

## Retrospective Study of Obstetric and Perinatal Outcome in Twin Pregnancy at Tertiary Care Hospital

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### Abstract:

**Background:** The simultaneous development of two fetuses in the uterus is referred to as twin pregnancy. Such pregnancies carry an increased risk for both the mother and the newborn, and this risk grows with the number of gestations. During the study period, the incidence of twin pregnancies at G.G. Hospital, Jamnagar, was 2%. The rising prevalence of multifetal births is concerning, as it correlates with a higher rate of preterm births, compromising neonatal survival and increasing the likelihood of lifelong disabilities.

**Material and Methods:** A descriptive retrospective analysis was conducted on 108 twin pregnancies at our hospital between July 2023 and April 2024. The study evaluated adverse antenatal outcomes, delivery methods, and maternal and perinatal outcomes.

**Results:** In our study, 66% of the patients were between 21 and 29 years of age. Among the cases, 34% were booked and attended regular antenatal clinics. Most of the patients (80%) with twin pregnancies were primigravida. The most common obstetric complication was preterm labor (64.28%). Intrauterine death occurred in 1% of cases, while 24% experienced intrauterine growth retardation, as detected during antenatal follow-ups. Of the 108 patients, 52% delivered vaginally, while 48% required Caesarean sections, with malpresentation being the leading indication for Caesarean delivery (50%).

**Conclusions:** The risk of complications is higher in twin pregnancies compared to singleton pregnancies. Early diagnosis, close monitoring of fetal well-being, the use of corticosteroids and tocolytics, regular antenatal checkups, adequate rest, and delivery in an institution with Level 3 neonatal care facilities are essential to improve maternal and perinatal outcomes. Encouraging proper nutrition and breastfeeding can further prevent health issues in newborns.

**Keywords:** Twin pregnancy, maternal outcome, perinatal outcome, Preterm labor.

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### Introduction

Twin pregnancies, characterized by the simultaneous development of two fetuses in the uterus, present unique challenges for both maternal and fetal health. [1] Compared to singleton pregnancies, twin gestations are associated with a significantly higher risk of complications, including preterm labor, hypertensive disorders, intrauterine growth restriction (IUGR), and increased rates of operative deliveries. [2] Advances in assisted reproductive techniques (ART) and delayed maternal age at conception have contributed to a rise in the incidence of multiple pregnancies globally, raising concerns about both maternal morbidity and neonatal outcomes. [3] Addressing these risks requires comprehensive antenatal care,

early diagnosis, and meticulous monitoring to improve outcomes for both mother and newborns. Preterm delivery, a common complication in twin pregnancies, compromises neonatal survival and increases the risk of long-term disability. [4] Moreover, twin pregnancies are more likely to encounter malpresentation, necessitating Cesarean sections in a significant proportion of cases. [5] Antenatal surveillance, timely interventions like the administration of corticosteroids and tocolytics, and delivery in well-equipped healthcare settings with neonatal intensive care support can mitigate adverse outcomes. [6] The present study aims to evaluate the obstetric and perinatal outcomes associated with twin pregnancies at G.G. Hospital,

Jamnagar, by analyzing the prevalence of maternal complications, delivery methods, and neonatal outcomes.

### Material and Methods

This retrospective observational study was conducted over a 10-month period from July 2023 to April 2024. The study was carried out in the Department of Obstetrics and Gynecology at Shri M.P. Shah Government Medical College, Jamnagar, and Gujarat, India. During the study period, 6,150 deliveries were recorded, of which 108 involved twin pregnancies. These patients were admitted through the emergency department, outpatient department, or were referred from other healthcare facilities. A total of 108 patients meeting the inclusion criteria were selected for detailed analysis.

The study included women with twin pregnancies of more than 28 weeks of gestation. Women with singleton pregnancies, triplets or higher-order pregnancies, and those with a gestational age of less than 28 weeks were excluded. This ensured that the study focused exclusively on twin pregnancies and excluded cases with different risk profiles or multiple higher-order gestations. The diagnosis of twin pregnancies was confirmed through clinical examination and transabdominal ultrasonographic imaging. Detailed patient histories were obtained, including age, parity, menstrual history, obstetric history, family history of multiple pregnancies, and the use of assisted reproductive techniques (ART). Throughout labor, the patients were closely monitored to ensure timely intervention if needed.

The outcomes of each twin pregnancy were evaluated based on the mode of delivery, including spontaneous vaginal delivery, instrumental delivery, assisted breech delivery, and Cesarean section. Additionally, perinatal complications such as prematurity, low birth weight, jaundice, sepsis, and birth hypoxia were recorded.

Apgar scores and the need for NICU admissions for either or both twins were also documented. All collected data were systematically entered into Excel sheets, and relevant tables and charts were prepared for statistical analysis and presentation.

