

TO EVALUATE THE ETIOLOGICAL FACTORS FOR MATERNAL AND FETAL OUTCOME IN PROM

Palli Lavanya¹, Maddela Yamuna², Dunna. Sravani³, Endava Shireesha²

¹Associate Professor, Department of OBG, Government Medical college, Eluru, Andhra Pradesh, India

²Assistant Professor, Department of OBG, Andhra Medical college, Visakhapatnam, Andhra Pradesh, India.

³Post Graduate, Andhra Medical College, Visakhapatnam, Andhra Pradesh, India

Received : 05/11/2023
Received in revised form : 18/12/2023
Accepted : 03/01/2024

Keywords:

Prelabor Rupture of Membranes, antibiotics, Chorioamnionitis.

Corresponding Author:

Dr. Endava Shireesha,

Email: shireesha.endava@gmail.com

DOI: 10.47009/jamp.2024.6.1.38

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2024; 6 (1); 195-199



Abstract

Background: Prelabor Rupture of Membranes (PROM) is one of the commonest complications of pregnancy that has a major impact on maternal and fetal outcome. With this event, a traditional pregnancy can turn into a high-risk situation for the mother as well as the fetus. **Materials and Methods:** Pregnant women more than 28 weeks period of gestation with PROM attending obstetrics and gynaecology department, Tertiary care hospital, GVH, Visakhapatnam were enrolled for the study and followed up from point of admission up to time of delivery. 100 singleton pregnancies with PROM were included in this study. They were evaluated and examined for risk factors and followed for course and for assessing maternal and fetal outcome in PROM. Data tabulated in Microsoft excel and analysed using SPSS 21. **Result:** Clinical evidence of chorioamnionitis is nil but bacterial study showed positive culture for 15 cases. This may be attributed for intrapartum usage of antibiotics. High vaginal swabs culture showed 15 positive cases for growth of E.coli, pseudomonas, klebsiella, streptococci and proteus. Remaining study group didn't show any specific organisms. **Conclusion:** Early intervention with proper care, prompt delivery and with good neonatal setup have decreased mortality due to sepsis, respiratory distress and birth asphyxia. Neonates treated with prophylactic antepartum and intrapartum antibiotics definitely has fewer complications and an improved long-term outcome. This study coincides with other studies and shows that the most important risk factors associated with PROM are low socio-economic status, nutritional deficiency and improper antenatal care. To conclude, with improvement in socio economic status, nutritional supplement and proper antenatal care will definitely reduce the incidence of PROM.

INTRODUCTION

Prelabor Rupture of Membranes (PROM) is one of the commonest complication of pregnancy that has a major impact on maternal and fetal outcome. With this event, a traditional pregnancy can turn into a high risk situation for the mother as well as the fetus.^[1]

It is defined as rupture of membranes beyond 28 weeks of pregnancy but before onset of labour. PROM may be term when occurs beyond 37 completed weeks or preterm (PPROM) when it occurs before 37 completed weeks.^[2]

Gestation age of less than 34 wks poses problems of bronchopulmonary dysplasia (if less than 26 weeks) hyaline membrane disease (leading to respiratory distress syndrome), necrotizing enterocolitis, intra ventricular hemorrhage and sepsis. Neonatal

morbidity and mortality is high when PROM occurs in pregnancies of less than 32 weeks.^[3]

The decision for appropriate management of PROM depends upon the assessment of gestational age, the likelihood of infection and the availability of neonatal intensive care facilities.^[4] The aim of the modern obstetrics here is to give best quality of life for the child to be born. Much of the literature available here is pertaining to studies in the developing countries where neonatal salvage rates in preterm deliveries are very high and stringent asepsis is followed.^[5]

MATERIALS AND METHODS

Study Population: Pregnant women more than 28 weeks period of gestation with PROM attending obstetrics and gynecology department, Tertiary care hospital, GVH, Visakhapatnam.

Sample Size: 100

Study population: 1 Year duration from September 2021 to August 2022.

Place of the study: Government Victoria hospital (GVH).

