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Original Research Article

Study of maternal and perinatal outcomes in twin pregnancies delivered at a tertiary centre hospital in Southern Rajasthan

Priyanka Sekhasaria[1], Rama S. Chundawat[1], Suman Shivrayan[2], Akanksha Agarwal[1], Balveer Jakhar[1]*

[1]Department of Obstetrics and Gynaecology, Pacific Medical College and Hospital, Udaipur, Rajasthan, India
[2]Department of Obstetrics and Gynaecology, RNT Medical College, Udaipur, Rajasthan, India

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***Correspondence:**
Dr. Balveer Jakhar,
E-mail: drjakharbalveer@gmail.com

ABSTRACT

Background: Twin pregnancy occurs when two babies are growing inside the uterus. The idea of twinning has fascinated people for as long as humans have been writing history. The primary concerns that arise during twin pregnancies include congenital malformations, birth trauma, birth asphyxia, intrauterine growth restriction (IUGR), premature birth, and low birth weight. The main factor that poses the highest risk is premature birth, which is mainly responsible for the higher chances of perinatal death, neonatal illness, and long-term problems in twins.
Methods: A total of 48 twin pregnant women with at least 28 weeks of gestation were observed during their hospitalization at Pacific Medical College and attached hospital in Udaipur, Rajasthan, from July 2021 to June 2024 (over a span of 3 years).
Results: Among the 2980 deliveries conducted at our facility, 48 instances of twin pregnancies were analysed in this research. 1.61% of pregnancies were twins. Most research subjects were aged between 20 and 29. Between 34 and 37 weeks of gestation, births occurred. 45.83% were first-time mothers while 54.16% had given birth multiple times. Of the patients, 41.66% had vaginal deliveries and 58.33% had caesarean sections.
Conclusions: Anxious obstetricians find twin pregnancies to be a significant issue. While it is impossible to prevent complications in twin pregnancies, they can be effectively controlled and detected at an early stage. Early diagnosis and prompt treatment of pre-eclampsia and nutritional anemia are necessary to prevent additional complications. Hence, to ensure a more favourable result, increased obstetric care, neonatal care, and health services are needed.

Keywords: Twin pregnancy, Glucocorticoids, Tocolytics

INTRODUCTION

Twin pregnancy occurs when two babies are growing inside the uterus. The idea of twinning has fascinated people for as long as humans have been writing history. Twins are commonly viewed as inherently different from singletons, and Soci et al responses to their arrival range from admiration to concern.[1] Twin fetuses are usually the result of two distinct eggs being fertilized and are also referred to as double ovum, dizygotic, or fraternal twins. About 33% of the time, twins are the result of a single fertilized egg dividing into two structures that can develop into two distinct individuals. These twins are referred to as monozygotic, single-egg, or identical twins.[2]

Dichorionic-diamniotic is a term used to describe twins who have two separate placentas and amniotic cavities, a characteristic found in all dizygotic twins and one-third of monozygotic twins. Approximately two thirds of identical twins have a placenta and two amniotic sacs, known as mono chorionic diamniotic, while only about 1% of twins share a placenta and amniotic sac, called monochorionic-monoamniotic.[3]

Advancements in assisted reproductive technology, increased maternal age, and the widespread use of ovulation inducing drugs have led to a notable increase in the occurrence of twin pregnancies in recent years.[4] In India, although twin pregnancies account for only 1% of all pregnancies, they are responsible for 10% of perinatal deaths. The likelihood of maternal death in twin pregnancies is 2.5 times greater compared to singleton pregnancies. The frequency of twins varies depending on race and where people live.[5]

The occurrence of twin pregnancies has been increasing for many years. The primary causes for the increasing occurrence are the utilization of ovulation induction, in vitro fertilization, and older maternal age during conception.[6] Although twin pregnancies account for a small percentage of live births, they experience higher rates of complications when compared to pregnancies with only one baby.

