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EVALUATION OF MATERNAL OUTCOME IN LATE PRETERM CAESAREAN SECTION: A PROSPECTIVE STUDY AT A TERTIARY CARE CENTRE

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Abstract

Child's births occur at a minimum of 39 weeks of gestation unless earlier delivery occurs spontaneously or because of maternal and fetal medical indications. Therefore, the present study included 100 patients who were delivered by late pre-term cesarean section conducted in Department of Obstetrics and Gynaecology, Umaid Hospital, Dr. S. N. Medical College Jodhpur. This study showed 81% patients from 21-30 years of age 13% were from 31-40 years, 5% were <20 years and 1% were >40 years. The average age was about 26.39 years. 31% of patients presented with complaints of labor pain followed by leaking per vaginum(25%). Highest number of abortions was 4 and maximum numbers of patients (10) have one abortion. 56% of patients have previous delivery and out of them 33% had previous LSCS. Among significant past history, history of previous preterm delivery was seen in 15% cases and history of previous SB/IUD was seen in 11% cases. Among maternal risk factors hypertensive disorder of pregnancy was seen in 29% patients. Among fetal risk factors severe oligohydramnios was most common (16%) and IUGR seen in 9% cases. 75% patients had cephalic presentation followed by breech presentation (24%).91% patients had singleton pregnancy and 9% patients had twin pregnancy. 53% of late preterm cesarean sections were due to fetal indications.28% of cesarean sections were due to previous cesarean sections with associated conditions.7 % of patients had PPH followed by, 2% had Couvelaire uterus and 1% had Placenta left in situ. The mean period of gestation was 35.5 weeks and 44% of patients have POG 36 -36.6 weeks when they have a cesarean section. The mean period of gestation was 35.5 weeks. We could find major complication of late preterm caesarean section of pregnant women and prefer to identify such cases and seek medical emergency prior to the preparation of cesarean.

Key Word: Late Preterm, Caesarean Section, Maternal Outcome

INTRODUCTION

Over the last several decades, globally stillbirth and neonatal mortality rates have declined, while preterm birth rates have remained stable or even increased in many countries.[1] The term "Preterm birth" refers to all births occurring before 37 weeks of gestation or <259 days from the 1st day of the last menstrual period. It is further subclassified into extreme preterm (<28 weeks gestation), very preterm (28–<32 weeks gestation), moderate preterm (32–<34 weeks gestation), and late preterm (34–<37 weeks gestation).[2, 3, 4]

Preterm birth is a prime cause of infant morbidity and mortality worldwide and occurring in an estimated 15 million births globally each year and approximately 1 million children die each year due to complications of preterm birth. More than 80% of preterm births occurred between 32 and 37 weeks of gestation. Exact incidence of late preterm births (34 - 36 completed) has not been reported, but it is logical to assume that more than 70% births were late preterm.[5] The incidence of preterm births in developing countries ranges from 12 Late preterm birth is largest and fastest growing subgroup of preterm births% to 18% and India recorded the highest number of preterm births in 2010.[2]

Late preterm birth is largest and fastest growing subgroup of preterm births.[6] The majority of late preterm deliveries are due to spontaneous onset of labour or preterm premature rupture of membranes (PPROM), while only less than one third of these births occurs as the result of a medical indication to terminate the pregnancy.[7]There are a number of maternal, fetal and placental complications in which late preterm delivery warranted.[8]These may be due to serious threat on mother and fetus which warrants immediate delivery or planned delivery with availability of multispecialty staff.For better understanding of epidemiology of late preterm infant the quality and volume of data needs to be increased with better monitoring and reporting. Lack of data in a developing country like India hindersthe formulation of proper management strategy. India's health care system is improving continuously by government priorities to boost up the infrastructure and at the same time various schemes which motivate women for institutional delivery and thus trying to reduce MMR, IMR, NMR and due to this there is rise in LSCS in a tertiary referral center. This also includes rise in preterm LSCS so for this we done a study to evaluate the perinatal outcome in late preterm cesarean section of pregnant women admitted in Umaid Hospital.

