



STUDY OF ETIOLOGY OF PRETERM BIRTH WITH NEONATAL OUTCOME

Obstetrics & Gynaecology

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ABSTRACT

Background: Preterm birth is the leading cause of neonatal morbidity and mortality worldwide and accounts for 75% of neonatal deaths and 50% of long-term morbidity, including respiratory disease and neurodevelopmental impairment. **Methodology:** A Prospective clinical study was carried out at tertiary care center which included hundred women with preterm birth. **Results:** Most of the patients were in the age group less than 25 years (52%) having short interpregnancy interval (19%). The important predictors of preterm birth were previous history of preterm birth (24%) and preterm premature rupture of membrane (25%). The presence of asymptomatic bacteriuria and genital infections was found in 32 percent of cases. In our study most of the patients delivered after 32 weeks (65%). The neonates requiring resuscitation and admission to neonatal intensive care unit was 53%.

KEYWORDS

Preterm Birth, previable Preterm Labour

INTRODUCTION:

Preterm birth is the leading cause of perinatal morbidity and mortality worldwide. Preterm birth is defined as birth between the age of fetal viability and 37 completed weeks of gestation. WHO defines preterm birth as:

- A) EXTREMELY PRETERM: less than 28 weeks.
 - B) VERY PRETERM: 28 to less than 32 weeks.
 - C) MODERATE TO LATE PRETERM: 32 to less than 37 weeks.
- Preterm birth can be spontaneous in 80% and iatrogenic in 20%. Earlier preterm newborn was defined by a birthweight <2500 gm.

INCIDENCE:

Preterm labour affects 5%-18% of women and the incidence is increasing worldwide due to the rise in multiple gestations from assisted reproductive techniques, better dating scans and iatrogenic deliveries.

PATHOPHYSIOLOGY:

Nowadays, around 25 percent of preterm birth are planned either due to maternal or foetal factors. The pathophysiological factors implicated are as follows:

- a) Premature activation of fetal hypothalamopituitary axis in response to maternal stress.
- b) Exaggerated inflammatory response due to infection and altered genital tract microbiome.
- c) Decidual haemorrhage due to abruption.
- d) Pathological uterine distension
- e) Previous history of preterm birth is associated with 1.5 to 2 fold increased chances of recurrent preterm birth.

RISK FACTORS:

Known risk factors for premature onset of labour include previous preterm birth, multiple pregnancies, genital tract infections, bacterial vaginosis, preterm premature rupture of membranes, chronic conditions like high blood pressure and diabetes, uterine anomalies, smoking or drug use, being underweight or overweight, history of cervical trauma and stressful life events.

PREVENTION AND MANAGEMENT:

Foetal fibronectin reflects stromal remodelling of cervix before labour. There is currently insufficient evidence to recommend the routine adoption of tests for foetal fibronectin like Actim Partus, PartoSure and Rapid foetal fibronectin to diagnose preterm labour with intact membrane. Newer markers IGFBP1 and PAMG1 are suggestive of decidual impairment and may be present in more than 30% of preterm labour cases.

The management options are identifying the modifiable risk factors involved and treating accordingly. The role of prophylactic vaginal

progesterone is established. The choice of prophylactic cervical cerclage or prophylactic vaginal progesterone should be offered to a woman with history of spontaneous preterm birth and those results from a transvaginal ultrasound scan carried out between 16 and 24 weeks of pregnancy that shows a cervical length of 25mm or less {NICE 2019}. Antenatal steroids administration has been shown to decrease the risk of neonatal death, respiratory distress syndrome, periventricular leucomalacia, intraventricular haemorrhage and necrotising enterocolitis. Tocolysis treatment (acute and maintenance treatments) are not recommended for women at risk of imminent preterm birth for the purpose of improving newborn outcomes. The use of magnesium sulphate is recommended for women at risk of imminent preterm birth before 32 weeks of gestation for prevention of cerebral palsy in the infant and child. The routine use of antibiotic administration is not recommended for women in preterm labour with intact membranes and no clinical signs of infection.

MATERIALS AND METHODS:

Aim Of Study:

The aim is to study of etiology and outcome of preterm birth at a tertiary health care system.

Study Design:

It is a prospective clinical study.

Selection Of Cases:

A total of hundred women presenting with preterm labour visiting obstetrical emergency facility of Nalanda Medical College Hospital, Patna during period of december 2019 to october 2021 were selected and analysed.

Sample Size:

A total of 100 Cases were selected and studied.