Common problems in twin pregnancies are prematurity, low birth weight, intrauterine growth restriction, birth trauma, birth asphyxia, congenital abnormalities, and fetal complications specific to twins.[7]

Premature birth poses the main risk for twins, resulting in a majority of the increased perinatal mortality rate, neonatal illnesses, and long-term health complications. More frequent occurrences of limited fetal growth and birth defects contribute to adverse outcomes in twin pregnancies.[8] About 25% of twins require hospitalization in the neonatal intensive care unit (NICU). Possible pregnancy complications with twins include anemia, severe vomiting, high blood pressure, bleeding during pregnancy, premature labor, excessive amniotic fluid, varicose veins, and diabetes during pregnancy.[9]

Until the end of the 20th century, twins were not common, at a rate of 7.44 per 1,000 births in the UK in 1938. Triplets were even more uncommon, with only 54 instances documented. Since that time, there has been a notable increase in the number of twins and triplets being born.[10] A study conducted worldwide analyzed the frequency of twin and triplet births in Canada, England and Wales, France, and the United States during the 1980s and 1990s, showing an increase in twin births ranging from 28% to 45% between 1981 and 1997 in these countries.[10]

According to the most recent information from the United States, there was a 2% rise in the rate of twin births in 2004, reaching 32.2 per 1,000 total births. Although the rates of triplets and higher order births have decreased by 6%, there was a significant rise in numbers during the 1980s and 1990s, resulting in the current rate of 1.8 per 1,000 total births.[10] In 2005, the UK had significantly lower rates, with twins born at only 10.5 per 1,000 births.

Nevertheless, there has been a rise in the rate of multiples as well, with numbers growing from 14.1 per 1,000 births in 1995 to 14.9 in 2005.[11]

METHODS

This study involved observing 48 pregnant women pregnant with twins who were admitted for delivery at Pacific Medical College and hospital in Udaipur, Rajasthan, at 28 weeks of gestation. The study took place from 01 July 2021 to 30 June 2024. Each pregnant woman expecting twins and beyond 28 weeks of pregnancy delivered at Pacific Medical College and its affiliated hospital in Udaipur, Rajasthan.

Sample size

Throughout the period of data collection, every pregnant woman carrying twins who were at least 28 weeks along delivered their babies at Pacific Medical College and its affiliated hospital in Udaipur, Rajasthan.

Inclusion criteria

Pregnant women expecting twins beyond 28 weeks gestation fulfilled the criteria for inclusion.

Exclusion criteria

Singleton pregnancy, triplets and higher order pregnancies, gestational age under 28 weeks, and pre-existing medical conditions like chronic hypertension, pre-gestational diabetes, cardiac disease, renal disease, or collagen vascular disorder were all excluded.

Methodology

The institutional ethical committee gave their approval. Every woman who met the requirements and had a twin pregnancy at Pacific Medical college and attached hospital in Udaipur, Rajasthan was included in the study. The patients were provided with the study information sheet and consent form, and were then explained the study details in a language they preferred. After explaining the purpose, nature, and process of the study, written consent was obtained before starting the data collection process. The information was collected through a predetermined peer-reviewed template. Maternal and fetal monitoring was carried out according to established procedures. Observation of outcomes showed morbidity and mortality in both mother and unborn baby.

RESULTS

Analysis of 48 twin gestations satisfying the inclusion criteria was done and following observations and results were made.

Majority (83.33%) of patients conceived by spontaneous conception (Table 1).

In our study majority 70.83% of patients studied were in the age group of 20-29 years (Table 2).

Table 1: Mode of conception (n=48).

Mode of conception	Numbers
Spontaneous conception	40
Conceived by ART	08

Table 2: Distribution of women according to age (n=48).

Maternal age (years)	Frequency	Percentage
<20	3	6.25
20-29	34	70.83
30-39	09	18.75
>40	2	4.16
Total	48	100.0

In this current study among 48 cases, most of the women (58.33%) were booked (Table 3).

Table 3: Distribution of booked and unbooked women (n=48).

Type	Frequency	Percentage
Booked	28	58.33
Unbooked	20	41.67

Most of the women (54.16%) at the time of delivery were between gestation age 34-37 weeks (Table 4).