Inclusion Criteria

- Singleton pregnancy between 28 – 40 weeks of gestation
 - Primigravida and multigravida
 - Age group 18 –40 years
 - Confirmed cases of leaking with or without membrane.
 - leaking from Cervix confirmed by speculum examination.
 - H/O leaking per vaginum
 - No uterine contractions
- Exclusion Criteria:
- Multiple gestation
 - Maternal complications interfering with active management of PROM like high risk pregnancies (hypertensive disorders complicating pregnancy, heart disease, previous LSCS).
 - Pregnant women with PROM not giving consent.

Methodology: The subjects enrolled for the study were followed up from point of admission up to time of delivery. 100 singleton pregnancies with PROM were included in this study were evaluated and examined for risk factors and followed for course and for assessing maternal and fetal outcome in PROM. Data tabulated in Microsoft excel and analysed using SPSS 21.

Assessed with

I. History taking

Age, Socio-economic status, Obstetric history, Time of rupture/ leaking, Any intervention outside, H/o coitus, H/o any infection, H/o any infection, Any cervical surgery.

II. Clinical Examination

Nutritional status / Anemia /infections, Vital Signs, Abdominal Examination, Speculum examination,

III. Lab investigations

Total and differential leucocyte count, ESR and CRP, High vaginal swabs for c/s

RESULTS

Incidence at Government Victoria Hospital (GVH):4.38%, It varies from : 2-18%, Average incidence: 10%, According to Williams / Arias: 2.7-17%

Table 1: Age Incidence

Age in years	Studygroup	Control group
<20	15	15
20-29	76	76
30-40	9	9
Total	100	100

Incidence of prom is more (76%) in age group of 20-29 years.

Table 2: Incidence of prom with gestational age

Gestational age	Study	Control
<34 weeks	3	1
34- 36+6 weeks	18	2
>=37 weeks	79	97
Total	100	100

Incidence of prom more in term pregnancies, about 79% in the study. Preterm were 21% in study group.

Table 3: Socio economic status (distribution and association)

Socio economic status	Study	Control	Chi square	P value
LOW (4 th and 5 th)	81	56	14.4	0.000141(significant)
Middle (3 rd)	19	44		
Total	100	100		

Table 4: antenatal care and prom (distribution and Association)

Antenatal booking	Study	Control	CHI Sqaure	P value
Booked	36	62	13.5	0.000235(significant)
Unbooked	64	38		
Total	100	100		

Table 5: prom with gravida: (distribution and association)

Gravida	Study	Control	Chi square	P value
G1	56	60	1.0175	0.797 (not significant)
G2	25	26		
G3	14	11		
G4 and above	5	3		

Table 6: Fetal Presentation and Prom

Presentation	Study	Control
Cephalic	90	98
Breech	8	2
Unstable	2	-
Total	100	100

Table 7: previous history of prom in multigravida

H/o prom	Study	Control	Chisquare	P value
Present	14	2	9.14	0.0025
Absent	30	38		
Total	44	40		

Table 8: etiological factors

Cause	Study group
Infection	15
H/o coitus	11
Polyamnios	11
Malpresentation	10
H/o cervical surgery	3
Unknown	50
Total	100

Table 9: bacterial study of high vaginal swabs in prom

Organism isolated	No. Of cases	Percentage
E.coli	6	40
Streptococci	2	13.3
Klebsiella	4	26.6
Proteus	2	13.3
Pseudomonas	1	6.6
Total	15	100%

High vaginal swabs culture showed 15 positive cases for growth of E.coli, pseudomonas, klebsiella, streptococci and proteus. Remaining study group didn't show any specific organisms.

Table 10: Membrane Status in Prom

Membranes	Study	Control
Present	12	100
Absent	88	-

Table 11: color of liquor in prom

Color	No of cases
Clear	78
Meconium stained (thin &thick)	20
Blood stained	2

Among 10 study group, 78% had clear liquor. 20% have meconium staining among which 7 underwent LSCS due to thick MSL and fetal distress, 8 were assisted deliveries, 5 were normal vaginal deliveries. 2 % with blood stained liquor were assisted deliveries.

