FETOMATERNAL OUTCOME OF PREGNANCY COMPLICATED BY PRETERM PREMATURE RUPTURE OF MEMBRANES

Shazia Tabassum, Sadia Shamsher, Bushra Rauf, Rabeea Sadaf, Iqbal Begum

ABSTRACT

Objective: To study the fetomaternal outcome of pregnancy complicated by preterm premature rupture of membranes.

Methods: This prospective observational study was conducted in the Department of Obstetrics and Gynecology, Hayatabad Medical Complex, Peshawar a tertiary care hospital in Peshawar, Khyber Pakhtunkhwa, Pakistan from 1st January 2016 to 31st December 2016. A total of 138 patients were studied after fulfilling inclusion and exclusion criteria. Booking status was assessed .Maternal outcome was assessed. Fetal outcome was assessed in relation to latency period, gestational age at delivery and birth weight of the baby.

Results: Among 138 patients 16 cases were booked and 122 were unbooked. Chorioamnionitis (CA) was found in 23.91%, abruption 3.62%, retained placenta 4.34%, PPH 2.17% and endometritis in 5.07% in case of early PPROM, while in late PPROM the incidence of CA was 6.52%, abruption and retained placenta 0%, PPH 1.44% and endometritis 5.79%. Neonatal sepsis was found in 15.94%, RDS 38.40% and physiological jaundice in 26.08% in case of early PPROM, while in late PPROM the incidences were 6.25%,10.86% and 17.39% respectively.

Conclusion: In our study majority of the patients were unbooked. Chorioamnionitis was the commonest maternal morbidity both in early and late PPROM. RDS was commonest fetal complication followed by physiological jaundice and neonatal sepsis.

Key Words: PPROM, maternal morbidity, fetal morbidity and mortality.

INTRODUCTION

The normal development, structural integrity and function of the fetal membranes are essential for the normal progress and outcome of pregnancy. One of the most important function of the membranes is to remain intact until the onset of labour at term in order to maintain the protective intra uterine fluid environment, the amniotic fluid upon which fetus depends for its survival in utero[1].

PROM is defined as the rupture of fetal membranes before the onset of labour[2]. While PPROM is the rupture of fetal membranes before 37 completed weeks of gestation and before the onset of labour[3]. PROM/ PPROM most commonly presents as a gush of fluid from the vagina, which is followed by constant wetting[4]. PPROM occurs in 3% of all pregnancies and is responsible for approximately 30% of all preterm deliveries[5]. In contrast to the "natural" phenomenon occurring at term PPROM usually has pathological origin. Ascending infection appears to be one of the major causes. Other causes include APH, smoking and low socio economic status[6].

Department of Gynae and Obstetric Hayatabad Medical Complex, Peshawar

Address for correspondence:
Dr. Shazia Tabassum
Department of Obstetrics and Gynecology, MTI Hayatabad Medical Complex, Peshawar, KPK
Email: shaziakhattak85@gmail.com

PPROM can lead to significant perinatal morbidity including prematurity, RDS, neonatal sepsis, cord prolapse and even fetal death[7-8]. PPROM is also associated with maternal morbidity including chorioamnionitis, placental abruption, dysfunctional labour, increase rates of induction of labour and its associated risks, increase rates of C/S, retained placenta, PPH and endometritis[9].

The most frequent consequence of PPROM is PTD with some 50% delivering within a week,75% within 2 weeks and 85% within one month[10]. Latency period is the time interval between the rupture of membranes and the onset of uterine contractions[10].

Prolonged PPROM is the rupture of membranes for more than 18 hours10. There appears to be an inverse relationship between gestational age at PPROM and latency period with a shorter interval between membranes rupture and preterm labour at later gestational ages[10].

Maternal risk of CA is directly related to the duration of latency period, the greater the latency period the more the risk. Similarly postnatal survival following PPROM is directly related to gestational age at delivery and fetal birth weight[10]. In planning the management of PPROM, several issues need to be considered. Prematurity is the principal risk to the fetus while infectious morbidity is the primary maternal risk[10]. Despite the fetomaternal risks associated with PPROM there is evidence that intentional delivery prior to 34 weeks of gestation does not reduce maternal or neonatal morbidity and may be associated with additional risks to the

fetus[11]. Management of PPROM between 34 -37 weeks is controversial between inductions of labour and expectant management. The recent large randomized trial specifically addressed this issue.The Dutch PPROMXEMIC (PPROM Expectant Management versus IOL) trial group failed to show a reduction in adverse neonatal outcome following IOL versus expectant management between 34 -37 week gestation[12].

