

A Study of Etiopathogenesis of Preterm Labour and its Fetomaternal Outcome

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Abstract: ***Background:** Prematurity is one of the most important causes of perinatal mortality and morbidity in our country. Prematurity is shown to be associated with increased incidence of stillbirths, neonatal deaths, mental retardation, epilepsy, poor school performance and visual field defects. **Methods:** This prospective study carried out in 'Department of obstetrics and Gynecology', at Tertiary care hospital in Gujarat between periods of July 2018 to July 2019. This study includes 100 patients of preterm labour between 24 weeks and 37 weeks completed with or without rupture of membrane. **Results:** The commonest causes of prematurity in present series are PROM, PIH, pre eclampsia, eclampsia, severe anemia, vaginal infection, febrile illnesses, accidental hemorrhage, multiple pregnancies. 97 Babies had NICU admission out of 108 babies delivered preterm out of which majority of babies admitted to NICU for the indication of prematurity. **Conclusion:** Systematic antenatal care with identification of risk factors is important in patients who are likely to go for repeated premature birth.*

Keywords: Prematurity, preterm, PROM

1. Introduction

Preterm labour and preterm delivery are very challenging obstetric complication encounter by the obstetrician as well as the neonatologist. Preterm labour is defined as onset of labour prior to 37 completed weeks of gestation but its lower limit is not defined.¹

Advance in clinical obstetrics have resulted in significant improvement in outcome of pregnancy for both mothers and babies. With maternal mortality almost totally controlled in developed world and coming under control in developing country with the awareness of importance of education, antenatal care and implication of concept of safe motherhood, now rightly shows that attention is focused on reduction of perinatal mortality. The knowledge of fetal physiology and neonatology has helped in bringing down the perinatal mortality to some extent, though not to the level of satisfaction of science.

Prematurity is one of the most important causes of perinatal mortality and morbidity in our country. Prematurity is shown to be associated with increased incidence of stillbirths, neonatal deaths, mental retardation, epilepsy, poor school performance and visual field defects. In most cases development in utero to full term gestation provide the fetus with best chance of survival and subsequent normal development. In fact, even two weeks prolongation of gestation for smallest of preterm infant can be expected to have major salutary influence on long term outcome for these babies at risk. With high tool and enormous direct and indirect cost associated with prematurity it is imperative that the ideal of a full term infant with normal birth weight become the principle objective of maternal and child health planning. To reduce prematurity it is very essential that etiology of prematurity should be known.³

This study is attempt to find out risk factors in mothers who are delivering preterm infant in order to analyze etiological factors of preterm labor in mothers in our class of patients and also assess fetal and maternal outcome in case of preterm deliveries.

2. Methods

This prospective study carried out in 'Department of obstetrics and Gynecology', at Tertiary care hospital in Gujarat between periods of July 2018 to July 2019. This study includes 100 patients of preterm labour between 24 weeks and 37 weeks completed with or without rupture of membrane. Each patient evaluated by detailed history taking, general, systemic and obstetric examination.

ACOG criteria (2016) were used to document preterm labour. Uterine contraction of increasing strength occurring 6 in 60 minutes with or without cervical dilatation greater than 1 cm or effacement 80% or greater. Periods of gestation were determined by first day of last menstrual period and by calculating expected date of delivery according to "Naegle's rule". When LMP was not known other parameter used to document it like previous record of antenatal visit and ultrasound. After birth, maturity of baby was determined by Modified Ballard's Criteria.

2.1 Subject selection

Inclusion Criteria

Antenatal women with gestational age between 24 weeks to 37 completed weeks with preterm labour pains or have preterm delivery between ages 20 – 45 years of age.

Exclusion Criteria

- Antenatal women not willing to participate in the study.
- Antenatal women with < 24 weeks of gestation.
- Antenatal women with >37 weeks of gestation.

2.2 Data analysis

Data entry will be done in Microsoft excel and analysis will be done using a software Epi info 7. Chi Square test was use to statistically compare the two group difference with a p value of < 0.05 was consider statistically significant with confidence interval 95%.

3. Results

Table 1: Relationship of Parity to Premature Birth.