Table 12: latency period in prom

Latency periods in Hours	Primigravida	Multigravida	Total
<6hours	27	20	47
6-12 hours	22	23	45
>12 -24 hours	7	1	8
Total	56	44	100

In this study, all cases were intervened except 10 cases, which were allowed latency period of >12-24 hours. Out of them 7 were preterm. This shows, shorter the gestational age, longer the latency period and vice versa.

Table 13: Latency Period in Preterm Prom

Latency period	<34 weeks	34-36 weeks	No of cases	Percentage
<6 hours	1	5	6	28%
6-12 hours	-	8	8	38%
>12 -24 hours	2	5	7	33%

Table 14: Induction in Prom

Induction method	Study			Control		
	PrimiGravida	MultiGravida	Total	PrimiGravida	MultiGravida	Total
Syntocin	28	20	48	7	9	16
Misoprostol	14	6	20	2	4	6
None	14	18	32	53	25	78
Total	56	44	100	62	38	100

68% cases of study group were induced with either syntocin drip or misoprostol induction compared to 24 of control group. Immediate stimulation policy appears to be beneficial in multipara and nullipara.

Table 15: induction in prom and nature of delivery

Induction methods	LSCS		VaginalDelivery		AssistedBreech		Total
	Nos	%	Nos	%	Nos	%	
Syntocin	14	29%	34	70%	-	-	48
Misoprostol	2	10%	18	90%	-	-	20
None	18	56%	13	40%	1	3.1%	32

In syntocin group – out of 48 , 29% delivered by LSCS and 70% by vaginal route. In misoprostol group- out of 20, 10% only delivered by LSCS and rest 90% by vaginal route. In no induction group, 56% delivered via LSCS mainly due to malpresentation, Severe oligoamnios, failure to progress and fetal distress.

Table 16: mode of delivery in prom

Delivery mode	Study		Control		Total
	Nos	%	Nos	%	
NVD	55	40%	80	59%	135
LSCS	34	65%	18	34%	52
Assisted breech	1	100%	0	0%	1
Forceps/kiwi	10	83%	2	16.6%	12
Total	100		100		200

Among the study group, 66% delivered via vaginal route(55 were normal vaginal deliveries, 8 with KIWI cup , 2 via outlet forceps delivery and 1 was a assisted breech delivery) LSCS rate was 65%, relatively high among study group when compared to 34% in control group. Clinical evidence of chorioamionitis is nil but bacterial study showed positive culture for 15 cases. This may be attributed for intrapartum usage of antibiotics.

Table 17: Perinatal Morbidity in Prom

Complication	Study	Control
Neonatal sepsis	6	1
Perinatal asphyxia	2	2
RDS	10	2
SGA	12	2
Meningitis	0	0
Total	27	7

30% of study group had perinatal morbidities and among control group, only 7% had complications. Perinatal mortality in this study was nil (0%).

DISCUSSION

Prelabour rupture of membranes remains as one of the difficult and controversial problem in obstetrics which leads to increased maternal complications, operative procedures, perinatal morbidity and mortality.^[6] Though the problem of PROM was identified centuries ago, the exact etiology is not known, and it involves poorly understood infective, biochemical and mechanical pathways.^[7]

This study was done in Govt. Victoria Hospital taking into account of 100 patients with PROM (both Term and pre term) and 100 patients as control without PROM in the same age group and parity.^[8] Overall incidence at GVH hospital was found to be 4.38% General Incidence varies from 2-18% (Gunn

et al 1970) and 2.7 to 17% (Arias). Bruzley (1959) gives an incidence of 15% where as Donald S.Greig (1943) talks about an 18% incidence. Mischell (1970) also gives 18% incidence.

Incidence of prom in this study was more in age group of 20-29 years. Kalkins (1952) after a thorough study of 1168 patients with PROM found the occurrence is more in 25 – 35 years of age group where as Mary 20 Shultz described more number of PROM in the age group of 25. Though there are quite a good number of papers on the relevance of PROM to the age of patients, many papers have also come out which shows no relationship to age and PROM.

