RESEARCH

PERINATAL OUTCOME IN TWIN PREGNANCY ACCORDING TO CHORIONICITY

Received : 12/06/2022
Received in revised form : 16/08/2022
Accepted : 23/08/2022

Keywords:
Monochorionic diamniotic (MCDA), Dichorionic diamniotic (DCDA), Intrauterine death(IUD), Intrauterine growth restriction (IUGR)

Corresponding Author:
Dr. Vanitha CH,
Email. drvanithamdobs@gmail.com
ORCID: 0000-0001-7648-5292

DOI: 10.47009/jamp.2022.4.4.32

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2022; 4 (4); 150-155

Pilli Rajitha[1], Vanitha CH[1], V. Aruna Devi[2]

[1]Assistant Professor, Department of Obstetrics and Gynecology: Kakatiya medical college, Hanamkonda, Telangana, India.
[2]Professor, Department of Obstetrics and Gynecology: Kakatiya medical college, Hanamkonda, Telangana, India.

Abstract

Background: Over a few decades, twin pregnancies have become more common. The main reasons for the rise in the frequency of twin gestations include the use of drug-induced ovulation, in vitro fertilisation, and ageing of the mother at conception. The aim is to study the chorionicity-related prenatal morbidity and death in twin gestations. **Materials and Methods:** Cross-sectional study that is prospective. Patients carrying twins who are more than 28 weeks pregnant are seen in the labour unit and prenatal OP and AN ward. **Result:** 70 % of 100 twin pregnancies had DCDA, 26% had MCDA, and 4% had MCMA. Twin pregnancies were more common in multigravida (58%), compared to primigravida (42%), and dichorionicity was more common as parity rose. The typical age range set out in both MCDA and DCDA was 26 to 30 years old. Preterm was found in all 30 monochorionic pregnancies (100%) with preterm PPROM in 40%. Preterm birth was discovered to occur more often in monochorionic pregnancies. As opposed to 5% in DCDA, PPH was found in 36% of MCDA. There was a statistical difference between the two groups, with MCDA having a higher incidence of IUD, selective IUGR, congenital abnormalities, and discordant growth. **Conclusion:** The most crucial stages in enhancing perinatal outcome and lowering negative maternal outcome in twin pregnancies include early diagnosis and care of preterm, early referral to foetal medical centres in case of complications, and early hospitalisation.

INTRODUCTION

Over a few decades, twin pregnancies have become more common. The main reasons for the rise in the frequency of twin gestations are the use of drug-induced ovulation, in vitro fertilisation, and ageing of the mother during conception. Even though twin pregnancies only account for a small share of live births, they are known to account for a disproportionate amount of all unfavourable perinatal outcomes. Prematurity, low birth weight, intrauterine growth retardation, birth trauma, birth asphyxia, congenital malformations, and specific twin pregnancy difficulties are the main issues that twin pregnancies present. Twin pregnancies include a number of dangers, necessitating highly attentive antepartum, intrapartum, and postpartum care.

Either monozygotic or dizygotic twins are possible. MC twin pregnancies had more perinatal difficulties than DC twin pregnancies. The shared placenta of MC twins with its vascular anastomoses, which results in blood shunting between the two twins, is the cause of this rise. If correct therapy is not provided, the prognosis for twin-to-twin transfusion syndrome (TTTS), which occurs in 10- 15% of MC twin pregnancies, is bad.[1,2] It is debatable when to deliver MC twins since different studies show varying fatality rates for late foetal deaths. Neonatal morbidity is higher in MC even when there is no TTTS or IUD of a co-twin.

MATERIALS AND METHODS

An inpatient prospective cross-sectional research was conducted in the prenatal ward and OPD of the Department of Obstetrics and Gynecology at the CKM Hospital in Warangal and the SNCU at the MGM Hospital in Telangana. Patients will be asked for study-related information such as age, parity, gravida, place of residence, and family history of twin pregnancies.

Inclusion Criteria

Patients carrying twins who are more than 28 weeks pregnant are seen in the labour unit and prenatal OP and AN ward.

