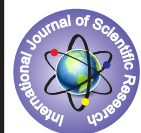


MATERNAL AND EARLY NEONATAL OUTCOME IN EARLY TERM DELIVERIES



Gynaecology

KEYWORDS: early term, morbidity, APGAR, NICU

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ABSTRACT

To determine maternal and early neonatal morbidity and mortality rates for early term birth compared to full term birth.

Methodology: – this was a prospective Study done in Department of Obstetrics & Gynaecology, Zenana Hospital, SMS Medical College, Jaipur March 2015 to February 2016. Sample size was calculated to 296 subjects in each of two group. Inclusion & exclusion criteria applied and data of maternal and early neonatal outcomes compared, correlated and statistically analyzed.

Result and discussion: Maternal morbidities were slightly higher in early term birth. Incidence of low birth weight were more in early term neonates (20%). No significant difference were noted between the 2 groups for APGAR scores at 1 and 5 minutes and jaundice and respiratory distress was seen more in early term neonates. 4 deaths of neonates were noted in early term birth (1.33%) and 3 deaths in controls (1%). NICU admission was more in early term birth (21.33%).

Conclusion: This study demonstrates that gestational age remains a predictor of neonatal morbidity. Most early-term infants (80%) weighed at least 2500 g at birth and had normal APGAR scores similar to those in term infants and appeared mature, providing false assurance to the clinical provider and parents. However, these neonates were physiologically immature as evidenced by greater need for admissions to the Neonatal Intensive Care Unit (NICU). NICU admission rate in early term is 21.33%.

Introduction: Term pregnancy has traditionally been defined as one in which 260–294 days have elapsed since the first day of the last menstrual period. Neonates born before this interval (less than 37 completed weeks of pregnancy) are classified as preterm, whereas those delivered beyond this interval (42 weeks and beyond) are designated postterm.^{1,2} Term birth has previously been considered a homogeneous group to which risks associated with preterm and postterm births are compared, but there is a growing body of data that suggests that significant differences exist in the outcomes of infants delivered within this 5-week interval.³ The American College of Obstetricians and Gynecologists (The College) and the Society for Maternal-Fetal Medicine (SMFM) are discouraging use of the general label 'term pregnancy' and replacing it with a series of more specific labels: 'early term,' 'full term,' 'late term,' and 'postterm.'

The following represent the four new definitions of 'term' deliveries:⁴

- **Early Term:** Between 37 weeks 0 days and 38 weeks 6 days
- **Full Term:** Between 39 weeks 0 days and 40 weeks 6 days
- **Late Term:** Between 41 weeks 0 days and 41 weeks 6 days
- **Postterm:** Between 42 weeks 0 days and beyond

Neonatal Morbidities Associated With Early-Term Delivery⁴

- Respiratory distress syndrome
- Transient tachypnea of the newborn
- Ventilator use
- Pneumonia
- Respiratory failure
- Neonatal intensive care unit admission
- Hypoglycemia
- 5-minute Apgar score less than 7
- Neonatal mortality

Determination of "the best gestational age for delivery" must include not only the risk of delivery but also the risk of remaining undelivered.⁵ The present study is undertaken to study maternal and early neonatal outcome in early term deliveries.

Material and Method:

Study design – prospective study

Place of study – department of obstetrics & gynaecology, zenana hospital, sms medical college, jaipur

Duration of study – march 2015 to February 2016

Sample size – sample size was calculated to 296 subjects in each of the two groups at alpha error 0.05 & study power 80% assuming the proportion of the low birth weight among full term & early term pregnancy to be 0.8% & 5% respectively [as per seed article] hence for study purpose 300 subjects were taken in each of two groups.