Table 4: Distribution of women according to period of gestation at the time of delivery (n=48).

Gestational age (weeks)	Frequency	Percentage
28-34	14	29.16
34-37	26	54.16
>37	8	16.66
Total	48	100.00

In our study, 54.16% were multigravida and 45.83% were primigravida among 48 cases (Table 5).

Table 5: Distribution of women according to parity (n=48).

Parity	Total	Percentage
Primigravida	22	45.83
Multigravida	26	54.16
Total	48	100.0

Preterm labor was the most frequently encountered complication seen in 83.33% patients, followed by anemia (62.5%), hypertensive disorders of pregnancy (22.91%), premature rupture of membranes (20.83%) and PPH (12.5%) (Table 6).

Mode of delivery was vaginal delivery in 41.66% versus 58.33% by caesarean section (Table 7).

Table 6: Maternal complications (n=48).

Outcome	Frequency (%)
Preterm labor	40 (83.33)
Hypertensive disorders of pregnancy	11 (22.91)
Anemia	30(62.5)
Gestational diabetes mellitus	3 (6.25)
Polyhydromnios	2 (4.16)
Antipartum hemorrhage	2 (4.16)
PROM	10 (20.83)
Postpartum hemorrhage	6 (12.5)
Maternal mortality	1 (2.08)
Others	1 (2.08)

Table 7: Mode of delivery (n=48).

Mode of delivery	Frequency	Percentage
Vaginal	20	41.66
Caesarean section	28	58.33
Total	48	100.0

In our study IUD was observed in 1 (2.08%) first twins and 2 (4.16%) second twins and congenital malformation was present in 1 (2.08%) in first twin as well as in second twin (Table 8).

Table 8: Perinatal outcome (n=48).

Neonatal outcome	Frequency	Percentage
IUD		
Twin 1	1	2.08
Twin 2	2	4.16
Congenital malformation		
Twin 1	1	2.08
Twin 2	1	2.08

Most of the neonates had birth weight between 1.5-2.49 kg [in twin 1 (58.33%) and twin 2 (64.58%)], less than 1.5 kg in twin 1 (20.83%) and in twin 2 (25%).

LBW and ELBW was observed more in second twin (Table 9).

Table 9: Birth weight (n=48).

Birth weight (kg)	Frequency	Percentage
Twin 1		
<1.5	10	20.83
1.5-2.49	28	58.33
2.5-3.49	9	18.75
>3.5	1	2.08
Twin 2		
<1.5	12	25
1.5-2.49	31	64.58
2.5-3.49	4	8.33
>3.5	1	2.08

DISCUSSION

Our institute's research involved monitoring 2980 births for 3 years, with 48 of them resulting in twins. In the study, the general occurrence of twins was 16.1 per 1000 births, equivalent to 1.61%. The frequency of twin births in our research matches the rate documented by Bassey et al at 16 per 1000 deliveries.[12] Gajera et al reported a higher incidence at 17.6 per 1000 births, Singh et al at 1.85%, Gupta et al at 2.82%, Upreti et al at 1.9%, and Rami et al at 1.78%, whereas Bangal et al noted a lower incidence of 1.49% compared to our study.[3,15-17,19,20]

According to our observations, the age range of 20-29 years had the highest incidence of twins at approximately 71%. Multiple studies by Bangal et al, Gajera et al, Chaudhary and Kumari, Mehta et al, Yadav et al, Irene et al, and Sultana et al reported a higher incidence in the age group of 20-29 years.[13,15,21-25] This age bracket is seen as the prime reproductive age. Just 4% of the population was over the age of 40. In the 30-39-year age bracket, 18.75% of births resulted in twins, whereas in the under 20 age bracket, 6.25% were twins. Rizwan and colleagues found an increased number of females who were over the age of 30.[11]

