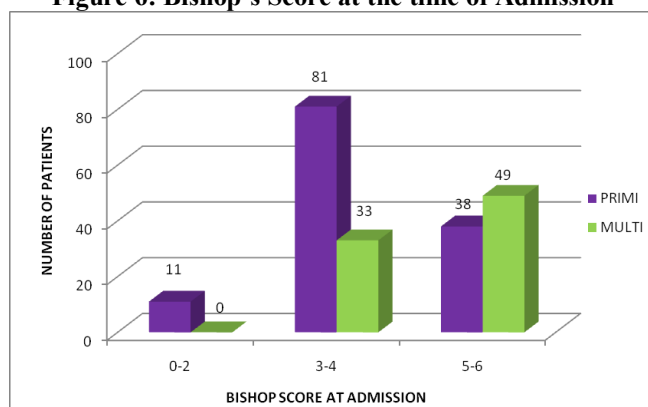


58% of women were admitted within 6 hours of PROM, 17.5% between 6-12 hours,17.9% between 12-24 hours,6.1% got admitted after 24 hours of PROM 0.5% after 48 hours of PROM.The shortest period of PROM was 1 hour and longest period was 72 hours. The mean duration of PROM to admission was 9.08hrs.Using chi square test for maternal morbidity p value is <0.00001 and for perinatalmorbidity the p value is 0.000035 ,both are statistically significant at (p<0.05).

Table 6: Bishop's Score at the time of Admission

Bishop's Score	Primi		Multi	
	No	%	No	%
0-2	11	8.5	0	0
3-4	81	62.3	33	40.2
5-6	38	29.2	49	59.8

Figure 6: Bishop's Score at the time of Admission

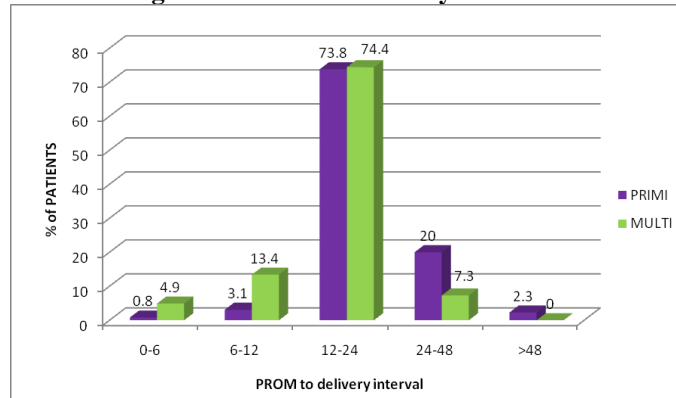


Among primigravida 8.5% (11-cases) had bishop score of 0-2 and 62.3%(81-cases) had bishopscore 3-4,and 29.2%(38 cases) had a score of 5-6.Among multi gravida 40.2%(33- CASES) had score 3-4 and 59.8%(49-cases) had bishop score of 5-6,there were no multi with 0-2 bishopscore.

Table 7: PROM to Delivery Interval

Time in hours	Primi		Multi	
	No	%	No	%
0-6	1	0.8	4	4.9
6-12	4	3.1	11	13.4
12-24	96	73.8	61	74.4
24-48	26	20	6	7.3
48-96	3	2.3	0	0

Figure 7: PROM to Delivery Interval

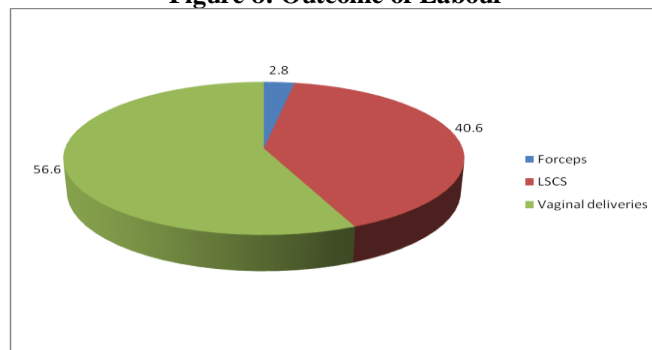


Maximum women delivered between 12-24 hours of PROM in both primi & multi. 73.8% of primigravida cases delivered between 12-24 hours of PROM 74.4% of multigravida cases delivered between 12-24 hours of PROM Using chi-square test For both maternal and perinatal morbidity the p-value is <0.00001 which is statistically significant at (p <0.05).

