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GESTATIONAL AGE AT DELIVERY AND PERINATAL MORTALITY IN TWIN PREGNANCIES: A PROSPECTIVE COHORT STUDY

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ABSTRACT

Background: Twin pregnancies are inherently associated with increased obstetric and perinatal risks compared to singleton gestations, with prematurity being the single most important determinant of adverse neonatal outcomes. Gestational age at delivery plays a critical role in influencing perinatal mortality in twin gestations, particularly in low- and middle-income settings.
Objectives: To evaluate the distribution of gestational age at delivery in twin pregnancies and to assess its association with perinatal mortality.
Methods: This prospective cohort study was conducted at a tertiary care teaching hospital and included 100 twin pregnancies resulting in 200 babies. Detailed antenatal, intrapartum, and neonatal data were recorded. Gestational age at delivery was categorized into 28–32 weeks, 33–36 weeks, and ≥37 weeks. Perinatal mortality included stillbirths and early neonatal deaths. Data were analyzed using descriptive statistics, and results were expressed as frequencies and percentages.
Results: The majority of twin deliveries occurred between 33 and 36 weeks of gestation (70%), followed by ≥37 weeks (17%) and 28–32 weeks (13%). Perinatal mortality showed a strong inverse relationship with gestational age at delivery. Of the total perinatal deaths (19%), 69% occurred among deliveries between 28 and 32 weeks, while 14% occurred between 33 and 36 weeks. Only 3% of perinatal deaths were observed when delivery occurred at ≥37 weeks. Overall, advancing gestational age significantly reduced perinatal mortality in twin pregnancies.
Conclusion: Gestational age at delivery is a major determinant of perinatal survival in twin pregnancies. Preterm delivery, particularly before 32 weeks of gestation, is associated with substantially higher perinatal mortality. Strategies aimed at prolonging gestation and optimizing antenatal surveillance are essential to improve perinatal outcomes in twin gestations.

Keywords*: Twin pregnancy; Gestational age; Perinatal mortality; Preterm delivery; Neonatal outcome*

INTRODUCTION

Twin pregnancies constitute a high-risk obstetric group due to increased maternal, fetal, and neonatal complications when compared to singleton pregnancies. The global incidence of twin pregnancies has risen over the past few decades, largely attributable to advanced maternal age and the widespread use of assisted reproductive technologies [1,2]. Despite advances in antenatal and neonatal care, perinatal morbidity and mortality remain significantly higher in twins, primarily due to prematurity and low birth weight [3].

Gestational age at delivery is the most critical determinant of perinatal outcome in twin gestations. More than 50% of twin pregnancies deliver preterm, with a substantial proportion occurring before 37 completed weeks of gestation [4]. Prematurity exposes the neonate to complications such as respiratory distress syndrome, intraventricular hemorrhage, necrotizing enterocolitis, and sepsis, all of which contribute to increased perinatal mortality [5].

Perinatal mortality, defined as stillbirths and early neonatal deaths, is reported to be two to three times higher in twin pregnancies compared to singleton pregnancies [6]. Several studies have demonstrated a steep decline in perinatal mortality with increasing gestational age, particularly beyond 32 and 34 weeks of gestation [7,8]. However, the optimal timing of delivery in twin pregnancies continues to be debated, as prolonging gestation must be balanced against the risk of intrauterine complications unique to twin gestations.

In developing countries, limited access to specialized antenatal care, delayed referrals, and inadequate neonatal intensive care facilities further compound the adverse outcomes associated with prematurity in twin pregnancies [9]. Local data from prospective cohorts are therefore essential to understand gestational age-specific risks and to formulate evidence-based management protocols.

The present study was undertaken to analyze the gestational age at delivery among twin pregnancies in a tertiary care setting and to evaluate its association with perinatal mortality, using prospectively collected data from a thesis cohort.

OBJECTIVE

To assess the relationship between gestational age at delivery and perinatal mortality in twin pregnancies.

MATERIALS AND METHODS

This prospective cohort study was conducted in the Department of Obstetrics and Gynecology at a tertiary care teaching hospital, Govt Medical College & JK Lon Hospital, Kota, Rajasthan. The study included **100 women with twin pregnancies**, resulting in **200 babies**, who were admitted for delivery during the study period.

