GMR
The Original

A STUDY OF RISK FACTORS, CLINICAL SIGNIFICANCE, AND OUTCOME OF POSTDATED PREGNANCY

Shanza Akram[1], Muhammad Tayyab[2], Mahpara Shaukat[3]

[1] Postgraduate Resident (PGR), Al Aleem Medical College / Gulab Devi Teaching Hospital, Lahore, Pakistan.
Email ID: shanzaakram664@gmail.com
[2] Professor, Al Aleem Medical College / Gulab Devi Teaching Hospital, Lahore, Pakistan.
[3] Associate Professor, Sahiwal Medical College / Sahiwal Teaching Hospital, Sahiwal, Pakistan.Email ID: doctor.doctor01@yahoo.com

ABSTRACT

Objective: To determine the frequency of risk factors as well as maternal and fetal outcomes in patients with post-date pregnancies.
Study design: Descriptive case series
Place and duration: Obstetrical and Gynecological department of Gulab Devi Hospital, Lahore, for a duration of 6 months, i.e., from Dec/2025 to May/2026.
Methodology: A total of 185 patients who fulfilled the selection criteria were enrolled after taking written informed consent. Risk factors were assessed. The patients were followed up to 24 hours after delivery, and any maternal and fetal outcomes were recorded. All findings were analyzed statistically.
Results: The median (IQR) age was 32 (7) years. Among the risk factors, 27 (14.6%) patients had macrosomia, 47 (25.4%) were primigravida, and 33 (17.8%) had a history of post-dated pregnancies. Among fetal outcomes, 47 (25.4%) had fetal distress, 22 (11.9%) had meconium aspiration syndrome, 20 (10.8%) had meconium-stained liquor, and 18 (9.7%) patients had oligohydramnios. Among maternal outcomes, 11 (5.9%) had cephalopelvic disproportion, 22 (11.9%) had postpartum hemorrhage, and 54 (29.2%) had delivery via cesarean section.
Conclusions: Frequent risk factors in post-dated pregnancies were being primigravida and having a previous history of post-dated pregnancy; the frequent fetal outcome was fetal distress and meconium aspiration syndrome, and the frequent maternal outcome was delivery via cesarean section and postpartum hemorrhage.

KEYWORDS: Pregnancy, prolonged, pregnancy outcome

INTRODUCTION

The International Federation of Gynecology and Obstetrics (FIGO) and the World Health Organization (WHO) recognize the terms "postmaturity," "post-term," "postdate," and "prolonged pregnancy" to refer to pregnancies that extend past dates (the anticipated date of delivery). Post-term pregnancy is defined by FIGO and WHO as any pregnancy with a gestational duration of 294 days or more. Up to 10% of pregnancies end in complications due to pregnancy prolongation, which also puts the mother and fetus at higher risk[1]. Whether an early pregnancy ultrasound scan is utilized to estimate gestational age or if the calculation is based only on the history and clinical examination determines the incidence of post-term pregnancy[2].

The basis for postdated pregnancy diagnosis and treatment is gestational age estimation. The main technique uses the Naegles rule, which states that 14% of women will go into labor at or after 42 weeks. The "incidence" of post-term pregnancy has decreased by 50% as a result of early ultrasound examinations used to determine gestational age[3].

Incorrect dating is the leading cause of long-term pregnancy. In most cases, the precise cause of postdates is uncertain. Primiparity, a history of post-term pregnancy, a male fetus, obesity, hormonal variables, and genetic susceptibility are common risk factors. Placental insufficiency is linked to postdates, and the risk of unfavorable perinatal outcomes can rise as early as 41 full weeks[4].

In postdated pregnancies, complications can affect the mother and the fetus. Meconium aspiration syndrome, fetal septicemia, oligohydramnios, meconium-stained liquor (MSL), macrosomia, fetal birth injury, fetal distress during labor, and non-reassuring fetal heart rate are among the fetal complications linked to post-dated pregnancies[5,6]. The increased rate of caesarean delivery, cephalopelvic disproportion (CPD), perineal lacerations, and postpartum hemorrhage are among the maternal complications linked to post-dated pregnancies[7,8].

Many recent studies have shown that, in light of these unfavorable complications for both the mother and the fetus, elective induction of labor at term, generally between 40 and 41 weeks of gestation in low-risk women, led to a lower rate of cesarean delivery and better outcomes for the fetus than expectant management[9,10]. Furthermore, no such

studies have been conducted so far in our local populations. Therefore, there is a need to identify females who are at high risk of post-dated pregnancies and thus experience maternal and fetal complications. Thus, the current study aims to determine the frequency of risk factors as well as maternal and fetal outcomes in patients with post-date pregnancies. The current study will help the obstetricians in terms of establishing the best timing and safest way to induce labor and reduce the risk of major complications for both the mother and the fetus, thus improving morbidity and overall survival through appropriate decisions and interventions.

