International Journal of Clinical Obstetrics and Gynaecology

ISSN (P): 2522-6614
ISSN (E): 2522-6622

www.gynaecologyjournal.com
2021; 5(5): 211-214
Received: 11-06-2021
Accepted: 14-07-2021

Dr. Priti Vasava
M.B.B.S, D.G.O, Junior Resident, C.U. Shah Medical Collage, Surendranagar, Gujarat, India

Dr. Bipin R Shah
M.D., Professor of Obstetrics & Gynecology (H.O.U), C.U. Shah Medical Collage, Surendranagar, Gujarat, India

DR. Bhavesh Airao
M.D., Professor of Head of Department Obstetrics & Gynecology. C.U. Shah Medical Collage, Surendranagar, Gujarat, India

Corresponding Author:
Dr. Priti Vasava
M.B.B.S, D.G.O, Junior Resident, C.U. Shah Medical Collage, Surendranagar, Gujarat, India

A study of risk factors and its impact on fetomaternal outcome in prelabour rupture of membranes

Dr. Priti Vasava, Dr. Bipin R Shah and DR. Bhavesh Airao

DOI: https://doi.org/10.33545/gynae.2021.v5.i5d.1041

Abstract
Premature rupture of membranes refers to rupture of fetal membranes at least one hour prior to the onset of labour, It is also referred to us Prelabor PROM. It can eiher occur ar trem (>37 weeks) or preterm (37<weeks). Prolonged PROM refers to PROM greater than 24 hours and is associated with an increased risk of ascending infection. Premature rupture of membranes that occurs before 24 weeks is called Midtrimester or Previable PROM. Patient of prom present with leakage of fluid, vaginal discharge and prelvic pressure, but they are not having contractions it can lead to significant morbidity, Including respiratory syndrome, neonatal sepsis, umbilical cord prolapse, placental abruption and fetal death appropriate evaluation and management are important for improving neonatal outcome.

Materials and Methods: This Present Prospective study was conducted in the department obstetrics and gynecology C.U. Shah medical college and hospital over a period from 2018 to 2019 among the patients diagnosed as premature rupture of membranes with woman complains of leaking attending antenatal OPD and antenatal admission detailed history was taken. Per abdomen, per speculum, per vaginal examination were carried out and investing were done as per the protocol. As per investigations maternal and fetal outcome were noted.

Result: More number of unbooked cases were found in study in comparision to controlled group. Most women in the age group of 20-25 years. The main identifiable risk factors in present study were previous history of prom and tobacco chewing and amniotic fluid was decreases in majority of the patients. Incidence of pre PROM were more than that of term PROM. Better fetal outcome was associated with term gestation age. Higher of maternal complications were found among the PROM.

Conclusion: Prom is a significant Obstetrics complication in 5 to 10% of all pregnancies. Antenatal diagnose is of preterm prom by identifying risk factors is imp tool in management of preterm prom and its early recognition of prom and its associated complications and appropriate management helps in reducing the maternal and neonatal morbidity.

Keywords: Fetomaternal outcome, risk factors, PROM, pregnancy

Introduction

Premature rupture of membranes refers to rupture of detal membranes at least one hour prior to the onset of labour. It is also referred to us Prelabor PROM. It can either occur at term (>37 weeks) or preterm (37 < weeks). Prolonged PROM refers to PROM greater than 24 hours and is associated with an increased risk of ascending infection. Premature rupture of membranes that occurs before 24 weeks is called Midtrimester or Previable PROM.

