Maternal and Fetal Outcome of Pre Labour Rupture of Membranes, A Prospective Study

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ABSTRACT

Introduction: Prelaborrupture of membranes (PROM) is defined as the spontaneous rupture of amniotic membrane with a release of amniotic fluid before the onset of labor. If the membranes rupture after 37 weeks of gestation it is called term PROM and before 37 weeks of gestation is termed as the preterm prelabor rupture of membrane (PPROM).

Material and methods: 100 Cases attending obstetrics and gynaecology opd of Gayatri Vidya Parishad Institute of Health Sciences and Medical Technology, Visakhapatnam, Andhra Pradesh of spontaneous rupture of membranes with gestational age 28-42 WKS were studied and compared with 100 cases of control group from August 2018 To August 2019.

Results: The study shows majority of PROM patients were in age group 20 – 25 years. However no significant correlation was found between age group and occurrence of PROM. 62% were unbooked, there was significant correlation between antenatal care and incidence of PROM in the study group. 56% of the patients with PROM were primigravidae indicating PROM was more common in primigravidae. Unknown (37%), urogenital infections(24%), Recent coitus (14%), breech presentation (9%) and previous h/o PROM (10%), polyhydromnios(6%) were the most common known risk factors found in study group. Higher incidence of caesarean section (27%) were noted in study group of PROM patients. Non reassuring fetal status (29.6%) and h/o previous LSCS (22.2%) were the most common indications for LSCS. E. Coli (48. 9%), commensals (27.6%), peptostreptococci (8. 5%) were the most common potential pathogens isolated from cervix/vagina from patients with PROM. 42% of PROM cases delivered within 13-24hrs. Maternal infectious morbidity (26%) was more common in study group and there was no maternal mortality in the study. Perinatal morbidity was mainly due to RDS, sepsis and hyperbilirubenemia birth asphyxia, Perinatal mortality (8%) was higher in study group 50% of the cases were due to RDS, followed by birth asphyxia (3%), sepsis (1%). Perinatal morbidity (48%) and mortality (8%) is more in the newborn with low birth weight.

Keywords: PROM, Amniotic Fluid, Maternal And Fetal Outcome

INTRODUCTION

Prelaborrupture of membranes (PROM) is defined as the spontaneous rupture of amniotic membrane with a release of amniotic fluid before the onset of labor. If the membranes rupture after 37 weeks of gestation it is called term PROM and before 37 weeks of gestation is termed as the preterm prelabor rupture of membrane (PPROM). Incidence in literature from 3-18. 5% varies widely (Gunn et al 1970).[10] PROM is a complication in approximately one-third of preterm births. This is a leading cause of preterm birth, perinatal morbidity and has a tremendous socio-economic impact worldwide. The management of a case of prelaborrupture of membranes (PROM) has remained as one of the most difficult and controversial problems in obstetrics over the past several decades. Mean while incidence has remained unabated and is still responsible for large number of neonatal mortality. The preventive treatment awaits further elucidation ofetiology, which is uncertain. The present study is undertaken to identify risk factors causing PROM and to study labor outcome, maternal morbidity and perinatal morbidity and mortality associated with PROM.

MATERIAL AND METHODS

100 Cases attending obstetrics and gynaecology opd of Gayatri Vidya Parishad Institute of Health Sciences and Medical Technology, Visakhapatnam, Andhra Pradesh of spontaneous rupture of membranes with gestational age 28-42 WKS were studied and compared with 100 cases of control group from august 2018 to august 2019.

Inclusion Criteria: Gestation age group 28-42 wks, Primigravida/multigravida, Singleton / Twin pregnancy, Malpresentations, Polyhydramnios, Confirmation of PROM by a speculum examination

Exclusion Criteria: Cases of APH, Congenital anomalies / IUD, preeclampsia/eclampsia/GDM

Methodology: Number of cases for study– 100 and control group – 100. Patients with history of prelabor rupture of membranes before onset of labor pains were admitted to labor room. A detailed history was taken and general examination, vitals, systemic examination done. A thorough obstetric examination was done. All parameters of maternal and fetal well being were recorded. A sterile speculum examination was conducted, presence of liquor amni was noted, when

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no amniotic fluid was seen in the vagina patient was asked to cough, to see drainage of amniotic fluid. For diagnosis of chorioamnionitis, clinical criteria (i. e. maternal pulse and temperature, fetal tachycardia, uterine irritability and tenderness) were used. Amniotic fluid culture (by cervical swab) were sent in suspected cases. All study cases were given prophylactic antibiotic. Single pelvic examination was done to note the presence or absence of membrane, presenting part and its station. A 4th hrly record of vitals and presence of absence of contractions were noted The variables were studied and compared. Labor outcome in study as well as control group were noted.

