



An Observational Study of Transvaginal Cervical Length and Amniotic Fluid Index for Prediction of Delivery Latency in Pregnant Women with Preterm Premature Rupture of Membrane (PPROM) In the Department of Obstetrics and Gynaecology at SMS Medical College, Jaipur

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Abstract

Background: Preterm premature rupture of membrane (PPROM) is defined as spontaneous breach in the Chori amniotic membrane before 37 completed weeks and prior to the onset of labour. It complicates approximately 3% of all pregnancies and is responsible for 30-40% of preterm births. The aim of proposed study is to determine role of USG guided transvaginal cervical length (TVCL) and amniotic fluid index (AFI) in prediction of delivery latency period in pregnant women presenting with PPRM between 27week 6days and 33week 6days with singleton pregnancy.

Material & Methods: A hospital based observational cross-sectional study was conducted on 162 Pregnant women with PPRM with gestational age between 27weeks 6days and 33weeks 6days with singleton pregnancy from July 2023 to October 2023. The data was collected by using semi-structured questionnaire and analyzed by excel software and $P \leq 0.05$ was considered significant.

Observations: A total of 162 pregnant women were included in the study. The mean age of the group was 25.87 years with SD of ± 4.06 . Our study shows that PPRM was more common in younger age group and among nulliparous women in the present study. Delivery

latency was found to be inversely proportional to period of gestation at PPRM, which means that shorter the period of gestation, longer the latency period. Furthermore, we found that there was no significant association between GA at delivery, history of PPRM and PTL and CRP at admission and mode of delivery with delivery latency. AFI (>5 cm) is significantly associated with a longer latency period (>7 days) following preterm premature rupture of membranes (PPROM).

Conclusions: From this study we conclude that PPRM was predominantly found in women in their early reproductive years(<25yrs) and was more frequent among nulliparous women. AFI (>5 cm) is significantly associated with a delivery latency (>7 days) following preterm premature rupture of membranes (PPROM). Study suggests that TVCL is fairly reliable, especially in identifying patients unlikely to deliver soon. In contrast, However, the combined use of AFI and TVCL, as a predictive test can improve the accuracy of predicting delivery latency in cases of PPRM.

Keywords: preterm premature rupture of membranes, latency period, transvaginal cervical length, amniotic fluid index, prediction of preterm delivery

Introduction

Preterm premature rupture of membrane (PPROM) is defined as spontaneous breach in the chorioamniotic membrane before 37 completed weeks and prior to the onset of labour¹. It complicates approximately 3% of all pregnancies and is responsible for 30- 40% of preterm births². It is an important risk factor for perinatal mortality and morbidity. Risk factors associated with PPRM include low socioeconomic status, tobacco use, history of preterm labor, genital and urinary tract infection, low body mass index (BMI), short cervical

length, uterine distention (eg:-polyhydramnios, multifetal pregnancy), intrauterine death and iatrogenic invasive procedure (cerclage, amniocentesis, foetal blood sampling).

The major maternal risks are chorioamnionitis (35%), abruption (19%) and septicemia (<1%). Chorioamnionitis is associated with gestational age at which PPRM occurs. Placental abruption is also more common if rupture of membrane occurs prior to 28 week of gestation. Major fetal morbidity is respiratory distress syndrome (RDS), pulmonary hypoplasia, sepsis, intraventricular haemorrhage and neurological injury. Pulmonary hypoplasia is frequent if PPRM occurs before 26 weeks and the latency is prolonged for more than 5 weeks.

Amniotic fluid index is the quantitative method of measurement of amniotic fluid which is most commonly used in clinical practice for determining of delivery latency and is also part of biophysical profile and modified biophysical profile. Maternal abdomen is divided into four quadrants by drawing two perpendicular lines through umbilicus (central point). A vertical line is drawn from xiphisternum (or fundus) to pubic symphysis. A transverse line at 90 degree cuts it at umbilicus. Using ultrasound, vertical depth of the largest pocket is measured in each quadrant avoiding umbilical cord and foetal extremity³

Amniotic fluid index is calculated in centimeters by adding the largest pockets from all the four quadrants. Normal range of AFI is 5 cm to 24 cm. An AFI of 25 cm and above is called hydramnios, while an AFI of < 5 cm is called oligohydramnios.