METHODOLOGY

This was a prospective observational study conducted in the department of Obstetrics and Gynaecology, Umaid Hospital, Dr. S.N. Medical College Jodhpur, after the ethical committee approval a written and signed informed consent was obtained from the parturients visiting the clinic from March 2021 and December 2021 for a period of 9 months or till the desired sample size was achieved.

All pregnant women having late preterm caesarean section (34week to 36 week 6 day) were Included in the study. Patients with Intrauterine death (USG suggestive of intrauterine death) and diagnosed of having major congenital anomalies (USG suggestive of gross congenital anomaly) were excluded from the study.

METHODS OF COLLECTION OF DATA

Data of all pregnant women who underwent a late preterm cesarean section between March 2021 and December 2021 were reviewed. The relevant data on patients demographic and clinical data was collected according to proforma and analyzed concerning patient's characteristics, age, religion (Hindu /Muslim), urban/ rural, socioeconomic status, married life, immunisation status, obstetric history, gestational age at admission, gestational age at cesarean section, pregnancy outcome in term of gestational age at the end of pregnancy, mode of deliveries, h/o previous pregnancy (twins, APH, HDOP, SPE, APE, PPH) and details of current pregnancy (infertility treatment, HDOP, GDM and APH) and relevant past medical (hypertension, diabetes, heart disease, chronic kidney disease) /personal /drug history/family history. Patients withIntrauterine death (USG suggestive of intrauterine death), major congenital anomalies (USG suggestive of gross congenital anomaly) were excluded.

Delivery outcomes were reviewed included to find out fetal outcome in late preterm caesarean section (sex, weight, mother shift/ NICU admission, hospital stay), to find out maternal outcome in late preterm caesarean section (ICU admission, wound infection, hospital stay, PPH, maternal mortality) to find out feto - maternal indications for late preterm caesarean(IUGR, Oligohydroamnios, abnormal doppler, multiple gestation, placenta previa,suspectedaccreta, increta, percreta, placenta abruption, hypertensive disorder of pregnancy, diabetes / gestation diabetes, PPROM). By this study we try to enhance the scope of fetal outcome by early flagging of high risk pregnancies, and prevented sudden and unexpected e3foetal loss.

STATISTICS ANALYSIS

1) Qualitative data was expressed in form of percentages and proportions.
2) Quantitative data was expressed in form of mean ± SD.
3) Significant difference in proportions was inferred by the chi-squared test.
4) Significant difference in mean ± SD was inferred by unpaired t-test.
5) 'p-value' less than 0.05 were considered as significant.

RESULTS

The present study was done on 100 patients, maximum, 81% were from the 21-30 years of age group and the minimum cases 1% were from the above 40year age group. The average age was about 26.39 years. 31% of patients presented with complaints of labor pain followed by leaking per vaginum (25%). Highest number of

abortions was 4 and maximum numbers of patients (10) have one abortion. 56% of patients have previous delivery and out of them 33% had previous LSCS. Among significant past history, history of previous preterm delivery was seen in 15% cases and history of previous SB/IUD was seen in 11% cases. Among maternal risk factors hypertensive disorder of pregnancy was seen in 29% patients. Among fetal risk factors severe oligohydramnios was most common (16%) and IUGR seen in 9% cases. 75% patients had cephalic presentation followed by breech presentation (24%).91% patients had singleton pregnancy and 9% patients had twin pregnancy. 53% of late preterm cesarean sections were due to fetal indications.28% of cesarean sections were due to previous cesarean sections with associated conditions.7 % of patients had PPH followed by, 2% had Couvelaire uterus and 1% had Placenta left in situ. The mean period of gestation was 35.5 weeks and 44% of patients have POG 36 -36.6 weeks when they have a cesarean section. The mean period of gestation was 35.5 weeks.

