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Original Research Article

A study on fetomaternal outcome in late preterm labour (34 weeks - 36 weeks 6 days) in a tertiary care centre, Rajkot

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ABSTRACT

Background: Preterm birth, defined as birth before 37 completed weeks of gestation, presents significant risks for short- and long-term health outcomes. This study evaluates risk factors, delivery modes and feto-maternal outcomes in late preterm labor.

Methods: This 1.5 years prospective observational study was conducted on 300 women delivering between 34 weeks and 36 weeks 6 days at P.D.U Medical College, Rajkot, from February 2023 to July 2024. Inclusion criteria involved spontaneous labor; induced labors and specific co-morbidities were excluded.

Results: The majority of patients were under 25 years (62%) and nulliparous (39.3%). Common risk factors included Gestational HTN (14.6%), UTI (11.3%) and prior abortions (17.33%). Most deliveries were vaginal (85.3%). Neonatal jaundice was the leading cause of NICU admission (8.33%). Low APGAR scores (<7) at 5 minutes were observed in 23.66% of neonates.

Conclusions: Late preterm labor is significantly associated with nulliparity and hypertensive disorders. While vaginal delivery is common, there is a high requirement for NICU care, particularly for jaundice and respiratory support. Collaboration between obstetricians and neonatologists is essential to improve outcomes.

Keywords: Late preterm, Maternal outcome, Neonatal jaundice, Pregnancy, Rajkot

INTRODUCTION

As per WHO, A Preterm birth has been defined as the birth of the baby before 37 completed weeks of gestation since the first day of woman's last menstrual period.[1] Preterm birth occurs in approximately 7% to 11% of pregnancies, yet it accounts for nearly 85% of neonatal deaths among normally formed infants without congenital anomalies. Preterm births account for 15 million (11.1%) of all births worldwide each year, with 13.3% of these births taking place in South Asia alone.[2] The global incidence of preterm birth is rising, largely due to factors such as an increased frequency of multiple pregnancies, the use of assisted reproductive technologies, a growing number of working mothers, heightened maternal psychological stress and a rise in medically indicated preterm deliveries.[3]

Beyond their elevated risk of neonatal and under-five mortality, surviving preterm infants remain vulnerable to a range of early and long-term morbidities. Early complications comprise respiratory distress syndrome, chronic lung disease, infections, intraventricular haemorrhage and impaired thermoregulation.[4]

Long-term outcomes include neurodevelopmental impairment, growth restriction, hypertension and cardiovascular disorders.[5,6] The multifactorial etiology of preterm birth (PTB) limits effective treatment options. Around 20% of cases are medically indicated due to maternal or fetal conditions such as preeclampsia or intrauterine growth restriction, while PPROM accounts for 20–30%.[7,8] Infection and inflammation contribute to 20–25% of cases and 25–30% occur spontaneously without a clear cause.[7] These factors also underlie a substantial

proportion of PPROM and PTBs with intact membranes, suggesting a role in previously unexplained cases.[7,9] The diversity of causes complicates risk identification and contributes to rising PTB rates.[10]

These statistics underscore the urgent need for continued efforts to address and prevent preterm births and their associated complications, as well as to improve access to quality neonatal care globally.

Aim

To evaluate the risk factor for preterm labour. To study the maternal outcome. To study the neonatal outcome.

METHODS

Study type

The present study is a prospective observational study.

Study place

The present study was conducted at at the department of Obstetrics and Gynaecology, PDU Medical College, Rajkot, Gujarat.

Study duration

The study was carried out from February 2023 to July 2024.

Study population

During this period 300 patients at a gestational age 34-36 week 6 days who delivered spontaneously were included

Inclusion criteria

Pregnant women admitted with signs and symptoms of preterm labor (regular uterine contractions with or without abdominal pain and cervical dilatation (>2cm) &/or effacement (>80%) of gestational age >34 weeks but <37 weeks admitted in OBGY department during the study period.

Exclusion criteria

Authors excluded patient with induced labour, women with co-morbidities, multiple pregnancy and women with any complication like GDM, IUFD and PIH.

A detailed history and examination were done. History about the patient's age, obstetric history, gestational age, menstrual history, obstetric history, associated risk factors, Fetal heart sounds were recorded. All required investigations like hemogram, blood grouping, Rh typing, urine routine and microscopy, urine and vaginal swab culture and sensitivity, ultrasound, per abdomen and per vaginal examination. Decision of delivery by vaginal route or cesarean delivery was done as and when required. Some patients were already in labour and others are allowed to go into spontaneous labour. If delivery made by cesarean section, indication was recorded. Cases were studied for maternal and neonatal outcome. The outcome of baby recorded by birth weight, NICU admission, APGAR score and perinatal mortality.