### Results

During the study period, a total of 6,150 deliveries were recorded at the study hospital, out of which 108 involved twin pregnancies, giving an incidence rate of 2%. These twin pregnancies were distributed across different patient categories, with half (50%) of the patients being un-booked, 16% referred from peripheral hospitals, and the remaining 34% being booked with regular antenatal follow-ups. In terms of maternal age, the majority (66%) of the patients were between 20 to 29 years old. Parity analysis revealed that 80% of the women with twin pregnancies were multiparous, indicating previous childbirth experience, while 20% were primiparous, experiencing their first pregnancy. The use of assisted reproductive techniques (ART) played a notable role, accounting for 28.57% (30 out of 108) of twin pregnancies, highlighting the impact of modern fertility treatments on multiple gestations.

A family history of twins was reported in 7.14% of the women (8 out of 108), while 3.57% (4 out of 108) had a history of twin pregnancy in their previous pregnancies. However, in the majority of the cases (60.72%), no specific causative factor for twin pregnancy was identified, indicating that spontaneous twin pregnancies were predominant in the study population. The most common presentation was Vertex-Vertex (57.14%), followed by Breech-Vertex (21.43%). Vertex-Breech occurred in 10.71%, Breech-Breech in 7.14%, and Vertex-Transverse in 3.57%.

No cases of Breech-Transverse presentation were found. (Table 1) In our study, monochorionic diamniotic (MCDA) twins were the most common, comprising 60.71% (66 out of 108) of cases, followed by dichorionic diamniotic (DCDA) twins at 28.57% (30 out of 108). Monochorionic-mono amniotic (MCMA) twins accounted for 7.14% (8 out of 108), with chorionicity unknown in 3.57% (4 out of 108) of cases. Regarding gestational age at delivery, 3.27% (4 out of 108) delivered between 28 and 30 weeks, while 46.42% (50 out of 108) delivered between 30 and 34 weeks. Another 42.85% (46 out of 108) delivered between 34 and 38 weeks, and 7.14% (8 out of 108) had their delivery beyond 38 weeks.

**Table 1: Fetal Presentation in Twin Pregnancies**

Presentation Type	Cases (n=108)	Percentage (%)
Vertex - Vertex	62	57.14
Breech - Vertex	23	21.43
Vertex - Breech	12	10.71
Breech - Breech	8	7.14
Vertex - Transverse	3	3.57
Breech - Transverse	0	0.00

In our study, spontaneous delivery was the most common mode of delivery, accounting for 51.85% (56 out of 108) of cases. Lower segment Caesarean section (LSCS) was performed in 35.2% (38 out of 108) of deliveries. Assisted breech delivery was used in 12.95% (14 out of 108) of cases, primarily for the second twin.

**Table 2: Mode of Delivery in Twin Pregnancies**

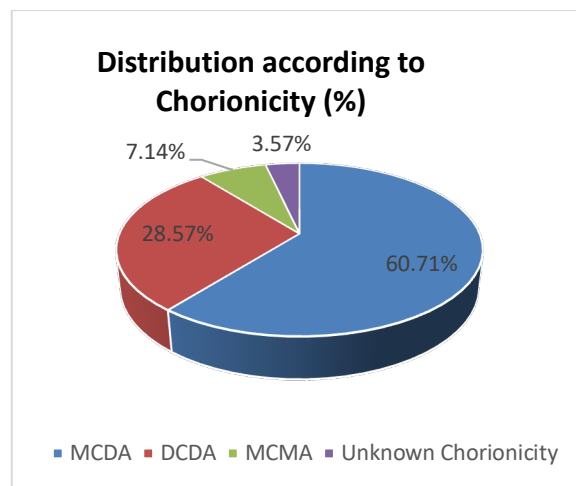
Mode of Delivery	1st Twin	2nd Twin	Total Number (%)
Lower segment Caesarean section	19	19	38 (35.2%)
Spontaneous delivery	28	28	56 (51.85%)
Assisted breech delivery	5	9	14 (12.95%)
<b>Total</b>	<b>52</b>	<b>56</b>	<b>108</b>

In our study, patients with preterm labor were managed conservatively with antibiotics, tocolytics (nifedipine and progesterone), magnesium sulfate, and glucocorticoids.