79% of patients had term PROM which coincides with reports by Allen (1991) who also found about 60-80% of cases were in term pregnancies. 21% belongs to preterm. In control group pre term delivery was only 3%.^[9]

High incidence of PROM occurs in low SE group (81%). Many studies (Artal et al 1976, 48 Harger et

al 1990) have shown that defects in the membrane may arise because of poor nutritional status which significantly influenced by low SE status. Donnelly et al (1957) Giddler & Widemann (1954) have all believed that PROM is influenced to a great extent by socio-economic background. Only 36 cases of PROM patients were getting proper antenatal care among 100 cases of PROM, when compared to 62 cases getting proper antenatal care in control group. This study gave the P Value < 0.001 which is very significant showing that poor antenatal booking has got significant role in the risk factors on PROM.

In this study 56% were primigravida and 44% were multigravida. Distribution of cases with regard to parity was not significant in this study and was comparable with the study of Margret B. Ballard who didn't find any difference in parity distribution. But Calvin from his extensive studies showed increased incidence in multigravida. Also Danforth (1953) Mosty N.P, Embrey (1953) and others like Balkins (1952) Donnelly et al (1957) John I.Biskind (1957) Dyer (1961) are all of the opinion that the incidence of PROM is more in the multigravida than in Primigravida.^[10]

CONCLUSION

Although the problem of PROM was identified centuries ago, the management is controversial and the outcome is equivocal. This study shows that careful antenatal monitoring, identification of risk factors and etiology detection, prompt treatment of infection and pelvic examination under aseptic precautions and appropriate therapy are important factors for prevention of PROM. Management of PROM lies in the continuum of immediate stimulation of labour and expectant management. Immediate stimulation policy with oxytocin / Misoprostol appears to be a reasonable approach in multigravida and primigravida with a good cervical score in term PROM. Early intervention with proper care, prompt delivery and with good neonatal setup, mortality due to sepsis, respiratory distress and birth asphyxia have been decreased. Neonates treated

with prophylactic antepartum and intrapartum antibiotics definitely has fewer complications and an improved long term outcome. Use of corticosteroid helps to improve the outcome. Even though PROM occurs more at term, the perinatal morbidity and mortality is mainly due to PPROM and more work needs to be done to identify the etiologies and prevention of PROM especially in the pre term gestation. This study coincides with other studies and shows that the most important risk factors associated with PROM are low socio economic status, nutritional deficiency and improper antenatal care. To conclude, with improvement in socio economic status, nutritional supplement and proper antenatal care will definitely reduce the incidence of PROM.

REFERENCES

1. Mercy Rodrigo R. Perinatal and maternal outcome in pre-labour rupture of membranes (Doctoral dissertation, Stanley Medical College, Chennai).
2. Jayaram VK, Sudha S. A study of PROM-Management and outcome. J Obstet Gynecol India. 2001;51:58-60.
3. Kodkany, Telang. Premature rupture of membranes, a study of 100 cases. J Obstet Gynecol India 1991;41:492.
4. Noor S, Nazar AF, Bashir R, Sultana R. Prevalance of PPROM and its outcome. J Ayub Med Coll Abbottabad. 2008;19(4):14-17.
5. ACOG Practice Bulletin No. 80: premature rupture of membranes. Clinical management guidelines for obstetrician-gynecologists. Obstet Gynecol. 2007 Apr. 109(4):1007-19.
6. ACOG. ACOG Committee Opinion No. 485: Prevention of early-onset group B streptococcal disease in newborns. Obstet Gynecol. 2011 Apr. 117(4): 1019-27.
7. Naeye R, Peters E. Causes and consequences of premature rupture of fetal membranes. Lancet. 1980;1:192-4.
8. Harger JH, Hsing AW, Tuomala RE, Gibbs RS, Mead PB, Eschenbach DA, Knox GE, Polk BF. Risk factors for preterm premature rupture of fetal membranes: a multicenter case-control study. American journal of obstetrics and gynecology. 1990 Jul 1;163(1):130-7.
9. Kanayama N, Kamijo H, Terao T, Horiuchi K, Fujimoto D. The relationship between trypsin activity in amniotic fluid and premature rupture of membranes. American journal of obstetrics and gynecology. 1986 Nov 1;155(5):1043-8.
10. El-Messidi A, Cameron A. Diagnosis of premature rupture of membranes: inspiration from the past and insights for the future. Journal of Obstetrics and Gynaecology Canada. 2010 Jun 1;32(6):561-9.