Age in Years	No of Cases	PRIMI	Multi 2 nd and 3 rd	Grand Multi ≥ 4
15 to 20	17	08	09	00
21 to 25	44	21	22	01
26 to 30	25	15	09	01
31 to 35	11	05	06	00
36 to 40	03	00	03	00
TOTAL	100	49%	49%	2%

There were 9 patients who undergone preterm delivery having parity 2 or >2 at the age of 20. These results suggest burden of illiteracy, poor health awareness and lower socioeconomic class in our class of patients.

Table 2: Gestation age in weeks at the time of labour

Weeks of Gestation	No of cases at time of labour, (n=100)	Percentage (%)	P value
<28	05	05%	0.00298 (significant)
28 – 30	35	35%	
31 – 32	22	22%	
33 – 34	32	32%	
35 – 36	06	06%	

(p value of < 0.05 was statistically significant) Majority of the case of preterm labour were between maturity of 28 to 34 weeks. Among them smallest baby was having 26 weeks of maturity.

Table 3: Association with Previous Preterm Births

No of previous preterm	No of cases (n = 25)	Percentage (%)	P value
1	17	68%	0.032 (significant)
2	05	20%	
>3	03	12%	

(p value of < 0.05 was statistically significant)

Above results shows that incidence of preterm was 68% having previous one preterm birth while incidence was 20% having history of previous two preterm births. The discrepancy of these results were entirely due to the fact that most of our patients were uneducated and did not pay attention to one fetal loss so after another fetal loss they became aware of condition and seek medical advice during prenatal and during early antenatal period and undergo systemic and regular antenatal care.

Table 4: Association of Preterm Labor with Previous Abortion

Previous Abortion	No of cases (n = 22)	Percentage (%)	P value
1	19	86%	0.005 (significant)
2	03	14%	
3	-	-	

(p value of < 0.05 was statistically significant)

Approximately 22 patients of present studies had history of previous abortion. Among them 86% patient have previous one abortion and 14% have previous 2 abortion. Since incidence of Abortion in our population is very high. Correlation between previous abortion and preterm births is not proven till now. But my findings are in correlation with findings from study conducted by Maria do et al.4

Table 5: Antenatal Risk Factors of Preterm Labor and Relative Incidence

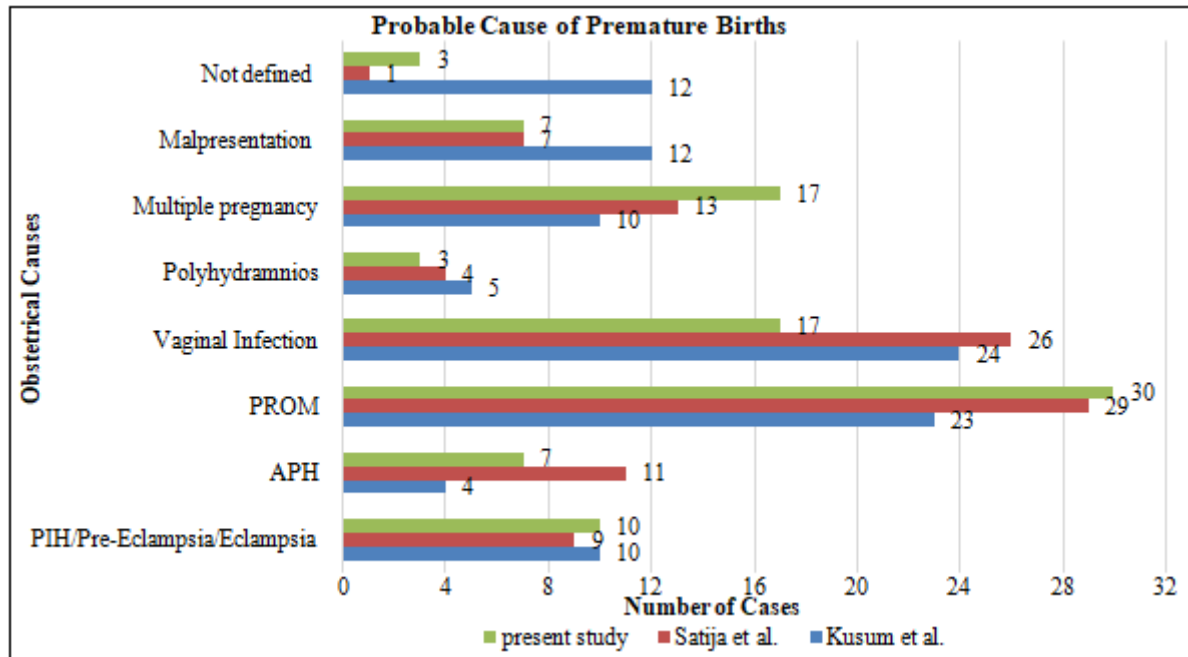
Risk Factors	Relative Incidence	Percentage (%)
Anemia	Hb in grams	no. of cases (n = 100)
	>10	30
	8 – 10	56
	6 – 8	12
	<6	02
PIH/Pre-Eclampsia/Eclampsia	10	10
Accidental hemorrhage	7	7
Placenta Previae	5	5
PROM	30	30
Vaginal Infection	17	17
Polyhydramnios	3	3
Multiple pregnancy	17	17
Malpresentation	7	7
History of os tightening	11	11
Not defined	3	3