At Term, PROM Complicates approximately 8% of Pregnancies and is generally followed by prompt onset of spontaneous labour and delivery. In a large randomized trial, one half of women with PROM who were managed expectantly gave birth within 5 hours and 95% gave birth within 28 hours of membrane rupture. The most significant maternal consequence of term PROM is intrauterine infection, the risk of which increases with the duration of membrane rupture. Regardless of obstetric management or clinical presentation, birth within 1 week of membrane rupture occurs in at least one half of patients with preterm PROM. Latency after membrane rupture is inversely correlated with the gestational age at membrane rupture. Cessation of amnionic fluid leakage with restoration of normal amnionic fluid volume may occur in the setting of spontaneous preterm PROM and is associated with favorable outcomes. Among women with Preterm PROM, clinically evident intramnionic infection occurs in 15-25% and postpartum infection occurs in approximately 15-20% patients. The incidence of infection is higher at earlier gestational ages. Abruptio placentae complicates 2-5% of pregnancies with preterm PROM.

The most significant risks to the fetus after preterm PROM are complications of prematurity distress has been reported to be the most common complications of preterm birth. Sepsis, Intraventricular hemorrhage and necrotizing enterocolitis also are associated with ore maturity, but these are less common near to term. Preterm PROM with intrauterine inflammation has been associated with an increased risk of neuro developmental impairment and early gestational age at membrane rupture also has been associated with an increased risk of neonatal white matter damage. However, there is no data that suggests that immediate delivery after presentation with PROM will avert these risks. Infection and umbilical card accident contribute to the 1-2% risk of antenatal fetal demise after preterm PROM.

Methods

The present prospective study was conducted in the department of obstetrics and gynecology c. u. shah medical collage over a period of 2019 to 2020 among the patients diagnosed as premature rupture of membranes with women complains of leaking attending antenatal OPD and antenatal word. This study was approved by ethical committee. All 60 case of patients coming with history of premature rupture of membranes before onset of labour pains were taken.

Inclusion criteria

All confirmed cases of prom more than 28 weeks.

Exclusion criteria

Bleeding P/V, intact Membranes less than 28 weeks of gestation age any complications other than prom that effects fetal and neonatal outcome angiography and parathyroid and adrenal diseases hepatic and renal failure malabsorption.

All the patients coming with history of premature rupture of membranes before onset of labor pains were admitted to labour room. A detailed history was taken. Age, Parity, Menstrual and obstetric a detailed history with emphasis on exact time of rupture, duration, amount of leaking and association of pain and history of previous similar episodes in other pregnancies were evaluated. Detailed history regarding recent coitus, severe physial exertion, chronic coughing, trauma and vaginal examinations pulse, BP and temperature were noted followed by systemic examination. In Obstetric examination, fundal height, presentation, position, lie of fetus and amount of liquor were noted.

All parameters of maternal and fetal well-being were recorded. A sterile speculum examination was conducted and presence of liquor amnii was noted. When frank leaking was present the liquor was examined for presence or absence of meconium. When no amnionic fluid was seen in the vagina, patient was asked to cough and per speculum done to see the drainage of amnionic fluid or pooling of fluid in posterior fornix. In case of doubt, fluid from avagina was collected on slide examined under microscope for ferning. A single pelvic examination was done to note the bishop's Score presence or absence of membranes, presenting part and its station and to rule out cord prolapse and to perform pelvic assessment. All patients with leaking received prophylactic antibiotics in the form of 1 g Ceftriaxone 12 hourly. Thereafter the patient was monitored for signs of infections, including maternal or fetal distress.

A one hourly monitoring of pulse, BP temperature, presence or absence of contractions was done. Fetal heart rate was recorded every 1/2 hourly.

Table 1: Distribution of Cases according to booking status

ANC	No of Patients	Percentage
Booked	23	38.3%
Un Booked	37	61.6%
Total	60	

61.6% of cases with PROM were unhooked. This indicates the importance of identification of high risk groups and provision of appropriate health services and counselling to decrease the incidence of PROM.

Table 2: Distribution of Cases according to age in Year

Age group (Years)	No of Patients	Percentage
<20	4	6.6%
21-25	27	45%
26-30	23	38.3%
>30	6	10%
Total	60	

For this study the cases were selected from all groups. Maternal age group between 21-25 Years was the most common age group, which is the most common child-bearing age group of the patients that visit our hospital. In our study, 45% of cases were grouped between to 21-25 years.

