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A Clinical Study of Maternal and Fetal Outcome in Multifetal Gestation

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Abstract
Background: Multifetal gestation is a high-risk obstetric syndrome linked to elevated mother and fetal morbidity and death. The increasing utilization of assisted reproductive technologies (ART) has led to a rise in multiple pregnancies, requiring meticulous assessment of the related effects.
Objectives: To investigate maternal and fetal outcomes in multifetal gestation and compare them with singleton pregnancies, focusing on chorionicity and mode of conception.
Methods: A prospective observational study was performed at a tertiary care hospital over six months, involving 41 women with multifetal gestation and 41 singleton pregnancies as a control group. We looked at maternal problems, the kind of delivery, chorionicity, the type of conception, newborn outcomes, and perinatal morbidity and mortality. We used the right tests to do a statistical analysis, and $p < 0.05$ was judged significant.
Results: Multifetal gestation correlated with increased maternal problems, including anemia (31.7%), preterm labor (26.8%), and hypertensive disorder of pregnancy (19.5%). The mean gestational age at birth was substantially lower in multifetal pregnancies (35.1 ± 2.1 weeks) compared to singleton pregnancies (38.2 ± 1.4 weeks; $p < 0.001$). Seventy percent of the instances were dichorionic diamniotic twins, and thirty percent were monochorionic diamniotic twins. Assisted reproduction constituted 26.8% of multifetal pregnancies. Twins had worse neonatal outcomes, with lower birth weights, more NICU admissions, and a perinatal fatality rate of 4.8%.
Conclusion: Having more than one fetus in the womb greatly raises the dangers for both the mother and the baby. Chorionicity and assisted reproductive technologies significantly influence results. To get better results, it is important to diagnose early, keep a close eye on the mother during pregnancy, and have the baby at a hospital with a NICU.

Keywords: Multifetal gestation, twin pregnancy, chorionicity, assisted reproduction, maternal outcome, fetal outcome

Introduction

Multifetal gestation continues to pose a significant issue in obstetric practice due to its robust correlation with negative maternal and neonatal outcomes. The global occurrence of twin pregnancies is between 1% and 2%, but in India, it is thought to be between 9 and 16 per 1000 births [1]. This upward trend has been ascribed to postponed childbirth, ovulation inducement, and the growing utilization of assisted reproductive technologies (ART) [2].

Maternal problems, including anemia, hypertensive disorders, preterm labor, gestational diabetes mellitus (GDM), and postpartum hemorrhage (PPH), are more prevalent in multifetal pregnancies than in singleton pregnancies [3]. Fetal problems encompass prematurity, low birth weight (LBW), intrauterine growth restriction (IUGR), respiratory distress, elevated NICU admissions, and increased perinatal mortality [4].

Chorionicity is a crucial factor influencing fetal outcomes in multifetal gestation. Monochorionic twins have heightened risks of twin-to-twin transfusion syndrome, growth restriction, and neonatal mortality in comparison to dichorionic twins [5]. It is important to know how chorionicity, mode of conception, and pregnancy outcome affect each other in order to manage effectively.

The current study is to assess mother and fetal outcomes in multifetal gestation relative to singleton pregnancies within a tertiary care environment.

Methods and Materials

Study Design and Location

This was a prospective observational study carried out at Rajarajeswari Medical College and Hospital, Bengaluru, from October 2024 to March 2025.
Study Population: A total of 82 pregnant women were involved.

Cases: 41 women with multifetal gestation
Controls: 41 women with singleton pregnancy

Inclusion Criteria

- The pregnancy is between 28 and 40 weeks along.
- The estimated weight of the fetus is more than 1 kg.
- The pregnancy is confirmed to be either multifetal or singleton.

Exclusion Criteria

- Chronic medical conditions that already exist
- Known fetal malformations
- Women who don't want to take part

Data Collection

We used a systematic proforma to gather data on the following: maternal age and parity, antenatal problems, mode of delivery, chorionicity (for multiple pregnancies), mode of conception, neonatal birth weight and Apgar scores, NICU hospitalization, and perinatal morbidity and mortality.