Inclusion criteria

- Regular menstrual cycle and sure of dates
- 37 wks to 40 wks 6 days- grouped into two (early term and full term)
- Spontaneous labour
- Premature rupture of membrane
- Previous two caesarean
- No recorded indication
- Any planned caesarean, eg. Breech, transverse lie
- Reassuring nst

Exclusion criteria

- Difficulty in determining gestational age
- Preterm, late term, post term pregnancy
- Aph
- Multiple pregnancy
- Iugr
- Congenital anomalies
- Medical illness
- Received blood transfusion
- Decreased fetal movements

Methodology

- Prospective study of women admitting in labour room with gestational age between 37 wks to 40 wks and 6 days at zenana hospital, sms medical college, jaipur was conducted.
- Exclusion and inclusion criteria applied.
- Gestational age estimated by lmp or first usg.
- Delivery precursors identified.
- Data of maternal and early neonatal outcomes compared, correlated and statistically analyzed.
- Chi-square test was used to assess statistical significance of association.
- P-value < 0.05 was considered as statistically significant.

Clinical evaluation: the recruited group were subjected to:-

- Detailed history
- Examination
- Investigation – routine and investigations, usg

Results: 600 subjects were recruited on the basis of inclusion and exclusion criteria. A form was completed for each subjects, a detailed medical and obstetric history taken, clinical examination and routine antenatal investigations and USG done. Delivery precursors identified. Data of maternal and early neonatal outcome compared, correlated and statistically analyzed. Salient features of this study were: -Mean age of study population 24.12 3.61 years. The urban population constituted major part of study population (68.67%). Majority of study population belonged to middle class (71.67%) and maximum cases were Hindu (83%). Majority of cases could read and write (70%). Early term births were more in primi gravida subjects (43.33%). More early-term infants were delivered by cesarean section compared with term infants (49.33%). In early term birth indicated deliveries were more (48%) and in full term birth spontaneous deliveries were more (51.3%). Maternal morbidities were slightly higher in early term birth (PPH 3%, secondary PPH 2.67%, genital tract injuries 2%). Though values were not statistically significant. Hospital stay of more than 8 days was more in early term neonates (25.67%). Incidence of low birth weight were more in early term neonates (20%) ($\chi^2 = 5.903$, d.f. = 1, $p < .05$, Significant). No significant difference was noted between the 2 groups for APGAR scores at 1 and 5 minutes ($\chi^2 = 0.970$, d.f. = 1, $p > .05$, Not significant). No significant difference was noted between the 2 groups for jaundice ($\chi^2 = 0.300$, d.f. = 1, $p > .05$, Non significant). Respiratory distress was seen more in early term neonates (6%). 4 deaths of neonates were noted in early term birth (1.33%) and 3 deaths in controls (1%). NICU admission was more in early term birth (21.33%). In early term neonates indicated deliveries were associated with more low birth weight (9%) followed by spontaneous (7%), PROM (3.33%) and not indicated deliveries (0.67%) [Indicated - $\chi^2 = 0.387$, d.f. = 1, $p > 0.05$, NS; Spontaneous - $\chi^2 = 0.146$, d.f. = 1, $p > 0.05$, NS]. Spontaneous deliveries and indicated deliveries in early term birth were associated with more respiratory distress (2.67% and 1.67% respectively) followed by PROM (1.33%) and not significant [Indicated - $\chi^2 = 0.725$, d.f. = 1, $p > 0.05$, NS; Spontaneous - $\chi^2 = 0.301$, d.f. = 1, $p > 0.05$, NS; PROM - $\chi^2 = 2.073$, d.f. = 1, $p > 0.05$, NS]. There was no significant difference noted in early term neonatal mortality rates according to precursor of delivery [Indicated - $\chi^2 = 0.000$, d.f. = 1, $p > 0.05$, NS; Spontaneous - $\chi^2 = 0.000$, d.f. = 1, $p > 0.05$, NS].

Observation and discussion:

Table – 1 Distribution According to Mode of Delivery of Case & Control Subjects

Mode of Delivery	Case		Control	
	No.	%	No.	%
LSCS	148	49.33	130	43.33
NVD	152	50.67	170	56.67
Total	300	100.00	300	100.00

$$\chi^2 = 2.170 \quad d.f. = 1 \quad p > 0.05 \quad NS$$

Sengupta S et al (2013)⁸ reported more early-term infants were delivered by cesarean section compared with term infants, which is a

contributor to longer duration of hospital stay and more respiratory morbidity in this population.