MATERIALS AND METHODS

This was a descriptive case series. The study was carried out at the Obstetrical and Gynecological department of Gulab Devi Hospital, Lahore, after taking approval from the Ethical Review Committee, for a duration of 6 months, i.e., from Sep/2025 to Feb/2026. A total of 185 females with postdated pregnancies were enrolled. A sample of 185 patients was calculated using the Open Epi sample size calculator, keeping a 95% confidence interval, a 5% margin of error, and an expected frequency of postdated pregnancy as 14%[6]. A non-probability consecutive sampling technique was used.

Inclusion criteria: The study comprised patients of age 18 to 45 years, females with postdated pregnancies, and those with singleton pregnancies.

Exclusion criteria: Patients who were not sure about their last menstrual period, females with a history of irregular menstrual cycles, and patients with multiple pregnancies were excluded from the study.

Postdated pregnancy was defined as a pregnancy that has crossed the expected date of delivery (i.e., beyond 280 days or >40 weeks) as assessed from the last menstrual period. The risk factors assessed were previous history of post-dated pregnancy, fetal weight of >4500 grams at the time of delivery, and primigravida (defined as a female who has conceived for the first time). Fetal outcomes assessed were fetal distress (assessed by a change in the heart rate of the fetus, i.e., if <110 or >160 beats per minute on cardiotocography during labor), meconium aspiration syndrome (defined as neonatal respiratory distress that occurs in a newborn in the context of meconium-stained amniotic fluid (MSAF) when respiratory symptoms could not be attributed to another etiology at the time of birth), meconium-stained liquor at the time of birth as assessed clinically, and oligohydramnios (diagnosed when an ultrasound measures amniotic fluid volume (AFV) that was less than expected for the gestational age and an amniotic fluid index (AFI) of 5 cm or less as assessed at 40 weeks). The maternal outcomes assessed were cephalopelvic disproportion (defined as a mismatch between the size of the fetal head and the size of the maternal pelvis, resulting in "failure to progress" in labor for mechanical reasons as assessed clinically at the time of labor), postpartum hemorrhage (defined as losing 500 ml or more of blood within the first 24 hours after the birth of the baby as assessed clinically); and delivery via cesarean section.

A total of 185 post-dated pregnant females were enrolled in the study after taking permission from the ethical review committee, and written informed consent was taken by all enrolled patients. Detailed history, clinical examination findings, and ultrasound findings were recorded on a predesigned proforma in order to find out obstetrical or systemic complications. The intrapartum record of uterine contractions, fetal heart rate, progress of labor, mode of delivery, and Apgar score was noted. Risk factors (as per operational definition) were assessed, and findings were noted down. The patients were followed up to 24 hours after delivery, and any maternal and fetal complications were noted down as per operational definitions. To remove bias in the study, the patients were assessed by single experienced obstetricians (having an experience of >5 years in the specialty), and the researcher assisted in documenting those findings. All patients enrolled in the study were managed as per standard operating protocols of the department.

Data was analyzed using SPSS version 25.0. Quantitative data such as age, parity, BMI, gestational age were presented as median and interquartile range, as the data was non-normal in distribution as assessed by the Shapiro-Wilk test. Qualitative data such as risk factors (primigravida, macrosomia, previous history of postdated pregnancy), fetal outcomes (fetal distress, meconium aspiration syndrome, meconium-stained liquor, and oligohydramnios), and maternal outcomes (cephalopelvic disproportion, postpartum hemorrhage, and delivery via cesarean section) were presented as frequency and percentage. Data was stratified for age and gestational age. A post-stratification chi-square test was applied, and a p-value of ≤ 0.05 was considered significant.

RESULTS

A total of 185 patients were enrolled. The median (IQR) age was 32 (7) years. The median (IQR) parity was 1 (1.5), the median (IQR) BMI was 24.8 (3.7) kg/m^2 and the median (IQR) gestational age was 40.6 (0.70) weeks (Table I).