RESULTS

Majority of the patients in both groups belonged to 21 – 25 years with mean age of 23.0 ± 3.5 and 23.4 ± 2.9 in PROM patients and control groups respectively. PROM is more common in lower socio economic status, more common among unbooked cases that is 62%. Most common the cause for PROM is unknown. Non reassuring fetal heart rate is common indication for LSCS, followed by previous lscs with prom(22.2%), failure to progress and failed induction(both 11.1%, prolonged second stage(7.4%), cord prolapse(3.7%), complete breech(7.4%), CPD(3.7%), twins(3.7%). E.

Coli was the most common pathogen isolated (48.9%) followed by commensals (27.6%), peptostreptococci (8. 55), coagulase negative staphylococci(4.2%), candida (6.3%,) no growth(4. 2%). Maternal morbidity was higher (26%) in cases of PROM compared to that in controls (2%) where morbidity amounting to puerperalpyrexia(13%), chorioamnionitis (08%), wound infection(02%), UTI(01%), abruptio placenta(02%) and there was no maternal deaths in this study. In perinatal morbidity most common complication is hyperbilirubinemia (19%), followed by sepsis (9%), RDS (4%), necrotizing enterocolitis (2%), retinopathy of prematurity(1%), hypoxic ischemic encephalopathy(6%), intraventricular hemorrhage (1%), birth asphyxia(6%). In perinatal mortality majority cases were respiratory distress syndrome (4%), sepsis (9%), birth asphyxia (3%).

DISCUSSION

Obstetricians from the very ancient days, were of the opinion that prelabor rupture of membranes can cause maternal complications, increased operative procedures and neonatal morbidity and mortality. Increasing the obstetricians trouble is the fact that much of the literature available pertains to the studies in developed countries where better neonatal care, strict asepsis is followed and appropriate antibiotics are

Parameter		Study Group/%	Control Group/%	Majority
1) Maternal age	-Upto 20yrs	34/34%	23/23%	
	-21-25yrs	46/46%	53/53%	21-25yrs
	-25-35yrs	11/11%	13/13%	
	31-35yrs	9/9%	11/11%	
2) Socioeconomic Status	-upper	12/12%	22/22%	
	-middle	30/30%	41/41%	
	-lower	58/58%	37/37%	lower
3) Booked/unbooked	Booked	38/38%	83/83%	
	Unbooked	62/62%	17/17%	unbooked
4) Primi/multigravida	primigravida	56/56%	36/36%	primigravida
	Multigravida	45/45%	64/64%	
5) Riskfactors	Unknown	37/37%		unknown
	Breech	9/9%	2/2%	
	h/orecent coitus	14/14%	4/4%	
	Prev h/o PROM	10/10%	1/1%	
	polyhydromnios	6/6%		
	Urogenital infections	24/24%	6/6%	
6) Mode of delivery	Term vaginal delivery	38/38%		
	Assisted breech delivery	5/5%		
	Outlet forceps or vaccum application	10/10%		
	LSCS	27/27%		Majority land up in LSCS
7) Investigation for evidence of infection	Cervical swab positive	11/11%		Most common pathogen is E. coli
	CRP positive	12/12%		
	TC>12, 000	24/24%		
8) PROM to delivery interval	>12hrs	28/28%		
	13-24hrs	42/42%		Majority in 13-24 hrs
	25-48hrs	17/17%		
	>48hrs	13/13%		