Ramprakash MA et al (2016)¹⁰ reported 52.2% LSCS in cases.

Table – 2 Distribution According to Precursor of Delivery of Case & Control Subjects

Precursor of Delivery	Case		Control	
	No.	%	No.	%
Indicated	144	48.00	126	42.00
Spontaneous	130	43.33	154	51.33
PROM	19	6.33	15	5.00
Not Indicated	7	2.34	5	1.67
Total	300	100.00	300	100.00

$$\text{Indicated} \quad \chi^2 = 2.180 \quad d.f. = 1 \quad p > 0.05 \quad NS$$

$$\text{Spontaneous} \quad \chi^2 = 3.851 \quad d.f. = 1 \quad p < 0.05 \quad Sig$$

$$\text{PROM} \quad \chi^2 = 0.500 \quad d.f. = 1 \quad p > 0.05 \quad NS$$

Above table shows maximum number of deliveries occurred in cases (48%) due to indication and in controls due to spontaneous onset (51.3%). With increasing gestational age percentage of indicated deliveries, PROM, non indicated delivery decreases and percentage of spontaneous deliveries increases.

Parikh LI et al (2014)⁹ reported 53.6% term deliveries occurred with spontaneous onset.

Table – 3 Distribution According to Maternal Morbidities of Case & Control Subjects

Maternal Morbidities	Case		Control	
	No.	%	No.	%
PPH	9	3.00	5	1.67
Secondary PPH	8	2.67	3	1.00
Septicemia	4	1.33	5	1.67
Genital Tract Injuries	6	2.00	5	1.66
None	273	91.00	282	94.00
Total	300	100.00	300	100.00

Above table shows maternal morbidities are absent in most of the subjects (cases 91% and 94% controls). Septicemia occurred in 4 cases and 5 subjects of controls. Secondary PPH occurred in 8 subjects of case group. Primary PPH occurred in 9 subjects of case in comparison to 5 subjects of controls.

Heimstad R et al (2006)⁶ reported that maternal complications varied with gestational age and PPH was lowest at 39 weeks (odds ratio 1.3 - 2.8%).

Table – 4 Distribution According to Birth Weight of Newborn of Case & Control Subjects

Birth Weight	Case		Control	
	No.	%	No.	%
LBW	60	20.00	38	12.67
NBW	240	80.00	262	87.33
Total	300	100.00	300	100.00

$$\chi^2 = 5.903 \quad d.f. = 1 \quad p < 0.05$$

Cheng YW et al (2008)⁷ reported that risk of macrosomia was lower with delivery at 37 or 38 weeks' gestation than at 40 or 41 weeks such that the risk of having neonates weighing greater than 4500 g was more than 3-fold that of delivery at 39 weeks (aOR 3.57 [95% CI, 3.45-3.69]).

Table – 5 Distribution According to APGAR Score at 1 Minute of Case & Control Subjects

APGAR at 1 Minute	Case		Control	
	No.	%	No.	%
7	94	31.33	83	27.67
>7	206	68.67	217	72.33
Total	300	100.00	300	100.00

$$\chi^2 = 0.970 \quad d.f. = 1 \quad p > 0.05 \quad NS$$

Sengupta S et al (2013)⁸ reported that no significant difference were noted between the 2 groups for APGAR scores of 5 or less at 1 and 5 minutes.

Table – 6 Distribution According to APGAR Score at 5 Minutes of Case & Control Subjects

APGAR at 5 Minutes	Case		Control	
	No.	%	No.	%
7	49	16.33	38	12.67
>7	251	83.67	262	87.33
Total	300	100.00	300	100.00

$$\chi^2 = 1.626 \quad d.f. = 1 \quad p > 0.05 \quad NS$$

Cheng YW et al (2008)⁷ reported that neonates delivered at 37 weeks had increase in risk of having a low 5 minute APGAR score (aOR 1.69 [95% CI, 1.59-1.79] for 5 minute APGAR less than 7 and aOR 1.87 [95% CI, 1.63-2.15] for 5 minute APGAR less than 4).