Inclusion Criteria:

Women presenting with 1) regular contractions before 37 weeks that are associated with cervical change with pelvic pressure, menstrual like cramps, watery vaginal discharge and lower back pain. 2) Asymptomatic cervical dilation after mid-pregnancy > 3cm. 3) Cervical length <2cm on TVS 4) Positive fFN in women with cervical length between 20-30mm.

Exclusion Criteria:

Patients not willing to get enrolled in study.

METHODOLOGY:

The patients fulfilling the inclusion criteria were enrolled during period december 2019 to october 2021. A total of hundred pregnant women were enrolled which were admitted with preterm labour.

Clinical profile of these patients was then categorized on the basis of age, occupation, residential status, gestational age at delivery, obstetrical history, previous history of preterm labour, cervical length at presentation and urinary infection. Patients were further followed up closely for monitoring progress of labour in terms of mode of delivery, use of antibiotics, tocolytics and corticosteroids.

RESULTS

Total of hundred pregnant women with preterm labour were observed during this study. Following observation were made.

Table 1 Distribution Of Study Group As Per Age.

AGE	FREQUENCY	PERCENT
<25 years	52	52%
25-30 years	36	36%
31-35 years	10	10%
>35 years	2	2%
TOTAL	100	100%

Maximum number of patients were of the age group of less than 25 years i.e. 52% (TABLE 1). Minimum number of patients were found to be in >35 years i.e. 2%

Table 2 Distribution Of Study Group As Per Gestational Age

WEEKS OF GESTATION	FREQUENCY	PERCENT
24-28 WEEKS	5	5%
29-32 WEEKS	30	30%
32-37 WEEKS	65	65%
TOTAL	100	100%

Gestational age is one of the most important factors which determines course of labour and neonatal outcome. In this study maximum no. of patients were between 32-37 weeks of gestational age i.e. 65% (TABLE 2). Out of total patients observed 55% were multigravida and 45% were primigravida. 24% of the patients had previous history of preterm delivery whereas 76% had no history of previous preterm birth.

Table 3 Distribution Of Study group As Per Mode Of Delivery

MODE OF DELIVERY	PERCENT
LSCS	25%
VAGINAL	75%
TOTAL	100%

In our study 75% delivered vaginally and 25% had to undergo caesarean section.

Table 4 Distribution In Accordance With Risk Factors Identified

PREVIOUS PRETERM DELIVERY	24
TWIN OR MULTIPLE PREGNANCY	5
GENITAL TRACT INFECTION, BACTERIAL VAGINOSIS, ASYMPTOMATIC BACTERURIA	12
PRETERM PREMATURE RUPTURE OF MEMBRANE	25
MEDICAL CONDITION (HTN IN PREVIOUS PREGNANCY)	2
DIABETES	1
SMOKING	3
SHORT INTERPREGNANCY INTERVAL	19
UNDERWEIGHT OR OVERWEIGHT BEFORE PREGNANCY	9
UTERINE ANOMALY	1
TRAUMA OR STRESSFUL EVENT	2
IUD	4

In our study, it was found that the most important risk factors for prediction of preterm birth are previous history of preterm birth and preterm premature rupture of membrane. The preterm rupture of membrane includes prelabour rupture i.e. before labour and before 37 weeks of gestation and previable prelabour rupture i.e. between 14 weeks of gestation and 24 weeks of gestation.

The neonates requiring admission to neonatal intensive care unit was 53 percent.

DISCUSSION:

This was a prospective observational study of clinical profile of the patient coming to a tertiary care centre with preterm labour from

December 2019 to October 2021. Maternal age is one of the important factors which determines outcome of pregnancy. In our study, maximum number of patients were of age group <25 years of age and among them most of cases have short interpregnancy interval. The number of extremely preterm cases was 5, very preterm was 30 and late preterm was 65. Preterm labour and the complications associated with it shows predilection to gestational age.

Previous history of preterm delivery is associated with recurrent preterm labour, out of total patients, 24% had such previous history whereas 76% had no such history of preterm labour.

About 75% of patients were delivered by vaginal route and caesarean section were done only for obstetrical indications in 25% cases.

CONCLUSION:

The antenatal visits and thorough investigation including measurement of cervical length using ultrasonography and culture of urine for diagnosing asymptomatic bacteruria is recommended in women with risk factors for preterm birth. Study showed preterm labour was more common in multigravida and women with cervical length <3 cm. Prolonging gestational age with therapeutic measures in cases of preterm labour significantly improves neonatal outcome in terms of morbidity and mortality. There is need of urgent action to address preterm birth. Both prevention of preterm birth and implementation of guideline for care of pregnant women with preterm birth requires more research as well as policy attention and programmatic investment.

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