Statistical Examination

We used Microsoft Excel and R tools to look at the data. The Chi-square test was used to look at categorical variables, while the independent t-test was used to look at continuous variables. A p-value of less than 0.05 was seen as statistically significant.

Results

Table 1: Maternal Demographic Characteristics

Parameter	Multifetal (n=41)	Singleton (n=41)	p-value
Mean maternal age (years)	26.8 ± 4.1	25.9 ± 3.9	0.38
Primigravida (%)	39.0	46.3	0.52
Multigravida (%)	61.0	53.7	0.52
Mean gestational age at delivery (weeks)	35.1 ± 2.1	38.2 ± 1.4	<0.001

Table 1 outlines the fundamental maternal characteristics of the study cohort. There was no statistically significant difference in the mean mother age for multifetal and singleton pregnancies. The parity distribution was comparable in both groups, suggesting that the two groups were demographically well matched. The mean gestational age at delivery was considerably lower in the multifetal group compared to singleton pregnancies ($p < 0.001$), underscoring the heightened risk of preterm delivery linked to multifetal gestation.

Table 2: Maternal Complications

Complication	Multifetal (%)	Singleton (%)	p-value
Anaemia	31.7	17.0	0.11
PIH	19.5	7.3	0.09
Preterm labour	26.8	7.3	0.01*
PROM	12.2	4.8	0.24
GDM	7.3	4.8	0.64
APH	2.4	0	0.31
PPH	9.7	2.4	0.17

*Statistically significant

Table 2 summarizes the complications seen by mothers in the research groups. Anaemia and hypertensive disorder of pregnancy occurred more frequently in women with multifetal gestation compared to those with singleton pregnancies; however, these differences did not achieve statistical significance. Preterm labor occurred substantially more frequently in the multifetal group ($p = 0.01$), showing a robust correlation between multifetal gestation and the premature commencement of labor. Other issues, like premature rupture of membranes, Gestational diabetes, Antepartum haemorrhage and Postpartum haemorrhage, were also more common in pregnancies with more than one fetus. This shows that mothers had more complications during antenatal and intrapartum period.

Table 3: Mode of Delivery

Mode of delivery	Multifetal (%)	Singleton (%)
Normal vaginal delivery	34.1	61.0
Instrumental delivery	7.3	4.8
LSCS	58.5	34.1

Table 3 demonstrates how the way of delivery is spread out. In multifetal pregnancies, cesarean section was the most common way to give birth, happening in more than half of the cases. In singleton pregnancies, vaginal delivery was more prevalent. This difference is due to the higher likelihood of complications during pregnancy with multiple fetuses, such as malpresentation, fetal compromise, and other obstetric indications.

Table 4: Neonatal Birth Weight

Group	Mean birth weight (kg)
Twin 1	2.12 ± 0.42
Twin 2	1.98 ± 0.46
Singleton	2.89 ± 0.38

Table 4 shows how the birth weights of newborns in the

different study groups compare. Twin 1 and Twin 2 both had mean birth weights that were much lower than those of singletons. Twin 2 consistently had a lower weight than Twin 1, which shows that Twin 2 was more restricted in its growth. These results illustrate the cumulative impact of preterm, shared intrauterine environment, and placental influences characteristic of multifetal gestation.

Table 5: Apgar Scores and NICU Admission

Outcome	Twin 1	Twin 2	Singleton
Apgar <7 at 1 min (%)	22.0	31.7	9.7
NICU admission (%)	39.0	43.9	17.0

Table 5 shows the Apgar scores after one minute and the rates of admission to the NICU. A greater percentage of twins, especially Twin 2, exhibited Apgar scores below 7 at one minute, in contrast to singleton neonates, indicating heightened prenatal stress. Twins were also far more likely to be admitted to the NICU, which shows that they were more likely to have respiratory problems as newborns, mostly because they were born preterm and with low birth weight.