Table – 7 Distribution According to Jaundice in Case & Control Subjects

Jaundice	Case		Control	
	No.	%	No.	%
Present	53	17.67	48	16.00
Absent	247	82.33	252	84.00
Total	300	100.00	300	100.00

$$\chi^2 = 0.300 \quad d.f. = 1 \quad p > 0.05 \quad NS$$

Ramprakash MA¹⁰ et al (2016), reported 88% full term neonate without jaundice in their study.

Table – 8 Distribution According to Respiratory Distress in Case & Control Subjects

Respiratory Distress	Case		Control	
	No.	%	No.	%
Present	18	6.00	15	5.00
Absent	282	94.00	285	95.00
Total	300	100.00	300	100.00

$$\chi^2 = 0.290 \quad d.f. = 1 \quad p > 0.05 \quad NS$$

Sengupta S et al (2014)⁸ reported respiratory distress in 5.4% in early term and 3.3% in full term birth.

Table – 9 Distribution According to Neonatal Mortality in Case & Control Subjects

Neonatal Mortality	Case		Control	
	No.	%	No.	%
Present	4	1.33	3	1.00
Absent	296	98.67	297	99.00
Total	300	100.00	300	100.00

$$\chi^2 = 0.000 \quad d.f. = 1 \quad p > 0.05 \quad NS$$

The American College of Obstetricians and Gynecologists Committee on Obstetric Practice (2013)⁴ reported 1.81% deaths in early term and 0.8% deaths in full term deliveries.

Table – 10 Distribution According to NICU Admission in Case & Control Subjects

NICU Admission	Case		Control	
	No.	%	No.	%
Present	64	21.33	57	19.00
Absent	236	78.67	243	81.00
Total	300	100.00	300	100.00

$$\chi^2 = 0.510 \quad d.f. = 1 \quad p > 0.05 \quad NS$$

According to Tracy SK (2007)¹² reported that NICU admission rate of early term 19.57%.

Table – 11 Distribution of Precursor of Delivery According to Birth Weight of New Born Baby of Case & Control Subjects

Precurs or of Delivery	Case			Control		
	LBW	NBW	Total	LBW	NBW	Total
Indicate d	27 (9.00%)	117 (39.00%)	144 (48.00%)	23 (7.67%)	103 (34.33%)	126 (42.00%)
Spontan eous	21 (7.00%)	109 (36.33%)	130 (43.33%)	13 (4.33%)	141 (47.00%)	154 (51.00%)
PROM	10 (3.33%)	9 (9.67%)	19 (6.33%)	2 (0.67%)	13 (4.33%)	15 (5.00%)
Not Indicate	2 (0.67%)	5 (1.67%)	7 (2.33%)	0 (0.00%)	5 (1.67%)	5 (1.67%)
Total	60 (20.00 %)	240 (80.00 %)	300 (100.00 %)	38 (12.67 %)	262 (87.33 %)	300 (100.00 %)

$$\text{Indicated} \quad \chi^2 = 0.387 \quad d.f. = 1 \quad p > 0.05 \quad NS$$

$$\text{Spontaneous} \quad \chi^2 = 0.146 \quad d.f. = 1 \quad p > 0.05 \quad NS$$

Parikh LI et al (2014)⁹ reported that women who underwent an indicated delivery during the early term period were more likely to have a neonate weighing <2,500 or >4,000 grams compared to deliveries among the other three precursors for early term birth ($p < .001$).

Conclusion : This study demonstrates that gestational age remains a predictor of neonatal morbidity. Most early-term infants (80%) weighed at least 2500 g at birth and had normal APGAR scores similar to those in term infants and appeared mature, providing false assurance to the clinical provider and parents. However, these neonates were physiologically immature as evidenced by greater need for admissions to the Neonatal Intensive Care Unit (NICU). NICU admission rate in early term is 21.33%. Further studies are needed in this regard in order to establish a perfect correlation between gestational age at delivery and neonatal morbidities. This will help us to set standard guidelines to determine optimal time for delivery and to reduce economic cost of neonatal intensive care and ongoing health care and educational needs in our country.

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