Inclusion Criteria

- All diagnosed twin pregnancies beyond 28 weeks of gestation
- Both spontaneous and assisted conceptions
- Booked and unbooked cases

Exclusion Criteria

- Major congenital anomalies incompatible with life
- Pregnancies with incomplete records

Gestational age was calculated based on the last menstrual period and confirmed by first-trimester or early second-trimester ultrasonography wherever available. Cases were categorized into three gestational age groups:

- 28–32 weeks
- 33–36 weeks
- ≥37 weeks

Perinatal mortality included stillbirths and early neonatal deaths occurring within the first seven days of life. Data were entered in a structured proforma and analyzed using descriptive statistics. Results were expressed as numbers and percentages.

RESULTS

Out of 100 twin pregnancies, **13 cases (13%)** delivered between **28–32 weeks; 70 cases (70%)** delivered between **33–36 weeks and 17 cases (17%)** delivered at **≥37 weeks.** The mean gestational age at delivery was **34.87 ± 2.39 weeks**. Overall, **83%** of twin pregnancies resulted in preterm deliveries, while **17%** reached term gestation.

Table 1: Distribution of cases according to gestational age at delivery

Gestational age (in weeks)	Number of cases	%
28-32	13	13%
33-36	70	70%
37 and above	17	17%
Total	**100**	**100%**

Table 2: Gestational age at delivery and perinatal mortality

Gestational age delivery (in weeks)	Total no. of babies born out of 100 twin pregnancies (n=200)	No. of cases (Perinatal mortality)	%
28-32	26	18	69.23%
33-36	140	19	13.57%
>37	34	1	2.94%
Total	**200**	**38**	**19%**

Chi-square = 51.004 with 2 degrees of freedom; P = 0.000 (S)

Among the **200 babies** born out of 100 twin pregancies, a total of **38 perinatal deaths** were recorded, giving an overall perinatal mortality rate of **19%**. Among the mothers who delivered at **28–32 weeks; total** 26 babies were delivered, out of which 18 (69.23%) perinatal deaths were recorded. Among the mothers who delivered at **33–36 weeks; total** 140 babies were delivered, out of which 19 (13.57%) perinatal deaths were recorded. Among the mothers who delivered at **≥37 weeks; total** 34 babies delivered, out of which 1 perinatal death (2.94%) was recorded. A clear inverse relationship was observed between gestational age at delivery and perinatal mortality, with the highest mortality occurring among deliveries before 32 weeks of gestation. This association was found to be statistically significant (P<0.001).

DISCUSSION

The present study highlights gestational age at delivery as a crucial determinant of perinatal mortality in twin pregnancies. The predominance of preterm delivery observed in this cohort (83%) is consistent with existing literature, which reports preterm birth rates of 50–70% in twin gestations [4,6].

Perinatal mortality was markedly high (69%) among deliveries occurring between 28 and 32 weeks of gestation. This finding aligns with previous studies demonstrating that extreme and early preterm births account for the majority of perinatal deaths in twin pregnancies [7,10]. Immaturity of organ systems, particularly pulmonary and neurological systems, significantly contributes to early neonatal deaths in this gestational age group.

A substantial decline in perinatal mortality was observed when delivery occurred between 33 and 36 weeks, with a mortality rate of 14%. Similar reductions have been reported by Luke et al. and Minakami et al., who emphasized the survival benefit associated with advancing gestation beyond 32–34 weeks [8,11].

The lowest perinatal mortality (3%) was noted among twins delivered at ≥37 weeks. This supports evidence suggesting that neonatal outcomes in twin pregnancies improve significantly when delivery approaches term gestation, provided there are no obstetric contraindications [12].

The findings underscore the importance of targeted antenatal surveillance, timely administration of antenatal corticosteroids, and referral to centers with neonatal intensive care facilities to optimize outcomes in preterm twin deliveries. Preventing very early preterm birth remains the most effective strategy to reduce perinatal mortality in twin pregnancies.

CONCLUSION

Gestational age at delivery has a profound impact on perinatal mortality in twin pregnancies. Deliveries before 32 weeks are associated with extremely high perinatal mortality, while outcomes improve significantly with advancing gestation. Efforts to prolong pregnancy and provide comprehensive antenatal and neonatal care are essential to reduce perinatal deaths in twin gestations.

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