DISCUSSION

Late preterm infants have increased attention over the past years because of the increasing percentage of late preterm neonates being born and additional care they required. The present study was designed to evaluate perinatal outcomes in late preterm cesarean sections in tertiary care hospital and data of perinatal outcomes of 100 women who underwent late preterm cesarean section. The following observations were made:-

As shown in this study,86% majority of women belonged to <30 years of age group andonly 1 patient was seen above 40 year of age.Similar results were obtained in the studies below 30 year of age:-

STUDIES	PERCENTAGE
Singh et al [9]	89%
Dey M et al [10]	89.5%
Present study	86%

Late preterm birth was more in <30 year of age group as this is the reproductive age group and early marriage is a common phenomenon in our country. **Carter et al (2011)[11]** reported that age more than 35 years of patients were associated with an increased risk of late preterm birth. Their late marriage and career priority being the cause for postponing childbearing has led to an increased in obstetrics associated chronic disease complications.

In the study of **Patil et al (2017)[2]** the mean age of women in the late preterm group was 24.4 years and more women were in the age group of 20 to 24 years. The mean age was 26.39 years in the present study and more women belongs to the age group 21 to 30 years.

56% of patients came with complaints of labor pain and PPROM, 18% of patients were admitted for safe confinement and 16% had complained of bleeding per vaginum. **Laughon et al (2010)[12]** reported that spontaneous labor and PPROM accounted for about 60% of late preterm births and 30% of patients were represented by other identifiable risk factors such as hypertensive disease, diabetes, and signs suggestive of loss of fetus homeostasis. **Vanin LK et al (2020)[13]** also reported that preterm labor and PPROM accounted for 53.2% of late preterm births. PPROM was a single most common cause of late preterm cesarean section where unfavourable cervix leads to failed induction and subsequent operative delivery.

The Association of late preterm births with previous abortion, whether spontaneous or induced, was still not clear. **Thorp et al (2003)[14]** reported more risk of preterm birth in women who had a previous induced abortion. 56% of patients had previous delivery and among them, 33% had previous cesarean section and 23% had a normal vaginal delivery. The present study showed that cesarean section increased the risk of late preterm birth in a subsequent pregnancy. **Yasseen et al (2018)[15]**reported that there was a significant association between previous cesarean section and late preterm birth and there was a 20% increased risk of late preterm birth in subsequent pregnancies as compared to those with no history of cesarean section. In **Singh et al[9]**study, 8.9% of patients had a prior cesarean section and in **Dey M et al[10]**study, 10.1% had a prior cesarean section because in this study both vaginal and cesarean sections were included as compared to our study.

History of previous preterm delivery was seen 15% of patients, 11% had a history of fetal loss and 11% had a prior recurrent abortion. **Patil et al[2]** reported that 19.2% of cases had previous preterm birth and found that it was the strongest risk factor for late preterm birth. As we know that history of preterm delivery is the strongest risk factor for future preterm delivery in such patients under the supervision of clinicians who can manage efficiently to protect preterm birth by prescribing progesterone and tocolytics can progress early perterm to late preterm in recurrent preterm deliveries. These medications might prolong the pregnancy by 2-3 weeks.

Dey M et al[10]study reported that previous history of fetal loss and other associated obstetric complications were associated with late preterm birth as shown in the study that 13% of women had a history of one or more fetal losses. In the present study, 3% of patients had a history of antepartum hemorrhage and among them, 2% had recurrent APH, 1% patient had a history of antepartum eclampsia and 1% had a history of the uterine rupture in a previous pregnancy.The maternal risk factors accounted to be 42% in the present study and similar risk factors were also reported by **Giliyaru Sahana et al (2019)[16]**. As shown below the maternal risk factors were:

Maternal risk factors	Current study	**Giliyaru Sahana et al[16]**
PIH	25%	24.7%
PROM	25%	14.6%
Multifetal gestation	9%	6.7%
Eclampsia	4%	1.1%
GDM/DM	4%	3.4%
Heart disease	1%	1.1%

In the study of **Patil et al, [2]** pre-eclampsia was seen in 36.6%, eclampsia in 4.8% cases, DM in 17.9% cases, placental previa in 13.5%, and abruption placenta in 9.8% cases with late preterm deliveries. In the current study, placenta previa was seen in 6% of cases.