Exclusion Criteria

Patients who are expecting triplets, have gestational ages under 28 weeks, are known to have chronic

HTN, diabetes, chronic renal disease, or another chronic medical condition

Using ultrasonography and placental examination, chorionicity is evaluated. The perinatal outcome will be recorded in terms of gestational age at delivery (28 to 30 weeks, 31 to 33, 34 to 37, > 37 weeks), mode of delivery (Caesarean section/vaginal delivery/combined/outlet forceps/vacuum), birth weight (> 2500 gms, 2500 - 1500 gms, 1500 gms), gender, dead/still/alive, babies getting admitted to NICU, number The effects of maternal antenatal conditions like PIH, GDM, APH, and anaemia complicating pregnancy on perinatal outcomes will also be investigated.

Data was input into Microsoft Excel, and SPSS version 20 was used for analysis. Analyses using descriptive statistics were conducted. The mean and standard deviation are used to show the results of continuous measurements. Percentages are used to display the results of categorical measures. The 5% threshold of significance is used to determine significance. Determine the significance of research parameters on a continuous scale between two groups using the Student t test (independent, two tailed). The chi square test is used to compare two groups on a categorical scale and determine the importance of research characteristics.

RESULTS

Primi gravidas made up 42% and multigravidas made up 58% of the 100 twin pregnancies, respectively.

Our research found that twin incidence was most prevalent in the 26 to 30 age range. The typical age range in mono and dichorionic pregnancies was 26 to 30 years. The likelihood of twins rises with age. Out of the 100 twin pregnancies, 56% were drug-induced, 43% were spontaneous, and 1% were the result of IVF. Only 9% of twin pregnancies had a positive family history of twinning, and 91% of the twins were born without one. [Table 1]

Seventy percent of the 100 twin pregnancies were dichorionic diamniotic, twenty-six percent were monochorionic diamniotic, and four percent were monochorionic and monoamniotic. [Table 2]

18% of twin pregnancies had gestational hypertension, 50% had anaemia, 6% had gestational diabetes mellitus, and 1% had polyhydramnios. Preterm PPROM occurred in 19% of cases, preterm complicated twin pregnancies in 66%, and term delivery was seen in 34% of cases. Out of the 30 monochorionic pregnancies, 100% had preterm, 40% had preterm PPROM, and none had term delivery. Preterm was present in 51%, preterm PPROM was present in 10%, and term delivery was present in 48% of the 70 dichorionic pregnancies. Of the 100 twin births, 53% occurred between 34 and 36 weeks of pregnancy, 30% occurred at a gestational age more than 37 weeks, 7% occurred between 31 and 33 weeks, and 10% occurred in less than 30 weeks. In the monochorionic pregnancies, 26% of the babies were born before 30 weeks, 23% between 31 and 33 weeks, 50% between 34 and 36 weeks, and none beyond 37 weeks. None of the dichorionic pregnancies gave birth between 31 and 33 weeks of gestation, 54% did between 34 and 36 weeks, 42% did beyond 37 weeks, and 2% did under 30 weeks.

Out of the 30 monochorionic pregnancies, 44% were delivered vaginally and 56% via LSCS. Out of the 70 dichorionic pregnancies, 43% were delivered vaginally and 57% via LSCS. [Table 3]

PPH was detected in 36% of the 30 monochorionic pregnancies. Using Fischer's exact test, the significance of PPH in connection to chorionicity was compared and was not found to be significant with a p value of 0.0001. IUD complicated 23% of monochorionic twin pregnancies and 2% of dichorionic twin deliveries out of 100 twin births. For Twin A, the P value using Fisher's exact is 0.055, whereas for Twin B, it is 0.006. One in one hundred dichorionic pregnancies resulted in a stillbirth. There was no discernible difference in the incidence of stillbirth between MC and DC pregnancies when using the Fischer's exact test. [Table 4]

Out of 100 twin births, the average birthweight of the first twin was 1.6 kg, while the average birthweight of the second twin was 1.5 kg. The average weight of the first twin in dichorionic pregnancies was 2.2 kg, while the average weight of the second twin was 2.1 kg.