Table 8: Outcome of Labour

Mode of delivery	Number	Percentage
Vaginal delivery	120	56.6
Forceps delivery	6	2.8
Cesarean section	86	40.6

Figure 8: Outcome of Labour

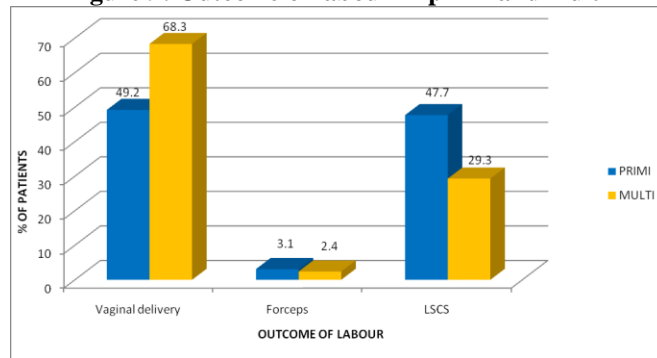


56.6% of women had vaginal delivery. Instrumental delivery was noticed in 2.8% Rate of cesarean section was 40.6%.

Table 9: Outcome of Labor in Primi and Multi

Labour outcome	PRIMI		MULTI	
	No	%	No	%
Vaginal deliveries	64	49.2	56	68.3
Forceps delivery	4	3.1	2	2.4
Cesarian section	62	47.7	24	29.3

Figure 9: Outcome of labour in primi and multi

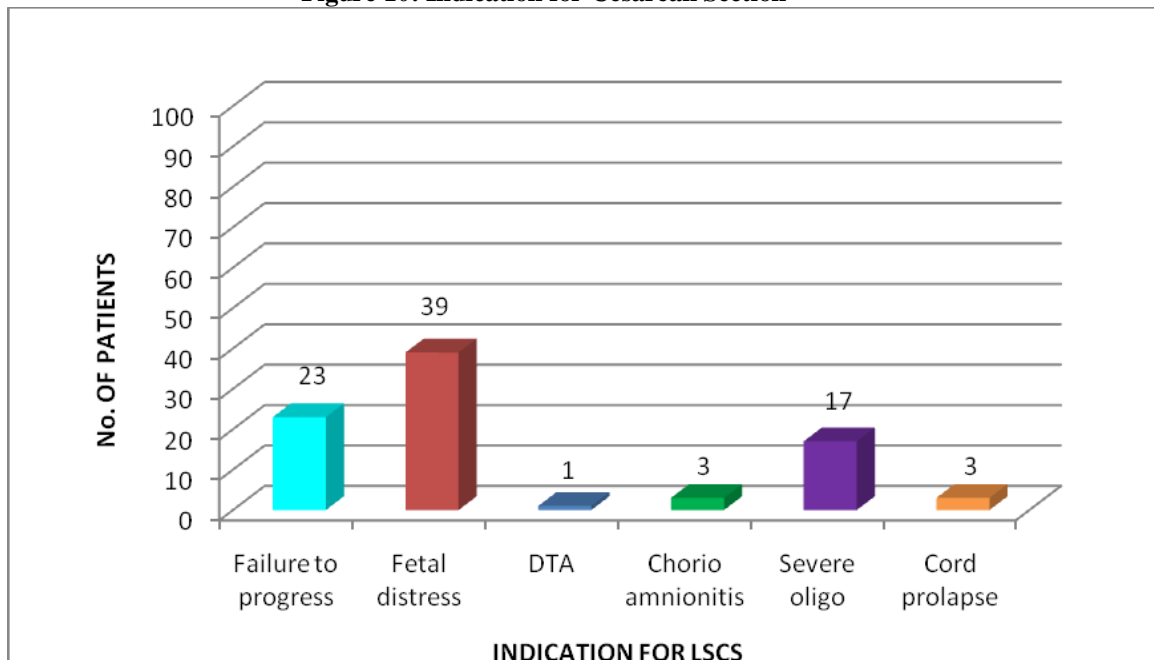


It is seen that rate of normal delivery was higher in multigravida compared to primigravidae. Cesarean sections were more among primigravidae compared to multigravidae.