In **Singh et al[9]** study, 21% of patients had a hypertensive disorder of pregnancy,13.5% had PPROM,6% had gestational diabetes,5% had multifetal gestation and4% had conceived after assisted reproductive techniques. HDOP cases were less compared to present study, 7% of patients had ART, 4% had cervical cerclage, 1% had heart disease and 1% had morbidly adherent placenta. All these were maternal risk factors that were reported by us in patients who had a late preterm cesarean section.

These differences were seen due to the heterogeneity of various studies. It was known that twin gestations delivered earlier than singleton pregnancy; the average gestational age of delivery was thought to be in the late preterm period. Expert opinion suggested that delivery of uncomplicated mono/dichorionic twins should occur in the late preterm period between 34 and 37 weeks of gestation.[15]An accidental result of ART showed an increase in the incidences of multiple pregnancies, which was a risk factor for preterm births. In the present study 7 patients conceived after ART and among them, 4 patients had twin pregnancies. It was also known that ART increased the risk of preterm births even in singleton pregnancies.[17]The optimal gestational age for delivery of women with placenta previa was based on expert opinion and was estimated between 36 to 38 weeks of gestation. The gestational age of delivery weighs the risk of prematurity versus the risk of maternal hemorrhage, which increases in the presence of contractions.[18]planned late preterm delivery is an acceptable management for placenta accreta since data was showing an increased rate of hemorrhage if delivery occurred beyond 36 weeks of gestation.[18]

Among fetal risk factors, oligohydramnios was seen in 23% of cases, andamong them,16% of patients had severeoligohydramnios, other fetal risk factors which we found during the doppler studyincluded IUGR in 9%of cases,uteroplacental or fetoplacental insufficiency in 6% cases,fetal hypoxia in 5% cases,brain sparing effect in 3% cases and restricted fetal movement seen in 2% cases. All these factors were also responsible for the adverse fetal outcomes. All these fetal and maternal risk factors together contributed to the poor perinatal outcomes of preterm infants and termination of pregnancy during the late preterm period.

Zhanga Jet al[19] study reported that isolated oligohydramnios were not to be related to adverse perinatal outcomes.In the present study, patients with oligohydramnios also had abnormal Dopplerfindings (UPI, brain sparing effect, IUGR),HDOP, and non-reassuring fetal heart rate.In the present study, 9% of patients had IUGR fetuses,it was well documented that poor third-trimesterfetal growth has an increased risk of both fetal and neonatal morbidity and mortality.[19] Only therapeutic option was timely delivered, this was a tricky situation where early delivery increased the risk of prematurity and too late,the risk of suboptimal fetal outcome or stillbirth.

In the present study, 2 or 3 loops of cord around the fetal neckwereseen in 5% of patients with other fetal risk factors which increases the chances of intrauterine fetal loss.Vertex presentationwasseen in 75% of cases, i.e.,the most common presentation and non-vertex presentation wereseen in 25% of cases, and among them, 24% hadthe breech presentation and 1% had transverse lie.
Singleton pregnancy was seen in 91% of cases and twin pregnancy was seen in 9% of cases. Among twin pregnancy, 4%of patients conceived after ART.53% of cesareansections were done due to fetal indications, 28% were done due to maternal indications, and the rest 19% cesarean sectionswere done due to fetomaternal indications as well being of the fetus was the top priority.Fetal indications for cesarean section was high because the primary aim of an obstetrician is to deliver healthy neonates in the safest manner possible soinfants who were exposed to the pathological intrauterine environment (characterized by infection, inflammation,placental ischemia, and other hypoxia) was high risk for the poor perinatal outcome or intrauterine fetal loss were

delivered after 34 weeks because 34 week was surrogate for lung maturity, therefore infants born at or after this were considered to be low risk for neonatal morbidity and mortality.