Table 6: Perinatal Morbidity and Mortality

Outcome	Twins (%)	Singleton (%)
Respiratory distress	24.3	9.7
Sepsis	9.7	2.4
IUGR	29.2	7.3
Perinatal mortality	4.8	0

Table 6 shows the rates of illness and mortality during and after pregnancy. Twins were more likely than single babies to have respiratory distress, sepsis, and IUGR. Perinatal death was confined solely to the multifetal cohort. These findings highlight the heightened susceptibility of neonates delivered from multifetal gestation and the significant impact of problems associated with preterm.

Table 7: Chorionicity in Multifetal Gestation (n=41)

Chorionicity	Number	Percentage (%)
Dichorionic diamniotic	29	70.7
Monochorionic diamniotic	12	29.3

Table 7 shows the pattern of chorionicity in pregnancies with more than one fetus. Most of the instances were dichorionic diamniotic, and over a third were monochorionic diamniotic. This distribution is clinically significant because monochorionic placentation is linked to increased fetal morbidity and negative postnatal outcomes, which means that more careful monitoring during pregnancy is needed.

Table 8: Mode of Conception in Multifetal Gestation (n=41)

Mode of conception	Number	Percentage (%)
Spontaneous	30	73.2
Ovulation induction	7	17.1
IVF	4	9.7

Table 8 explains how multiple pregnancies happen. Most pregnancies happened on their own, while more than a quarter were the result of assisted reproductive procedures, such as ovulation induction and *in vitro* fertilization. This data underscores the substantial role of reproductive therapies in the incidence of multifetal gestation.

Discussion

The current analysis indicates that multifetal gestation is linked to markedly elevated maternal and newborn morbidity in comparison to singleton pregnancy, aligning with prior research [1, 3].

Anaemia and premature labor were the predominant maternal problems in multifetal gestation. The prevalence of anemia (31.7%) was similar to that documented by Kalyankar *et al.* [1]. Preterm labor was markedly elevated in multifetal pregnancies, indicative of uterine overdistension and placental factors, as previously shown by Luke and Brown [2].

The rate of cesarean sections in multifetal gestation (58.5%) was greater than in singleton pregnancies, which is consistent with the findings of Hartley *et al.* [6]. This is because there are more cases of malpresentation, fetal distress, and other obstetric indications antenatally and intranatally.

Twins had worse outcomes at birth, with much lower birth weights and more admissions to the NICU. These findings align with those of Hoekstra *et al.* and Blickstein and Kalish, who identified low birth weight and preterm as significant factors contributing to newborn morbidity in twins [4, 7].

Chorionicity investigation indicated that around one-third of twins were monochorionic diamniotic. Sebire *et al.* [5] showed that monochorionic twins are more likely to have bad outcomes, such as IUGR and neonatal death. While outcomes were not individually assessed by chorionicity in this investigation, the occurrence of monochorionic placentation may partially elucidate the reported newborn morbidity.

Assisted reproduction constituted 26.8% of multifetal pregnancies in the current study. Similar findings have been documented in other research, highlighting the contribution of ovulation inducement and IVF to the increasing prevalence of multiple gestations [2, 8].

Conclusion

Multifetal gestation is linked to markedly elevated maternal and newborn morbidity in contrast to singleton pregnancy. Preterm labor, surgical delivery, low birth weight, NICU hospitalization, and perinatal death continue to be significant issues. A significant percentage of multifetal pregnancies arise from assisted reproductive technologies, underscoring the necessity for prudent application of ART. To improve the health of both the mother and the baby, it is important to find out chorionicity early, keep a close eye on the mother during pregnancy, and give birth at a tertiary center with modern neonatal intensive care facilities.

Conflict of Interest

Not available.

Financial Support

Not available.

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