There were 74 (40%) patients of age 18 to 30 years and 111 (60%) patients of age 31 to 45 years. The gestational week of 40 or more was recorded in 112 (60.5%) patients and of 41 or more weeks in 73 (39.5%) patients. No risk factor was seen in 78 (42.2%) patients, 27 (14.6%) patients had macrosomia, 47 (25.4%) patients were primigravida, and 33 (17.8%) patients had a history of post-dated pregnancies. In terms of fetal outcomes, no complications were seen in 78 (42.2%) patients, 47 (25.4%) patients had fetal distress, 22 (11.9%) patients had meconium aspiration syndrome, 20 (10.8%) patients had meconium-stained liquor, and 18 (9.7%) patients had oligohydramnios. In terms

of maternal outcomes, 98 (53%) patients had no complications, 11 (5.9%) patients had cephalopelvic disproportion, 22 (11.9%) patients had postpartum hemorrhage, and 54 (29.2%) patients had delivery via cesarean section (Table II). Data was stratified for risk factors and fetal and maternal outcomes with respect to age and gestational age (Tables III to V). It was found that risk factors (Table III) and maternal outcomes (Table V) were significantly linked with age groups.

Table I: Baseline demographic features (n=185)

Variable	Median (IQR)
Age (in years)	32 (7)
Parity	1 (1.5)
BMI (in Kg/m^2)	24.8 (3.7)
Gestational age (in weeks)	40.6 (0.70)

Table II: Baseline and clinical characteristics of the patients (n=185)

Variable	Frequency (percentage)
Age group:	
18 to 30 years	74 (40%)
31 to 45 years	111 (60%)
Week of gestation:	
40 plus	112 (60.5%)
41 plus	73 (39.5%)
Risk factors:	
None	78 (42.2%)
Macrosomia	27 (14.6%)
Primigravida	47 (25.4%)
Previous history of post-dated pregnancy	33 (17.8%)
Fetal outcome:	
No complication	78 (42.2%)
Fetal distress	47 (25.4%)
Meconium aspiration syndrome	22 (11.9%)
Meconium-stained liquor	20 (10.8%)
Oligohydramnios	18 (9.7%)
Maternal outcome:	
No complication	98 (53%)
Cephalopelvic disproportion	11 (5.9%)
Postpartum hemorrhage	22 (11.9%)
Delivery via Cesarean section	54 (29.2%)

Table III: Stratification of risk factors with respect to age and gestational age of the patients (n=185)

Stratification with respect to age		
Risk factors	**Age group**	**p Value**

	18-30 years	31 to 45 years	
None	18 (9.7%)	60 (32.4%)	<0.001
Macrosomia	7 (3.8%)	20 (10.8%)	
Primigravida	42 (22.7%)	5 (2.7%)	
Previous history of post-dated pregnancy	7 (3.8%)	26 (14.1%)	
Stratification with respect to gestational age			
Risk factors	**Gestational age**		**p Value**
	40+ weeks	**41+ weeks**	
None	49 (26.5%)	29 (15.7%)	0.676
Macrosomia	16 (8.6%)	11 (5.9%)	
Primigravida	30 (16.2%)	17 (9.2%)	
Previous history of post-dated pregnancy	17 (9.2%)	16 (8.6%)	

Table IV: Stratification of fetal outcomes with respect to age and gestational age of the patients (n=185)

Stratification with respect to age			
Fetal outcome	**Age group**		**p Value**
	18-30 years	**31 to 45 years**	
None	34 (18.4%)	44 (23.8%)	0.538
Fetal distress	19 (10.3%)	28 (15.1%)	
Meconium aspiration syndrome	8 (4.3%)	14 (7.6%)	

Meconium-stained liquor	9 (4.9%)	11 (5.9%)	
Oligohydramnios	4 (2.2%)	14 (7.6%)	
Stratification with respect to gestational age			
Fetal outcome	**Gestational age**		**p Value**
	40+ weeks	**41+ weeks**	
None	49 (26.5%)	29 (15.7%)	0.649
Fetal distress	24 (13%)	23 (12.4%)	
Meconium aspiration syndrome	14 (7.6%)	8 (4.3%)	
Meconium-stained liquor	13 (7%)	7 (3.8%)	
Oligohydramnios	12 (6.5%)	6 (3.2%)	

Table V: Stratification of maternal outcomes with respect to age and gestational age of the patients (n=185)

Stratification with respect to age			
Maternal outcome	**Age group**		**p Value**
	18-30 years	**31 to 45 years**	
None	37 (20%)	61 (33%)	0.033
Cephalopelvic disproportion	9 (4.9%)	2 (1.1%)	
Postpartum hemorrhage	9 (4.9%)	13 (7%)	
Delivery via cesarean section	19 (10.3%)	35 (18.9%)	

Stratification with respect to gestational age			
Maternal outcome	**Gestational age**		**p Value**
	40+ weeks	**41+ weeks**	
None	57 (30.8%)	41 (22.2%)	0.826
Cephalopelvic disproportion	6 (3.2%)	5 (2.7%)	
Postpartum hemorrhage	14 (7.6%)	8 (4.3%)	
Delivery via cesarean section	35 (18.9%)	19 (10.3%)	

DISCUSSION

The current study findings revealed that in patients with post-dated pregnancies, the most common risk factor was primigravida followed by a previous history of post-dated pregnancy. The commonest fetal outcomes were fetal distress and meconium aspiration syndrome, and maternal outcomes frequently encountered were delivery via cesarean section and postpartum hemorrhage.