Table 10: Indication for Cesarean Section

Indication	No.	%
Failure to progress	23	10.8
Fetal distress	39	18.4
DTA(deep transverse arrest)	1	0.5
Chorioamnionitis (Intrapartum sepsis)	3	1.4
Severe oligo at admission	17	8.0
Cord prolapse	3	1.4
TOTAL	86	40.6

Figure 10: Indication for Cesarean Section



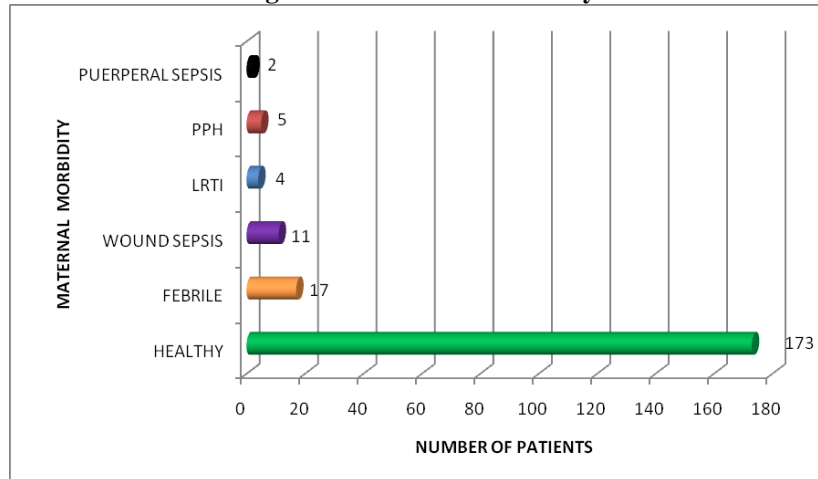
Cesarian section rate was 40.6%. Common indication was fetal distress accounting for 18.4%. Failure to progress was next common indication accounting for 10.8%.

Table 11: Maternal Morbidity

Morbidity	No.	%
Febrile Morbidity	17	8.0

Wound Infection	11	5.2
LRTI	4	1.9
PPH	5	2.4
Puerperal Sepsis	2	0.9
Total	39	18.4

Figure 11: Maternal Morbidity

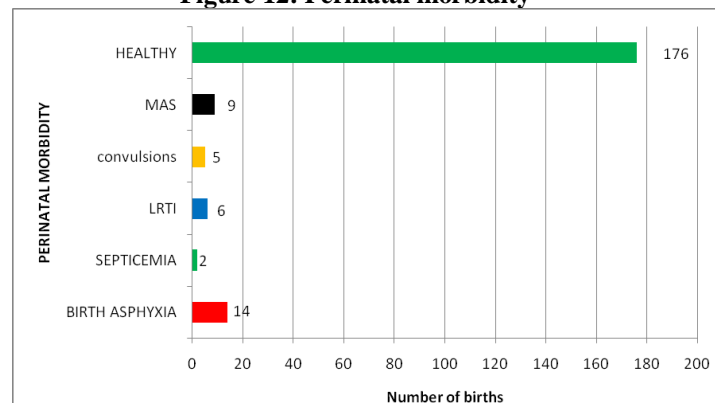


The rate of maternal morbidity was 18.4%, commonest was Febrile Morbidity seen in 8 %. No maternal mortality was seen in the study.

Table 12: Perinatal morbidity

Morbidity	No.	%
Birth asphyxia	14	6.6
Septicemia	2	0.9
LRTI	6	2.8
Convulsions	5	2.4
Meconium aspiration syndrome (MAS)	9	4.2
TOTAL	36	16.98

Figure 12: Perinatal morbidity



Perinatal morbidity was seen in 16.98% of cases. Birth asphyxia was the commonest cause for perinatal morbidity noticed in 6.6% of cases.

