

The Clinical Spectrum and Outcome Profile of Patients with Postdated Pregnancy

Sonal¹, Hemali Heidi Sinha²

¹Senior Resident, Department of Obstetrics and Gynecology, All India Institute of Medical Science (AIIMS), Patna, Bihar, India

²Professor and HOD, Department of Obstetrics and Gynecology, All India Institute of Medical Science (AIIMS), Patna, Bihar, India

Received: 05-11-2023 / Revised: 19-12-2023 / Accepted: 18-01-2024

Corresponding Author: Dr. Sonal

Conflict of interest: Nil

Abstract

Aim: The aim of the present study was to find out the incidence of maternal complications, perinatal mortality and morbidity in postdated pregnancies.

Methods: This was a retrospective observational study conducted in the Department of Obstetrics and Gynaecology, for 12 months. Total 200 patients in the antenatal ward and labour room were selected for the study and they were divided into two groups, Control group with Gestational age 37-40 weeks and Study group with Gestational age >40 weeks.

Results: Majority of the patients belonged to 25-30 years age group. Maximum number of patients belonged to the age group of 25-30 years both in cases (50%) and control group (50%). The maximum number of patients in the study group (82%) belonged to the gestational age of 40-41 weeks while all the controls belonged to 37-40 weeks gestational age. 65% of the patients in study group were primigravida and in the control group and 55% were primigravida. The percentage of LSCS was 30% which was higher than in the control group where it was 15%. Incidence of instrumental delivery was also higher in the study group as compared to control group (10% as compared to 5%). Among the indications for LSCS, the most common indication among the study group was acute foetal distress which includes meconium stained liquor (10%) followed by cephalopelvic disproportion (9%). In the control group, most common indication was non progress of labour (4%) followed by acute foetal distress (01%) and non-reactive CTG (1%).

Conclusion: Postdated pregnancy remains a clinical dilemma for an obstetrician. The choice is between watchful expectancy for labour to start or induction in postdated patients. According to our study, postdated pregnancies are related with higher rate of LSCS and instrumental deliveries.

Keywords: Maternal complications, Post datism, Perinatal morbidity, clinic-pathological

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Several retrospective and relatively small studies have concluded that prolongation of pregnancy beyond term is accompanied by a rise in perinatal morbidity and mortality. [1,2] Abnormalities such as congenital anomalies, oligohydramnios, meconium aspiration, fetal asphyxia, shoulder dystocia, and fetal dysmaturity are commonly observed in these pregnancies. [3,4] The presumed etiology for this rise in perinatal morbidity and mortality is "placental insufficiency." Cunningham et al [4] concluded that the postterm fetus may outgrow the ability of its placenta to supply nutrients and provide adequate gas exchange and is therefore at risk for adverse outcome resulting from either malnutrition or asphyxia. Indeed, studies of placental histologic features in these pregnancies revealed an increased incidence of placental infarcts, calcification,

intervillous thrombosis, perivillous fibrin deposits, arterial thrombosis, and arterial endarteritis. [5,6]

Although the increased morbidity and mortality associated with postterm pregnancy has long been appreciated, most authors have studied gestational age as the only contributing factor. [7-9] The influence of other factors such as maternal age, parity, maternal smoking history, fetal gender, or birth weight has not been adequately evaluated. Additionally, the accuracy of most these earlier studies is limited by the fact that they predate the widespread use of both ultrasonography (for accurate gestational dating) and intensive fetal testing (to establish fetal well-being). The combination of continued fetal growth and arrested placental growth may lead to situation of decreasing

placental nutrient reserve, compromised fetal circulation and eventually fetal distress. However, a recent electron microscopy study of placental changes in prolonged pregnancy suggests that the uteroplacental ischemia and not placental aging may be more important in genesis of post maturity syndrome. [10]

Prolonged pregnancies are associated with an increased incidence of macrosomia. Macrosomia infants account for about 1% of term deliveries and 3-10% of post term deliveries. [11] Post maturity infants particularly with macrosomia and post maturity are at increased risk of hypoglycemia. They also have increased chance of polycythemia.¹² The maternal risks of postdated pregnancy are often underappreciated. These include an increase in labor dystocia (9-12% vs 2-7% at term), an increase in severe perineal injury (3rd and 4th degree perineal lacerations) related to macrosomia (3.3% vs 2.6% at term) and operative vaginal delivery, and a doubling in the rate of cesarean delivery (14% vs 7% at term). [13-16]

The aim of the present study was to find out the incidence of maternal complications, perinatal mortality and morbidity in postdated pregnancies.