Majority of cesarean sections were done in 28%patients who hada previous cesarean section. Among these 8% of patients were in labor, 11% were presented with PPROM, 3% weresevere preeclampsia, 6% were doppler abnormalities and all can affect the outcome of both mother and fetus. The decline in the rate of VBAC was because of patients and obstetricians fear of uterine rupture and associated complication thus increase the rate of repeat cesarean section and late preterm birth. **Yaseen et al[16]** study found that previous cesarean section was associated with higher risk of late preterm birth in subsequent pregnancies due to previous cesarean section having increased chances of low lying placenta, placenta accreta and damage to the uterine wall leading to increased scar dehiscence and furtherincreasing risk of subsequent emergency preterm cesarean section. 17% of cesarean sectionswas due to malpresentation with labor pain(3%), PROM(6%), severe preeclampsia(2%), doppler abnormalities(6%)which can affect the outcome of the fetus if pregnancy was continued, and also patients and obstetrician fear of complications associated with breech vaginal delivery.

The cesarean section also significantly reduced mortality associated with breech presentation.17% cesarean sections were done due to antepartum hemorrhage, out of which 10% were due to abruptio placentae and 7% were due to placenta previa.A study from Greece reported that when the mothers suffered an antepartum hemorrhage and were taken up for emergency cesarean deliveries that had an independent risk for neonatal morbidity and the risk to fetus and mother also increased than taking the same as elective surgery.11% of cesarean section was due to fetal distress,4% due to failed induction (Induction was done on account of severe pre-eclampsia and PROM).7% of cases were presented with precious pregnancies with PROM or abnormal Doppler parameters.Other reason for late preterm cesarean section was antepartum eclampsia (4%), hand prolapse(1%), PROM with CPD (2%), and morbidly adherent placenta(1%).

Emergency cesarean was found in69% of patients and 31% were elective cesarean sections. This high rate of emergency cesarean section was due to high-risk pregnant women who were referred to our hospital and those patients who directly came to the hospital in an emergency situation including previous cesarean section in labor and PPROM. **Yaseen et al[15]**study showed that previous cesarean section was associated with a 4fold increased risk of subsequent unplanned cesarean section.

Intraoperative period was uneventful in 90% of cases, only10% of cases had intraoperative complications, among these 7% of cases had PPH, 2% had Couvelaire uterus, and only 1 case in which the placenta was densely adhered to myometrium so the placenta was left in situ. PPH was the most common complication of obstetric cases and in the present study; PPH was seen in 5 cases of APH,1 case of antepartum eclampsia, and 1case of primibreech.

Cesarean sections were done in 44% of patients between 36 to 36.6weeksof gestation, 32% were at 35-35.6 weeks and 24% were at 34-34.6week of gestation.The mean period of gestation was 35.5 weeks.In **Giliyaru S et al[16]** study following gestational age were seen 22.5% were between 34-35 weeks, 32.5% were between 35-36 weeks and 45% were between 36-37 weeks of gestation.

CONCLUSION

In this present study, more women were having hypertension, severe oligohydroamnios, fetal cephalic presentation; maximum patients were observed to have fetal distress and previous LSCS (1/2) with PROM, followed by APH abruption. Cesarean cases were more than elective choice, fetuses admitted in NICU due to respiratory distress were maximum, HDU/ICU monitoring was also required. Hence, we could find major complication of late preterm caesarean section of pregnant women and prefer to identify such cases and seek medical emergency prior to the preparation of cesarean.

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REFERENCES

1. Morisaki N, Zhang X, Ganchimeg T, Provider-initiated delivery, late preterm birth and perinatal mortality: a secondary analysis of the WHO multicountry survey on maternal and newborn health BMJ Global Health 2017;2:e000204
2. Patil S, Patil KP. Analysis of risk factors of late preterm birth: A case-control study.Indian journal Health Sci Biomed Res. 2017;10:283-7.

