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ORIGINAL RESEARCH ARTICLE

MATERNAL AND FETAL OUTCOME IN PREGNANCY BEYOND THE EXPECTED DATE OF DELIVERY IN A TERTIARY CARE HOSPITAL OF NEPAL

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ABSTRACT

Background: The risk to the mother and the fetus increase with advancing gestation age. Our study aims to study the maternal and fetal outcome in pregnancy extending beyond the expected date of delivery so that safe timings of induction and appropriate mode of delivery can be determined.

Methods: We conducted a retrospective study of 152 patients with pregnancy beyond the expected date who presented to the department of Obstetrics and Gynecology, College of Medical Sciences Teaching Hospital from the time period of October 2019- November 2021.The primary outcome measures were obtained in terms of rate of cesarean section, postpartum hemorrhage, wound infection, admission in neonatal intensive care unit, birth asphyxia and meconium aspiration syndrome. Statistical analysis was performed using Chi-square test with P value <0.05.

Results: The majority of 86 (56.58%) patients were between 40-41 weeks of gestation. Maximum number of vaginal deliveries were seen between 40-41weeks (77.90%). Overall cesarean section rate was 40.13% with maximum number between 41-42 weeks (64.28%). Fetal distress with meconium-stained liquor was the most common indication (36.06%). The rate of neonatal intensive care unit admission was 16.44% with birth asphyxia (12.50%) and meconium aspiration syndrome (8.55%) as the primary cause for admission. Maternal complications like oligohydramnios, postpartum hemorrhage, wound infection, cervical tear, shoulder dystocia was seen in 16.45%, 1.97%, 1.97%, 2.63% and 1.31% respectively.

Conclusions: The pregnancy beyond the expected date causes definite risk to the mother and the fetus. Therefore, strict fetal surveillance with early induction of labor prior to expected date of delivery is recommended for better fetomaternal outcomes.

INTRODUCTION

Any pregnancy advancing beyond the expected date of delivery (EDD) or more is called prolonged pregnancy.[1] It causes complication in about 10% of all pregnancies.[2,3] Inaccurate dating of pregnancy remains the most frequent cause.[4,5]Primiparity, maternal genetic factors, previous history of post dated pregnancy, obesity and male fetus remains the predisposing factors.[6, 7]

The higher rate of lower segment caesarean section (LSCS), instrumental deliveries, postpartum haemorrhage (PPH), perineal tears and wound infection are the common maternal risk associated with prolonged pregnancy.[8] The other perinatal risks associated with prolonged pregnancy include fetal distress, birth asphyxia, meconium aspiration syndrome (MAS), oligohydramnios, macrosomia, fetal birth injuries and ultimately fetal death.[8,9]The risk of still birth increases beyond 40 weeks of gestation with double fold increased rate at 42 weeks and threefold by 44 weeks.[10, 11]In view of these adverse maternal and fetal complications, various recent studies have demonstrated that elective induction of labor at term, mostly between 40 and 41 weeks of gestation in low risk women resulted in lower rate of caesarean delivery and more favourable fetal outcomes than expectant management.[12-14]

Therefore, our study objective was to observe the maternal and fetal outcome in pregnancy beyond expected date of delivery so that safe and timely induction of labor can be determined minimizing serious maternal and fetal complications.

METHODS

This retrospective study was conducted in department of Obstetrics and Gynecology, College of Medical sciences and Teaching Hospital, COMSTH between time period of 2 years from October 2019-November 2021. Ethical approval was obtained from the Institutional Review Committee (IRC-COMSTH). All the information were retrieved from the medical record section of the hospital and used for analysis. All the pregnant women beyond the expected date of delivery with known 1st day of last menstrual period (LMP), regular last 3 menstrual cycles, not used any contraceptive pill for past 3 months; uncomplicated singleton pregnancy and vertex presentation

were included in the study. The exclusion criteria involved any associated complications like previous LSCS, malpresentations, hypertensive disorders in pregnancy, placenta previa, other medical illness and fetal anomalies. All the data regarding the maternal demographic factors like age, parity and gestational age were retrieved. The maternal outcomes including mode of delivery was obtained in terms of rate of LSCS, PPH, wound infection and cervical tear. The fetal outcomes were extracted in terms of admission in neonatal intensive care unit (NICU), presence of meconium-stained liquor (MSL), birth asphyxia and meconium aspiration syndrome. The data were presented in number and percentage. Statistical analysis was performed using Chi-square test with SPSS version 20. The level of significance, P value was set at 0.05 with 95% Confidence Interval (CI).