Materials and Methods

This was a retrospective observational study conducted in the Department of Obstetrics and

Gynaecology AIIMS , Patna, Bihar India for 12 months. Total 200 patients in the antenatal ward and labour room were selected for the study and they were divided into two groups, Control group with Gestational age 37-40 weeks and Study group with Gestational age >40 weeks.

Inclusion Criteria

- Singleton pregnancy
- Cephalic presentation
- Absence of any other maternal complication

Exclusion Criteria

- Previous cesarean section
- Gestational hypertension
- Malpresentation
- Abruption
- Placenta previa

All the data regarding the age, parity gestational age, any maternal complications like oligohydromnios, intrauterine growth restriction etc was collected. The maternal outcome was noted in terms of need for cesarean section, postpartum haemorrhage and sepsis. Foetal outcome was noted in terms of intrapartam asphyxia, intrauterine foetal death, admission to neonatal intensive care unit etc.

Results

Table 1: Demographic details and mode of delivery

Age (Years)	Number of Cases (%)	Number of Controls (%)
Below -25	30 (30%)	34 (34%)
25-30	50 (50%)	52 (52%)
Above 30	20 (20%)	14 (14%)
Total	100	100
Mean \pm SD	27.3 \pm 3.46	28.4 \pm 3.75
Period of gestation		
37-40 weeks	0	100 (100%)
40-41 weeks	82 (82%)	0
41-42 weeks	18 (18%)	0
Total	100	100
Parity		
Primigravida	65 (65%)	55 (55%)
Multigravida	35 (35%)	45 (45%)
Total	100	100
Type of delivery		
NVD	60 (60%)	80 (80%)
Instrumental delivery	10 (10%)	5 (5%)
LSCS	30 (30%)	15 (15%)
Total	100	100

Majority of the patients belonged to 25-30 years age group. Maximum number of patients belonged to the age group of 25-30 years both in cases (50%) and control group (50%). The maximum number of patients in the study group (82%) belonged to the gestational age of 40-41 weeks while all the controls belonged to 37-40 weeks gestational age. 65% of the

patients in study group were primigravida and in the control group and 55% were primigravida. The percentage of LSCS was 30% which was higher than in the control group where it was 15%. Incidence of instrumental delivery was also higher in the study group as compared to control group (10% as compared to 5%).

Table 2: Distribution of cases and controls according to the indication of LSCS

Indication of LSCS	Number of Cases (%)	Number of Controls (%)
Acute foetal distress/MSL	10 (10%)	1 (1%)
Failed induction	5 (5%)	0
Non progress of labour	4 (4%)	4 (4%)
Non-reactive CTG	4 (4%)	1 (1%)
CPD	9 (9%)	0
Total	32	6

Among the indications for LSCS, the most common indication among the study group was acute foetal distress which includes meconium stained liquor (10%) followed by cephalopelvic disproportion

(9%). In the control group, most common indication was non progress of labour (4%) followed by acute foetal distress (01%) and non-reactive CTG (1%).

Table 3: Distribution of cases and controls according to maternal complications

Maternal complication	Number of cases	Number of controls
LSCS	25 (25%)	15 (15%)
PPH	15 (15%)	5 (5%)
Sepsis	8 (8%)	2 (2%)
Total	48	22

Maternal complications like LSCS, PPH and sepsis all were higher in the study group as compared to the control group.

Table 4: Distribution of cases and controls according to the foetal outcome

Foetal outcome	Number of Cases (%)	Number of Controls (%)
No asphyxia	65 (65%)	80 (80%)
Fetal asphyxia (APGAR score <6 /10)	15 (15%)	5 (5%)
Admission to NICU	16 (16%)	15 (15%)
IUD	4 (4%)	0
Total	100	100

15% of infants in the study group had asphyxia as compared to only 5% in the control group. 16% infants of the study group had to be admitted to the NICU as compared to 15% in the control group. 4% was the percentage of intrauterine deaths in the study group as compared to none in the control group.