3. Engle WA, Tomashek KM, Wallman C. “Late-preterm” infants: a population at risk. Pediatrics. 2007 Dec 1;120(6):1390-401.
4. Committee on Obstetric Practice. ACOG committee opinion No. 404 April 2008. Late-preterm infants. Obstetrics and gynecology. 2008 Apr;111(4):1029-32.
5. Blencowe H, Cousens S, Chou D, Oestergaard M, Say L, Moller AB, Kinney M, Lawn J; Born Too Soon Preterm Birth Action Group. Born too soon: the global epidemiology of 15 million preterm births. Reprod Health. 2013;10 Suppl 1(Suppl 1):S2.
6. Shapiro-Mendoza CK, Tomashek KM, Kotelchuck M. Effect of late preterm birth and maternal medical condition on newborn morbidity risk.Paediatric.2008;121:e223-232.
7. Trilla CC, Madina MC, Ginovart G, Betancourt J, ArmengolJA,Perinatal outcomes of spontaneous and medically indicated late preterm infants.Clinical Obstetrics ,Gynecology and Reproductive Medicine,2019;5:1-5.
8. ACOG Committee Opinion No. 764: Medically Indicated Late-Preterm and Early-Term Deliveries. Obstet Gynecol. 2019 Feb;133(2):e151-e155.
9. Singh S, Seth A, Dey M.Maternal factors associated with late preterm births.International journal of contemporary medical research 2016;3(9):2612-2616
10. Dey M; Agarwal R; Manji D. Maternal and fetal factors observed with late preterm births International journal of medical research 2015: Aug:3(8):1969-1973.
11. Carter MF, Fowler S, Holden A, Xenakis E, Dudley D. The late preterm birth rate and its association with comorbidities in a population-based study. Am J Perinatol 2011;28:703–708.
12. Laughon SK, Reddy UM, Sun L, Zhang J.Precursors for late preterm birth in singleton gestations. Obstet Gynecol. 2010;116:1047-1055. doi: 10.1097/AOG.0b013e3181f73f97. PMID: 20966688; PMCID: PMC3014049.
13. Vanina LK, Zattib H, Soncinib T, Nunesb RD, de Siqueira LBS. Maternal and fetal risk factors associated with late preterm infants. Rev Paul Pediatr. 2020;38:e2018136.
14. Thorp JM, Hartmann KE, Shadigian E. Long-term physical and psychological health consequences of induced abortion: Review of the evidence. Obstet Gynecol Surv. 2003;58:67-79.
15. Yasseen AS III, Bassil K, Sprague A, Urquia M, Maguire JL. Late preterm birth and previous cesarean section: A population based cohort study, J Maternal-Fetal Neonat Med. Accepted author version posted online: 07 Feb 2018. DOI: 10.1080/14767058.2018.1438397.
16. Giliyaru S;Nirmala S; Adarsh E. Maternal risk factors and immediate outcome of late preterms. Int J Contempor Pediatr. 2019: [S.l.];6(5):1845-1849.
17. Berhman RE, Butler AS, editors. Preterm Birth: Causes, consequences, and prevention. Institute of Medicine (US) Committee on understanding premature birthe and assuring healthy outcomes. Washington (DC): National Academies Press (US); 2007. PMID: 20669423.
18. Gyamfi-Bannerman C, Fuchs KM, Young OM, et al. Nonspontaneous late preterm birth: Etiology and outcomes. Am J Obstet Gynecol. 2011;205:456.e1-6.
19. Zhanga J, Troendlea J, Meikleb S, Klebanoffa MA, Rayburnc WF. Isolated oligohydramnios is not associated with adverse perinatal outcomes. Br J Obstet Gynecol. 2004;111:220–5. DOI: 10.1111/j.1471-0528.2004.00060.x.