MATERIALS AND METHODS

This prospective observational study was conducted in the department of Obstetrics and Gynecology, Hayatabad Medical Complex, a tertiary care hospital in Peshawar, Khyber Pakhtunkhwa, Pakistan from 1st January to 31stDecember 2016. A total of 138 patients complaining of leaking per vagina who were diagnosed as cases of PPROM were studied after fulfilling inclusion and exclusion criteria.

Inclusion criteria:

All pregnant women having singleton pregnancy and having POG between 28 to 36+6 weeks with diagnosis of PPROM.

Exclusion criteria:

- Gestation less than 28weeks and more than 36+6 weeks.
- Multiple pregnancy
- Congenital anomalies
- Polyhydramnios
- Associated medical disorders like diabetes, chronic hypertension, cardiac, renal disease etc
- Obstetrical complication other than PPROM like APH, Pre eclampsia etc.

All patients who presented to labour room or antenatal OPD with p/v leak diagnosed as cases of PPROM were admitted.

On admission detailed history was taken. Special consideration was given to last menstrual period for calculating exact POG. In case of unsure of dates obstetrical u/s done within 20 weeks were reviewed. Other parameters noted were age, parity, booking status, time of onset of leaking, amount, color, odor, associated pain, bleeding and perception of fetal movements. In GPE special emphasis was given to pulse and temperature besides routine examination.

In obstetrical examination following were noted: SFH, Lie, P/P, LV, EFW, FHS, uterine tenderness and uterine contractions. Then sterile speculum examination was performed and amniotic fluid pooling in the posterior fornix was noted down. The colour and smell of fluid and cervical status was noted,its dilatation and effacement, any meconium, bleeding was also noted and cord prolapse was excluded as well. HVS was taken and sent for culture and sensitivity. Both baseline and specific investigations were performed like blood group with Rh factor, TLC/DLC, urine R/E, RBS and HBsAg/ Anti HCV. Specific investigations included CRP, HVS already taken and sent. Fetal tests included obstetrical U/S for biometry, AFI, EFW, placental localization, B.P.P and CTG. In the absence of any indication for delivery (no p/v bleeding, meconium, labour, chorioamnionitis or fetal compromise), patients were put on conservative management to prolong the pregnancy as close to term as possible to prevent the baby from the effects of prematurity and not yet compromising maternal health.

This was achieved by doing strict fetomaternal monitoring for detecting chorioamnionitis and ensuring fetal wellbeing. For this, patients were put on pulse and temperature record 4 hourly, assessing uterine tenderness 12 hourly, inspection of saved pads for change in color and foul smell 12 hourly. TLC and DLC were done on alternate days.

The diagnosis of clinical CA was based on the presence of maternal pyrexia (37.8°C or 100.4°F) and two or more of the following: maternal tachycardia >100 bpm, fetal tachycardia >160bpm, uterine tenderness, foul smelling vaginal discharge or CRP >5mg /dl. Fetal monitoring included daily KCC, weekly obstetrical U/S and B.P.P for assessing liquor and ensuring fetal wellbeing.

Steroid cover was given for fetal lung maturity and broad spectrum I/V antibiotics were given to all patients. Conservative management was abandoned and delivery was planned in the presence of chorioamnionitis, abruption, fetal distress, cord prolapsed or active labour. Patients were kept admitted till delivery and were monitored in the intrapartum period for retained placenta and in the postnatal period for PPH and endometritis till discharge.

Neonates were monitored for sepsis, RDS and physiological jaundice and other complications of prematurity. They were admitted in NICU for close monitoring and further management and were followed till discharged. Total 138 cases were studied. The following parameters were studied, booking status, maternal morbidity, fetal morbidity and mortality, perinatal morbidity and mortality in relation to latency period, gestational age at delivery and fetal birth weight. All the relevant data was entered into a predesigned Proforma and data was analyzed on SPSS version 19.

RESULTS

In this study 138 cases in total with PPROM were evaluated for feto-maternal outcome. Out of all, 16 cases 11.59% were booked and 122 cases 88.40% were unbooked as shown in Table 1. In our study out of 138 patients 36 cases 26.08% presented with early PPROM and 102 cases 73.92% presented with late PPROM as shown in Table 2.