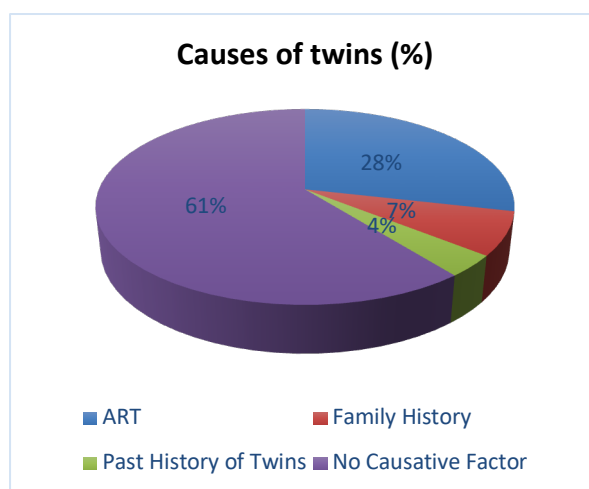
These interventions helped prevent preterm labor and improved neonatal outcomes by reducing respiratory distress syndrome (RDS), intraventricular hemorrhage (IVH), and necrotizing enterocolitis (NEC). Magnesium sulfate also served

as a neuroprotective agent. Perinatal morbidity was primarily due to respiratory distress and birth hypoxia, with additional cases involving intrauterine growth restriction (IUGR), jaundice, and neonatal sepsis.

Notably, birth hypoxia was more prevalent in second twins, affecting 73.3% of them, compared to 26.6% in first twins.



**Figure 1: Distribution according to Chorionicity (%)**



**Figure 2: Causes of twins (%)**

In our study, the most common intrapartum complication in twin pregnancies was preterm labor, observed in 64.28% of patients (70 out of

108). Anemia affected 50% (54 out of 108) of the patients, and pregnancy-induced hypertension (PIH) occurred in 42.85% (46 out of 108) cases.

Premature rupture of membranes (PROM) was reported in 21.43% (23 out of 108), while postpartum hemorrhage (PPH) occurred in 10.71% (12 out of 108) of cases. Notably, several patients experienced more than one complication, so the total percentage exceeds 100%. Additionally, one

case involving a dichorionic twin pregnancy was complicated by single intrauterine fetal demise (SIUFD). In this instance, the pregnancy continued into the third trimester, resulting in the delivery of one healthy fetus, while the other was delivered deceased with a weight of 320 grams.

**Table 3: Neonatal Outcomes in Twin Pregnancies**

Parameter	N = 216	Percentage (%)
Live births	212	98.21
NICU admissions	100	46.42
Neonatal death (1st week)	10	4.63
Intrauterine growth restriction (IUGR)	52	24.00
Fresh stillbirths	5	2.31
Macerated stillbirths	1	0.50

Among 216 neonates, 98.21% (212) were live births, with 46.42% (100) requiring NICU admission. Intrauterine growth restriction (IUGR) was observed in 24% (52) of cases. Neonatal death

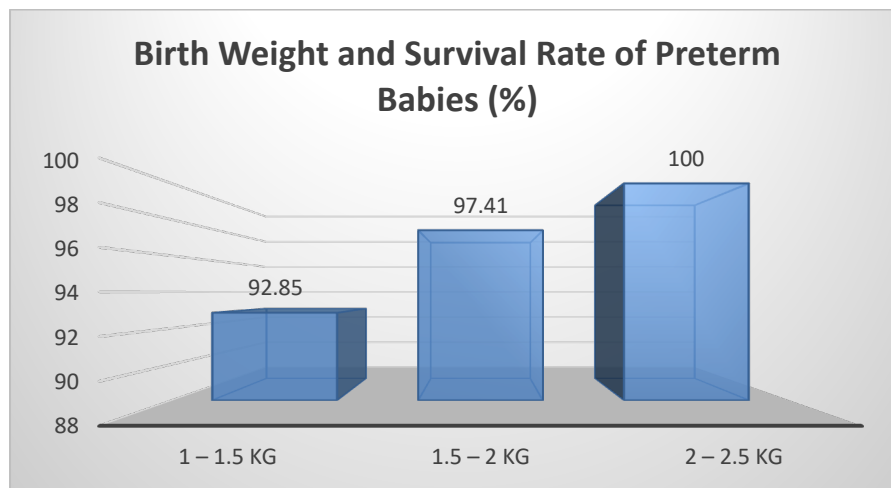
within the first week occurred in 4.63% (10) of cases. Fresh stillbirths were reported in 2.31% (5) cases, while macerated stillbirths accounted for 0.5% (1) of the total deliveries.

**Table 4: Gestational Age at Delivery**

Gestational Age	Number of Cases (n=108)	Percentage (%)
Before 30 weeks	4	3.27
30–34 weeks	50	46.42
34–38 weeks	46	42.85
Beyond 38 weeks	8	7.14

Most deliveries occurred between 30 and 34 weeks (46.42%), followed by 42.85% of cases between 34 and 38 weeks. Only 3.27% of deliveries happened before 30 weeks, while 7.14% extended beyond 38 weeks. Among low birth weight babies, those

weighing between 1.5–2 kg had the highest frequency (116) with a survival rate of 97.41%. Babies weighing 1–1.5 kg showed a survival rate of 92.85%. All babies in the 2–2.5 kg category survived, achieving a 100% survival rate.