Table 3: Gestational age-wise Distribution

Gestational Age (Years)	No of Patients	Percentage
$28\text{-}31^{+6}$	29	48.3%
$32\text{-}36^{+6}$	24	40%
>37	7	11.6%
Total	60	

Table 4: Distribution according to amniotic fluid volume in relation with prom

Amnionic Fluid Volume	AFI	Number	Percentage
Adequate	>8	18	30%
Just Adequate	6-7	4	6.6%
Increased	>25	1	1.6%
Reduced	<6	31	51.6%
Practically Nil	1-2	6	10%
Total		60	

This table show that 51.6% AND 10% patients with history of prom presented with reduced and practically nil amniotic fluid volume, respectively, there by leading to prompt induction of labour of caesarean section, in turn leading to varying degrees of fetal distress and nicu admissions.

Table 5: Distribution according to risk factors in relation to prom

Risk Factors	No of Patients	Percentage
Previous history of PROM	15	25%
Idiopathic	13	21.6%
Tobacco Chewing	11	18.3%
Hypertensive Disorders	5	8.3%
H/O Acute or Chronicle Infections	5	8.3%
Hypothyroidism	2	3.3%
Multiple Pregnancy	2	3.3%
Polyhydramnios	1	1.6%
Smoking	2	3.3%
Drugs	3	5%
H/O Trauma	-	-
Diabetes Mellitus	1	1.6%

Table 6: Distribution according to onset of labour

PROM-onset of labor interval	No of Patients	Percentage
<24	44	73.3%
24-72	4	6.6%
>72	2	3.3%
No Trial	10	16.6%
Total	60	

Table 7: Distribution according to mode of delivery

Mode of Delivery		No of Patients	Percentage
Vaginal Vertex		36	60%
Vaginal Breech (assistend)		6	10%
Instrumental		-	-
Total Caesarean	Primary	10	30%
	Emergency	8	
Total		60	

In this study majority pf patients with prom underwent a normal vaginal delivery (60%).the caesarean rate was 30% which was almost equal to the rate of the hospital.

Table 8: Distribution according to maturity of neonates

Maturity	Number	Percentage
Term(>_37 week)	28	46.6%
Late Preterm (34-36 weeks)	19	31.6%
Preterm (28-33 weeks)	13	21.6%
TOTAL	60	30%

Table 9: Distribution according to nicu admission

Gestational age	NICU admission	No of Patient	Percentage
Term PROM	5	28	17.8%
Preterm PROM	15	32	46.8%
Total	20	60	

Table 10: Distribution according to maternal morbidity

Complications	Number	Percentage
Uneventful Postpartum Period	45	75%
Puerperal Pyrexia	4	6.6%
Anemia	3	5%
Sub involution	-	-
Abruptio Placentae	2	3.3%
Wound gape	3	5%
Chorioamnionitis	2	3.3%
Postpartum hemorrhage	1	1.6%
Maternal Mortality	-	-
Total	60	

In this study as the incidence of prom was more than term prom. Majorities of babies were delivered preterm, a total of 46.6%, consequently leading to more nicu.

In this study in 21% cases no significant risk factors could be identified. The most common factor was a previous history of prom amounting 25% of cases were complicated with hypertensive disorders of pregnancy while in 18.3% cases history of tobacco chewing was elicited. However in many cases multiple risk factors were found coexist.

The better fetal outcome was associated with term gestation age. Higher the chances of maternal complications were found among mothers with prom.

Discussion

The present study can be summarized as follows:

45% of the patients were in the age group of 21-25 years which is the most common child-bearing age group. The mean age was 25.6 years. Most of the patients in the study had not taken antenatal visits (61.6%) and were unavailable for long term follow up or did not provide informed consent for expectant management of preterm PROM. 50% patients in the study were nulliparous. The main identifiable risk factors in present study were previous history of PROM (25%) and tobacco chewing (18.3%). In 21.6% patients, no attributable risk factor could be recognized. The diagnosis of PROM was confirmed in 95% cases with visual inspection and the doubtful cases were further Subjected to fern test. Amnionic fluid volume was naturally reduced in majority of patients (51.6%), prompting augmentation or induction of labor.

