

Twin Pregnancies: Maternal Challenges and Neonatal Outcomes in a Tertiary Hospital

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Abstract

Introduction: Twin pregnancies present unique challenges for both maternal and neonatal health. These pregnancies are associated with an increased risk of complications, such as preterm labor, growth restrictions, and higher rates of perinatal mortality. **Methods:** This prospective observational study was conducted at the Department of Gynaecology and Obstetrics in Dhaka Medical College and Hospital, Dhaka, from January 2008 to December 2008. Total number of cases were 132. Data analysis was done using Statistical Package for Social Sciences (SPSS) version 20.0. A descriptive method was adopted in this study. **Result:** In this study of 132 twin pregnancies, 1.47% of deliveries were twins. Most patients were aged 20-35 years and multiparous. Preterm births accounted for 40.15%, with 43.93% of pregnancies reaching full term. Common maternal complications included premature labor (50%) and anemia (37.87%). The perinatal mortality rate was 10.98%, with prematurity (40.15%) being the leading cause of morbidity. Most twins had favorable APGAR scores (79.3% at 1 minute, 91.2% at 5 minutes), and birth weights were predominantly between 1.6-2.5 kg. **Conclusion:** This study concludes that twin pregnancies pose significant maternal and neonatal risks, including preterm labor, anemia, and hypertensive disorders in mothers, as well as prematurity and respiratory distress in neonates. However, the majority of neonates showed favorable outcomes with improved APGAR scores over time. While perinatal mortality was relatively low, proper management and early intervention are crucial in improving outcomes.

Keywords: Twin pregnancy, Maternal complications, Neonatal outcome, APGAR score.

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INTRODUCTION

Globally, the incidence of twin pregnancies has risen significantly, particularly in high-income regions. The increase is attributed primarily to ART and delayed childbearing, as advanced maternal age is associated with higher rates of multiple ovulations and dizygotic twinning. Twin pregnancies are classified as monozygotic, arising from a single fertilized ovum that splits, or dizygotic, resulting from two separate ova fertilized during the same cycle. Monozygotic pregnancies carry additional risks depending on the chorionicity and amnionicity, with monochorionic twins at greater risk of complications such as twin-to-twin transfusion syndrome (TTTS) and selective intrauterine growth restriction (sIUGR) [1]. The occurrence of hypertensive disorders of pregnancy (HDP) including

gestational hypertension, chronic hypertension, preeclampsia, and eclampsia is proportional to the number of fetuses: singletons 6.5%, twins 12.7%, and triplets 20.0% [2]. Multiple pregnancies constitute a significant risk to both mother and fetus. Antepartum complications—including preterm labor, preterm premature rupture of the membranes, intrauterine growth restriction, intrauterine fetal demise, gestational diabetes, and preeclampsia—develop in over 80% of multiple pregnancies as compared with approximately 25% of singleton gestations [3]. Preterm labor is a notable concern, occurring in up to 50% of twin pregnancies, as demonstrated in various studies. Prematurity is strongly associated with adverse neonatal outcomes, including respiratory distress syndrome (RDS) and neurodevelopmental delays. Additionally, gestational diabetes mellitus (GDM), urinary tract

infections (UTIs), and the risk of operative delivery further underscore the complexity of twin pregnancies in clinical practice [4]. Neonates from twin pregnancies are at a disproportionately higher risk of morbidity and mortality compared to singletons. Prematurity is the leading cause of perinatal morbidity, with approximately 60% of twins delivered before 37 weeks of gestation. Associated complications include low birth weight, respiratory distress, and intraventricular hemorrhage. Intrauterine growth restriction (IUGR), observed in nearly 20% of twins, results from unequal placental sharing, particularly in monochorionic pregnancies [5]. Perinatal mortality, encompassing stillbirths, intrauterine deaths (IUD), and neonatal deaths, remains a significant challenge in twin gestations. Studies report perinatal mortality rates ranging from 10% to 12%, with monochorionic twins facing a higher risk compared to dichorionic twins [6]. Tertiary healthcare centers play a pivotal role in the management of twin pregnancies, offering advanced diagnostic and therapeutic capabilities. Multidisciplinary teams comprising obstetricians, neonatologists, and anesthesiologists ensure comprehensive care for maternal and neonatal complications. Frequent antenatal visits, targeted ultrasonography for chorionicity assessment, and timely interventions such as corticosteroid administration for fetal lung maturity are integral to improving outcomes [7]. Twin pregnancies also necessitate individualized delivery planning to balance the risks of preterm delivery and the complications of prolonged gestation. Cesarean delivery rates are higher among twins, attributed to malpresentation and the risk of inter-twin delivery interval complications. Neonatal intensive care units (NICUs) in tertiary centers are crucial in managing preterm neonates and those with severe morbidity, improving survival and long-term prognosis. This study aimed to evaluate maternal challenges and neonatal outcomes in twin pregnancies.

