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Maternal and Neonatal Outcomes in Multifetal Pregnancy: An Observational Study at a Tertiary Care Centre in Assam, India

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A B S T R A C T

Background: Multifetal gestation is associated with increased maternal and neonatal complications. With the rise of assisted reproductive technologies (ART), the incidence of such pregnancies has increased.

Objective: To evaluate the maternal and neonatal outcomes in multifetal pregnancies and assess the associated complications and mortality at a tertiary care center in Jorhat, Assam.

Methods: A prospective observational study was conducted from March 2023 to February 2024 at Jorhat Medical College and Hospital. Fifty women with multifetal gestation ≥28 weeks were enrolled. Data on demographic factors, antenatal care, complications, mode of delivery, and neonatal outcomes were collected and analyzed.

Results: Out of 4744 births, 50 were multifetal gestations (49 twins, 1 triplet), giving an incidence of 1.05%. Majority (62%) were aged 21–29 years and unbooked (80%). Primigravidas accounted for 62%. ART was the cause in 12%, and 58% delivered between 29–36 weeks. Most were dichorionic-diamniotic (64%). Maternal complications included anemia (62%), preterm labor (58%), hypertensive disorders (14%), PPROM (14%), PROM (12%), APH (6%), and PPH (22%). Cesarean section rate was 62%, most commonly for malpresentation. Perinatal mortality was 8.1%. There was no maternal mortality.

Conclusion: Multifetal pregnancies are associated with increased maternal and neonatal morbidity. Early diagnosis, regular antenatal care, and adequate neonatal support can significantly improve outcomes.

Keywords: Multifetal pregnancy, maternal outcome, neonatal outcome, twin pregnancy, high-risk pregnancy.

INTRODUCTION:

Multifetal pregnancies, defined as the presence of more than one fetus in the uterus, represent a high-risk category in obstetrics due to their strong association with maternal and neonatal complications. While twin gestation is the most common form, triplets and higher-order multiples are increasingly reported, particularly in settings where assisted reproductive technologies (ART) are in widespread use【1】.

Globally, the incidence of multifetal pregnancies has risen significantly since the 1980s, largely due to delayed childbearing and increased use of ovulation induction and ART【2,3】. In natural conception, the twin birth rate is about 1 in 89 pregnancies, as described by Hellin's Rule【4】, but this has increased in ART-related conceptions. Monozygotic (MZ) twinning remains stable at around 3.5 per 1,000 births, while dizygotic (DZ) twinning varies with ethnicity, maternal age, parity, and fertility treatments【5】.

These pregnancies carry a heightened risk of maternal complications such as anemia, preterm labor, hypertensive disorders, gestational diabetes, and postpartum hemorrhage【6,7】. Women with multifetal pregnancies are up to six

times more likely to require hospitalization during pregnancy compared to singleton pregnancies【8】. Additionally, cesarean delivery is more common, particularly in cases of non-cephalic presentation of the first twin【9】.
From a fetal standpoint, complications like intrauterine growth restriction (IUGR), malpresentation, twin-to-twin transfusion syndrome (TTTS), and increased risk of stillbirth and neonatal death are well documented【10,11】. The perinatal mortality rate is 4–6 times higher in multifetal pregnancies compared to singletons【12】. Monochorionic twins, in particular, are at increased risk of complications due to shared placental circulation and associated vascular anastomoses【13】.
Accurate diagnosis of chorionicity and amnionicity in the first trimester using ultrasonography is essential for appropriate management【14】. The International Society of Ultrasound in Obstetrics and Gynecology (ISUOG) and NICE guidelines recommend intensified prenatal surveillance and early planning for delivery based on chorionicity and fetal presentation【15,16】.

In India, where access to antenatal care varies greatly across regions, early detection and close monitoring of multifetal pregnancies are critical. This prospective observational study aims to evaluate the maternal and neonatal outcomes of multifetal pregnancies in a tertiary care center in Jorhat, Assam, and identify key predictors of adverse outcomes.