The incidence of preterm PROM in this study was 53% and that of term PROM was 47%. 73.3% patients developed labor pains within 24 hours of leaking, either spontaneously or by induction. In 16.6% patients, no trial of labor was given and they were taken up for caesarean section 60% patients delivered normally. The total caesarean section rate was 30% which was almost equal to the caesarean rate of the hospital. The rate of caesarean section in induced patients was more than those with spontaneous onset of labor pains, 25% and 6.8% respectively, the primary causes being fetal distress (22.03%) and non-progress of labor (13.5%). 85% patients of PROM were delivered within 24 hours, either vaginally or by caesarean sections. Based on maturity-wise distribution of the neonates, majority of cases in the study were those of preterm PROM i.e. 46.6%, consequently leading to a heavy burden of NICU admissions in the study. The rate of NICU admission in term PROM cases was 17.8% while that in preterm PROM was 46.8%. With increasing gestational age, there was a marked reduction in perinatal mortality; 37.5% in the 28-31+6 gestational age group as against 7.14% in term patients. Maximum maternal morbidity associated with PROM was observed in the form of puerperal pyrexia (6.6%). Only 3.3% patients suffered from clinical chorioamnionitis and recovered completely with antibiotic coverage. Also, the incidence of puerperal pyrexia and chorioamnionitis was more in cases with prolonged PROM. However, in majority of patients, with timely intervention and appropriate management, postpartum period was uneventful. With increase in PROM-delivery interval, the incidence of puerperal pyrexia and chorioamnionitis raised from 17.6 to 33.3% and 2.9 to 50%, respectively. Considering expectant versus active management of preterm PROM, even with the risk of chorioamnionitis, there was a definite advantage of neonatal survival. As compared to the perinatal mortality rate of 10% in the actively managed group, that in patients expectantly managed was 12%. But such cases were minimal in this study. The patients recovered completely from infection and the neonatal mortality was reduced with expectant management. Our study was also complained to Sweta petal study and Hassan boskabadi *et al.* study. Also revealed almost similar type of study and findings in relation to prom.

Conclusion

PROM is a significant obstetric problem, complicating 5- 10% of all pregnancies, and it poses a huge challenge to the obstetrician who is caught in a dilemma due to the jeopardizing effects of premature rupture of membranes on both maternal and fetal health. Though excellent advances in care of preterm babies may reduce the perinatal morbidity and mortality following PROM, the ultimate solution lies in accurate determination of etiological factors and prevention of rupture of membranes before term, indicating better availability and utilisation of antenatal healthcare services. A combined effort of

obstetrician and neonatologist is necessary. Antenatal diagnosis of preterm PROM by identifying risk factors is an important tool in the management of preterm PROM. Preterm prelabor rupture of membranes has a significant impact on perinatal outcome.

Therefore, early recognition of PROM and its associated complications and appropriate management helps in reducing the maternal and neonatal morbidity.

In managing PPROM, timely use of proper antibiotics, steroids and induction or augmentation of labor reduce hospital stay and ultimately reduce perinatal and maternal complications. However, it also calls for the need to choose between conservative and active management to balance between maternal and neonatal morbidity.

For women with PROM at 37 0/7 weeks of gestation or more, if spontaneous labor does not occur at the time of presentation in those who do not have contraindications to labor, labor should be induced. A timely caesarean section even without induction of labor is associated with a good perinatal outcome.

Acknowledgement

Authors are thankful to all faculty and technical staff members of the department of obstetrics and gynecology C.U. shah medical collage Surendranagar Gujarat India, for their immense cooperation and support during the entire study period.

Funding: no funding sources

Conflict of interest: none declared

Ethical approval: the study was approved by institute of ethical committee.