Anemia of varying degree was associated with approximately 70% of cases in present study. There were 17 (17 %) cases of multiple pregnancies undergone preterm labor out of which 12 pregnancies spontaneously terminated preterm at gestational age less than 34 weeks. Rests of others were late preterm that mean between 34 to 36 weeks of gestation. Incidence of twin delivery in Martin et al. study was 15.38% which is almost near to my study.5

This table shows that out of all obstetrical complication among them major cause were PROM, PIH/pre –Eclampsia / Eclampsia, vaginal infection in our group of patients.

Table 6: Probable cause of premature births compare with other studies

Obstetrical Causes	Kusum et al.	Satija et al.	Present study (%)
PIH/Pre-Eclampsia/Eclampsia	10	9	10
APH	4	11	7
PROM	23	29	30
Vaginal Infection	24	26	17
Polyhydramnios	5	4	3
Multiple pregnancy	10	13	17
Malpresentation	12	7	7
Not defined	12	1	3

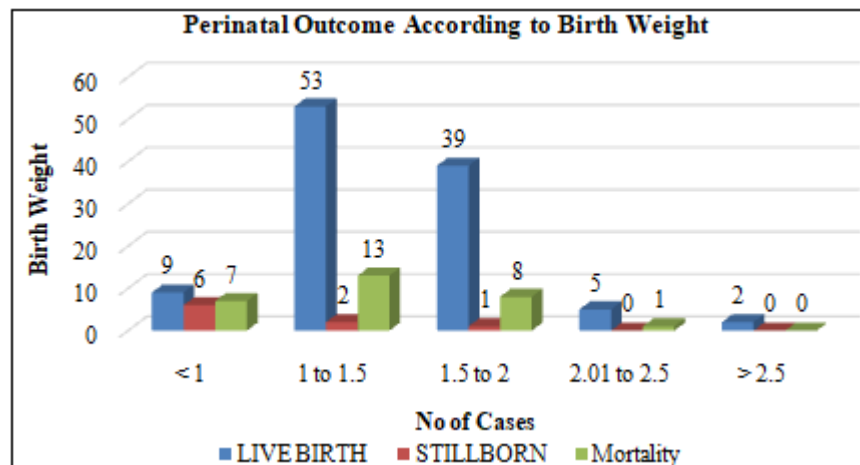


The commonest causes of prematurity in present series are PROM, PIH, pre eclampsia, eclampsia, Severe anemia, vaginal infection, febrile illnesses, accidental hemorrhage, multiple pregnancies. This findings are correlate with findings from study conducted by Kusumet al⁶ and Satija et al.⁷

Table 7: Perinatal Outcome according to birth weight

Birth Weight	Live Birth	Stillborn	Mortality (%)	P value
< 1	9	06	7 (77.7)	0.00265 (significant)
1 to 1.5	53	02	13 (24.5)	
1.5 to 2	39	01	08 (20.5)	
2.01 to 2.5	05	-	01 (20)	
> 2.5	02	-	-	
TOTAL	108	9	29 (26.8)	

(p value of < 0.05 was statistically significant)



Percentage of stillbirth were 66% in preterm babies having birth weight less than 1 kg while same were 22% in preterm babies having birth weight 1 to 1.5 kg. These results suggest importance of birth weight in view of perinatal outcome. As the birth weight increases outcome is better this is statistically significant.

