



PRETERM LABOUR AND ITS OUTCOME

Obstetrics & Gynaecology

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ABSTRACT

Background: Preterm births are still one of the leading causes of perinatal mortality and morbidity. Preterm birth is an important risk factor for neurological impairment and disability. It is a major challenge in the perinatal health care.

Methods: This was a prospective observational study conducted in the Department of Obstetrics and Gynaecology, KIMS Hospital, Bengaluru over a period of one year from January 2020 to December 2020. All patients who delivered a live baby before 37 weeks of gestation satisfying inclusion and exclusion criteria were included in the study.

Results: A total of 131 patients with preterm labour were enrolled in the study. Majority of them (69%) delivered after 34 weeks of gestation. The most common risk factor for preterm labour in our study was preterm premature rupture of membranes (19.1%) followed by hypertensive disorders of pregnancy (17.5%). Out of 131 preterm babies, 90 (68.7%) babies required NICU admission, RDS and hyperbilirubinemia being the most important causes for admission. Neonatal mortality in our study was 9.9% (13 babies).

Conclusion: Preterm labour is still one of the leading causes of neonatal mortality and morbidity. The causes of preterm birth are multifactorial and modifiable. The incidence can be reduced by early identification of risk factors and by proper antenatal care.

KEYWORDS

Preterm labour, PPRM (preterm premature rupture of membranes), RDS (respiratory distress syndrome), NICU (neonatal intensive care unit), neonatal mortality

Preterm births still are the leading cause of perinatal mortality in developing countries. In addition to being a cause of mortality, preterm birth has long-term neurodevelopmental effects and higher risk of chronic diseases in adult life.

The World Health Organization (WHO) has estimated that 9.6% of all births in 2005 were preterm - almost 13 million worldwide. Africa and Asia accounted for almost 11 million¹.

Preterm labor is defined by WHO as "The onset of labor prior to the completion of 37 weeks of gestation, in pregnancy beyond 20 weeks of gestation."²

Preterm births are subdivided into early preterm (before 34 completed weeks) and late preterm (between 34 to 37 completed weeks)

Preterm labour is considered to be established, if regular uterine contractions can be documented at least four in 20 minutes or eight in 60 minutes with progressive change in the cervical score in the form of effacement of 80 % or more and cervical dilatation greater than 1 cm. If uterine contractions are perceived in the absence of cervical change, the condition is called threatened preterm labour⁶.

Nearly 40 – 50% of preterm births occur following spontaneous labour, 30% due to preterm premature rupture of membranes and the remaining 30% are iatrogenic terminations for maternal or fetal benefits³

Preterm infant is susceptible to various serious medical complications during the newborn period as well as morbidities extending later into life. These complications are primarily the consequence of immature organs that result from abbreviated gestation. The pivotal complication is respiratory distress syndrome (RDS)⁴.

Other complications are intraventricular hemorrhage (IVH), bronchopulmonary dysplasia (BPD), patent ductus arteriosus (PDA), necrotizing enterocolitis (NEC), sepsis, apnea, and retinopathy of prematurity (ROP). Rates of morbidity vary primarily by gestational age but are also affected by birth weight, fetal number (singleton vs. multiple gestations), geographic location, proximity to a neonatal intensive care unit (NICU), and any maternal or fetal conditions that may have led to preterm birth⁵.

In 1960, a neonate weighing 1000g had a 95% risk of death. Today, a neonate with the same birth weight has a 95% chance of surviving (Indelfinger 2007)⁴. This remarkable improvement in survival is due to the widespread application of neonatal intensive care in the early 1970s⁴.

Although advances in neonatal care have led to increased survival and reduced short- and long-term morbidity for infants born preterm, surviving infants have increased risks of visual and hearing impairment, chronic lung disease, cerebral palsy, and delayed development in childhood⁵.

AETIOLOGY AND RISK FACTORS⁶

A wide variety of aetiological factors have been implicated in the causation of preterm labour. The most evident of these factors include obstetric complications and past obstetric history. Others like socioeconomic and nutritional factors may be contributory.

OBSTETRIC RISK FACTORS

- Prior preterm birth – the risk of preterm birth increases twofold with every previous preterm delivery. The recurrence ranges from 17 – 40% depending on the number of previous preterm deliveries^{7,8}.
- Conditions that cause over-distension of the uterus such as multiple pregnancy and Hydramnios predispose to preterm labour. About 60% of twins and nearly all higher order multiple gestations deliver preterm³.
- First and second trimester bleeding, and also bleeding in the third trimester due to APH (antepartum haemorrhage) are significantly associated with preterm labour.
- Indication of preterm termination of pregnancy for medical and obstetric reasons include pre-eclampsia, fetal distress, IUGR, abruptio placentae and intrauterine fetal demise⁷.
- Interpregnancy interval of less than 6 months and presence of uterine anomalies is associated with greater risk³.

