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Original Research Article

Perinatal morbidity and mortality in postdated pregnancies

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ABSTRACT

Background: Postdated pregnancies are associated with a range of risks that contribute to elevated perinatal morbidity and mortality rates. Therefore, the purpose of this study was to assess the perinatal morbidity and mortality associated with postdated pregnancies. The aim of the study was to evaluate the perinatal morbidity and mortality associated with postdated pregnancies.
Methods: This descriptive cross-sectional study was conducted at the department of obstetrics and gynecology, Shaheed Ziaur Rahman Medical College Hospital (SZMCH), Bogra, from November 18, 2013, to May 17, 2014, and included 50 postdated pregnant women. Informed consent was obtained, and maternal and fetal outcomes were observed for seven days post-delivery. Data were analyzed using SPSS version 22.0, with results presented as mean (±SD) for quantitative data and as frequency and percentage for qualitative data.
Results: This study found a 6.7% incidence of postdated pregnancy at SZMCH, with 84% of patients aged 18-29 years and 52% having regular antenatal checkups. Most (82%) presented at 41 weeks, and 50% underwent caesarean delivery. Newborns had favourable APGAR scores (74% scored 7-10). Maternal morbidity occurred in 16 cases, primarily postpartum hemorrhage (31.3%) and wound infection (25%). Fetal complications were seen in 40%, with birth asphyxia (35%) and macrosomia (20%) being the most common.
Conclusions: This study emphasizes the need for timely interventions and consistent prenatal monitoring to reduce maternal and fetal complications in postdated pregnancies, which accounted for 6.7% of cases at SZMCH.

Keywords: Maternal outcomes, Neonatal outcomes, Perinatal morbidity, Perinatal mortality, Postdated pregnancies

INTRODUCTION

Post-term pregnancy (PTP), as defined by the World Health Organization (WHO), refers to pregnancies that extend beyond 294 days, or 42 weeks of gestation, affecting approximately 7% of pregnancies.[1,2] With the growing use of ovulation induction and assisted reproductive technologies, the incidence of twin and higher-order multiple gestations, such as triplets and quadruplets,[3,4] has risen, leading to increased risks for both perinatal mortality and morbidity.[5] As reproductive technologies continue to advance, these higher-order pregnancies contribute significantly to perinatal complications.

Perinatal mortality is a key indicator of the quality of obstetric care and is influenced by factors such as maternal age, the presence of multiple pregnancies, and the lack of standardized screening for congenital anomalies.[6,7] Furthermore, inconsistencies in tracking and managing gestational ages can exacerbate risks, underscoring the need for vigilant monitoring and intervention in postdated pregnancies to reduce potential complications for both mothers and fetuses.[8]

Postdated pregnancies are associated with a range of risks that contribute to elevated perinatal morbidity and mortality rates. Complications such as preterm deliveries, intrauterine growth retardation, and congenital malformations are among the primary factors responsible for these increased risks, particularly in high-risk pregnancies like twin gestations.[9] Research indicates that neonatal mortality can be significantly reduced when fetuses are transferred in utero rather than after delivery, with antenatal transfers resulting in fewer morbidities compared to postnatal transfers.[10-13] This underscores the importance of early detection and timely interventions to improve neonatal outcomes.

Approximately 10% of all pregnancies are complicated by prolongation beyond the expected delivery date, increasing risks for both the mother and the fetus.[14,15] This highlights the critical need for careful monitoring and timely management of postdated pregnancies to prevent adverse outcomes. In healthcare models such as the Dutch obstetric care system, a clear distinction is made between low- and high-risk pregnancies, allowing for timely referral to obstetricians when complications arise. Management strategies, including labor induction and continuous fetal monitoring, are employed to mitigate perinatal risks, ensuring better maternal and neonatal outcomes.