A post-dated pregnancy offers serious risks to both mother and fetal health[11,12]. Post-term pregnancies are still linked to higher perinatal morbidity and mortality despite improvements in obstetric care[13,14]. Because placental insufficiency increases the risk of stillbirth, meconium aspiration syndrome, and macrosomia, it is critical to evaluate risk factors and maternal/fetal outcomes in post-date pregnancies[15,16]. Early evaluation and intervention improve neonatal survival rates, which sharply decrease after term, and reduce maternal morbidity (such as hemorrhage and cesarean birth)[17,18]. Keeping this in view, our study aimed to assess the risk factors and fetal as well as maternal outcomes in patients with postdated pregnancies.

Our study findings showed that in terms of risk factors, macrosomia was seen in 14.6%, primigravidas were 25.4%, and a previous history of cesarean section was reported by 17.8% of patients. A study conducted by Mitao *et al.* revealed that in patients who had postdated pregnancies, a previous history of postdated pregnancy was present in 14.8% of patients (absolute relative risk=1.81, $p<0.001$), and a baby weight of >4500 g was present in 13.5% of patients (absolute relative risk=4.99, $p<0.001$)[19]. Fayed *et al.* revealed that among females with post-date pregnancies, primiparous females (n = 59/194) had an increased risk of post-dated pregnancy (odds ratio 1.71, $p<0.05$)[20]. These findings are consistent with our findings that in patients with post-dated pregnancies, risk factors such as macrosomia, previous history of post-dated pregnancy, and being primigravida are frequently encountered.

In terms of outcomes, our results showed that commonly encountered fetal outcomes were fetal distress in 25.4%, followed by meconium aspiration syndrome (11.9%), meconium-stained liquor (10.8%), and oligohydramnios (9.7%); and in terms of maternal outcomes, the commonest outcome was delivery via cesarean section (29.2%), followed by postpartum hemorrhage (11.9%) and cephalopelvic disproportion (5.9%). In a study, it was revealed that in patients who had postdated pregnancies, fetal complications such as fetal distress occurred in 25%, oligohydramnios occurred in 8% of patients, meconium-stained liquor was seen in 22% of patients, and maternal complications such as CPD were seen in 12% of patients; postpartum hemorrhage occurred in 22% of patients, and cesarean delivery occurred in 60% of patients[3]. In another study by Chanu *et al.*, it was found that among the fetal complications, oligohydramnios occurred in 0.7% of patients, macrosomia occurred in 0.7% of patients, and meconium aspiration syndrome occurred in 6% of patients; and among the maternal complications, CPD occurred in 2.7% of patients, and cesarean delivery occurred in 29.3% of patients[4]. These findings support our study findings that among the fetal outcomes in postdated pregnancies, fetal distress and meconium aspiration syndrome are the commonest, and among the maternal outcomes, delivery via cesarean section and postpartum hemorrhage are frequently seen outcomes.

Due to placental aging, reduced amniotic fluid, and fetal macrosomia, postdated pregnancies are linked to markedly elevated risks for both mother and fetus. In order to guide early intervention and enhance results, so our research

focused on assessing these hazards. Our study clearly highlighted the risk factors leading to such a condition and the associated outcomes that both the fetus and mother have to go through. Our study focused mainly on the identification of important risk factors and quantification of adverse outcomes, which can help us in improving decision-making and timely intervention, thus improving the survival and quality of life of fetuses as well as mothers.

CONCLUSIONS

Our study results concluded that in patients with post-dated pregnancies, the most commonly encountered risk factors were being primigravida and having a previous history of post-dated pregnancy; the frequent fetal outcome was fetal distress and meconium aspiration syndrome, and the frequent maternal outcome was delivery via cesarean section and postpartum hemorrhage. Future studies must be carried out on a larger sample size in order to validate our study findings.

ACKNOWLEDGEMENTS:

We sincerely thank all of our seniors and coworkers who assisted us in gathering information, conducting the necessary literature search, and assembling this work.

LIMITATIONS:

The study had certain limitations. Firstly, there could be inaccuracies in gestational dating, as some of the patients might not have the first trimester dating scan. Secondly, across different institutions, there may be inconsistency in the fetal monitoring protocols as well as the protocol for induction of labor. These inconsistencies can affect the outcomes, and thus the findings cannot be generalized.