The sample size was calculated with formula as $N=Z^2pq/e^2$, where N: required sample size, z: CI at 95% (standard value of 1.96), p: proportion percentage, 10%, q=1-p, e: margin of error, 5% =1.96x1.96x0.1x0.9/0.05x0.05=138
Nonresponse error =10% of 138=14
Therefore, the optimal sample size was 138+14=152

RESULTS

The total numbers of deliveries over the time period of October 2019-November 2021 were 984, out of which 152 patients were selected after applying inclusion and exclusion criteria. The maximum number of patients belonged to the age group of 20-35 years (89.47%) with mean age of 25 ± 4 years. Maximum numbers of 86 patients (56.58%) were present in the group of gestational age from 40-41 weeks (Table 1).

Table 1: Distribution of participants according to demographic data

Parameters	n=152	No of Patients (%)
Age	<20	11(7.24)
	20-35	136(89.47)
	≥35	5(3.29)
Gravida	Primigravida	71(46.71)
	Multigravida	81(53.29)
Gestational age (weeks)	40-41	86(56.58)
	41-42	56(36.84)
	>42	10(6.58)

Note: According to the Williams obstetrics textbook, maternal age < 20 and age>35 may have increased risk of complications compared to 20-35 years. So, we have classified maternal age as <20, 20-35 and >35.

Vaginal delivery was observed in 91 patients (59.87%). Out of those 91 patients, 87 patients had full term normal delivery while 4 patients (2.63%) had vacuum assisted delivery due to poor maternal effort and meconium-stained liquor. Majority of vaginal deliveries were observed in the gestational age group of 40-41 weeks (77.90%). Overall LSCS was seen in 40.13 %. The gestational age and mode of delivery was found to be statistically correlated (Table 2).

Table 2: Comparison of mode of delivery with gestational age

Gestational Age	Vaginal Delivery N=91	LSCS N=61	p-value
40-41	67(77.90)	19(22.10)	<0.00001
41-42	20 (35.72)	36(64.28)	
>42	4(40)	6(60)	

The most common indications for LSCS were fetal distress with meconium-stained liquor (36.06 %) (Table 3).

Table 3: Indications of Lower segment caesarean Section

Indications: (n=61)	Frequency (%)
Failed Induction	13(21.31)
Non-Reactive Non-Stress Test	11(18.03)
Severe Oligohydramnios	16(29.22)
Fetal distress, MSL	22(36.06
Arrest of dilatation/Descent	13(21.31)

Note: The frequency table of the indications do not match with no of cases because same patients had more than one indication of caesarean section.

The majority 127(83.55%) babies born didn't need admission to NICU and was kept by mother's side. The remaining 25 babies (16.44%) were admitted to NICU after delivery with increased rate of admission in gestational group ≥41 weeks. However, the correlation between the gestational age and NICU admission was not statistically significant, p>0.05 (Table 4).

Table 4: Distribution of patients according to gestational age at birth and the fetal outcome

Gestational Age (weeks)	N	Normal baby (%)	NICU Admission (%)	p-value
40-41	86	76(88.37)	10(11.63)	0.18
41-42	56	43(76.79)	13(23.21)	
>42	10	8(80.00)	2(20.00)	
Total	152	127	25	

Table 5: Distribution of patients according to the maternal complications

Complications	No of Patient (%)
Oligohydramnios	25(16.45)
Atonic PPH	3(1.97)
Wound Infection	3(1.97)
Cervical /Perineal Tear	4(2.63)
Shoulder dystocia	2(1.31)
Length of hospital stay≥7days	6(3.94)

In our study, maternal complications were seen in 26.98 % of patients. Maximum number of patients had oligohydramnios (16.45%). Atonic PPH was seen only in 3 patients (1.97%). 3

patients had post delivery wound infection, 4 patients had cervical tear and 2 patients had shoulder dystocia (Table 5). No maternal death was present.