Congenital abnormalities were detected in 36% of monochorionic pregnancies but not in DC pregnancies. The P value for Twin A was discovered to be.002 and for Twin B to be 0.0001. [Table 5]

In a monochorionic twin pregnancy, Twin A's mean APGAR score was 6.03 and Twin B's was 5.87. In a dichorionic twin, twin A's mean APGAR score was 7.57, whereas twin B's was 7.34. [Table 6]

IUGR was seen in 11% of monochorionic births and in 2% of DC pregnancies. For twins A and B, the P values were 0.058 and 0.121, respectively. Out of MC pregnancies, discordant growth was discovered in 50% of cases and in 4% of DC cases. P value was determined to be significant between the two groups at 0.0001. Neonatal mortality was discovered in 23% of MC births and 3% of DC pregnancies. In 70 DC pregnancies, 95% of the infants were delivered alive, compared to 80% in 30 MC pregnancies. [Table 7]

RDS and seizures accounted for 66% of the 12 newborn fatalities in MC and 33% of the 6 neonatal deaths in DC, whereas sepsis accounted for 8% in MC and 16% in DC. NEC caused 8% of deaths in MC and 16% in DC, while IVH caused 8% of deaths in MC and 16% in DC. 16% of deaths in DC and 8% in MC were due to CHD. [Table 8]

Regarding IUD and stillbirth, there was little difference between MC twin B and DC twin B. However, MC twin B had considerably greater rates of VLBW, NICU hospitalisation, congenital abnormalities, discordant growth, and neonatal mortality than DC twin B. [Table 9]

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Table 1: Shows distribution of 100 twin deliveries.

Gravida	MCDA+MCM A	DCD A
Multigravida	19	39
Primigravida	11	31
Total	30	70
Age		
≤20	4	5
21-25	6	13
26-30	20	50
≥31	0	2
Mode of Conception		
Induced	56	56.0
IVF	1	1.0
Spontaneous	43	43.0
Family History		
Absent	91	91.0
Present	9	9.0

Table 2: Showing the distribution of chorionicity among twin pregnancies.

Chorioniciy	Frequency	Percent
DCDA	70	70.0
MCDA	27	27.0
MCMA	4	04.0
Total	100	100.0

Table 3: Showing various maternal risk factors complicating twin pregnancies

	MCMA+MCDA	DCDA
Gestational hypertension	9	9
Gest DM	5	1
Polyhydramnios	4	2
Anaemia	27	13
Preterm complicating		
Term	0	34
Preterm	30	36
Preterm + PPROM	12	7
Gestational Age at Delivery		
Less than 30 weeks	8	2
31-33 weeks	7	0
34- 36 weeks	15	38
More 37 weeks	0	30

Table 4: Showing relationship between PPH and chorionicity

PPH	Chorionicity		Total	
	DCDA	MCDA		
Present	4	11	15	0.0001
Absent	66	19	85	
IUD				
TWIN A				
Present	2	4	6	
Absent	68	26	94	0.055
TWIN B				
Present	0	3	3	0.006
Absent	70	27	97	
Still birth				
TWIN A				
Present	1	0	1	
Absent	69	30	99	.397
TWIN B				
Present	1	0	1	.397
Absent	69	30	99	

Table 5: Showing the relation between birth weight and chorionicity

Chorionicity		Birth weight		P value (independent t test)
		Mean	Std. Deviation	
TWIN A	DCDA	2.213000	.4489645	0.0001
	MCDA	1.695500	.6441010	
TWIN B	DCDA	2.118571	.4502150	0.0001
	MCDA	1.513333	.6262826	

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Table 6: showing relation between Apgar score and chorionicity

Chorionicity		APGAR score		P value (independent t test)
		Mean	Std. Deviation	
TWIN A	DCDA	7.57	1.399	0.0001
	MCDA	6.03	2.414	
TWIN B	DCDA	7.34	1.596	0.001
	MCDA	5.87	2.556	

Table 7: showing relation between IUGR and chorionicity

IUGR	Chorionicity		Total
	DCDA	MCDA+MCMA	
Twin A			
Present	1	3	4
Absent	69	27	96
Twin -B			
Present	3	4	7
Absent	67	26	93
Discordant Twins >20%			
Present	3	15	18
Absent	67	15	82
Neonatal death			
Present	14	5	19
Absent	46	135	181
No of days of NICU admission			
1 – 5 days	3	2	5
6 -10 days	16	9	25
11- 15 days	6	2	8
Alive babies on discharge			
Present	48	133	181
Absent	12	7	19
Total	60	140	200