used when necessary. In developing countries like INDIA, incidence of perinatal morbidities is still higher especially in resource poor settings. So appropriate trials/studies are needed in order to know the etiology, clinical course of PROM in developing countries as it is becoming common now a days. The present study was done in GVP institute of health sciences and medical technology, Visakhapatnam, andhrapradesh from august 2018 to august 2019. 100 cases of PROM are studied in comparison to 100 cases of controls(no rupture of membranes. The present study was undertaken to identify risk factors causing prelabor rupture of membranes and to study labor outcome, maternal morbidity and perinatal morbidity and mortality associated with PROM. For this study the cases were selected from all the age groups. Maximum percentage of PROM cases are from 21-25yrs of age amounting to 46%. While 34% are up to 20yrs age, 11% are of 25-30yrs age, 9% are of 31-35yrs age. These findings correlated with studies age range of 16 – 41 years and the mean age was 25 years. The lower common age group in this study is probably due to early marriages and pregnancy in our country. According to socio-economic status, the maximum number of patients are of low socioeconomic status amounting to 58% and middle socioeconomic status were 30%. This is comparable with the study by Swathi Pandey[1] which shows 61% of lower socioeconomic status, and 39% of middle socio economic status. respectively. Studies have shown that defects in the amniotic membranes occur due to low socio-economic status associated with factors like malnutrition, over exertion, poor hygiene, stress, high parity, recurrent genitourinary infection and anemia. This study showing more cases in lower socio economic groupis also in correlation with study done by Murali Paul Kannan et al (2003)[3] who identified risk factors like age below 20 years, inadequate ante natal care, low socio-economic status, illiteracy, non vertex presentation, operative deliveries, presence of fetal distress for PROM.

PROM in relation to Antenatal care, shows 38% were booked cases, 62% were unbooked, is comparable with the study by Anjana Devi which shows higher incidence of PROM in unbooked cases as 52%. In unbooked cases there is lack of antenatal care leading to lack of identification of recurrent risk factors like PROM, preterm delivery, induced abortions and their managements, unidentified urogenital infections.

Risk factors in relation to PROM: Study shows most common known risk factors were unknown(37%), urogenital infections(24%), h/o recent coitus (14%) malpresentations (breech) 9% and previous h/o PROM 10%, these factor were also present in control group but to lesser percentage Increased incidence of PROM is noted in breech presentation as the ball valve mechanism of presenting part is defective leading to transmission of intrauterine pressure to bag of membranes below presenting part leading to rupture. This study is in accordance to the study of Tounson(1966) where malpresentation and malposition have been thought to be the cause of PPROM. In this study 10% of patients with h/o

PROM in previous pregnancy landed in PROM in present pregnancy, A study by Lee and Lee (1985)[10] where 18. 2% of patients gave h/o PROM during their previous pregnancy they stated that genetic factors as well as possible vaginal or cervical infection could be a contributory factor. In this study 14% have h/o recent coitus, this is in accordance to the study done by Singhal(2002) in 100 cases of PROM, where he described 10% of cases have h/o coitus. Also Jayaramet al(2001)[11] analyzed 100 patients with PROM between 32- 40 weeks with respect to risk factors and outcome and found that a lower genital tract infection with associated coital activity was a major risk factor (56%). Caesarean rate was higher (15% vs. 5%). So adequate history of antenatal women is very important to rule out risk factors. Infection has to be ruled out as soon as possible, by laboratory investigations, in order to prevent chorioamnionitis, fetal infection, post partum endometritis. Antibiotics should be started as soon as possible that is intravenous route for 48hrs, and later orally for 5days. By following this infections can be reduced. Analysisof PROM according to mode of delivery, our study vaginal delivery without instruments(57%), outlet forceps and vacuum10% and LSCS 27%which is comparable to the study by Swathi Pandey[1] which shows incidence of LSCS 31% in PROM patients. Analysis of PROM according to indications forlscs-In this study LSCS was done in 27% of the cases, the main indications being non reassuring fetal heart rate29. 6%, previous LSCS with PROM22. 2%, failure to progress and failed induction 11. 1%, each breech 7. 4%, which is comparable to the study by Kamala Jayaram,[11] the indications being failed induction, fetal distress and malpresentation. This high incidence is also in accordance to the study by Singhal P (2002)-49%. The main indications were fetal distress and failed induction. LSCS were more when cervix was unripe and induction was done compared to cases with Bishop score >5. inorder to identify these conditions continuous fetal monitoring is needed either electronically or manually.