Discussion

Fernandos Arias defined prolonged pregnancy as those pregnancies advancing beyond the expected date of delivery (EDD). [17] Prolongation of pregnancy complicates up to 10% of all pregnancies and carries increased risk to mother and fetus. [18,19] Post term perinatal mortality is greater than that of term pregnancy in almost all studies reviewed. [20] The growth and survival of most post dated infants suggests that the placenta uncommonly deteriorates with increasing length of gestation; thus the changes seen in fetuses afflicted with post maturity syndrome may not be explained by placental findings alone. Vorherr described critical reductions of fetal oxygen supply after 43rd week of gestation by cord blood oxygen content determinations. [20] The combination of continued fetal growth and arrested placental growth may lead to situation of decreasing placental nutrient reserve,

compromised fetal circulation and eventually fetal distress. However, a recent electron microscopy study of placental changes in prolonged pregnancy suggests that the uteroplacental ischemia and not placental aging may be more important in genesis of post maturity syndrome. [21]

Majority of the patients belonged to 25-30 years age group. Maximum number of patients belonged to the age group of 25-30 years both in cases (50%) and control group (50%). The maximum number of patients in the study group (82%) belonged to the gestational age of 40-41 weeks while all the controls belonged to 37-40 weeks gestational age. 65% of the patients in study group were primigravida and in the control group and 55% were primigravida. Similar studies by Mahapatro [22] and Eden et al [23] have shown the mean age to be 24.19 ± 3.30 and 25.8 years respectively. 62% of the patients in study group were primigravida which is similar to Mahapatro [18] and Alexander et al's study. [24] The percentage of LSCS was 30% which was higher than in the control group where it was 15%. Incidence of instrumental delivery was also higher in the study group as compared to control group (10% as compared to 5%). In a similar study by

Mahapatro¹⁸ the rate of LSCS was found to be 28.9% and that of instrumental delivery was 5.72%. In study by Singhal et al [25] the rate of LSCS was found to be 14.7% and that of instrumental delivery was 8.6%. Davinder et al [26] study showed the rate of instrumental delivery as 10.35%.

Among the indications for LSCS, the most common indication among the study group was acute foetal distress which includes meconium stained liquor (10%) followed by cephalopelvic disproportion (9%). In the control group, most common indication was non progress of labour (4%) followed by acute foetal distress (01%) and non-reactive CTG (1%). Bhriegu R et al [27] in their study also found that Meconium stained liquor with fetal distress was the most common indication for LSCS (23.5%) and in Mahapatro's study [22], again fetal distress was found to be the most common indication for LSCS (65.5%). Maternal complications like LSCS, PPH and sepsis all were higher in the study group as compared to the control group. 15% of infants in the study group had asphyxia as compared to only 5% in the control group. 16% infants of the study group had to be admitted to the NICU as compared to 15% in the control group. 4% was the percentage of intrauterine deaths in the study group as compared to none in the control group. According to study done by Aaron, estimated rates of maternal complications increase beyond 40 weeks of gestation. Beyond that the rates of operative vaginal delivery, 3rd or 4th degree perineal laceration and chorioamnionitis all increases. ($p < 0.001$), and rates of postpartum hemorrhage, endometritis and primary caesarean delivery increased at 41 weeks of gestation. [28]

Conclusion

Postdated pregnancy remains a clinical dilemma for an obstetrician. The choice is between watchful expectancy for labour to start or induction in postdated patients. According to our study, postdated pregnancies are related with higher rate of LSCS and instrumental deliveries. Foetal distress and meconium stained liquor are significantly higher in postdated pregnancies. Similarly, maternal and perinatal complications like postpartum haemorrhage, sepsis, admission to NICU, low Apgar scores, foetal asphyxia and intrauterine deaths are also higher in post-term pregnancies. Therefore it is recommended to not prolong the postdated pregnancies and their induction must be soon after the expected date is crossed to prevent the above mentioned complications.

References

1. NAEYE RL. Causes of perinatal mortality excess in prolonged gestations. American journal of epidemiology. 1978 Nov 1;108(5): 429-33.