Despite existing research, significant gaps remain in understanding the impact of postdated pregnancies on maternal and neonatal health. Studies indicate that perinatal mortality at 42 weeks is twice as high as at 40 weeks and increases fourfold by 43 weeks.[16] Contributing factors to these excess deaths include uteroplacental insufficiency and asphyxia.[17] Additionally, postdated pregnancies are linked to higher rates of perinatal morbidities, such as meconium aspiration syndrome, oligohydramnios, and fetal distress.[18-20] These conditions also elevate the risks of neonatal encephalopathy and mortality during the first year of life. Given these serious concerns, careful monitoring and management of postdated pregnancies are essential to mitigate associated risks. Therefore, the purpose of this study was to assess the perinatal morbidity and mortality associated with postdated pregnancies, providing insights that could inform clinical practices and improve outcomes for both mothers and neonates.

Objectives

The aim of the study was to evaluate the perinatal morbidity and mortality associated with postdated pregnancies.

METHODS

This descriptive cross-sectional study was conducted at the department of obstetrics and gynecology, Shaheed Ziaur Rahman Medical College Hospital (SZMCH), Bogra, Bangladesh, from November 18, 2013, to May 17, 2014. The study included 50 postdated pregnant women and their fetuses admitted to the labor and antenatal wards during this period. The sample size was determined based on the incidence of postdated pregnancies in the hospital, with 50 cases ultimately analyzed.

Inclusion criteria

Patients beyond 40 completed weeks of pregnancy. Patients who were sure of their last menstrual period (LMP). Patients with regular menstrual cycles.

Exclusion criteria

Patients unable to provide an accurate history of their LMP. Patients with irregular menstruation prior to the existing pregnancy. Patients belonging to high-risk groups, such as those with eclampsia, preeclampsia, heart disease, diabetes mellitus, renal disease, or systemic hypertension. Patients with multiple pregnancies, congenital anomalies, or Rh incompatible pregnancies.

Informed consent was obtained from all participants, ensuring confidentiality and voluntary participation, with a thorough history taken and maternal and fetal outcome observed for seven days post-delivery. Data collection was conducted using a standardized data record form to gather relevant patient information, and the data were analyzed using the Statistical Package for Social Science (SPSS) version 22.0, with quantitative data presented as mean and standard deviation (±SD) and qualitative data expressed as frequency and percentage. Ethical approval was secured, adhering to guidelines that maintained patient confidentiality and ensured standard medical care throughout the study. Patients were informed of their right to withdraw at any stage, the confidentiality of their identity, and that standard treatment would be provided, with any treatment costs in case of complications covered by SZMCH.

RESULTS

Total number of pregnancy cases admitted in SZMCH was 926; among them, 283 patients were primigravida, and a total of 62 patients were admitted with postdated pregnancy. The incidence of postdated pregnancy during this study period was 6.7%.

Table 1: Incidence of postdated Pregnancy.

Number of patients admitted in the study period	Number of postdated pregnancies	Incidence
926	62	6.70%

Among the 50 patients, the majority (84%) were within the age group of 18 to 29 years. Most of the patients belonged to the younger age group. 24% were illiterate, while the rest were 60%, 14%, and 2% with SSC, HSC, and Graduated educational qualifications, respectively. The

study revealed that 60% and 40% came from middle and lower socio-economic status, respectively. 80% were housewives, 6% were service holders, 4% were day laborers, and the remaining 10% were students. A positive family history of postdated pregnancy was found in 13 (26%) cases. In this study, 26 (52%) patients had regular antenatal checkups, 16 (32%) had irregular checkups, and 8 (16%) patients had no antenatal checkups.

Table 2: Distribution of patients by socio-demographic profile (n=50).

Variables		Frequency	Percentage
Age	18-29 years	42	84.00
	30 years onwards	8	16.00
Education	Illiterate	12	24.00
	SSC	30	60.00
	HSC	7	14.00
	Graduate	1	2.00
Economic Status	Middle	30	60.00
	Low	20	40.00
Occupation	Housewife	40	80.00
	Service	3	6.00
	Day labour	2	4.00
	Student	5	10.00
Family history of postdated pregnancy	Present	13	26.00
	Absent	37	74.00
Antenatal checkup	Regular	26	52.00
	Irregular	16	32.00
	No check up	8	16.00

Table 3: Distribution of patients by duration of pregnancy (n=50).

