Original Research Article

Short term outcomes of early term neonates in a tertiary care centre: A Descriptive study

Running title: Short term outcomes of early term neonates

Abstract:

Introduction: The number of babies delivered between 37 weeks to 38 weeks and 6 days has been on the risewith increase in lower section caesarian section (LSCS). These early term neonates have increased risk of developing respiratory distress syndrome, neonatal hyperbilirubinemia, transient tachypnoea, prolonged hospital stays, hypothermia, feeding difficulty has been increased, when compared to a term neonate(Not a meaningful sentence). An audit of early term neonatal short-term outcomes was undertaken at our institute.

Methodology: A retrospective descriptive cross- sectional study was carried out between July 2020 and December 2020 at a private medical college neonatal intensive care unit. Neonates with a gestation age of 37 weeks and 0 days to 38 weeks and 6 days born were included.

Results: A total of 137 early term delivery data were obtained. Hypothyroidism (23%) and gestational diabetes (23%) were found to be the most common associated antenatal problems. The most common morbidity ?? in out of 137 early term neonates 91(66.4%) followed by respiratory morbidity which affected 38 (28%) neonates. (Make it clear what to say)

Conclusion: This study establishes the high incidence of neonatal jaundice and respiratory morbidities in this population. Hence unless indicated, it is imperative to schedule elective LSCS not less than 39 weeks.

Keywords: early term neonate, neonatal jaundice, respiratory morbidity

Introduction:

A child's risk of death is 15 times greater in the first 4 weeks of life [1], which may be due to various causes. It is important to know the various preventable causes of neonatal mortality for timely intervention and reduction of perinatal morbidity.Although prematurity has been the most common cause of perinatal morbidity [2], more recent evidences suggest that early term deliveries contribute to an extent to neonatal morbidity [3,4,5]. American College of Obstetricians and Gynecologist defines early term delivery as delivery of baby between the gestational periods from 37 weeks to 38 weeks and 6 days [6].

Incidence of Respiratory Distress syndrome, Neonatal hyperbilirubinemia, Transient Tachypnoea, prolonged hospital stays, hypothermia, feeding difficulty has been increased [7], when compared to a term neonate. The reason behind these is physiological immaturity of the baby.The indications of elective LSCS in early term pregnancy can range fromunavoidable circumstances such as, previous LSCS in labour, breech in labour, cephalopelvic disproportion toavoidable scenarios such as maternal request of LSCS in view of anxiety or wishing to have their child on an auspicious day. According to a study done by Pirjani, R et al, 28% of women requested for LSCS [8].

Astudywas undertaken at our institute to audit the early term neonatal short-term outcomes. Though it is impossible to drastically decrease the incidence of early term deliveries as there will be absolute indications making an early term delivery inevitable, we can still try and avoid early term deliveries that are done for maternal request or non-medical and non-emergent indications.

Methodology:

A retrospective descriptive cross- sectional study was carried out between July 2020 and December 2020 at a private medical college neonatal intensive care unit. Neonates with a gestation age of 37 weeks and 0 days to 38 weeks and 6 days born during the above period of 6 months were included. The identity details of the

babies were obtained from department database. Institutional Ethical Committee approval was obtained prior to retrieving case records from Hospital Medical Records Department.

Information on maternal age, parity, antenatal risk factors, mode of delivery, resuscitation were obtained from case records. The early neonatal outcomes that were studied were incidence of respiratory morbidity, hypoglycemia, feeding problems, neonatal jaundice and duration of hospital stay.

The data was compiled using Microsoft Office 365 Exceland analyzed with Microsoft Excel data analysis tool kit. Qualitative data was presented as frequencies and percentages. Mean, standard deviation, median an interquartile range were used to represent quantitative data.

Better to mention any exclusion criteria considered or not, as these babies in mentioned age group may have other problems to increase mortality. Next, 137 no. - is it sufficient for a valid conclusion ?

Result:

A total of 137 early term babies were delivered between July 2020 and December 2020. Table 1 shows maternal characteristics. The mean age of the mother who gave birth to early term neonates was 26.8 years [SD ±4.2].Hypothyroidism (23%) and gestational diabetes (23%) were found to be the most common antenatal problem. 73% of the deliveries were through LSCS.

TABLE 1: Maternal Characteristics

Maternal characteristics(n=137)	Frequency (Percentage)
Age, mean (sd)	26.8 (4.2)
Primi, n(%)	63(46)
Multi, n(%)	74(54)
PIH, n(%)	21(15)
GDM, n(%)	31(23)
Hypothyroid, n(%)	32(23)
Mode of delivery	
LSCS, n(%)	100(73)
NVD, n(%)	37(27)

Neonatal characteristics are given in Table 2. The mean gestational age of the neonates was 37.4 [SD ±0.5] and mean weight of the neonates was 2822g [SD±471]. Out of 137 neonates 80 [58%] of them were male babies and 57 [42%] of them were female babies. The median value for the time taken for giving the first feed was around 30 minutes with interquartile range of 18-36.