Cervical length is one of the major determinants of preterm delivery. The risk of preterm birth varies inversely with cervical length measured by

transvaginal/ transabdominal scan at 20-22 weeks.⁴ In some women, a shortened cervical length can be due to natural biological variation. In other cases, early cervical shortening or effacement may be due to haemorrhage or infection leading to inflammation, or due to biophysical effects of uterine overdistension (e.g. multifetal gestation) or subclinical contractions. Using transvaginal ultrasound, a cervical length below the 10th centile for gestational age increased by 6-fold the risk of delivery prior to 35 weeks' gestation⁵.

A cut-off value of cervical length of 25 mm has been used by clinicians and researchers to screen for women at the highest risk of spontaneous preterm birth⁵. Previous researchers have evaluated the use of serial transvaginal ultrasound assessments in predicting preterm birth^{6,7}. Many of these studies, however, evaluated low-risk women or those with symptoms of preterm labor⁸. Trans-vaginal ultrasonography (TVU) CL assessment is the gold standard and preferred screening test for a short cervix. TVU is more sensitive than transabdominal ultrasound.

Latency is defined as the time from the rupture of membranes to delivery. It has been described to be longer if PPRM occurs at an earlier gestational age. Oligohydramnios as a result of PPRM has been found to be associated with shorter latency. Prior studies found that a low(<5cm) amniotic fluid index and shorter cervical length (<2cm) in PPRM is associated with a shorter latency as compared to normal AFI and cervical length⁹. Most pregnancies complicated with PPRM requires hospitalization because spontaneous labour or birth occurs within 1week from the onset of PPRM. The prediction of delivery latency could help direct the need for specific interventions such as hospitalization,

intensive monitoring, appropriate timings of antenatal steroids and magnesium for neuroprotection.

The aim of proposed study is to determine role of USG guided transvaginal cervical length (TVCL) and amniotic fluid index (AFI) in prediction of delivery latency period in pregnant women presenting with PPRM between 27week 6days and 33week 6days with singleton pregnancy. So the Prediction of delivery latency period by trans-vaginal cervical length and amniotic fluid index in women with PPRM can guide better treatment of these women thus help us to improve the foetal and maternal outcome.

Aim

To determine role of USG guided trans-vaginal cervical length (TVCL) and amniotic fluid index (AFI) in prediction of delivery latency period in pregnant women presenting with PPRM between 27week 6days and 33week 6days with singleton pregnancy.

Objectives

Primary Objective: To determine trans-vaginal cervical length, amniotic fluid index and delivery latency in pregnant women with PPRM.

Secondary objective: To find out foetal outcome in terms of APGAR score at birth, NICU admission, birth weight and maternal outcome in terms of chorioamnionitis, aburptio placenta and mode of delivery.

Material and Methodology

This was a hospital-based observational study utilized a prospective longitudinal design. The study was conducted in the Department of Obstetrics and Gynaecology at SMS Medical College, Jaipur, Rajasthan. Sample size was calculated as 147 pregnancies with PPRM as per previous studies shows the sensitivity 73.71 with prevalence of delivery within

7days is 48% for 95% confidence Interval 80% power. Assuming 10% attrition, the sample size will be 162 pregnant patients with PPRM.

The study period commenced in July 2023, with data collection officially starting in October 2023 after obtaining formal approval from the ethics committee; data collection continued until the target sample size was reached, followed by an additional two months dedicated to data analysis and compilation.

The study universe comprised all pregnant women admitted to the labor room at the Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur. Prior to the commencement of the study, necessary permissions and ethical clearance were obtained from the Institutional Review Board and Ethics Committee of SMS Medical College, Jaipur.

The data analysis was done by using statistical software SPSS Inc. continuous variables were expressed as mean and standard deviation while categorical variables was expressed as percentages. The sensitivity, specificity, positive predictive value and accuracy of TVCL, AFI and both to predict delivery latency period were calculated and a p value <0.05 was considered statistically significant.