Table 8: showing relation between causes of neonatal death and chorionicity

Cause of death	MCMA+MCDA	DCDA
RDS	6	1
Sepsis	1	1
CHD	1	1
IVH	1	1
NEC	1	1
Seizures	2	1
Total	12	6

Table 9: showing perinatal outcome in Twin B in relation to chorionicity

Perinatal outcome of Twin B in relation to chorionicity	MCMA + MCDA	DCDA	P value (fischer exact test)
IUD	3	0	0.025(f)
Stillbirth	0	1	0.999(f)
Low birth weight	16	39	0.999
Very low birth weight	12	3	0.0001(f)
Congenital anomalies	7	0	0.0001(f)
NICU admission	23	19	0.0001
IUGR	4	3	0.192(f)
Discordant growth	15	3	0.0001
Neonatal death	14	5	0.0001

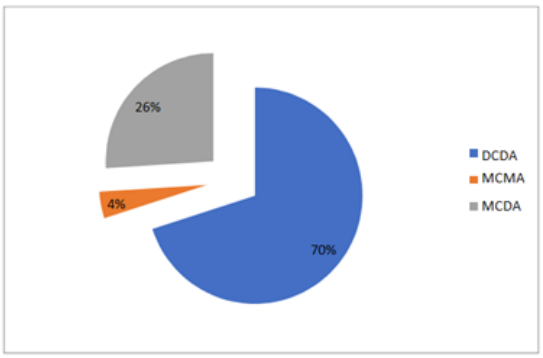

Figure 1: showing the distribution of chorionicity among twin pregnancies.

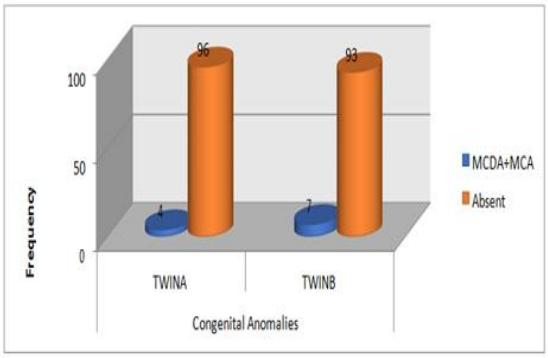

Figure 2: showing the relation between congenital anomalies and chorionicity.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

DISCUSSION

On 100 twin pregnancies admitted to MGM Hospital, we performed research. The study's goal was to analyse chorionicity to determine the perinatal outcome. Seventy percent of the 100 twin pregnancies were dichorionic diamniotic, twenty-six percent were monochorionic diamniotic, and four percent were monochorionic and monoamniotic. In 150 twin pregnancies studied by Shobha et al. between 2013 and 2014, it was discovered that 73.3% of them were DCDA, 16.6% were MCDA, and 10% were MCMA. The findings of our investigation matched those of this study.

Primigravidas made up 42% of the 100 twin pregnancies, while multigravidas made up 58% of the pregnancies. Dichorionicity is reported to occur more often as parity rises. The findings were consistent with a research done in 1982 by Azubike et al. in Nigeria that shown that as parity increases, the incidence of twins rises from 2% in primi to 6.6% in multiparous women.[3]

Our research found that twin incidence was most prevalent in the 26 to 30 age range. The typical age range in mono and dichorionic pregnancies was 26 to 30 years. Out of the 100 twin pregnancies, 56% were drug-induced, 43% were spontaneous, and 1% were the result of IVF. There was no distinction between MC and DC in terms of conception mode. This outcome was comparable to that of the Asuncion et al,[4] Study. Only 9% of twin pregnancies had a positive family history of twinning, and 91% of the twins were born without one.

Gestational hypertension was seen in 18% of twin pregnancies, along with anaemia in 50%, gestational diabetes mellitus (GDM) in 6%, and polyhydramnios in 1%. Maternal risk variables were present in the same amounts in both MC and DC pregnancies.