Table 13: Perinatal mortality (PNM)

Mortality	No	%
Birth asphyxia	3	1.4
Septicaemia	2	0.9

Perinatal mortality rate was 2.35%.Birth asphyxia was the major cases for perinatal mortality.

Table 14: Relationship between PROM to delivery Interval – Maternal and Fetal morbidity and perinatal mortality.

PDI In hours	Maternal morbidity		Perinatal morbidity		Perinatal mortality	
	No	%	No.	%	No.	%
0-6	-	-	-	-	-	-
6-12	-	-	-	-	-	-
12-24	16	41.03	14	38.89	-	-
24-48	20	51.28	22	61.11	2	40
48-96	3	7.69	-	-	3	60

PROM to delivery interval has an impact on maternal and fetal morbidity. Longer the interval between PROM to delivery more the Fetal and maternal morbidity. 58.97% of maternal morbidity occurred with PROM to delivery interval of greater than 24 hours.61.11% of Fetal morbidity with PROM to delivery interval greater than 24 hours duration.60% of Perinatal mortality was with PROM to delivery interval of >48 hours

Table 16: Cervical swab culture

Organism	No.	%
No growth	135	63.7
Escherichia coli	28	13.2
Klebsiella	15	7.1
Coagulase negative Staphylococcus	10	4.7
Staphylococcus aureus	7	3.4
Group B Streptococcus	10	4.7
Citrobacter	2	0.9
Escherichia coli + Coagulase negative Staphylococcus	2	0.9
Urea plasma urealyticum	2	0.9
Non-ferm	1	0.5

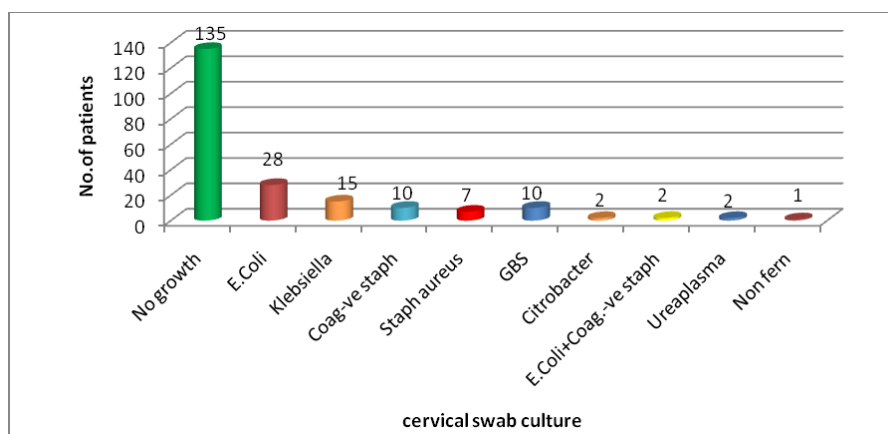


Figure 14: Cervical swab culture

36.3% of women had positive cervical swab culture. Most common organism found on culture of amniotic fluid was Escherichia Coli(13.2%)

V. Discussion

The present study was done at Government maternity Hospital, Hanamkonda, Warangal with 212 cases and was compared to similar studies elsewhere. Relationship of premature rupture of membranes to maternal age. In the study done by Anjana Devi⁵⁹ done at J.I.P.M.E.R, Pondicherry (1996), 76.9% of cases belonged to age group of 20-29 years.

Table 17: Maternal age 20-29 years

Age (years)	Anjana Devi	Piya Ray	Present study
20-29	76.9%	82.0%	89.6%

Relationship to Antenatal care:

The occurrence of PROM is more in un-booked cases compared to booked cases.

Table 18: Comparison of Booked and Un-booked cases

	Anjana Devi	Present study
Booked	52.0%	37.7%
Un-booked	48.0%	62.3%

Relationship to Socio-Economic Status:

Studies have shown that defects in the membranes occur due to poor nutritional status which is significantly influenced by socio economic status of patients.

Relationship to obstetric score:

Multiparity is a risk factor for PROM due to long standing infection, previous trauma to the cervix and patulous os.