RESULTS

The present study was conducted in the department of Obstetrics and Gynaecology department at a tertiary care centre for a period of one and a half year. The maximum number of patients were in the age group below 25 years, 186 (62%) preterm deliveries belonged to this age group. As there is a huge number of immigrant population living close to Rajkot, a large number of patients in my study (37.3%) were uneducated and not aware of the high-risk pregnancies. The higher incidence of preterm deliveries were seen in nulliparous women (118 i.e., 39.3%) compared to primiparous or multipara women (Table 1).

Patients with a previous history of one or more abortions or preterm deliveries had higher incidence of preterm delivery (Table 3). In this study the commonest obstetrical cause predisposing to preterm labour was Gestational HTN including pre-eclampsia (14.6%), 17 (5.6%) patients had history of PTPROM and 17 (5.6%) patients had history of prior preterm births. Maternal condition like anemia, cardiac illness, renal disorder can have implications in women undergoing preterm labour (Table 2). Though majorly antenatal corticosteroids are not given at a gestational age of >34 weeks, but in our study it has been observed that good neonatal outcome and less incidence of respiratory problems were seen in neonates born to mother who were given antenatal corticosteroid. In our study, majority patients were delivered vaginally. The neonates majorly had birth weight between 2.1-2.5 kg, in our study it amounted to 172 neonates (57.3%). In our study, most common cause of NICU admissions was neonatal jaundice (25(8.33%)). Higher incidence 118 (39.3%) of PTL in nulliparous patients. 80 (26.6%) preterm births were found in 2nd and 3rd Para patients. 11 (3.6%) preterm delivery were found in grand multipara patients.

In present study, most common cause is GHTN (14.6%) which includes hypertensive disorders of pregnancy. It was most common for iatrogenic preterm labor. Our study includes patients with GHTN who went into spontaneous labor excluding those who were induced. Other common cause being PTPROM (preterm premature rupture of membrane) the incidence being 14.3%.GDM (Gestational diabetes) has been a cause for both preterm and post-term pregnancies, the incidence being 1.3% in our study. UTI accounts for 11.33% incidence of preterm labor, any source of infection or inflammation has been found to be a cause for preterm labor. Vaginal infection of a variety have been a common cause for women going into preterm labor,

the disruption of the normal vaginal flora leads to preterm delivery with a incidence of 7.66% in present study. Amniotic fluid disorder (oligohydramnios and polyhdramnios) was present in 2% patients. In the present study, patients with a previous history of one or more preterm deliveries and prior abortions were 5.66% and 17.33% respectively. Women with a prior history of abortion and preterm delivery have a higher likelihood of experiencing preterm delivery, the possible mechanism include cervical damage or changes in uterine structure following previous abortion.

As my study was restricted to late preterm period i.e., 34-36 weeks 6days, therefore majority babies (76.6%) had birth weight between 1.5-2.5 kg (230), only 2 babies had birth weight less than 1.5 kg (0.66%) and 68 babies had birth weight >2.5 kg (22.6%). In this study total no ,71 (23.66%) babies had low APGAR score (<7) at 5 min, out of these 61 babies delivered vaginally and 9 baby delivered by LSCS and 1 by instrumental delivery. Total 113 (37.59%) patients were admitted in NICU for various reasons, out of which 95 (31.66%) delivered vaginally and 17 (5.66%) delivered by LSCS.

Table 1: Parity wise distribution.

Parity	No. of patients	%
0	118	39.30
1	91	30.30
2	62	20.60
3	18	6
>=4	11	3.60

Table 2: High risk factors.

High risk factor	No. of patients	%
Anemia	43	14.30
Cervical incompetence	4	1.33
Fever under investigation	3	1
GDM	4	1.30
Gestational HTN	44	14.60
Amniotic fluid disorder	6	2
No ANC Visit	5	1.66
Multigravida	5	1.66
Cardiac disorder	1	0.30
Renal disorder(hydronephrosis)	1	0.30
Infective lung disorder	1	0.30
Prior PTB	17	5.60
PTPROM	17	5.60
Tobacco chewing	2	0.66
UTI	34	11.30
Vaginal infection	23	7.66
Uterine anomaly	2	0.60
Thalassemia trait	2	0.60
Idiopathic	82	27.30

Table 3: Previous preterm delivery or abortion.

Prior preterm	No of patients	%	Previous abortion	No of patients	%
1	4	1.33	1	41	13.60
2	6	2	2	8	2.66
>=3	7	2.33	>=3	3	1
Total	17	5.66		52	17.33

Table 4: Mode of delivery.

Mode of delivery	No. of patients	%
Normal vaginal delivery	256	85.30
LSCS	36	12
Assisted breech vaginal delivery	6	2
Instrumental delivery	1	0.33
VBAC	1	0.33

Table 5: Neonatal complications.