Almost the same percentage of first-time pregnant women and women who have been pregnant before had the occurrence (45.83% are first-time pregnant women and 54.16% are women who have been pregnant before). In the study by Rami et al, it was found that 47.7% of first-time mothers experienced the incidence, compared to 52.3% of mothers who had previously given birth.[20] Lata et al reported that twin pregnancy occurred in 70.7% of women who had prior pregnancies and 29.3% of first-time pregnant women.[18]

The rate of cesarean delivery for twin pregnancies was (58.33%). Chaudhary et al discovered that 67.4% of births were delivered via cesarean section, while Mehta et al reported a rate of 63.3%, Arora et al found it to be 20.32%, and Bangal et al reported 33%.[15,21,22,26] The increase in cesarean section for twin pregnancies might be connected to a rise in various obstetric reasons for this method, including hypertensive disorders, malpresentation, cord prolapse, premature rupture of membranes, fetal distress, and precious pregnancy after infertility.

The highest percentage of women who gave birth fell within the gestational age range of 34 to 37 weeks, reaching 54.16%. In this research, the occurrence of premature labor was seen at a rate of 83.33%, which is within the range of rates reported by Chowdhury et al and Bangal et al recorded a preterm birth rate of 88%, while Chowdhury et al reported a rate of 44%.[14,15] Australia's Mothers and Babies from AIHW in 2011 found a preterm birth rate of 52.2% among women with twins in 2009.

This study discovered that PROM appeared in 20.83% of twin pregnancies. In previous studies, PROM was observed at a rate of 10.67% in Singh et al, 8.5% in Rami et al, and 16% in Bangal et al.[15,19,20]

Ante partum bleeding was noted in 4.16% of subjects, consistent with Singh et al's discovery of 4% in their research.[19] Irene and colleagues found a 2% decrease in the occurrence of APH.[24]

In our study, postpartum hemorrhage occurred in 12.5% of cases. Similar rates of postpartum hemorrhage were found in other studies: 17% in Gajera et al, 13.33% in Singh et al, and 11% in Sharma et al.[13,19,27] Improved handling of the third stage of labor and the utilization of more modern prostaglandins have led to a reduction in the occurrence of PPH.

This study discovered that gestational diabetes affected 6.25% of the population, and polyhydramnios had a prevalence of 4.16%. Taj et al discovered polyhydramnios in 8.3% and gestational diabetes in 4.2% of instances.[29] Polyhydramnios was seen in 3.1% of cases in Rani et al research, while gestational diabetes was present in 0.8%.[28]

During our study, intrauterine deaths occurred in 2.08% of twin 1 and in 4.16% of twin 2. Yadav and colleagues noted a 2% IUD rate, Rani and colleagues found a 3.8% rate.[23,28]

There was one congenital malformation in the first twin, as well as one in the second twin. Mehta et al reported a 3.3% occurrence of congenital malformations.[22]

During our study, we discovered that approximately 80% of the first babies born to twins and 89% of the second babies born to twins had a low birth weight (<2.5 kg). Low birth weight was evident in 84.4% of twins when looking at both infants together. LBW babies were reported in 79% of cases in Taj et al, 82% in Bengal et al, and 78.67% in Singh et al.[15,19,29] The high rate could be due to poor nutrition among patients and a high number of premature births in the area.

Limitations

There are limitations to this study. In our study, we have enough participants, however, collecting additional data could lead to a more precise outcome. Additionally, the study was carried out at a tertiary care center that receives many high-risk referrals from rural regions, so the results may differ if the study had been conducted at a tertiary care center located in a city area.

CONCLUSION

Identifying if a twin pregnancy is monochorionic is essential for predicting possible abnormalities. Prenatal care, along with adequate rest and proper nutrition, early detection of fetal and maternal issues and careful monitoring during labor and postpartum, has significantly decreased risks for both the mother and the baby. Most problems in pregnancies involving more than one baby can

be prevented. Having high-risk units in the obstetric ward and a well-equipped NICU could decrease rates of maternal and perinatal morbidity and mortality. Better knowledge of maternal and fetal complications enhances monitoring and aids in averting adverse health consequences. Hence, it is essential to enhance obstetric, neonatal, and health services for a better result.

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