Time between PROM to Admission

As the duration of PROM increases, problems in the mother and the baby also increase. In the study by Umed Thakor,⁶¹ the duration from PROM to admission was 12.06±6.04 hours. As the Bishop's score increases, the percentage of normal delivery goes up in both primigravidas and multigravidas.

PROM to Delivery Interval

In cases of PROM at term or near term labor usually occurs spontaneously in 75-85% of cases within first 24 hours and 90% within 48 hours. In the present study 73.8% of primigravidas and 74.4% of multigravidas delivered between 12-24 hours of PROM. In the present study 40.6% cases had cesarean section.

Maternal outcome

PROM is associated with an increased risk of maternal morbidity. Maternal morbidity increases with increase in duration of PROM. Febrile morbidity is the commonest morbidity seen.(8%)

Table 23 shows the distribution of maternal morbidity in different studies which are comparable.

In Kodkany⁷ study maternal morbidity was seen in 21% of cases. In contrast Singhal¹⁶ showed a maternal morbidity of 4%. In Kamala Jayaram's¹⁵ study maternal morbidity was 4%. In the present study, maternal morbidity was 18.4% and the commonest morbidity is febrile morbidity accounting for 8%.

Chorioamnionitis

Chorioamnionitis is a major problem which can lead to intrapartum and postpartum sepsis and even septicemia. It is an important complication of PROM with an incidence of 3-31%.

Perinatal Outcome

Perinatal mortality rate has also been observed to be higher in association with PROM (Akhter et al., 1980). In study by Sanyal⁶² perinatal morbidity was 32% and mortality was 5%. Fetal morbidity increases with increase in PROM to delivery interval.

VI. Conclusion

PROM is an enigmatic condition associated with high risk of maternal morbidity, perinatal morbidity and mortality. It complicates 5-10% of all pregnancies. Complications increase with decrease in gestational age and increase in the latent period. Difficulties are found in the diagnosis of PROM, Recognition of etiological factors and management. In the present study the incidence of PROM at term gestation was 2.8%. In the present study, the rate of cesarean section was 40.6%. Maternal morbidity was seen in 18.4%.

Febrile morbidity being the commonest accounting for 8%. Perinatal morbidity was seen in 16.98% of cases. Birth asphyxia was the commonest cause for perinatal morbidity seen in 6.6% cases. The perinatal mortality rate was seen in 2.35%. Pregnancies complicated with PROM should have supervised labor preferably in an institution. Management of each case has to be individualized. A combined effort of obstetrician and neonatologist is necessary. Thus a team approach, early recognition of premature rupture of membranes and their associated complication and appropriate management of situation helps in reducing the problems caused by PROM to a great extent. In the present study concerning PROM at term, the rate of maternal and fetal morbidity was higher compared to normal cases.

References

- [1]. Gunn G.G., Mischell Morton: "PROM A review", Am. J. Obstet Gynaecol 1970;106:409.
- [2]. Swati Pandey, Dave A, Bandi S. Maternal and foetal outcome in cases of PROM. Journal of Obstet and Gynecology of India 2000;50:63.
- [3]. Kodkany, Telang. Premature rupture of membranes, a study of 100 cases. Journal of Obstet and Gynecol of India 1991;41:492.
- [4]. Jayaram VK, Sudha S. A study of PROM – Management and outcome. Journal of Obstet and Gynecol of India 2001;51:58-60.
- [5]. Singhal P, Singhal AK. Fetomaternal outcome in premature rupture of membranes. Obs&Gynae Today 2002;10:585.
- [6]. Anjana Devi, Reddi Rani. Premature rupture of membranes – A clinical study. Journal of Obstet and Gynaecol of India 1996;46:63.
- [7]. Ray Piya, Sikdar K, Das A, Ghosh T. Study of cases of chorioamnionitis followed premature rupture of membranes. Journal of Obstet & Gynaecol of India 1997; 47:136.
- [8]. Thakor Umed, Aitra N, Baxi S, Hazra M. Labor characteristics in pre-labor rupture of membranes. Journal of Obstet and Gynecology of India 1994;44:527.
- [9]. Sanyal MK, Mukherjee TN. Premature rupture of membranes an assessment from a rural medical college of West Bengal. Journal of Obstetrics & Gynaecology of India 1990;40:623.

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