Neonatal complications	No. of neonates	%
LBW	19	6.33
VLBW	1	0.33
Delayed initiation of feeding	3	1
Hypoglycemia	5	1.66
Hypothermia	4	1.33
Intraventricular hemorrhage	1	0.33
Meconium aspiration syndrome	1	0.33
NEC	2	0.66
Neonatal jaundice	25	8.33
Expired	3	1
Patent ductus arteriosus	1	0.33
Perinatal asphyxia	7	2.33
PPHN	5	1.66
RDS	11	3.66
Retinopathy of prematurity	2	0.66
Septicemia	11	3.66
TTN	7	2.33
Baby of seropositive mother	5	1.66
Total	107	

Table 6: Parity.

Parity	Vandana et al[13]	Girotra et al[12]	Arshi Shaheen et al[14]	Prakash et al[15]	Fernandes et al[16]
Primigravida	47.29	34.60	35.40	27.08	44.80
Multigravida	52.70	65.40	64.76	72.92	55.20

DISCUSSION

In this study, 62% of patients were under the age of 25.[2] This aligns with findings by Ferre and Callaghan, who noted increased incidence among the youngest and oldest cohorts.[11] The study showed a higher incidence of preterm labor in nulliparous patients (39.3%). The study is comparable to the following study.

In the present study, patients with a previous history of one or more preterm deliveries and prior abortions were 5.66% and 17.33% respectively. This aligns with the study by Pandey Kiran et al, which demonstrated 14.4% patients had a previous history of abortions and 14.4% had previous history of preterm deliveries.[17]

In a study by Girotra et al around 10.83% patients had history of either previous abortions or preterm deliveries.[12] In the study infections accounts for 17% of the total incidence of preterm labor. In Fernandes et al, study about 13.65% patient had UTI compared to 11.3% patients in our study.[16] In the study 41.6% patients received antenatal steroids before delivery while the remaining did not received antenatal corticosteroids. In a study by Kamath et al use of antenatal corticosteroids in pregnancy beyond 34 weeks would reduce the rate of respiratory morbidity and NICU admissions.[18]Travers et al and co-worker in 2017 studied that infants exposed to antenatal corticosteroids lowers rate of death (22.7%) compared to infants without exposure (41.5%) also the rate of surfactant use and mechanical ventilation were lower in infants exposed to any Antenatal et al.[19]

Majority of the patients in this study delivered vaginally 256 (85.3%) and operative intervention in the form of LSCS was done in 36 (12%) no. of patients. These operative deliveries were done for other obstetric indication along with prematurity. Forceps delivery was done in 1 patient (0.33%) and also vaginal birth after cesarean section (VBAC) in 1 patient (0.33%). In this study total no, 71 (23.66%) babies had low APGAR score (<7) at 5 min, out of these 61 babies delivered vaginally and 9 baby delivered by LSCS and 1 by instrumental delivery. Total 113 (37.59%) patients were admitted in NICU for various reasons, out of which 95 (31.66%) delivered vaginally and 17 (5.66%) delivered by LSCS.

In study out of 107 infant majority were admitted in NICU because of jaundice (25 babies), it may be due to immature liver and not exclusively breast feeding the babies, also we considered birth weight <2.5 kg as LBW, 19 infants had birth weight <2.5 kg. 5 infants were admitted for administration of Hep B immunoglobulin and also observed for development of hepatitis, those who were

born to seropositive mother. In Garg et al study 84 babies were admitted in NICU, out of which 30 babies had jaundice, while 16 babies had RDS, 18 babies undergone asphyxia, septicemia seen in 9 patients and NEC in 1 baby.[20] In Chauhan et al, study jaundice was seen in 32.3% babies and RDS IN 22.6% While birth asphyxia in 13.7%.[21]

In Wang et al study jaundice was seen in 54% babies, also he studied that feeding difficulties in preterm babies were common compared to term infants due to immature suck-swallow coordination, fewer awake and alert periods. Hypoglycemia seen in 16% infants and hypothermia in 10% infants.[22] According to McIntire et al IVH rate in late preterm infants was 0.5% at 34 weeks, 0.2% at 35 weeks and 0.06% at 36 weeks.[23]

The current study was limited by its focus on a specific geographical immigrant population in Rajkot, which may not be representative of the general population. Additionally, because the study excluded induced labors and specific co-morbidities like GDM and PIH to focus on spontaneous late preterm labor, the findings may not reflect the full spectrum of late preterm delivery complications. The 1.5 years duration also limits the assessment of long-term neurodevelopmental outcomes in the neonates.

CONCLUSION

The perinatal morbidity and mortality rate have played a huge role in how to deliver a preterm baby, but an important fact is the presence of a highly skilled and experienced obstetrician. In order to reduce the incidence of preterm births a strong collaboration between an Obstetrician, neonatologist, patients and government is needed.

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