Meconium-stained liquor was seen in 49 cases (31.23 %). The maximum number of patients with meconium-stained liquor was found between the gestational age 40-41 (22 patients) followed by 20 patients between 41-42 weeks of gestation Out of 25 babies with NICU admission, 13 babies (8.55%) had meconium aspiration syndrome and total of 12.50 % had birth asphyxia (Table 6). However no stillbirth/neonatal death were observed in our study.

Table 6: Distribution according to the fetal complications

Perinatal Outcome, n=152	No of Patients (%)
NICU admission	25(16.44)
Birth Asphyxia	19(12.50)
MAS	13(8.55)
MSL	49(32.23)
Birth Injuries	0
Apgar< 6 in 1 min	21(13.81)
Apgar<6 in 5 min	8(5.26)
Neonatal Death	0

DISCUSSION

This study was conducted to find out the maternal and perinatal mortality and morbidity in pregnancies beyond the 40 weeks of gestation.

In our study, majority of patients belonged to age group 20- 35 years (89.47%) which was similar to other studies conducted by Kandalgaonkar et al[15] and Gupta M et al [16]in which 80.2 % and 85.3% patients were in age group 20-35years respectively. Primiparity remains one of the predisposing factors for prolonged pregnancies. However in our study, maximum of 81 patients (53.29%) were multigravida. Amina FN et al[17] observed similar findings with 54% of patients belonging to multigravida group. In respect to distribution of patients according to the gestational age, high proportion of cases were seen in 40-41 weeks (56.58 %), 36.84% in 41-42 weeks, 6.58 % in > 42 weeks. This findings was similar to the study done in 150 women with prolonged pregnancy in which maximum number of patients (69.8%) were observed between 40-41 weeks.[15, 16]

The rate of meconium stained liquor and oligohydramnios increase with gestational age.[18]In our study 31.23% of patients had meconium stained liquor and 16.45 % had oligohydramnios. The maximum number of patients with meconium-stained liquor was seen between the gestational age 40-41 (22 patients) followed by 20 patients between 41-42 weeks of gestation. These findings were consistent with study by Ibishi Va et.al with rate of MSL of 34.7%.[19]Chakrabotry et al also found the similar incidence of thick MSL in prolonged pregnancy.[20]

Higher rate of caesarean section , instrumental delivery, NICU admission and perinatal death are associated with meconium stained amniotic fluid.[21]Singh N et al in 100 post dated deliveries studied that c-section and instrumental delivery was performed in 32% and 2 % respectively.[22] Our study showed even higher rate of LSCS of 40.13 % and 2 % of instrumental delivery. Fetal distress with meconium-stained liquor was observed as the most common indications for caesarean Section (36.06%) followed by oligohydramnios (29.22%) and failed induction (21.31%). Our findings were consistent to another comparative study done by Shinge et al in which 37% patients required caesarean section as mode of delivery.[23]Dobariya et al also studied that LSCS rate as32.14% with common indications for CS as fetal distress (48.15 %).[24]Similar findings were seen in various recent studies.[17, 23, 25]

In our study, we observed significant correlation of gestational age and mode of delivery. The maximum number of vaginal deliveries was seen in gestational age of 40-41 and caesarean section was performed in 22.10 % of cases. The rate of LSCS increased with advancing gestational age with maximum number of LSCS between 41-42 weeks (64.28%). Our findings were consistent with the study done by Bhriegu et.al with increased rate of caesarean section of 33% vs 41% at 40 and 41 weeks of gestation.[26]Rani et al also observed the decreased rate of normal delivery and increased rate of operative deliveries as the gestational age advances.[27]

NICU admission was required in 16.44% of neonates after delivery. The primary reason was birth asphyxia (12.50%) and meconium aspiration syndrome (8.55%). Kriska et al showed even higher proportion of NICU admission (40%) with meconium aspiration syndrome as leading cause of admission to NICU and perinatal death.[28]Similar study was published by Dr Supriya Mahajan with higher incidence of NICU admission, meconium stained liquor and oligohydramnios particularly after 41 weeks of gestation. [29] However no stillbirth/neonatal death were observed in our study.