2. Clifford SH. Postmaturity—with placental dysfunction: Clinical syndrome and pathologic findings. The Journal of pediatrics. 1954 Jan 1; 44(1):1-3.
3. Chamberlain PF, Manning FA, Morrison I, Harman CR, Lange IR. Ultrasound evaluation of amniotic fluid volume: I. The relationship of marginal and decreased amniotic fluid volumes to perinatal outcome. American journal of obstetrics and gynecology. 1984 Oct 1;150(3): 245-9.
4. Cunningham FG, McDonald PC, Gant NF, et al., editors. Williams' obstetrics. 20th ed. Stamford (CT): Appleton & Lange; 1997. p. 827-37.
5. Vorherr H. Placental insufficiency in relation to postterm pregnancy and fetal postmaturity: evaluation of fetoplacental function; management of the postterm gravida. American journal of obstetrics and gynecology . 1975 Sep 1;123(1):67-103.
6. Thliveris JA, Baskett TF. Fine structure of the human placenta in prolonged pregnancy preliminary report. Gynecologic and Obstetric Investigation. 1978 Mar 18;9(1):40-8.
7. Browne JM. Postmaturity. JAMA. 1963 Dec 21;186(12):1047-52.
8. Stewart Jr HL. Duration of pregnancy and postmaturity. Journal of the American Medical Association. 1952 Mar 29;148(13):1079-83.
9. Saito M, Yazawa K, Hashiguchi A, Kumasaka T, Nishi N, Kato K. Time of ovulation and prolonged pregnancy. American journal of obstetrics and gynecology. 1972 Jan 1;112(1): 31-8.
10. Jones JP, Fox H. Ultrastructure of the placenta in prolonged pregnancy. J Pathol. 1978;126(3): 173-9.
11. Spellacy WN, Miller S, Winegar A, Peterson PQ. Macrosomia maternal characteristics and infant complications. 1985;66(2):158-61.
12. Ratnam SS, Arulkumaran S. Post term infant. Obstetrics and Gynecology, 2nd Edition, India Orient Longman. 2003;2:48-53.
13. Rand L, Robinson JN, Economy KE. Post-term induction of labor revisited. Obstet Gynecol. 2000;96(5 Pt 1):779-83.
14. Campbell MK, Ostbye T, Irgens LM. Post-term birth: risk factors and outcomes in a 10-year cohort of Norwegian births. J Obstet. Gynecol. 1997;89(4):543-8.
15. Alexander JM, McIntire DD, Leveno KJ. Forty weeks and beyond: pregnancy outcomes by week of gestation. Obstet Gynecol. 2000;96 (2):291-4.
16. Treger M, Hallak M, Silberstein T. Post-term pregnancy: should induction of labor be considered before 42 weeks? J Maternal Fetal Neonatal Med. 2002;11(1):50-3.

17. Arias F, Bhide AG, Arulkumaran S, Damania K, Daftary SN, editors. Practical Guide to High Risk Pregnancy and Delivery-E-Book: A South Asian Perspective. Elsevier health sciences; 2008 Jul 15.
18. Olesen AW, Olsen J, Westergaard JG. Perinatal and maternal complications related to post-term delivery: A national register-based study 1978-93.
19. Norwitz ER, Snegovskikh VV, Caughey AB. Prolonged Pregnancy:: When Should We Intervene?. Clinical obstetrics and gynecology. 2007 Jun 1;50(2):547-57.
20. Vorherr H. Placental insufficiency in relation to postterm pregnancy and fetal postmaturity: evaluation of fetoplacental function; management of the postterm gravida. American journal of obstetrics and gynecology. 1975 Sep 1;123(1):67-103.
21. Jones JP, Fox H. Ultrastructure of the placenta in prolonged pregnancy. J Pathol. 1978; 126 (3):173-9.
22. Mahapatro A, Samal S. Fetomaternal outcome in pregnancy beyond 40 weeks. Int J Pharm Bio Sci. 2015;6(2):53-8.
23. Eden RD, Gergely RZ, Schifrin BS, Wade ME. Comparison of antepartum testing schemes for the management of the postdate pregnancy. American journal of obstetrics and gynecology. 1982 Nov 15;144(6):683-92.
24. Alexander JM, McIntire DD, Leveno KJ. Forty weeks and beyond: pregnancy outcomes by week of gestation. Obstetrics & Gynecology. 2000 Aug 1;96(2):291-4.
25. Singhal P, Sharma A, Jain D, Panday V. Fetomaternal outcome following postdate pregnancy. A prospective study. J Obstet Gynecol India. 2001;51:89-93.
26. Kaur D, Saini AS, Kaur J. Maternal and fetal outcome in postdated pregnancies. J Obstet Gynecol India. 1997;47:331-4.
27. 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 Jan 1;12(1):35-40.
28. Caughey AB, Stotland NE, Washington AE, Escobar GJ. Maternal Complications of Pregnancy Increase Beyond 40 Weeks' Gestation. Am J Obstet Gynecol. 2007;196: 155.