Materials and Methods

Study Design: Prospective observational study
Duration: March 2023 – February 2024
Location: Department of Obstetrics and Gynaecology, Jorhat Medical College and Hospital
Inclusion Criteria: Pregnant women with multifetal gestation ≥28 weeks
Sample Size: 50 women (49 twin pregnancies, 1 triplet)
Data Collection: Demographic profile, obstetric history, antenatal care, complications, delivery mode, neonatal outcome
Statistical Analysis: Data analyzed using descriptive statistics and chi-square test for associations

Results

Maternal outcome-

During the study period, out of 4744 deliveries, 50 cases were multifetal gestations—49 were twin pregnancies and 1 was a triplet pregnancy—giving an incidence of 1.05%.

Majority of the women (62%) were between 21–29 years. Most were booked (80%) and primigravida (62%). Family history of multifetal gestation was found in 4%, and 12% conceived following infertility treatment.

A large proportion (58%) delivered between 29–36 weeks of gestation, and 64% had dichorionic diamniotic placentation. Common maternal complications were anemia (62%), preterm labor (58%), hypertensive disorders (14%), PPROM (14%), PROM (12%), APH (6%), and PPH (22%).

LSCS was the most common mode of delivery (62%), mainly indicated for malpresentation. There was no maternal mortality.

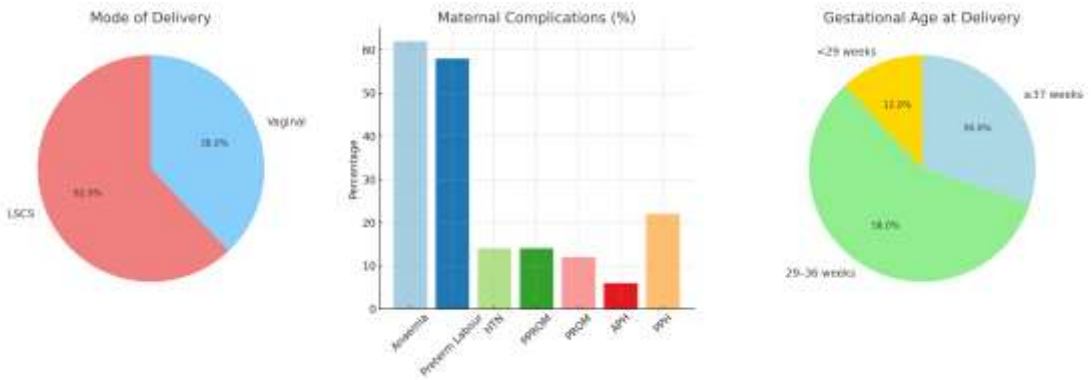

Figure: Summary of key results including mode of delivery, maternal complications, and gestational age at delivery.

Neonatal Outcome-

Table: Neonatal Outcomes in Multifetal Pregnancy (n = 101 fetuses)

Parameter	Number	Percentage (%)
Live births	99	97.1
Intrauterine Fetal Death (IUFD)	1	1.0
Macerated Abortus	1	1.0
Low Birth Weight (<2.5kg)	85	83.4
NICU Admissions	43	42.2
Neonatal Deaths	7	6.9
APGAR < 7 at 1 minute	27	26.5