Preterm, preterm PPROM, and PROM were three additional maternal complications that were examined separately. Preterm was found in all 30 monochorionic pregnancies (100%) with preterm PPROM in 40%. Preterm was found in 51% and preterm PPROM in 10% of the 70 dichorionic pregnancies. Preterm birth was more often seen in monochorionic pregnancies. Retrospective investigation of 24 monochorionic twin deliveries by Ratko Matijevik et al,[5] revealed that monochorionic twin pregnancies had a significant complication rate, with threatened and actual preterm labour and delivery being the most frequent problems. The gestational age at birth in this outcome correlated with our research. In line with Assuncao et al,[4] research's the mean gestational age in our study was 34 weeks. In the monochorionic pregnancies, 26% of the babies were born before 30 weeks, 23% between 31 and 33 weeks, 50% between 34 and 36 weeks, and none beyond 37 weeks. None of the dichorionic pregnancies gave birth between 31 and 33 weeks of gestation, 54% did between 34 and 36 weeks, 42% did beyond 37 weeks, and 2% did under 30 weeks. In line with the findings of the research by Assuncao et al,[4] it can be said that the mean gestational age at delivery was lower in MC pregnancies than in DC.

Then, the delivery method was evaluated. This means that out of the 30 monochorionic pregnancies, 56 percent were delivered through LSCS and 44 percent were vaginal deliveries. Out of the 70 dichorionic pregnancies, 43% were delivered vaginally and 57% via LSCS. This was comparable to the research of Assuncao et al,[4] in which vaginal births were not the only cases with LSCS. PPH occurrence was examined. This indicates that 36% of the 30 monochorionic pregnancies had PPH. Using Fischer's exact test, the significance of PPH in connection to chorionicity was compared and was not found to be significant with a p value of 0.0001. This was consistent with the findings of the Naushaba et al. investigation.[6]

It was evaluated how IUD and chorionicity related. IUD complicated 23% of monochorionic twin pregnancies and 2% of dichorionic twin deliveries out of 100 twin births. For Twin A, the P value using Fisher's exact is 0.055, whereas for Twin B, it is 0.006. IUD use was higher in MC pregnancies than DC pregnancies. The outcomes matched those of Assuncao et al,[4] who found that IUD use was more common in DC pregnancies than in MC pregnancies. Out of 100 twin deliveries, 1% of dichorionic and none of monochorionic pregnancies had stillbirths, according to estimates of the stillbirth rate in twin pregnancies. There was no discernible difference in the incidence of stillbirth between MC and DC pregnancies when using the Fischer's exact test. The findings of the research by Svetlana et al,[7] indicated an increase in stillbirth among MC pregnancies, which contrasts with these findings. Out of 100 twin births, the average birthweight of the first twin was 1.6 kg, while the average birthweight of the second twin was 1.5 kg. The average first twin weight in dichorionic pregnancies was 2.2 kg, whereas the average second twin weight was 2.1 kg. MC twins had a lower birth weight than DC twins, which is consistent with the findings of the research by PA Hatkar et al.[8] Congenital abnormalities were detected in 36% of monochorionic pregnancies but not in DC pregnancies. The P value for Twin A was discovered to be.002 and for Twin B to be.0001. Similar to the research of S.V. Glinianaia et al,[9] the incidence of congenital abnormalities was twice as prevalent in MC pregnancies as it was in DC pregnancies.

IUGR was seen in 11% of monochorionic births and in 2% of DC pregnancies. For twin A, the P value was discovered to be 0.058, whereas for twin B, the P value was 0.121. In MC pregnancies, the incidence of IUGR was found to be statistically significant, which is consistent with the findings of Dominigues et al,[10] study's In a monochorionic twin pregnancy, Twin A's mean APGAR score was 6.03 and Twin B's was 5.87. In a dichorionic twin, twin A's mean APGAR score was 7.57, whereas twin B's was 7.34. Similar to the findings of Naushaba et al,[6] Study's. It was

ISSN (O): 2687-5365; ISSN (P): 2753-6556

discovered that the Apgar score was lower in pregnancies with MC.

Discordant growth was discovered in 50% of MC pregnancies and 4% of DC pregnancies. P value was determined to be significant between the two groups at 0.0001. Similar to the findings of Domonigues et al, there was higher discordancy in pregnancies involving MC. Neonatal mortality was discovered in 23% of MC births and 3% of DC pregnancies. This was similar to the findings of Summera Alsam et al,[10] research's.