METHODS

This prospective observational study was conducted at the Department of Gynaecology and Obstetrics in Dhaka Medical College and Hospital, Dhaka, from January 2008 to December 2008. All the consecutive cases of twin pregnancy admitted in DMCH were considered as study population. Total number of cases were 132.

Inclusion criteria:

- All twin pregnancies are admitted after 28 weeks gestation.
- Patients who were willing to participate in the study.

Exclusion criteria:

- Triplet and quadruplet pregnancies were excluded.
- Gestational age less than 28 weeks.

After the admission of each patient detailed history, examination, and relevant investigation were done. Babies who were admitted to the neonatal unit were followed up to their discharge. Patients requiring transfer to other departments of this hospital were also followed in the same way. Necessary information was collected in a predesigned data sheet and finally, the findings were compiled using Microsoft Excel (A complete-based software). Data analysis was done using Statistical Package for Social Sciences (SPSS) version 20.0. A descriptive method was adopted in this study. Ethical clearance was taken from Dhaka Medical College and Hospital.

RESULTS

Table 1: Frequency of twin pregnancy (N=132)

Total delivery	n	%
8952	132	1.47

This table shows that out of 8952 pregnant women attending DMCH during the study, 132 were twin pregnancies (1.47%). [Table 1]

Table 2: Age and parity of the study patients (N=132)

Age (years)	n	%
<20	8	6.06
20-29	63	47.72
30-35	53	40.15
>35	8	6.06
Parity		
Primi	36	27.27
Multi	96	72.73

Among the 132 study patients, the majority (47.72%) were aged between 20 and 29 years, followed by 40.15% in the 30–35 age group. Patients younger than 20 years and older than 35 years were less common, each comprising 6.06% of the cohort. Regarding parity, 72.73% of patients were multiparous, while 27.27% were primiparous, indicating a predominance of women with prior childbirth experience in the study population. [Table 2]

Table 3: Duration of gestation (N=132)

Duration(weeks)	n	%
29-32	13	9.8
33-36	53	40.15
37-40	58	43.93
41-42	8	6.06

Among the 132 cases analyzed, the majority of pregnancies (43.93%) reached full term between 37 and 40 weeks of gestation. Preterm deliveries between 33 and 36 weeks accounted for 40.15% of cases, while early preterm births (29–32 weeks) were less common, occurring in 9.8%. Post-term pregnancies (41–42 weeks)

were the least frequent, representing 6.06% of cases. [Table 3]

Table 4: Maternal complications (N=132)

Complications	n	%
Anemia	50	37.87
Hyperemesis gravidarum	6	4.54
Hypertension (PH and Preeclampsia)	26	19.7
Polyhydramnios	5	3.79
Antepartum Hemorrhage (APH)	13	9.84
Postpartum hemorrhage (PPH)	8	6.06
Premature labor	66	50.0
Premature rupture of membrane (PROM)	13	9.84
Gestational diabetes GDM)	5	3.79
Urinary tract infection (UTI)	3	2.3
No complication	13	9.84

Among the maternal complications observed in 132 cases, premature labor was the most common, affecting 50.0% of patients. Anemia followed, occurring in 37.87% of cases. Hypertension, including pregnancy-induced hypertension and preeclampsia, was reported in 19.7% of cases. Antepartum hemorrhage (APH) and premature rupture of membranes (PROM) were each

noted in 9.84% of cases. Postpartum hemorrhage (PPH) affected 6.06%, while hyperemesis gravidarum occurred in 4.54% of cases. Polyhydramnios and gestational diabetes mellitus (GDM) were observed at equal rates of 3.79%, and urinary tract infections (UTIs) were least common at 2.3%. Notably, 9.84% of cases had no complications. [Table 4]