The other maternal morbidity such as PPH, cervical tear and wound infection post delivery was seen in 3(1.97%), 3(1.97%) and 4(2.63%) respectively. 2 patients had shoulder dystocia. However no birth injuries and maternal mortality was noted. These findings were consistent with other studies done in the past.[24, 30]

The small number of the study group was one of the limitations of our study. Some of the babies admitted in NICU were referred to other centre due to unavailability of ventilators while some left against the legal medical advice due to financial issue. However no neonatal and maternal death was observed till the time of discharge.

CONCLUSION

We found that maternal morbidity increased with advancing gestational age in the form of emergency LSCS primarily due to fetal distress with meconium-stained liquor. Fetal complications were observed in the form of higher rate of NICU admission done for birth related asphyxia and meconium

aspiration syndrome. The higher rate of meconium-stained liquor and oligohydramnios was observed even in 40 weeks as high as at 41 weeks with increased risk of intrapartum fetal distress ultimately increasing neonatal morbidity and mortality. Therefore, the patient should be counselled about risks associated with increasing gestational age and elective induction of labor should be offered between 40 and 41 weeks which decrease the incidence of maternal and fetal complications. All the pregnancies beyond 40 weeks of gestation should be properly supervised with strict intrapartum fetal monitoring and appropriate decisions related to mode of delivery should be taken before any sign of fetal distress occurs.

CONFLICT OF INTEREST: None

FINANCIAL DISCLOSURE: None

REFERENCES:

1. Fernando Arias. Practical guide to high risk pregnancy and delivery: 3 Edition. India Harcourt private limited; 2008:255-7
2. Olesen AW, Westergaard JG and Olsen J. Perinatal and Maternal Complications Related to Postterm Delivery: A National Register-Based Study. American Journal of Obstetrics and Gynecology.2003 Jul 1;189(1):222-7.[DOI]
3. Noritz ER, Snegovskikh VV, Caughey AB. Prolonged Pregnancy: When Should We Intervene?Clinical obstetrics and gynecology. 2007;50(2):547-57.[DOI]
4. Taipale P,HiilesmaaV. Predicting delivery date by ultrasound and last menstrual period in early gestation. Obstet Gynecol. 2001;97(2):189-94. [DOI]
5. Savitz DA TJ, Dole N, Thorp JM, Siega-Riz AM, Herring AH. Comparison of pregnancy dating by last menstrual period, ultrasound scanning, and their combination. Am J Obstet Gynecol. 2002;187(6):1660-6. [DOI]
6. Divon MY, Ferber A, Nisell H, Westgren M. Male gender predisposes to prolongation of pregnancy. Am J Obstet Gynecol. 2002;187(4):1081-3. [DOI]
7. Usha Kiran TS, Hemmadi S, Bethel J, Evans J. Outcome of pregnancy in a woman with an increased body mass index. BJOG. 2005 Jun;112(6):768-72. [DOI]
8. Caughey AB,Stotland NE, Washington AE, Escobar GJ. Maternal and obstetric complications of pregnancy are associated with increasing gestational age at term. Am J Obstet Gynecol. 2007;196(2):155E1-E6. [DOI]
9. Cunningham FG, Leveno, K. J., Bloom, S. L., Hauth, J. C., Larry, C. G., &Wenstrom, K. D Post-term pregnancy. William's Obstetrics 23rd ed. New York: McGraw-Hill Companies; 2010. p. 831-41.
10. Heimstad R,Romundstad PR,Salvesen KA. Induction of labour for post-term pregnancy and risk estimates for intrauterine and perinatal death. Acta Obstet Gynecol Scand. 2008;87(2):247-9. [DOI]
11. Caughey AB,Washington AE, Laros RK. Neonatal complications of term pregnancy: rates by gestational age increase in a continuous, not threshold, fashion. Am J Obstet Gynecol. 2005;192(1):185-90. [DOI]
12. Gibson KS,Waters TP, Bailit JL. Maternal and neonatal outcomes in electively induced low-risk term pregnancies. Am J Obstet Gynecol 2014;211(3):249.e1-.e16. [DOI]
13. Stock SJ, Ferguson E, Duffy A, Ford I, Chalmers J, Norman JE. Outcomes of elective induction of labour compared with expectant management: population based study. Bmj. 2012;344. [DOI]
14. Grobman WA, Rice MM, Reddy UM, Tita ATN, Silver RM, Mallett G, et al. Labor Induction versus Expectant Management in Low-Risk Nulliparous Women. New England Journal of Medicine. 2018;379(6):513-23. [DOI]
15. Kandalgaonkar VP, Kose V. Fetomaternal outcome in post dated pregnancy. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2019;8(5):1899-907. [DOI]
16. Gupta M, Shrivastava S, Rai S. To study the maternal and fetal outcome in pregnancy beyond 40 weeks. Int J Clin Obstet Gynaecol. 2020;4(2):123-9. [DOI]
17. Naz FA, Javid AM, Saeed SA, Begum A, Zareen A. Neonatal outcome in post-term pregnancy.2010;3(4):248-251. [LINK]
18. Mundhra R, Agarwal M. Fetal outcome in meconium stained deliveries. Journal of clinical and diagnostic research: JCDR. 2013;7(12):2874.[DOI]
19. Ibishi VA, Isjanovska RD. Prelabour rupture of membranes: mode of delivery and outcome. Open access Macedonian journal of medical sciences. 2015;3(2):237. [DOI]
20. Chakraborty A, Mitra P, Seth S, Das A, Basak S, Paul J. Study on risk factors of meconium stained amniotic fluid and comparison of pregnancy outcome in clear and meconium stained amniotic fluid, in a tertiary care hospital, Kolkata.India Int J Biol MedRes.2013;4(2):3084-7.[LINK]
21. Rathoria R, Rathoria E, Bansal U, Mishra M, Jalote I, Shukla NK, et al. Study of risk factors and perinatal outcome in meconium stained deliveries from a district of Uttar Pradesh, India. Int J Reprod Contracept Obstet Gynecol. 2018;7(9):3605-9. [DOI]
22. Singh N, Misra D, Srivastava S. Postdated pregnancy: its maternal and fetal outcome. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2020;9(8):3223-8 [LINK]
23. Shinge N, MM VK, Prashanth S. Comparative study of maternal & fetal outcome in pregnancies of gestational age 40 completed weeks and beyond. Journal of Evolution of Medical and Dental Sciences. 2013;2(25):4509-16.[LINK]
24. Dobariya PV, Shah PT, Ganatra HK. Feto-maternal outcome in pregnancy beyond 40 weeks. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2017;6(2):527-32. [DOI]
25. Mahapatro A, Samal S. Fetomaternal outcome in pregnancy beyond 40 weeks. Int J Pharm Bio Sci. 2015;6(2):53-8. [LINK]
26. Bhriegu R, Agrawal M, Hariharan C. Assessment of maternal and perinatal outcome in postdated pregnancy. Journal of Datta Meghe Institute of Medical Sciences University. 2017;12(1):35. [LINK]
27. Reddy SR. Study of Maternal and Fetal Outcomes between 37 To 42 Weeks of Pregnancy. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS. 2018;17(6):54-8. [DOI]
28. Kistka ZA-F, Palomar L, Boslaugh SE, DeBaun MR, DeFranco EA, Muglia LJ. Risk for postterm delivery after previous postterm delivery. American journal of obstetrics and gynecology. 2007;196(3):241. e1-. e6. [DOI]
29. Mahajan DS. A study of fetal outcome in pregnancy beyond 40 weeks using fetal heart rate monitoring with Non stress test". International Journal of Current Research. 2015;7(6):16951-4. [LINK]
30. Haq AIU, Bashir S, Shabana N, Sadiq N, Inayat FC, Faisal J. 40 Weeks of Gestation is as High-Risk Gestation as 41 Weeks in Low-Risk Pregnancies. Journal of Rawalpindi Medical College. 2020;24(4):358-62. [DOI]