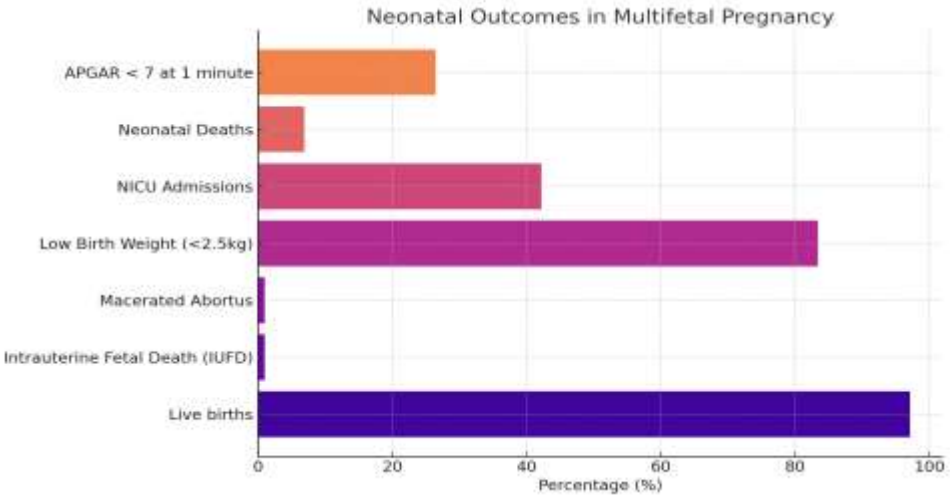

Figure: Distribution of neonatal outcomes in multifetal pregnancies.

Discussion

The findings of this study reinforce the established evidence that multifetal pregnancies are associated with significantly increased maternal and neonatal risks. The incidence of multifetal gestation in this study was 1.05%, comparable to the incidence reported by Smits and Monden in developing countries, where it typically ranges from 0.9% to 1.5%【2】.

The majority of patients (62%) were aged 21–29 years, consistent with the demographic profile observed by Mehta et al. (2020), who reported a mean maternal age of 26.7 years in twin pregnancies【19】. The high percentage of booked cases (80%) in our study underscores a critical gap in antenatal care coverage, particularly in semi-urban and rural populations. Rizwan et al. in a northern Indian cohort, where unbooked cases accounted for more than 75% of twin gestations【5】.

The high prevalence of maternal anemia (62%) is a consistent finding across studies conducted in resource-limited settings. Bhalla et al. reported anemia in 62.1% of their multifetal cohort, attributing it to increased nutritional demands and lack of supplementation【5】. Likewise, the rate of preterm labor (58%) closely matches the results from Hada et al.

(48.5%) and Chauhan et al. (46%)【5】【7】. These outcomes emphasize the importance of frequent antenatal surveillance and early hospitalization in high-risk pregnancies.

Hypertensive disorders of pregnancy (14%), including gestational hypertension and preeclampsia, were observed at slightly lower rates than the 18–22% range reported in larger studies such as those by Lewi et al. and Hack et al.【8】【9】. This may be due to smaller sample size or underdiagnosis in the absence of regular follow-up in unbooked women.
The rate of cesarean section (62%) in this study is high but aligns with global trends in multifetal pregnancy management. NICE guidelines recommend cesarean delivery in certain twin presentations, and Lewi et al. documented a cesarean rate of 61.5% in monochorionic twins【9】【16】. The most frequent indication in our cohort was malpresentation of the first twin, consistent with other Indian and international studies.
In terms of neonatal outcomes, 83.4% of neonates were low birth weight (<2.5 kg), which matches the findings of Hack et al. and Salafia et al., who reported low birth weight in more than 80% of twin neonates【13】【14】. The perinatal mortality rate in our study was 8.1%, consistent with the 6.5–10% range seen in multiple Indian studies including those by Gajera et al. and Dube et al.【15】【5】. The mortality was primarily related to extreme prematurity and neonatal sepsis, both common in resource-constrained NICU settings.
NICU admission was required for 42% of newborns, which is consistent with the findings of Yasmin et al., who reported admission rates of 40–60% depending on gestational age and birth weight【19】. Additionally, APGAR scores below 7 at 1 minute in 26% of neonates reflect a higher rate of perinatal compromise, also supported by data from Blickstein and Keith, especially among monochorionic twins【4】.
This study's findings strongly support the recommendations from ISUOG and ACOG that emphasize early detection of chorionicity, individualized birth planning, and availability of neonatal intensive care facilities as key components in the management of multifetal gestation【1【14】.

Conclusion

Multifetal pregnancies require intensive obstetric and neonatal care. Identifying high-risk cases early, providing frequent antenatal visits, and ensuring NICU facilities can significantly reduce maternal and neonatal morbidity and mortality.

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