Duration of pregnancy (in weeks)	Frequency	Percentage
41	41	82.00
42	7	14.00
43	2	4.00
Total	50	100.00

In this study, the majority (82%) of the patients presented at 41 weeks of pregnancy, 14% at 42 weeks, and 4% at 43 weeks.

Table 4: Presenting complaints of patients on admission (n=50).

Presenting complaints	Number of cases	Percentage
With labour pain	24	48.00
Crossed EDD	12	24.00
Less foetal movement	14	28.00
Total	50	100.00

The majority of the patients (48%) were admitted with labor pain, 28% for less fetal movement, and the remaining 24% came with discrepancies in their estimated due dates (EDD).

Table 5: Distribution of patients by mode of delivery (n=50).

Mode of delivery	Frequency	Percentage
SVD	23	46.00
Ventouse	2	4.00
LUCS	25	50.00
Total	50	100.00

In this study, the majority of the patients underwent lower uterine cesarean section (LUCS) (50%). Spontaneous vaginal delivery (SVD) occurred in 46% of patients.

Table 6: APGAR score of newborns after 5 minutes of delivery (n=50).

Mode of delivery	APGAR score			Total
	0-3	4-6	7-10	
SVD	2	5	16	23
Ventouse	0	0	2	2
LUCS	1	5	19	25
Total	3 (6%)	10 (20%)	37 (74%)	50 (100%)

In this study, 37 (74%) babies had an APGAR score between 7-10. Among them, 16 babies were delivered by SVD, 19 by LUCS, and 2 by ventouse.

Table 7: Distribution of patients by maternal morbidity (n=50).

Maternal morbidity	Frequency	Percentage
PPH	5	31.30
Wound infection	4	25.00
UTI	3	18.70
Perineal tear	4	25.00
Total	16	100.00

Maternal morbidity was identified in 16 cases. The complications included postpartum hemorrhage (PPH) (31.3%), wound infection (25%), urinary tract infection (UTI) (18.7%), and perineal tear (25%).

Table 8: Distribution of foetal complications.

Foetal complications	Frequency	Percentage
Birth asphyxia	7	35.00
RDS	3	15.00
Neonatal jaundice	2	10.00
Neonatal septicemia	1	5.00
Meconium aspiration syndrome	1	5.00
IUD	1	5.00
Neonatal death	1	5.00
Macrosomia	4	20.00
Total	20	100.00

Foetal complications were identified in 20 cases (40%). The complications included birth asphyxia (35%), respiratory distress syndrome (RDS) (15%), neonatal jaundice (10%), meconium aspiration syndrome (5%), neonatal septicemia (5%), intrauterine death (IUD) (5%), neonatal death (5%), and macrosomia (20%).

DISCUSSION

The increasing incidence of postdated pregnancies raises significant concerns regarding perinatal morbidity and mortality. Despite advancements in obstetric care, postdated pregnancies remain a high-risk situation due to various complications that can affect both maternal and neonatal outcomes.

The incidence of postdated pregnancy observed in this study was 6.7%. Previous research indicates that the incidence can vary widely, with reported rates ranging from 3% to 14%, 9.14%, and 11%.[21] Specifically, the incidence among primigravida patients was found to be 8.5%.

Our findings revealed a higher prevalence of prolonged pregnancies among women in the younger age group (18-29 years) compared to those aged 30 years and older. In our country, approximately 80% of women become mothers by the age of 18, which may contribute to the increased incidence in the younger cohort. However, one study indicated no significant difference in postdated pregnancy rates concerning age.[22]

Most patients in this study had educational levels of SSC and HSC, and a significant portion came from middle socioeconomic backgrounds. This finding suggests that the average educational level may not be directly linked to postdated pregnancies. In terms of socioeconomic status, 60% of the patients belonged to the middle class and 40% to the lower class, with income thresholds defined as follows: lower class (<5,000 Tk/month), middle class (5,000-20,000 Tk/month), and upper class (>20,000 Tk/month). It is often observed that patients from upper and middle-class families tend to have regular antenatal checkups, allowing for early diagnosis and management of potential complications. However, our study did not include any patients from upper-class families.