Table 1: Analysis of PPROM according to booking status of the patients

Booking status	No. of patients	%age
Booked	16	11.59%
Unbooked	122	88.40%

Table 2: Distribution of PPROM into early (28 to 33+6weeks) and late PPROM (33+6 to 36+6weeks)

Distribution of PPROM	No. of patients	%age
Early PPROM (28 -33+6 weeks)	36	26.08%
Late PPROM (33+6 to 36+6 weeks)	102	73.92%

Table 3: Distribution of latency period in early and late PPROM

Latency Period	Early PPROM		Late PPROM	
	No. of Patients	%age	No. of Patients	%age
<24hours	50	36.23%	122	86.95%
>24hours	88	63.76%	16	11.59%

Table 4: Analysis of PPROM in relation to maternal morbidity

Maternal Outcome	Early PPROM		Late PPROM	
	No. of Patients	%age	No. of Patients	%age
CA	33	23.91%	09	6.52%
Abruption	05	3.62%	0	0%
Retained placenta	06	4.34%	0	0%
PPH	03	2.17%	02	1.44%
Endome-tritis	07	5.07%	08	5.79%
No compli-cation	84	60.89%	119	86.25%

Table 5: Analysis of PPROM in relation to perinatal morbidity and mortality

Perinatal outcome	Early PPROM		Late PPROM	
	No. of Patients	%age	No. of Patients	%age
RDS	53	38.40%	15	10.86%
Physiologi-cal jaundice	36	26.08%	24	17.39%
Neonatal sepsis	22	15.94%	09	6.52%
Still birth	08	5.79%	02	1.44%
Neonatal death	09	6.52%	03	2.17%
No compli-cation	10	7.24%	85	58.69%

Table 6: Analysis of perinatal morbidity in relation to latency period

Perinatal morbidity	Latency <24 hours		Latency >24 hours	
	Patients	%age	Patients	%age
RDS	53	38.40%	41	29.71%
Neonatal sepsis	17	12.31%	48	34.78%
Physiologi-cal jaundice	68	49.27%	49	35.50%

Table 7: Analysis of perinatal morbidity in relation to gestational age

Gestational age	Latency <24 hours		Latency >24 hours	
	Patients	%age	Patients	%age
28 to 32 +6 weeks	68	49.27%	44	31.88%
33 to 34 +6 weeks	17	12.31%	06	4.34%
35 to 36 +6 weeks	09	6.52%	0	0%

Table 8: Analysis of perinatal morbidityand mortality in relation to fetal birth weight

Fetal birth weight	Perinatal mor-tality %age	Perinatal mor-tality %age
< 1kg	99.27%	97.82%
1 -1.5 kg	86.95%	43.47%
1.6 -2kg	27.53%	14.44%
2.1-2.5kg	11.59%	5.79%
>2.5kg	0%	0%

In our study out of 138 cases 50 patients had latency <24 hours and 88 patients had latency >24 hours in case of early PPROM while in late PPROM 122 patients had latency <24 hours and 16 patients had latency >24 hours as shown in Table 3. In our study commonest maternal morbidity was CA, the incidence of which was 23.91% in early PPROM and 6.25% in late PPROM as shown in Table 4.

In our study commonest fetal morbidity was RDS followed by physiological jaundice and neonatal sepsis as shown in Table 5, the incidence of these complications was more in early PPROM. In our study the incidence of neonatal sepsis was directly related to latency period, the more the latency period the more the risks, while the incidence of RDS and physiological jaundice was inversely related, the more the latency period the less the risk as shown in Table 6.

In our study perinatal morbidity was also directly related to gestational age, the early the PPROM the

more the complications as shown in Table 7. In our study perinatal morbidity and mortality was also related to fetal birth weight as shown in Table 8.

DISCUSSION

We studied 138 cases in total. Among those only 16 cases 11.59% were booked and 122, 88.40% were unbooked. In a study by Tripti Nargaria et al[13], 30.7% cases were booked and 69.3% were unbooked. Similarly in a study by Shweta Anant Mohokar et al[1], 16% were booked and 84% were unbooked. In unbooked cases there is lack of antenatal care leading to lack of identification of recurrent risk factors like previous PPROM, PTD etc. Also urogenital infections are not identified and treated on time due to lack of antenatal care leading to PPROM and hence increase fetomaternal morbidity and perinatal mortality[1]. In our study 36 cases 26.08% had early PPROM and 102 cases 73.92% had late PPROM. In a study by Diraviyan JMV et al[9], 23% had early PPROM and 77% had late PPROM.