Inclusion criteria: Pregnant women with PPRM with gestational age between 27weeks 6days and 33weeks 6days with singleton pregnancy. women willing to participate and giving informed and written consent women not participating in other study

Exclusion criteria: Women in labour (painful uterine contraction and cervical dilatation >3cm)

Foetal cause- foetal distress, congenital anomalies, foetal death Antepartum haemorrhage (APH): Abruptio placenta and placenta previa Cervical cerclage Signs of chorioamnionitis.

All pregnant women presenting in the department who full-filled the inclusion and exclusion criteria were explained about the study, an informed and written consent obtained. Socio-demographic data i.e. age, gravidity-parity, socioeconomic status, BMI, residence-urban/rural, smoking, tobacco chewer, supari user or other drug abuse were collected.

A detailed history including obstetrics history, history of preterm birth, dilatation and evacuation, cervical cerclage, past history -asthma, chronic cough, tuberculosis or any other medical or surgical history was taken and they underwent a general physical examination systemic examination, breast examination, per abdominal examination, sterile per speculum examination and per vaginal examination.

Gestational age was calculated by last menstrual period, first trimester scan or both.

All the women underwent USG obstetrics for foetal well-being, gestational age and AFI determination. USG was done by using SAMSUNG SONOACEX-7 machine. Abdominal probe was used for USG obstetrics for foetal wellbeing and AFI is 4-9Hz. The abdomen was divided into four compartment and each of single deepest vertical pocket of amniotic fluid was taken and calculated.

A trans-vaginal USG was performed to determine trans-vaginal cervical length with an empty bladder, TVS probe used to determine TVCL is of 2-5Hz. Cervical measurement was done by placing callipers between external and internal OS. The external cervical OS was identified as point at which anterior and posterior lip of cervix came together and internal OS as point at which cervical mucosa ended.

A sterile per speculum examination was done under all aseptic conditions, presence of amniotic fluid coming

through cervical OS will be observed as present or absent. A litmus paper test was done to determine pH of vagina by placement of litmus paper in the vaginal fluid collected from the posterior vaginal pool, the litmus paper turned blue if the vaginal fluid had alkaline pH and the membranes is probably intact if the colour of the paper remains yellow (pH 5.0- 5.5).

All pregnant women were undergoing basic investigations which includes haemoglobin, total leucocyte count, C-reactive protein, urine routine, microscopy and culture sensitivity.

All women were given prophylactic antibiotics for 48-72hrs (Inj. ceftriaxone 2gm iv stat after AST followed by ceftriaxone 1gm iv 12 hourly). Injection Dexamethasone 6mg i/m 12 hourly 4 doses were given for foetal lung maturity. No tocolytics were given.

The women were observed until they went into spontaneous labour or were induced at 34 completed weeks. The delivery latency duration was noted. If delivery latency duration was longer they were discharged. Women were monitored for signs and symptoms of chorioamnionitis-fever, uterine tenderness, blood investigation including TLC, DLC, CRP were done weekly. Foetal monitoring was done by birth weight, APGAR score, NICU admission and surfactant use.

Statistical Analysis

The data analysis was done by using statistical software SPSS Inc. continuous variables were expressed as mean and standard deviation while categorical variables was expressed as percentages. The sensitivity, specificity, positive predictive value and accuracy of TVCL, AFI and both to predict delivery latency period were calculated and a p value <0.05 was considered statistically significant.

Results

The current study was carried out to assess the Transvaginal Cervical Length and Amniotic Fluid Index for Prediction of Delivery Latency in Pregnant Women with Preterm Premature Rupture of Membrane (PPROM) in The Department of Obstetrics and Gynaecology at SMS Medical College, Jaipur

There were 162 pregnant females with PPRM between 27week 6days and 33week 6days with singleton pregnancy and who met the inclusion criteria were enrolled in the study.