MATERNAL FACTORS

- RACE – black women have twice the risk of preterm delivery compared to whites⁹.
- Women with low body mass index and poor maternal weight gain in pregnancy are at increased risk
- Overweight and obese women also have increased risk
- Other demographic factors associated with higher risk of preterm labour include women with low socioeconomic status, minimal or no prenatal care, women younger than 17 years and older than 35 years
- Psychosocial factors¹⁰
- Dietary factors and substance abuse – smoking was found to be an independent risk factor and increases the risk by twofold¹¹
- Heavy alcohol consumption and cocaine abuse are also associated with increased risk

AIM OF THE STUDY

To study preterm labour and its outcome

OBJECTIVES OF THE STUDY

- To identify the aetiological factors of preterm delivery
- To identify the causes which need intervention
- To study the neonatal morbidity and mortality associated with preterm birth.

MATHODOLOGY

This is a prospective observational study conducted in the Department of Obstetrics and Gynaecology, KIMS Hospital, Bengaluru for a period of one year from January 2020 to December 2020.

INCLUSION CRITERIA

- All booked and un-booked patients
- Singleton pregnancy
- >20 weeks and <37 weeks of gestation
- Either preterm vaginal delivery or instrumental delivery or caesarean section

EXCLUSION CRITERIA

- Pregnancy beyond 37 weeks of gestation
- Multifacetal gestation
- Patients with intrauterine faetal demise and congenital anomalies

STUDY DESIGN

A total of 131 patients were enrolled in the study. A detailed history of present pregnancy, past medical and surgical history along with past obstetrical history was taken. Detailed general physical, systemic and obstetrical examination was performed. Gentle per speculum examination was done in all cases and a per vaginum examination was done if needed. Risk factors related to preterm labor and neonatal outcome were recorded and analyzed. All relevant investigations done. Tocolytics were given in cases where immediate delivery was not indicated. Cases under conservative management were treated with appropriate antibiotics, fluid therapy. In cases with mild to moderate oligohydramnios hyposalinization was given. Steroid prophylaxis was given. Single dose of Betamethasone was given where immediate delivery was indicated. In those cases where termination of pregnancy was indicated, induction of labour was done and cases were managed by either vaginal delivery or emergency LSCS depending on the indication.

Gestational age at the time of delivery, mode of delivery and neonatal outcome in terms of birth weight, sex of the baby and APGAR score was recorded. Depending on the condition, neonates were shifted to NICU and managed accordingly. Morbidity and mortality was recorded. Normal healthy neonates were shifted on to mother's side. Stastical analysis was done using SPSS – 20 version software.

OBSERVATIONS AND RESULTS

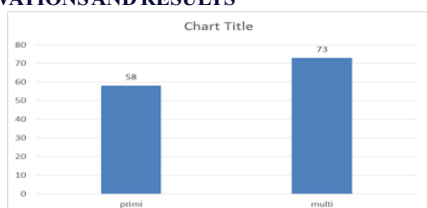


Figure 1 - Preterm birth distribution according to the parity

In our study, out of 131 preterm deliveries, 58 (44.27%) were primi and 73 (57.73%) were multi. Out of 73 patients 15 patients had history of one abortion and 5 patients had 2 abortions. 10 patients had history of preterm delivery in past. This shows that preterm deliveries were more common in multiparous patients with history of prior preterm deliveries and abortions.

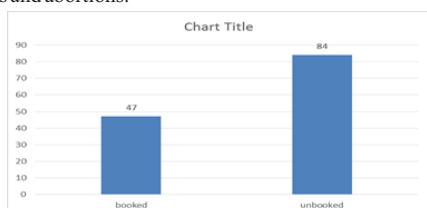


Figure 2 - Preterm births in booked and un-booked patients

Out of 131 preterm deliveries, 84 (64.12%) patients were either un-booked or referred from other centers for preterm management.

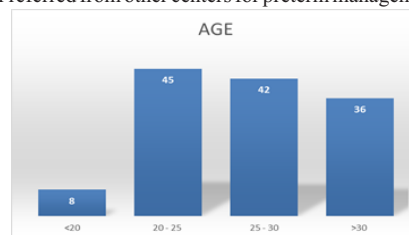


Figure 3 - Preterm birth distribution according to maternal age

Preterm labour is common with increasing maternal age. In our study, we had maximum patients in 20 -25 years age group (34.35%).