Table 5: Frequency of perinatal mortality (N=132)

Type of death	n	%	Total death rate
IUD	12	4.54	10.98
Stillbirth	01	0.3	
Neonatal death	16	6.06	

Among the 132 cases, the perinatal mortality rate was 10.98%. Intrauterine deaths (IUD) accounted for 4.54% of cases, while neonatal deaths occurred in

6.06%. Stillbirths were rare, representing only 0.3% of cases. [Table 5]

Table 6: Causes of perinatal morbidity (N=132)

Causes	n	%
Prematurity	53	40.15
IUGR	26	19.70
Congenital anomalies	11	8.33
Physiological jaundice	13	9.84
Respiratory distress	18	13.64
Hypocalcaemia	5	3.78
Hypoglycemia	13	9.84
Umbilical sepsis	8	6.06

Among the 132 cases analyzed, prematurity was the leading cause of perinatal morbidity, affecting 40.15% of neonates. Intrauterine growth restriction (IUGR) was the second most common, reported in 19.7% of cases. Respiratory distress affected 13.64%,

while both physiological jaundice and hypoglycemia were observed in 9.84% of cases each. Congenital anomalies accounted for 8.33% of morbidity, followed by umbilical sepsis at 6.06%. Hypocalcemia was the least common, occurring in 3.78% of cases. [Table 6]

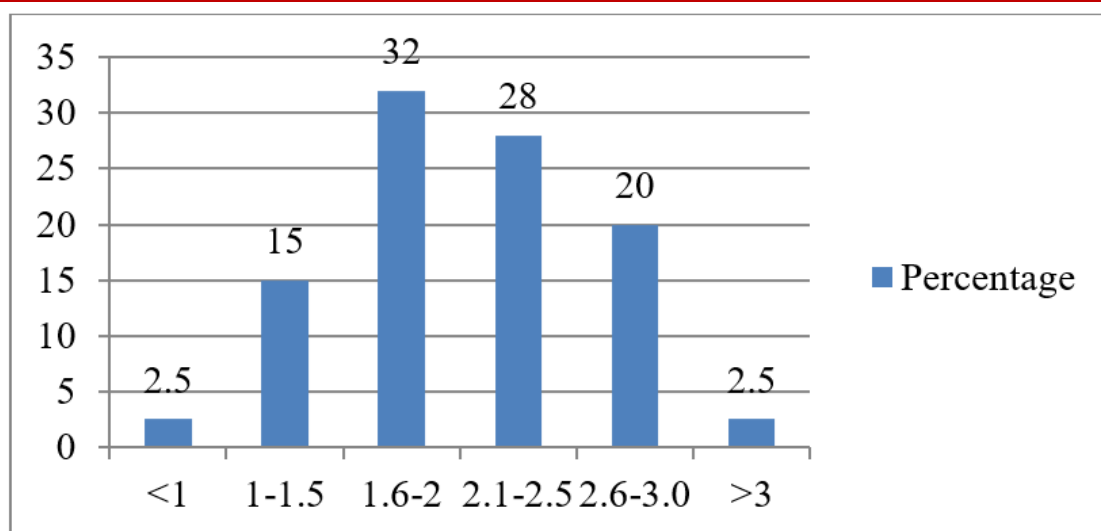


Fig 1: Birth weight of twin gestation

This figure shows that the majority of birth weight of twins is 1.6-2 kg (32.0%) followed by 2.1-2.5 kg (28.0%), 2.6-3.0 kg (20.0%), 1-1.5 kg (15.0%), <1 kg (2.5%) and >3 kg (2.5%).

Table 7: One and five-minute APGAR score of first twin and second twin

APGAR score	1 st twin (n=129) n (%)	2 nd twin (n=122) n (%)	Total (n=251) n (%)
1-minute			
0-6	24 (18.6)	28 (23.0)	52 (20.7)
7-10	105 (81.4)	94 (77.0)	199 (79.3)
5-minute			
0-6	11 (8.5)	11 (9.0)	22 (8.8)
7-10	118 (91.5)	111 (91.0)	229 (91.2)

The APGAR scores for the 251 twins at one and five minutes indicate that the majority had favorable outcomes. At one minute, 79.3% of twins scored between 7 and 10, with 81.4% of first twins and 77.0% of second twins achieving this range. However, 20.7% of twins scored between 0 and 6, indicating some initial distress.