The distribution of cases across different age groups among 162 individuals. It reveals that more than half of the cases (50.61%) occur in individuals younger than 25 years, indicating a marked predominance of younger age in the affected population. The mean age of the group is 25.87 years with a standard deviation of 4.06 years, suggesting that the majority of cases are clustered in the early adult years with relatively little age variability.

The mean BMI of the group is 22.12 with a standard deviation of 1.51, further supporting the observation that most individuals are within the normal weight range.

The distribution of cases according to parity among the total 162 cases included in the study. Out of the total, 84 cases (51.85%) were Nullipara, 58 cases (35.80%) were primipara, and 20 cases (12.35%) were multipara.

The distribution of cases according to History of PPRM and PTL [Total parous women(n)=78, out of total 162 cases]" presents the distribution of 78 parous women based on their medical history related to preterm premature rupture of membranes (PPROM) and preterm labor (PTL). The "Only History of PPRM" category includes 3 cases, accounting for 21.79% of the total. The "Only History of PTL" category has 4 cases, making up 24.36%. The "Both PPRM and PTL" category

comprises 14 cases, representing 17.95%. The "No history" category, which indicates women with no prior history of PPROM or PTL, includes the majority with 57 cases, equating to 35.90%.

The mean gestational age at PPROM was 31.14 weeks with a standard deviation of ± 2.00 weeks. This data indicates that most instances of PPROM occur in the late preterm period (>32 weeks), with relatively fewer cases presenting before 30 weeks of gestation.

The distribution of cases according to gestational age at the time of PPROM, categorized in weeks. Out of a total of 162 cases, 52 cases (32.09%) occurred before 30 weeks of gestation, while the majority of cases were observed after 32 weeks, accounting for 73 cases (45.06%). And, fewer cases, 37 in total (22.84%), occurred between 30 - 32 weeks of gestation. The mean gestational age at PPROM was 31.14 weeks with a standard deviation of ± 2.00 weeks. This data indicates that most instances of PPROM occur in the late preterm period (>32 weeks), with relatively fewer cases presenting before 30 weeks of gestation.

The mean TVCL at the time of admission along with the standard deviation is provided as 26.66 ± 4.94 mm,

Table 1: Correlation of different variables with delivery latency

		Latency period				P value
		≤7 days (94)		>7 days (68)		
		Count	%	Count	%	
GA at PPROM	≤30	27	28.7%	29	42.6%	0.094
	>30	67	71.3%	39	57.4%	
History of PPROM and PTL	Yes	11	11.7%	10	14.7%	0.745
	No	83	88.3%	58	85.3%	
Mode of delivery	LSCS	17	18.1%	8	11.8%	0.379
	NVD	77	81.9%	60	88.2%	
NICU admission	Yes	62	65.9%	31	45.5%	0.015
	No	32	34.1%	37	54.5%	
CRP on admission	Positive	25	26.6%	12	17.6%	0.250
	Negative	69	73.4%	56	82.4%	

offering a statistical summary of the cervical length distribution. The mean AFI along with the standard deviation is provided as 6.91 ± 2.90 cm, offering a statistical summary of the amniotic fluid index distribution at admission.

Out of 162 patients, 49 patients were induced. Out of these 49 patients 44 delivered by NVD and 05 delivered by LSCS (due to failed induction). Indication of induction was Oligohydramnios, 34 completed weeks and sign and symptoms of chorioamnionitis. Total 08 patient developed Chorioamnionitis and all were induced, out of all these 08 patients 04 delivered by NVD and 04 delivered by LSCS. Among 25 LSCS, the indication included failed induction, Abruptio and foetal distress.

The latency period before delivery for 162 cases, categorized into two groups: ≤ 7 days and > 7 days, along with their respective percentages. A total of 94 cases had a latency period of 7 days or less, accounting for 58.02%, while 68 cases had a latency period exceeding 7 days, representing 41.98%.