Conflict of interest: None

Funding: None

REFERENCES

1. Anand N, Shah H. A clinical study of maternal outcome in post dated pregnancy in a tertiary care hospital. Int J Reprod Contracept Obstet Gynecol. 2019;8(9):3573-3578.
2. Salam S, Naz M, Akter M. Study on Fetal and Maternal Outcome of Postdated Pregnancy. East West Med Coll J. 2024;12(1):94-98.
3. Krishna Sailaja Sattiraju DP, Katakdhond S. A clinical study on post-dated pregnancy and its outcomes: when a pregnancy extends past the due date. Afr J Bio Sc. 2024;6(11):959-963
4. Chanu NS, Singh CD, Singh TD. Postdated pregnancy and its perinatal outcome-a clinical study at a tertiary care centre. Int J Acad Med Pharm. 2023; 5(2);1252-1255.
5. Mehari MA, Maeruf H, Robles CC, Woldemariam S, Adhena T, Mulugeta M, et al. Advanced maternal age pregnancy and its adverse obstetrical and perinatal outcomes in Ayder comprehensive specialized hospital, Northern Ethiopia, 2017: a comparative cross-sectional study. BMC pregnancy and childbirth. 2020;20:60.
6. Botcha H, Agrawal S, Dora AK. The Fetomaternal Outcome in Pregnancy beyond 40 Weeks of Gestation at a Tertiary Center. J South Asian Fed Obstet Gynaecol. 2023;15(3):278-282.
7. Chhetri PB, Shrestha BK, Shrestha S, Pathak P, Shrestha R, Acharya M. Maternal and fetal outcome in pregnancy beyond the expected date of delivery in a tertiary care hospital of Nepal. J Chitwan Med Coll. 2022;12(2):47-50.
8. Latif S, Aiken C. Prolonged pregnancy: balancing risks and interventions for post-term gestations. Obstet Gynaecol Reprod Med. 2024;34(5):127-133.
9. Shiferaw MA, Solomon A, Getachew S, Gudu W. Maternal and perinatal outcomes of oligohydramnios in late term and post term pregnancies at public hospitals in Ethiopia: a cross-sectional study. BMC Women's Health. 2024;24(1):113.
10. Emannuel G, Martin O, Peter OS, Obeagu EI, Daniel K. Factors Influencing Early Neonatal Adverse Outcomes among Women with HIV with Post Dated Pregnancies Delivering at Kampala International University Teaching Hospital, Uganda. AJPCB. 2023;6(1):203-211.
11. Muglia LJ, Benhalima K, Tong S, Ozanne S. Maternal factors during pregnancy influencing maternal, fetal, and childhood outcomes. BMC Med. 2022;20(1):418.
12. McNestry C, Killeen SL, Crowley RK, McAuliffe FM. Pregnancy complications and later life women's health. Acta Obstet Gynecol Scand. 2023;102(5):523-531.
13. Parate S, Pounikar M. Fetomaternal Outcome of Postdated Pregnancy. J Datta Meghe Inst Med Sci Univ. 2025;20(4):878-881.
14. Firdaush H, Chauhan N, Alka RN. A study of maternal outcomes in postdated pregnancy. 2023;14(4):109.

15. Roy M, Rani A. Study on Post Dated Pregnancy: Its Maternal and Foetal Outcome. Int J Med Health Res. 2025;13(1):1-7.
16. Chanu NS, Singh CD, Singh TD. Postdated pregnancy and its perinatal outcome-a clinical study at a tertiary care centre. Int J Acad Med Pharm. 2023;8(10):1252-1255.
17. Suliman AA, Abdelrahman GM, Ahmed HS, Ibrahim AS, Hammad KM, Omer EA, et al. Postdate pregnancy maternal and fetal outcomes among Sudanese women. Clin J Obstet Gynecol. 2023;6(4):165-171.
18. Jahan K. Relationship of Maternal Complications and Delivery Methods Among Postdated Pregnancy. Insight. 2022;5(01):37-43.
19. Mitao M, Mwita WC, Antony C, Adinan H, Shayo B, Amour C, et al. Recurrence of post-term pregnancy and associated factors among women who delivered at Kilimanjaro Christian Medical Centre in northern Tanzania: A retrospective cohort study. PLoS One. 2023;18(4):e0282078.
20. Fayed A, Wahabi HA, Esmaeil S, Elmorshedy H, AlAniezy H. Preterm, early term, and post-term infants from Riyadh mother and baby multicenter cohort study: The cohort profile. Front Public Health. 2022;10:928037.