**Figure 3: Birth Weight and Survival Rate of Preterm Babies (%)**

**Discussion**

Twin pregnancies are recognized as high-risk and require a multidisciplinary approach for optimal management. In our study, the incidence of twin pregnancies was 2%, aligning with the global range of 0.2–2%, as reported by Collins et al. [7] The increasing trend toward delayed motherhood and the widespread use of fertility treatments have

contributed to the rise in twin pregnancies. [8,9] In our cohort, 28.57% of patients conceived following ovulation induction or in-vitro fertilization (IVF), higher than the 14% reported by Santana et al. [10], reflecting the growing role of assisted reproductive techniques (ART) in multiple gestations.

In terms of fetal presentation, Vertex-Vertex was the most common (57.14%), consistent with

findings from Chowdhury et al. [11] (47.5%) and Qazi et al. [12] (51.4%). Breech-Vertex presentation was observed in 21.43% of cases, followed by Vertex-Breech (10.71%) and Breech-Breech (7.14%). These patterns emphasize the challenges of fetal positioning in twin pregnancies and the impact on delivery methods. The primary delivery method in our study was spontaneous vaginal delivery, observed in 52% of cases, with 35% requiring lower segment Cesarean section (LSCS) and 13% managed by assisted breech delivery. These findings are comparable to prior studies, such as those by Rizwan et al. [13] and Korb et al. [14], which emphasized that Cesarean delivery, especially for the second twin, increases the risk of maternal morbidity. We found that in 7% of cases, the first twin was delivered vaginally, while the second required LSCS, highlighting the complexity involved in managing twin deliveries.

Preterm labor was the most frequent maternal complication, affecting 64.28% of cases, which is higher than the 55.7% reported by Smith et al. [15] and 48.5% by Madar et al. [16] Anemia was the second most common complication, observed in 50% of patients, surpassing the 35.8% reported by Madar et al. [16] and the 35.5% by Brown et al. [17], though still lower than the 84% reported by Bangal et al. [18] Postpartum hemorrhage (PPH) occurred in 10.71% of cases in our study, lower than the 18.9% reported by Madar et al. [16]

Premature rupture of membranes (PROM) was seen in 21.43% of our patients, which is higher than the rates of 3.8% and 10% reported by Chowdhury and Sultana, respectively. Fortunately, no maternal mortality occurred in our study, reflecting improvements in antenatal care and institutional deliveries. However, as Santana et al. [10] and Vogel et al. [19] noted, twin pregnancies remain associated with increased maternal morbidity due to conditions like PPH and hypertensive disorders, necessitating vigilant monitoring.

Perinatal outcomes in twin pregnancies are concerning due to higher risks of neonatal mortality and morbidity, particularly for the second twin. In our study, birth hypoxia was more frequent in the second twin (73.3%) compared to the first twin (26.6%), consistent with findings from Rossi et al. [20] Furthermore, maternal mortality in twin pregnancies remains a significant risk factor, with Santana et al. [10] reporting a fourfold increase in mortality risk compared to singleton pregnancies. This risk emphasizes the need for planned vaginal or cesarean delivery with appropriate neonatal backup to minimize complications. [14] Our study aligns with broader findings that twin pregnancies are inherently associated with increased risks of preterm labor, PROM, and neonatal complications. [12,21] As such, proactive management, early diagnosis, and delivery in specialized centers with

Level-3 NICU support are critical for improving maternal and neonatal outcomes in these high-risk pregnancies. Our study has certain limitations. Being a retrospective observational study, it is subject to selection bias and relies on the accuracy of recorded data. The sample size was relatively small, limiting the generalizability of the findings. Additionally, long-term neonatal outcomes were not assessed, and variations in care practices could have influenced the results. Future studies with larger cohorts and prospective designs are needed to validate our findings and explore long-term outcomes in twin pregnancies.

### Conclusion

The incidence of twin pregnancies in our hospital was 2%, which aligns with the increasing global trend due to infertility treatments and advancing maternal age. This rise is associated with higher maternal and fetal complications, particularly when twins are delivered at earlier gestational ages. Identifying high-risk cases early and providing appropriate management through regular antenatal visits, adequate rest, and timely administration of steroids are crucial for improving outcomes.

Early hospitalization, vigilant intra-partum monitoring, and access to advanced NICU facilities further reduce risks. Additionally, early diagnosis and assessment of chorionicity play a key role in managing twin pregnancies, which require special attention due to their contribution to maternal and fetal morbidity and mortality.

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