The Table No 1: Correlation of different variables with delivery latency" examines the relationship between various clinical factors and delivery latency periods, categorized as ≤ 7 days (64 cases) and > 7 days (68 cases), with corresponding p-values indicating statistical significance. For gestational age (GA) at preterm premature rupture of membranes (PPROM), the ≤ 30 weeks group shows 27 cases (28.7%) and 29 cases (42.6%) for ≤ 7 days and > 7 days respectively, while the > 30 weeks group has 37 cases (71.3%) and 39 cases (57.4%), with a p-value of 0.094. History of PPRM and PTL is divided into Yes (11 cases, 11.7% and 10 cases, 14.7%) and No (53 cases, 88.3% and 58 cases, 85.3%), with a p-value of 0.745. Mode of delivery is

Table 2: Correlation of TVCL with delivery latency

		Latency period				P value
		≤7 days (94)		>7 days (68)		
		Count	%	Count	%	
TVCL	≤2.5 cm	51	54.25%	21	30.88%	0.06
	>2.5 cm	43	45.75%	47	69.12%	

The Table No 2: Correlation of TVCL with delivery latency" presents data on the relationship between transvaginal cervical length (TVCL) and delivery latency periods, categorized into ≤ 7 days (94 cases) and > 7 days (68 cases), with a p-value indicating statistical significance. The TVCL is divided into two groups: ≤ 2.5 cm and > 2.5 cm. For the ≤ 2.5 cm category, there are 51 cases (54.25%) in the ≤ 7 days group and 21 cases

Table 3: Correlation of AFI with delivery latency

		Latency period				P value
		≤7 days (94)		>7 days (68)		
		Count	%	Count	%	
AFI	≤5 cm	37	39.4%	16	23.53%	0.049
	>5 cm	57	60.6%	52	76.47%	

split into Lower Segment Cesarean Section (LSCS) with 17 cases (18.1%) and 8 cases (11.8%), and Normal Vaginal Delivery (NVD) with 77 cases (81.9%) and 60 cases (88.2%), with a p-value of 0.379. NICU admission shows Yes (62 cases, 65.9%) and No (32 cases, 34.1%) for ≤ 7 days, and Yes (31 cases, 45.5%) and No (37 cases, 54.5%) for > 7 days, with a p-value of 0.015. CRP on admission is categorized as Positive (25 cases, 26.6%) and Negative (69 cases, 73.4%) for ≤ 7 days, and Positive (12 cases, 17.6%) and Negative (56 cases, 82.4%) for > 7 days, with a p-value of 0.250. These findings suggest that NICU admission has a statistically significant correlation with delivery latency (p=0.015), while other variables show no significant association.

(30.88%) in the > 7 days group. For the > 2.5 cm category, there are 43 cases (45.75%) in the ≤ 7 days group and 47 cases (69.12%) in the > 7 days group. The p-value for this correlation is 0.06, suggesting non-significant. This indicates that TVCL not have association with delivery latency, with a higher proportion of cases with TVCL > 2.5 cm experiencing delivery latency beyond 7 days.

The table 3 examines the correlation of the Amniotic Fluid Index (AFI) with delivery latency, categorized into two latency periods: ≤ 7 days (94 cases) and > 7 days (68 cases). For AFI values ≤ 5 cm, 37 cases (39.4%) fall within the ≤ 7 days group, while 16 cases (23.53%) are in the > 7 days group. For AFI values > 5 cm, 57 cases (60.6%) are in the ≤ 7 days group, and 52 cases (76.47%) are in the > 7 days group. The p-value of 0.049 indicates a statistically significant correlation between AFI and delivery latency.

Discussion

In our study shows that gestational age (GA) at preterm premature rupture of membranes (PPROM), where a longer duration of latency period (> 7 days) is more common in the ≤ 30 weeks GA group, while a shorter duration (≤ 7 days) is more common in the > 30 weeks GA group, this difference does not have statistical significance (p-value = 0.094). Mustafeez ur Rehman et al study shows that Most of patients with POG < 34 weeks delivered with delivery latency ≥ 7 days and most of patients with POG ≥ 34 weeks delivered with delivery latency, which is statistically significant (P value = 0.035). Patil et al declared that, of 170, the majority (95) belonged to the group with 28+1 to 32 weeks. The gestational period had an inverse relationship with latency (p < 0.0001)

In our study shows that History of PPRM and PTL not have significant association with delivery latency. (p-value = 0.745). Megha Kansara et al study shows that parity and period of gestation were not found to factors which predict delivery latency period. There was history of preterm birth in 10 women out of which 6 (60%) of these women were delivered within 7 days. Sixteen women had history of PPRM in previous pregnancy out

of which 9 (56.25%) had delivery within 7 days in this pregnancy (p-value- 0.246).