RDS and seizures accounted for 66% of the 12 newborn fatalities in MC and 33% of the 6 neonatal deaths in DC, whereas sepsis accounted for 8% in MC and 16% in DC. NEC caused 8% of deaths in MC and 16% in DC, while IVH caused 8% of deaths in MC and 16% in DC. 16% of deaths in DC and 8% in MC were due to CHD. RDS was the leading cause of mortality in both groups. When the number of days spent in the NICU was examined, it was shown that MC births had lengthier stays than DC deliveries.

In 70 DC pregnancies, 90% of the infants were delivered alive, compared to 50% of the newborns in 30 MC pregnancies. Between the two groups, the P value was significant. Compared to DC births, monochorionic pregnancies had a lower chance of being released alive.

CONCLUSION

Twin pregnancies considerably raise the risk of unfavourable outcomes for both the mother and the foetus. MC pregnancies are more likely to have a number of problems.

The chorionicity should be assessed between 11 and 14 weeks of gestation since each placentation type has a unique prognosis and morbidity. By identifying the placentation, we can inform the parents about the dangers of intrusive testing and unfavourable perinatal outcomes. The treatment of discordant growth, twin to twin transfusion, the viability of multifetal reduction, and the management of various issues are all helped by the assessment of chorionicity. The perinatal prognosis is improved by early chorionicity diagnosis and appropriate follow-up throughout the gestation.

It is essential to do regular ultrasound exams and, if necessary, Doppler exams to monitor the development and health of twins, especially monochorionic twins. The most crucial actions in enhancing perinatal outcome and lowering poor maternal result in twin pregnancies are early diagnosis and care of preterm, early referral to foetal medical facilities in case of problem, and early hospitalisation.

REFERENCES

1. Multiple gestation pregnancy. The ESHRE Capri Workshop Group. Hum Reprod. 2000;15(8):1856-64.
2. Moldenhauer JS, Johnson MP. Diagnosis and Management of Complicated Monochorionic Twins. Clin Obstet Gynecol. 2015;58(3):632-42. doi: 10.1097/GRF.0000000000000127.
3. Azubuike JC. Multiple births in Igbo women. Br J Obstet Gynaecol. 1982;89(1):77-9. doi: 10.1111/j.1471-0528.1982.tb04641.x.
4. Assunção RA, Liao AW, Brizot Mde L, Krebs VL, Zugaib M. Perinatal outcome of twin pregnancies delivered in a teaching hospital. Rev Assoc Med Bras (1992). 2010;56(4):447-51. doi: 10.1590/s0104-42302010000400018.
5. Matijević R, Solak M, Kalogjera N, Kurjak A. Monochorionic twin pregnancy: retrospective analysis of predicted pregnancy outcome. Croat Med J. 2003;44(6):734-9.
6. Rizwan N, Abbasi RM, Mughal R. Maternal morbidity and perinatal outcome with twin pregnancy. J Ayub Med Coll Abbottabad. 2010;22(2):105-7.
7. Glinianaia SV, Obeysekera MA, Sturgiss S, Bell R. Stillbirth and neonatal mortality in monochorionic and dichorionic twins: a population-based study. Hum Reprod. 2011;26(9):2549-57. doi: 10.1093/humrep/der213.
8. Hatkar PA, Bhide AG. Perinatal outcome of twins in relation to chorionicity. J Postgrad Med. 1999;45(2):33-7.
9. Pharoah PO, Glinianaia SV, Rankin J. Congenital anomalies in multiple births after early loss of a conceptus. Hum Reprod. 2009;24(3):726-31. doi: 10.1093/humrep/den436.
10. Hack KEA, Vereycken MEMS, Torrance HL, Koopman-Esseboom C, Derks JB. Perinatal outcome of monochorionic and dichorionic twins after spontaneous and assisted conception: a retrospective cohort study. Acta Obstet Gynecol Scand. 2018;97(6):717-726. doi: 10.1111/aogs.13323.

ISSN (O): 2687-5365; ISSN (P): 2753-6556