In our study chorioamnionitis was found in 33 cases 26.08% and 9 cases 6.52% in early PPROM and late PPROM respectively. The incidence of abruption was 3.62% (5 cases), retained placenta 4.34% (6 cases), PPH 2.17% (93 cases) and endometritis 5.07% (7 cases) in case of early PPROM while in late PPROM the incidence of abruption and retained placenta was 0%, PPH 1.44% (2 cases) and endometritis 5.79% (8 cases). Overall maternal morbidity was 16%. In a study by D' Souza AS et al[14], the incidence of CA was 15.7%, abruption 2.6%, retained placenta 15.7% and endometritis 2.6% in case of early PPROM. In late PPROM the incidence of CA was 2.7%, abruption 0%, retained placenta 0% and endometritis 5.4%. In a study by Diraviyan JMV et al[9], chorioamnionitis was present in 18% and abruption 6% in early PPROM while in late PPROM chorioamnionitis was present in 4% but abruption was found in none.

In our study neonatal sepsis was found in 15.94% (22 cases), RDS in 38.40% (52 cases) and physiological jaundice in 26.08% (36 cases) in early PPROM, while in late PPROM, the incidence of neonatal sepsis was 6.52% (9 cases), RDS 10.86% (15 cases) and physiological jaundice 17.39% (24 cases). Overall perinatal morbidity was 35% and mortality was 18%. In our study perinatal morbidity and mortality was directly related to latency period, gestational age at delivery and birth weight. In study by D' Souza AS et al[14], the incidence of neonatal sepsis was 13.6%, physiological jaundice 56.8% in early PPROM. In late PPROM the incidence of neonatal sepsis was 0% and physiological jaundice 69.2%.

CONCLUSION

In our study majority of the patients were unbooked who do not receive proper antenatal care. Majority of the patients presented with late PPROM. In early PPROM majority had latency period > 24 hours while in late PPROM latency period was <24 hours in majority of the cases. Commonest maternal morbidity was chorioamnionitis while other maternal complications were less common in both earl and late PPROM. Commonest fetal morbidity was RDS followed by physiological jaundice and neonatal sepsis. The perinatal morbidity and mortality was directly related to gestational age at birth and birth weight and inversely related to latency period.

REFERENCES

1. ShwetaAnantMohokar et al. Analysis of Maternal and Perinatal Outcome in cases of Preterm Premature Rupture of Membranes.Bombay Hospital Journal, Vol 57,N0 3,2015.
2. Cunningham F,GantF,LevenoJ.WilliamsObstetric 23 Ed.NewYork:McGraw- Hill 2010.
3. Beckmann, Charles(2014).Obstetrics and Gynecology,7e.Philadelphia:Wotters Kluwer Health /Lippincott Williams and Wilkins pp Chapter 17:Premature Rupture of Membranes.2014;169-173.
4. Liu J,Feng ZC, Wu J.The incidence rate of premature rupture of membranes and its influence on fetal-neonatal health:A Report from Mainland China.Journal of tropical pediatrics.2009 Jun 19:fmp 051.
5. Caughey AB, Robinson JN, NorwitzER.Contemporary Diagnosis and Management of Preterm Premature Rupture of Membranes.Rev.Obstet Gynecology 2008;1(1):11-22.PMCID:PMI 2492588.
6. David M Luesley and Mark D.KilbyObstetric and Gynecology. An Evidence-based Text for the MRCOG. Third Edition.2016.
7. FrenetteP,DoddsL,ArmsonBA,JangaurdK.Pretermprelabour rupture of membranes:effect of latency on neonatal and maternal outcome SJ Obstet Gynecology Can.2013 Aug;35(8):710 -7.
8. Acaia B,CrovettoF,Ossola MW, NozzaS,Baffero GM,-Somigliana E et al. Predective factors for neonatal survival in women with pre viable preterm rupture of membranes.J Maternal Fetal Neonatal Med.2013 Nov; (26):1628-34.
9. Diraviyam JMV et al.Int J ReprodContraceptObstet Gynecol.2017 Jun ;6 (6):2498-2502.
10. D.Keith Edmonds.Dewhurts Textbook of Obstetrics and Gynecology.Eight Edition 2012.
11. Al-Mandeel H Alhindi MY, Suave R. Effects of intensional delivery on maternal and neonatal outcome in pregnancy with PPROM between 28-34 weeks of gestation. A systematic review and meta analysis.J Mater Fetal Neonatal Med 2013;26:83-9.
12. Vander Ham DP, Vander Heyden JL, Opmeer BC et al.Management of late PPROM:the PPROMX-EMIL-2;207 :276. e 1 -10.
13. TriptiNargaria et al. A study on fetomaternal outcome in patients with premature rupture of membranes. IntJReprodContraceptObstetGynecolVol 5, issue 12, 2016 :5:4: 4123-7.
14. D' Souza AS et al. Fetomaternal outcome in pregnancy with preterm premature rupture of membranes. Int J ReprodContraceptObstetGynecol .2015 Oct:4 (5):1529 -1533.