In our study shows that Mode of delivery (LSCS/NVD) is not have significant association with delivery latency (p-value=0.379). Fatima Ossama Fetouh Mohamed Morsy et al study reported that gestational age at delivery was 34.58 ± 2.13 weeks, 45 cases delivered by LSCS, 3 cases with induced vaginal delivery, 22 cases with NVD, 7 cases developed chorioamnionitis and 11 cases reached > 7 days latency period with no significant relation with cervical length or amniotic fluid index.

In our study shows that shorter duration of latency period ≤ 7 days more NICU admission (62 cases, 65.9%) in comparison to longer duration of latency period > 7 days where less no of NICU admission happen (37 cases, 54.5%) for > 7 days, which is statistically significant (p-value of 0.015). Gupta et al proved significant relation between cervical length or amniotic fluid index and neonatal outcomes. The majority of the newborns in Group 1 had an Apgar score of between 4 and 6, while Group 2 had a score of > 6 . Most newborns in both groups had an Apgar score of greater than six after five minutes. Group 1 required NICU admission at a statistically significant greater rate than Group 2. Although it was not statistically significant, Group 1 had higher rates of newborn death and morbidity.

In our study shows that CRP on admission is not have significant association with delivery latency (p-value= 0.250).

In our study shows that TVCL > 2.5 cm are more likely to experience a longer latency period (> 7 days) compared to those with a shorter cervical length (69.12% vs 30.88%). Conversely, a TVCL ≤ 2.5 cm is associated with a higher likelihood of delivery occurring within 7 days (54.25% vs 45.75%) but it does not have

statistical significance (p value=0.06). opposite to our study Megha Kansara et al study shows that women who had cervical length of ≤ 2 cm were 44, out of which 31 (70.45%) women had delivery latency period of less than 7 days. 51 women had cervical length of > 2 cm out of which, 15 delivered within 7 days and 36 delivered after 7 days. which was statistically significant ($p < 0.001$). In a study conducted by Kathir et al between 28 and 32 weeks of gestation, the mean time interval was 96.9 hours between membrane rupture and delivery. The majority of the women (63.8% ($n = 51$)) gave birth within 48 hours. TVCL was not found to be related to the latency period ($p = .559$). Mustafeez ur Rehman et al study shows that a shorter TVCL and lesser AFI independently predict delivery within 7 days in women presenting with PPRM. The combination of an AFI ≥ 5 cm and TVCL ≥ 2 cm greatly improved the potential to remain undelivered after 7 days and vice versa. G Rizzo et al in 1998 in predicting delivery latency period in women with PPRM between 24 and 32 weeks, short cervical length, presence of cervical funnelling and cervical index of > 0.5 were significantly associated with shorter delivery latency period. E. Tsoi et al in women with PPRM between 24 to 36 weeks of gestation, logistic regression analysis demonstrated that significant independent contribution in the prediction of delivery within 7 days was provided by cervical length (odds ratio (OR)=0.91, 95% CI 0.86–0.96, $P = 0.001$). Nidhi Gupta et al shows that longer the TVCL, more is the latency period and shorter the TVCL, smaller is the latency period ($P = 0.00005$). The data suggest that a higher AFI (> 5 cm) is significantly associated with a longer latency period (> 7 days) following preterm premature rupture of membranes (PPROM). Conversely, lower AFI (≤ 5 cm) is more commonly observed with