Table 2: Neonatal Characteristics

Gestational age, mean(SD)	**37.4(0.5)**
Birth weight, grams, mean(SD)	**2822(471)**
Male, n(%)	**80(58)**
Female, n(%)	**57(42)**
Need for resuscitation, n(%)	**8(6)**
Positive pressure ventilation, n(%)	**8(6)**
1 min apgar, mean (SD)	**7.5(0.9)**
5 min apgar, mean (SD)	**8.6(0.6)**
First feed initiation, minutes, median(IQR)	**30(18-36)**

Table 3 shows early neonatal outcomes of the study population. The most common morbidity in early term neonates was neonatal jaundice which affected 91 [66.4%] of the neonates, with mean peak bilirubin value of 14.1mg/dl, followed by respiratory morbidity which affected 38 [28%] of the neonates. None of the babies had feeding problem.

Table 3: Early Neonatal Outcomes

Respiratory morbidity, n(%)	**38(28)**
Hypoglycemia, n(%)	**5(3.6)**
Hypoglycemia corrected with feeds, n(%)	**5(100)**
Neonatal jaundice, n(%)	**91(66.4)**
Maximum bilirubin, mg/dl, median(IQR)	**14.1(11-16.3)**
Exchange transfusion, n(%)	**1(0.7)**
Feeding problems, n(%)	**Nil ???**
Duration of stay, median (IQR)	**7(6-10)**

Discussion:

In our study we aimed to highlight the risk factors associated with early term deliveries and its impact on short term neonatal outcomes. In our study the mean age of the mothers is 26.8, which is comparatively lower than the study done by Tita ATN et al [10] in which the median age was 30 and is similar to study

done by Dilek Ulubaş-Işık et al in which the mean age was 28.2[11]. (Better to cite some Indian studies to match the socio demographic profile) Maternal hypothyroidism (23%), gestational diabetes (GDM) (23%) followed by pregnancy induced hypertension (PIH) (15%) were the antenatal risk factors associated with early term deliveries in our study. These findings are in contrast to the study done by Dilek Ulubaş-Işık et al in where 22% of PIH and 35% of GDM accounted for early term deliveries [11]. The mode of delivery in our study is 73% via LSCS and 27% by NVD, which implies that early term deliveries are associated with LSCS. LSCS was either indicated or non indicated where maternal preference was placed over fetal and neonatal well-being.(No data to prove this observation in this study) Our incidence of LSCS is more than three fourths of total delivery when compared to study done by Sengupta S et al where the frequency of LSCS for early term gestation was 38.4%[12].

According to our study the mean gestational age of the babies is 37.4 weeks and the mean birth weight is 2822 grams which is almost similar to study done by Bulut et al [13] where the mean weight is 3124 grams. This implies that incidence of low birth weight is not that significant in early term according to our study. The frequency of male baby in this study is 58% which is similar to the study done by Dilek Ulubaş-Işık et al [11] in which there was 61 % of male babies. The mean 1-minute APGAR score is 7.5and 5-minute APGAR score is 8.6 which is lesser when compared to study done by Ozgul Bulut et al where the 1 minute APGAR was 7.9 and 5 minute APGAR was 9.1[13].

Our study results showed significant increase in incidence of respiratory morbidity and neonatal jaundice. The most common adverse outcome was neonatal jaundice which accounted for 66.4% with mean peak bilirubin value of 14.1.mg/dl followed by respiratory morbidity which accounted for 28%. How to conclude the significance of these findings, as they are simple data of prevalence. You have no data to show that more than 38 weeks newborns have different data. A study done by Ghartey K et al showed that there is 2 fold increase in incidence of respiratory morbidity in early term neonates when compared to term neonates [14] and this fact is also supported by the study done by Thomas J et al[15]. The increase in respiratory

morbidity is probably due to decreased clearance of lung fluid which is secondary to delayed pulmonary fluid absorption due to decreased maturity and increased rate of LSCS.

The incidence of neonatal hypoglycemia is 5% which is similar to the study done by Sengupta S et al in which the incidence was 4.9%[12].In our study population, the low incidence could be due to the practice of first hour feeding. None of the neonates needed intravenous fluids for hypoglycemia correction and correction of feeds along with prescription of pasteurized donor human milk from our human milk bank was sufficient for hypoglycemia correction.

Jaundice is the most common condition requiring medical attention in the neonates. According to a study done by Woodgate P , about 50% of term babies and 80% of preterm babies develop neonatal jaundice. This shows that as the gestational age decreases the incidence of jaundice increases. The incidence of neonatal jaundice in our study is 66.4% which is comparatively higher than the study done by Dilek Ulubaş-Işık et al [11] in which the incidence was 45% which might be due to higher study population. The higher incidence was probably due to decreased feeding ability of early term neonates that is compounded by hepatic immaturity.

The mean duration of hospital stay in our study is 7 which is higher when compared to study done by Ozgul Bulut et al[13], where the mean duration was 4.4.the higher incidence of neonatal jaundice needing phototherapy and respiratory morbidity probably lead on to increase in duration of stay.

Conclusion:

Our study is limited by the sample size used and long-term data, which is being done as a follow up project in our unit. This study establishes the high incidence of neonatal jaundice and respiratory morbidities in this population. This will in turn cause maternal anxiety, mother child separation and increased hospital stay.

Hence unless indicated, our Obstetric colleagues must be requested to schedule elective LSCS not less than 39 weeks.

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