References

1. American College of Obstetricians and Gynecologists, Practice Bulletin number 160, Premature Rupture of membranes 2016.
2. American College of Obstetricians and Gynecologists, Practice Bulletin number 139, Premature Rupture of membranes 2013.
3. Induction of labor compared with expectant management for prelabor rupture of the membranes at term; Mary E. Hannah, M.D.C.M., Arne Ohlsson, M.D., Dan Farine, M.D *et al.* for The Term Prom Study Group, New England Journal of Medicine 1996, 334(16).
4. Maternal and Fetal Outcome in Premature Rupture of Membranes, Shweta P, Vikram P.IOSR-JDMS, Dec 2014, 56-83 Hassan Boskabadi, Gholamani Maamonei, Shahin MaFinejad. Macedonian Journal of Medical Sciences 2011;4(1):93-98.
5. F-Nili AA, Shams Ansari. Neonatal complications of premature rupture of membranes. Aeta Medica Irania 2003;41(3):176.
6. Edward Newton R. Clinical Perinatology 2005;32:571-600.
7. Varner MW, Galask RP. Conservative management of premature rupture of membranes. Am J Obstet Gynecol 1981;140:39.
8. Patel O, Pradhan S, Meher Metal. C-reactive protein in premature rupture of membrane with respect to fetomaternal outcome. J Evid. Based Med. Healthc 2017;4(58):3490-3495.
9. Gaikwad BH, Maskar RP. Study of maternal and perinatal outcome in premature rupture of membrane at term pregnancy. J Evolution Med. Dent. Sci 2016;5(37):2226-2228.
10. Premature Rupture of Membranes Characteristics, Determinants, and Outcomes of in Benghazi, Libya, Milad M.M. Gahwagi, Musa O. Busarira, Mona Atia. Open Journal of Obstetrics and Gynecology 2015;5:494-504.
11. Kenyon S, Boulvin M, Neilson J. Antibiotics for premature rupture of membranes: A systemic review. Oracle Study. Obstet and Gynecol 2004;104(5):1051-7. Aktar MS, Degan JS, Aktar UA, D Sharam.
12. PROM. Study of 300 cases and review of literature. J Obstet & Gynecol of India 1980;30:81.
13. Diagnosis of Premature Rupture of Membranes, Amira El-Messidi, MD, J Obstet Gynaecol Can 2010;32(6):561-569.
14. Kappy Kenneth A, Cetrulo Curtis, Robert LK. A premature rupture of membranes. A conservative approach. Am J Obstet Gynecol 1979;134(6):655-661.
15. Gunn GC, Mishell DR, Morton DG. Premature of membranes, a review: Am J Obstet Gynec 1970;106:469.
16. Friedman ML, McElin TW. Diagnosis of ruptured fetal membranes. Am J Obstet Gynecol 1969;104:545-550.
17. Bourne *et al.* Management of premature rupture of membranes. Obstet and Gynecol 1976;153:37-40. Russell KP, Anderson GVT.
18. The aggressive management of ruptured membranes. Am J Obstet Gynecol 1962;83:930-1962.
19. Artal K, Sokal RJ, Neuman M, Burstein AH, Stojkor J. The mechanical properties of prematurely and non- prematurely ruptured membranes. Am J Obstet Gynecol 1976;125:655-659.
20. Akhter S, Rashid M, Akter R *et al*. Journal of Bangladesh College of Physician Singoel 2010;28:1.
21. Newton ER, Prithoda TJ, Gibbs RS. Logistic regression analysis of risk factors for intra- amnionic infection. Obstet Gynecol 1984;73:571-5.
22. Danforth DN *et al*. Am J Obstet Gynecl 1953;65:480.
23. Charles PJ, Muriel R, Charles PJ, Reni E, Olivienc, Pascal G *et al*. A prospective population bared study of 598 cams of PROM, description, management and mortality. Eur J Obstet Gynecol Reprod Boil 2005;121:164-70.
24. Perkins RP. Neonatal significance of selected perinatal events among Infant of LBW-II. The influence of ruptured membranes. Am J Obst Gynec 1982;142:7.