The majority of participants in our study were housewives, and it is common for urban housewives to lead sedentary lifestyles during pregnancy. This lifestyle may contribute to the incidence of prolonged pregnancies within this group. Additionally, a notable number of patients reported a positive family history of postdated pregnancies, suggesting that genetic or familial factors may play a role, warranting further investigation.

Most patients in our study had regular antenatal checkups, indicating that prenatal care generally reduces complications and improves perinatal outcomes. However, as SZMCH is a referral hospital, the observed rates of operative delivery, maternal, and fetal complications may not accurately reflect the broader community context.

Among the presenting complaints, the majority of patients reported labor pain (48%), while 28% presented with decreased fetal movement. In contrast, another study found that 64% of patients presented without labor, while 36% did report labor pain.[23] Diagnoses in our study relied primarily on history and clinical examination; while ultrasonography was available, it could not be performed on patients admitted with labor pain.

The rate of lower uterine cesarean sections (LUCS) in this study was notably high at 50%, primarily due to fetal distress and failed induction. In comparison, other studies reported LUCS rates of 17% and 18%.[24] This elevated rate may be attributed to SZMCH being a tertiary hospital, where complicated cases are more frequently referred. While a considerable number of patients underwent spontaneous vaginal delivery, the incidence of operative vaginal delivery (5.3%) aligned with other studies, although our practice was limited to ventouse delivery without the use of forceps or craniotomy, which were more common in other settings.[25]

Maternal morbidity was prevalent in this study, with complications such as postpartum hemorrhage (PPH), wound infections, urinary tract infections (UTIs), and perineal tears contributing to increased rates of operative

delivery. Our findings indicate a higher rate of maternal morbidity among postdated primigravida patients compared to previous studies on prolonged pregnancies, although no maternal mortality was reported.[22] No significant differences were found in maternal outcomes related to the mode of delivery ($p>0.05$).

In terms of fetal morbidity, birth asphyxia was the most common complication in our study, consistent with findings from previous study.[23] Other observed morbidities included respiratory distress syndrome (RDS), neonatal jaundice, meconium aspiration syndrome, neonatal septicemia, and macrosomia. This alignment may be attributed to the overall quality of neonatal care and the awareness of mothers and family members regarding potential risks. However, the perinatal mortality rate in our study was notably high, contrasting with another study that reported a perinatal mortality rate of 2.5 per thousand live births in cases of postdated pregnancy.[23]

Given that this study was conducted in a referral hospital, many patients arrived without prior checkups or relevant ultrasound examinations, and some presented in labor without any medical records. This lack of prior documentation hindered the ability to ensure optimal case selection. Enhanced outcomes could be anticipated if timely and appropriate interventions were implemented with meticulous attention to each individual case.

The current study had the following limitations: due to high levels of illiteracy and limited awareness, accurately determining the last menstrual period (LMP) and estimated due date (EDD) was challenging for some patients. In several cases, early ultrasound (USG) scans were unavailable, making it difficult to accurately assess fetal maturity at times. Patient monitoring during labor was primarily conducted through clinical methods, as electronic fetal monitoring was not consistently used in all cases.

CONCLUSION

This study highlighted the significant incidence of postdated pregnancies at 6.7% among the admitted cases at SZMCH, underscoring a notable public health concern. The majority of patients were young, predominantly aged 18 to 29 years, with a substantial portion lacking regular antenatal care, suggesting a critical need for enhanced education and access to healthcare services. Maternal morbidity was evident, with postpartum hemorrhage and wound infections being the most common complications. Furthermore, fetal complications such as birth asphyxia and respiratory distress syndrome were observed, emphasizing the heightened risk associated with postdated pregnancies. These findings underscore the necessity for timely interventions and consistent prenatal monitoring to mitigate risks, improve maternal and neonatal outcomes, and reduce the associated morbidity and mortality linked to postdated pregnancies.

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