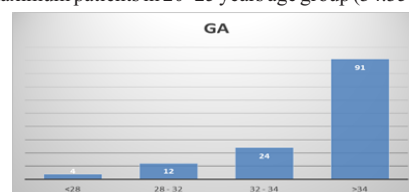


Figure 4 - Preterm birth distribution according to the gestational age at the time of delivery

our study, out of 131 preterm deliveries 91 (69.47%) patients delivered after 34 weeks of gestation (late preterm). We had only 4 (3%) patients in <28 weeks group.

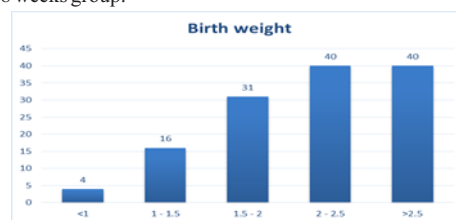


Figure 5 - Birth weight distribution in preterm deliveries

In our study, maximum number of patients (30.53%) delivered babies of 2 -2.5 kg and > 2.5 kg as we had maximum number of patients in late preterm category.

Table 1 - Preterm birth distribution according to socioeconomic status

Socioeconomic status	Number of patients
Upper class	15
Middle class	32
Lower class	84

Maximum number of patients in our study belonged to lower socioeconomic status (64.12%).

Table 2 - Preterm birth distribution according to the risk factors

Risk factor	Number
Vaginal infection	3
UTI	5
PPROM	25
Antepartum haemorrhage	2
Maternal anaemia	12
Febrile illness	5
Hypertensive disorders of pregnancy	23
Oligohydramnios	9
Gestational diabetes	11

In the present study PPRM (19.1%) is the most common cause of preterm birth, followed by hyperetensive disorders of pregnancy (17.5%).

Table 3 – Preterm birth distribution according to the mode of delivery

Mode of delivery	Number
Preterm vaginal delivery	29
LSCS	102

In our study, maximum number of patients delivered by caesarean section (77.86%).

Table 4 – preterm birth distribution according to sex of baby

Sex of the baby	Number
Male baby	74
Female baby	57

In our study, we had 74 male babies and 57 female babies.

Table 5 – Neonatal morbidity and mortality

Neonatal outcome	Number
NICU admission	90
Neonatal mortality	13
Respiratory distress syndrome	28
Hyperbilirubinemia	38
Necrotizing enterocolitis	8
Hypothermia	12
Hypoglycemia	15
Septicemia	11

Out of 131 preterm deliveries, 90 babies (68.7%) required NICU admission. Among them 28 babies had RDS. Hyperbilirubinemia was observed in 38 babies. Totally we had 13 (9.9%) neonatal mortalities.

DISCUSSION

In our hospital we had a total of 624 deliveries in last year from January 2020 to December 2020, out of which we had 131 preterm deliveries. Incidence is 20.99% which is comparable to studies of Singh U et al¹² and Satija A et al¹³ which reported an incidence of 20.9% and 20.4% respectively. The incidence of preterm labour is 17% in a study conducted by Radhanapuri F et al¹⁴ which is comparable to our study.

The most common cause for preterm delivery in the present study was PPROM which accounted for 19.1% of cases. This result is comparable to Singh U et al¹² study which found that preterm premature rupture of membranes was associated with preterm births in 25.9% of cases. The study conducted by Garg S et al¹⁵ reported an association of PPROM in 22% of the cases of preterm labour.

In present study, 90 babies (68.7%) required NICU admission and hyperbilirubinemia being the most common cause for NICU admission followed by RDS. In our study hyperbilirubinemia was observed in 38 babies (29%) and 28 babies had RDS (21.37%). The results are comparable to Chauhan et al study which reported an incidence of jaundice in 32.3% and RDS in 22.6% in their study¹⁶.

Neonatal mortality rate was 9.9% in our study. Satija A et al¹³ reported 12.84% of mortality rate and Sonkusare S et al¹⁷ reported 14.5% of mortality rate which are comparable to our study. Mortality rate decreased with gestational age.

CONCLUSION

Preterm labour and births are still the leading cause of perinatal mortality and morbidity and also causes significant economic burden on the family and the hospital. Though it is very difficult to predict who will deliver prematurely, the incidence can be reduced by early identification of risk factors. Regular antenatal visits, prevention of anaemia, treatment of women with threatened and established preterm labour, rest and hydration reduce the incidence of preterm labour.

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Ethical approval: Not required

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