shorter latency periods (≤ 7 days), p value (0.049). Megha Kansara et al study shows that women who had AFI (≤ 5 cm) were 51, out of which 34 (66.67%) women delivered within 7 days and 17 (33.33%) and AFI (> 5 cm) 44 out of which 32 (72.72%) had latency period of more than 7 days. Which was statistically significant ($p < 0.001$). Raina et al, study shows that among 51 pregnancies, AFI ≤ 5 was observed in 21 pregnancies and 14 pregnancies delivered within 48 hours. In this study, Oligohydramnios was significantly more common in subjects with latency less than 48 hours compared to subjects with latency more than > 48 hours (p -value = 0.040). In another study by Borna et al, after PPRM, AFI ≤ 5 was significantly associated with an increased risk of chorioamnionitis; on the other hand, the patients in the AFI ≤ 5 groups did not have a shorter latency period. Hence no evidence was found between the association between the development of chorioamnionitis and latency interval in patients with ruptured membranes ($P = 0/783$) in this study as the latency period was not significantly different between the two groups. Park JS et al, Vermillion ST et al, Piazza J et al studies hypothesized a relationship between AFI and delivery latency in PPRM and found a significant relationship between AFI ≤ 5 cm and delivery latency. In the above studies, in cases where the amniotic fluid index was less than or equal to 5, delivery occurred within 48 hours in the majority of cases, which is statistically significant. Juan Piazza et al conducted a study in women with gestational age between 24 and 34 weeks' with PPRM. Patients were categorized into two groups on the basis of AFI value (AFI ≤ 5 cms or AFI > 5 cms) performed at the time of admission. Latency in days from preterm PROM episode to delivery was significantly lower in the group with AFI < 5 cm.

Conclusion

From this study we conclude that PPRM was predominantly found in women in their early reproductive years(<25yrs) and was more frequent among nulliparous women. Delivery latency was found to be inversely proportional to gestational age at PPRM. Furthermore, no significant association was observed between gestational age at delivery, history of PPRM or preterm labor, CRP levels at admission, and mode of delivery with respect to delivery latency. AFI (>5 cm) is significantly associated with a delivery latency (>7 days) following preterm premature rupture of membranes (PPROM). Study suggests that TVCL is fairly reliable, especially in identifying patients unlikely to deliver soon. In contrast, However, the combined use of AFI and TVCL, as a predictive test can improve the accuracy of predicting delivery latency in cases of PPRM.

In conclusion, TVCL and AFI can be reliable predictors of delivery latency in PPRM, facilitating clinicians to implement timely interventions and appropriate referrals, ultimately improving maternal and neonatal outcomes.

References

1. Brown RG, Marchesi JR, Lee YS, Smith A, Lehne B, Kindinger LM, Terzidou V, Holmes E, Nicholson JK, Bennett PR, MacIntyre DA. Vaginal dysbiosis increases risk of preterm fetal membrane rupture, neonatal sepsis and is exacerbated by erythromycin. BMC medicine. 2018 Dec; 16(1):1-5.
2. Obstetrics & Gynecology, 2013. Practice Bulletin No. 139. 122(4), pp.918-930.
3. Poovathi M. A study of perinatal outcome in preterm premature rupture of membranes. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2018 Dec 1;7(12):5061-6.
4. Aris IM, Logan S, Lim C, Choolani M, Biswas A, Bhattacharya S. Preterm prelabour rupture of membranes: a retrospective cohort study of association with adverse outcome in subsequent pregnancy. BJOG: An International Journal of Obstetrics & Gynaecology. 2017 Oct; 124(11): 1698-707.
5. Bartfield MC, Carlan SJ. The home management of preterm premature ruptured membranes. Clin Obstet Gynecol. 1998;41(3):503-14.
6. Goldenberg RL, Rouse DJ. Prevention of premature birth. N Eng J Med. 1998;339(5):313-20.
7. Jayaram VK, Sudha S. A study of PPRM management and outcome. J Obstet Gynecol India. 2001;51:58-60
8. Khuppel KA, Curtis C, Robert LK. Premature rupture of membranes. Am J Obstet Gynecol. 1979;134(6):655-61.
9. Noor S, Nazar AF, Bashir R, Sulthana R. Prevalence of PPRM and its outcome. J Ayub Med Coll Abbottabad. 2007;19(4).