97 Babies had NICU admission out of 108 babies delivered preterm out of which majority of babies admitted to NICU for the indication of prematurity. Out of 117 babies delivered preterm, 76 babies got discharged, 9 were stillborn and 29 babies were died in early neonatal period. Most common cause for perinatal mortality was extreme

prematurity itself. All the perinatal mortality were within 1 week.

Table 8: Perinatal Outcome according to birth weight Compare with Other Studies

Birth weight (kilograms)	Mortality in Ashtekar et al. ⁸ (%)	Mortality in Satija et al. ⁷ (%)	Mortality in present study (%)
< 1	88.3	57.14	77.7
1 to 1.5	38.4	13.04	24.5
1.5 to 2	18.75	6.45	20.5
2.01 to 2.5	-	5.56	20
Total	40.2	21.3	29 (26.8)

In my study mortality was 26.8%. Highest mortality seen among babies born < 1 kg (77.7%). My findings are in correlation with findings from study conducted by Ashtekaret al.⁸ and Satija et al.⁷

Table 9: Neonatal Morbidity Associated With Prematurity

Neonatal Morbidity	Satija et al. (%)	Persent study (%)
RDS	15.60	24.7
TTN	0.92	3.09
JAUNDICE	28.44	36.08
SEPSIS	12.84	12.37
CONGENITAL MALFORMATIONS	4.59	6.1
APNEA, BRADYCARDIA	8.57	10.3
HYPOTHERMIA	5.25	6.1
NECROTISING ENTROCOLITIS	1.83	1.03

The most common neonatal complication in our study group were jaundice (36.08%), RDS (24.7%), sepsis (12.37 %). these were also the common complications in study carried out by Satija et al.⁷

4. Discussion

- Total 100 patients were studied during this study from july 2018-july 2019. Among these there were 117 preterm babies out of which 108 were live and 09 were intra uterine death or still birth babies.
- Incidence of prematurity was almost equal in primipara (49%) patients and in multipara (49%) patients in this study.
- Most of the prematurity babies were among 1 to 1.5kg of birth weight (58%) and with maturity of 28 to 34 weeks (89%).
- Higher incidence of preterm was found among women having anemia (70%).
- There was increased incidence of repetition of preterm labor among patients having previous abortion (22%) and previous history of preterm births (25%) as compared to those with previous term labour.
- Commonest cause of prematurity were pre-eclampsia, Eclampsia, placenta previae, vaginal infection, PROM, accidental hemorrhage.
- PROM constitutes almost 1/4th of cases of preterm in my study.
- Maternal morbidity in terms of episiotomy gap, caesarian wound gap and puerperal sepsis is found in around 25% of cases.
- The most common neonatal complication in our study group were jaundice (36.08%), RDS (24.7%), sepsis (12.37 %).
- There was no MMR found in this study.
- Perinatal mortality is around 26.8% in my study.

5. Conclusion

- Systematic antenatal care with identification of said risk factors is important in patients who are likely to go for repeated premature birth.
- History of abortion, MTP or preterm birth is important in identification of the patients at risk of repeated premature birth.

- Patients having medical disorders should be assessed and timely treated to prevent preterm birth.
- Every infection during pregnancy should be treated in order to prevent preterm birth.
- Separate schedule with frequent visits with extra rest should be given to patients who are 'at risk' for preterm birth.
- Education of couple and family about importance of regular antenatal care to reduce incidence of preterm births and for better pregnancy outcome is important.
- Multiple pregnancy is a frequent predisposing condition for preterm labor.

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