By the five-minute mark, the proportion of twins with scores of 7 to 10 improved to 91.2%, with 91.5% of first twins and 91.0% of second twins falling into this category. The percentage of those scoring 0 to 6 decreased to 8.8%, suggesting a significant recovery in neonatal condition over time. [Table 7]

DISCUSSION

The prevalence of twin pregnancies in this study was 1.47%, consistent with global rates of 1–3% reported in various populations [8]. The relatively high prevalence in this study reflects the concentration of high-risk pregnancies in tertiary hospitals. Studies by Hoekstra *et al.*, also noted similar rates, with twin pregnancies being more common in regions with increased access to assisted reproductive technologies (ART) [9]. The study identified premature labor as the most frequent maternal complication, affecting 50% of cases. Anemia was the second most prevalent

complication (37.87%), likely due to the increased iron demands associated with carrying twins. Hypertensive disorders, including preeclampsia, were observed in 19.7% of cases, corroborating the increased risk documented in studies by Lisonkova *et al.*, which found that the risk of preeclampsia in twin pregnancies is nearly double that of singleton pregnancies [10]. Antepartum and postpartum hemorrhages, observed in 9.84% and 6.06% of cases, respectively, are well-recognized complications in twin pregnancies, as noted by Villar *et al.*, who highlighted the impact of uterine overdistension and placental abnormalities [11]. The perinatal mortality rate in this study was 10.98%, neonatal deaths (6.06%) were primarily associated with complications of prematurity, while intrauterine deaths (4.54%) reflected placental insufficiency and growth restrictions, common in twin gestations. Perinatal mortality was 11.6% in MC twin pregnancies and 5.0% in DC twin pregnancies according to another author [1]. The high prevalence of intrauterine growth restriction (IUGR) in this study (19.7%) aligns with data from another study, highlighting the impact of shared placental insufficiency in twin pregnancies [12]. The one- and five-minute APGAR scores revealed favorable neonatal outcomes for the majority, with 79.3% of twins scoring 7–10 at one minute and 91.2% at five minutes. Somewhat similar results were observed in the study of Dolgun ZN *et al.*,

at one minute, 73.4% of neonates scored between 7 and 10, indicating good initial health, while 20.1% scored between 4 and 6, showing moderate distress, and 6.5% scored between 0 and 3, suggesting severe distress. By five minutes, 94.2% of neonates scored between 7 and 10, reflecting significant recovery, while only 5.8% scored between 0 and 6, indicating that most neonates stabilized well [13]. Respiratory distress syndrome (13.64%) was a significant cause of morbidity. Physiological jaundice and hypoglycemia each affected 9.84% of neonates, reflecting the metabolic and physiological vulnerabilities of preterm and low-birth-weight twins. Umbilical sepsis (6.06%) emphasizes the importance of infection control practices in neonatal care units. The American Academy of Paediatrics also recommends that a sibling of a multiple birth index case with confirmed early- or late-onset sepsis should be observed carefully and evaluated and treated empirically if the infant is symptomatic [14]. This study highlights the importance of specialized care in managing twin pregnancies. Prolonging gestation through interventions such as cervical cerclage and prophylactic tocolysis, along with the timely administration of corticosteroids, can reduce neonatal morbidity. The high prevalence of hypertensive disorders calls for close monitoring of maternal blood pressure and early identification of preeclampsia. Furthermore, robust neonatal resuscitation protocols and NICU facilities are essential to improve outcomes.

Limitations of The Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

CONCLUSION

This study concludes that twin pregnancies pose significant maternal and neonatal risks, including preterm labor, anemia, and hypertensive disorders in mothers, as well as prematurity and respiratory distress in neonates. However, the majority of neonates showed favorable outcomes with improved APGAR scores over time. While perinatal mortality was relatively low, proper management and early intervention are crucial in improving outcomes.

RECOMMENDATION

It is recommended that twin pregnancies be closely monitored throughout gestation to identify and manage potential complications such as preterm labor, anemia, and hypertensive disorders early. Timely interventions, including appropriate neonatal care, can significantly improve outcomes, particularly in managing prematurity and respiratory distress.

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