Analysis of PROM according to investigations for evidence of infection, and causative organisms: The investigations like total count, C-reactive protein and high vaginal swab for culture and sensitivity were done to evaluate for the evidence of infection The leucocyte count is 23-80% sensitive in the diagnosis of infection (Ohisson-1990). CRP estimates seem to be reliable monitoring tool (Carroll – 1996).[12] But in some detailed studies WBC and CRP were poor predictors of the presence of a positive amniotic fluid or fetal blood culture. In the current study E. coli was the commonest microbe recovered by culture and had an isolation rate of 48. 9% which was also the most common organism isolated in studies bySwathipandey.[1] Gomez et al 1997[2], Goncalveset al 2002[14] described that bacterial invasion facilitates membranes rupture through direct secretion of proteases and also throughstimulation of host inflammatory response resulting in elaboration of local cytokines and prostaglandinsAnalysis of cases according to PROM to delivery interval, Duration of latent period is inversely related to gestational age when

the membranes ruptured (Carroll-1995).[12] In this study 28% delivered within 24 hours, 42% delivered within 48 hours and 30% after 48, –Carroll et al 1995[12] described that the latency period between rupture of membranes and delivery is inversely proportional to gestational age. Hannah et al 1996[6,15] described that at term 95% will deliver with in 24 hrs. Analysis of PROM according to maternal morbidity, As the duration of PROM increases the maternal morbidity also increases. The maternal morbidity in this study was 26% which correlates with the study by Anjana Devi (21%) but low in the study by Swathi Pandey (9%).[1] Risk of intrauterine infection increases with the duration of membrane rupture and with declining gestational age-ACOG 2007. So antibiotics like ampicillin, erythromycin are to be started as soon as possible first intravenousely, later orally for total 7 days. Analysis of a PROM according to perinatal morbidity- In this study perinatal morbidity was48% of which 19% were hyperbilirubinemia, 9% sepsis and 4% RDS. This is high in comparable to the study by Kamala Jayaram[11] where perinatal morbidity was 24%. Yoon et al 1999[14] reported approximately 6-12% of neurological damage in infants due to hypoxia, inflammation, gross prematurity. Analysis of a PROM according to perinatal mortality -In this study, perinatal mortality was 8% of which 4% were due to RDS, 3% were due to birth asphyxia, 1% were due to sepsis. This is comparable to the studies by Cox & Colleagues with perinatal mortality 11. 9% of which sepsis was 3%, RDS 52. 4% and NEC 23.8%. It is also comparable with the study of Swathi Pandey[1] who showed a perinatal mortality of 12%.

CONCLUSION

The study shows majority of PROM patients were in age group 20 – 25 years. However no significant correlation was found between age group and occurrence of PROM. 62% were unbooked, there was significant correlation between antenatal care and incidence of PROM in the study group. 56% of the patients with PROM were primigravidae indicating PROM was more common in primigravidae. Unknown(37%), urogenital infections(24%), Recent coitus (14%), breech presentation (9%) and previous h/o PROM (10%), polyhydromnios(6%) were the most common known risk factors found in study group. Higher incidence of caesarean section (27%) were noted in study group of PROM patients. Non reassuring fetal status (29.6%) and h/o previous LSCS (22.2%) were the most common indications for LSCS. E. Coli (48.9%), commensals (27.6%), peptostreptococci (8.5%) were the most common potential pathogens isolated from cervix/vagina from patients with PROM. 42% of PROM cases delivered within 13-24hrs. Maternal infectious morbidity (26%) was more common in study group and there was no maternal mortality in the studY. Perinatal morbidity was mainly due to RDS, sepsis and hyperbilirubenemia birth asphyxia, Perinatal mortality (8%) was higher in study group 50% of the cases were due to RDS, followed by birth asphyxia (3%), sepsis(1%). Perinatal morbidity (48%) and mortality (8%) is more in the newborn with low birth weight.

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