

## Study of Maternal Outcome in Twin Pregnancy Based on Chorionicity

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### Abstract

**Objective:** To study the maternal morbidity & mortality in twin gestations according to chorionicity and predict the course of twin pregnancy.

**Methods:** All Women with twin pregnancies attending the antenatal OPD, antenatal ward, labour were included in the study, according to inclusion criteria. All the data were collected with the help of pre structured pre tested proforma. The detailed history and through physical and obstetric examination along with relevant investigation were done, risk factors if any were noted. Determination of chorionicity was done using sonography during pregnancy and by clinical assessment of placenta during delivery and described as dichorionic, monochorionic, diamniotic, monochorionic monoamniotic. Maternal outcome in terms of morbidity and mortality were noted.

**Results:** Among 252 twin pregnancies, 188 (75.2%) were dichorionic, 64(24.8%) was monochorionic out of which 52 (20.4%) were monochorionic diamniotic and 12(4.4%) were monochorionic monoamniotic. Higher maternal age group was noted in dichorionic group (50.5%) as compared to monochorionic group (45.2%). In monochorionic and dichorionic twin pregnancies, primigravida contributed the largest percentage which was 54.8% (139 out of 252). MCMA group was found to be associated with use of ART(16.7%). In present study, significant family history of twinning was seen in MCMA group (50%).

**Conclusion:** All the twins should have their chorionicity assessed via ultrasound, preferably in the first trimester. The practicality of reducing multifetal pregnancies, invasive diagnosis and therapy of discordant abnormalities, and counselling parents about their risk of prenatal morbidity and death all depend on the chorionicity of the mother. If unfavourable results are to be avoided, every effort should be taken to identify any foetal abnormalities as early as feasible and to perform the necessary interventions.

**Keywords:** Chorionicity, Twin Pregnancy, Maternal Outcome.

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## Introduction

Over a few decades, twin pregnancies have become more common. The use of drug-induced ovulation, assisted reproduction, and maternal age during conception are the three main explanations of the rise in occurrence. In Asia, the rate of multiple pregnancies is approximately 5–6 per 1000 deliveries, whereas the global incidence ranges from 2–20 per 1000 births. The rate of dizygotic twinning has mainly contributed for increase of twin birth while the rate of monozygotic twin remains constant. [1]

An unusual rise in multiple births poses a concern to the public's health because they are linked to higher maternal as well as perinatal morbidity and mortality. The various complications encountered in mothers are anemia, hyperemesis, pre-term labor, pre mature rupture of membrane, placental abruption, hypertensive disorders of pregnancy, antepartum hemorrhage, polyhydramnios, increased pressure symptoms, varicose veins and gestational diabetes. When compared to singleton births, the chance of the mother's death is 2.5 times higher with twin pregnancies. Repeated antenatal hospitalizations, extended hospital stays, and blood transfusions are all caused by these complications. [2]

Early and accurate prenatal diagnosis, the identification and treatment of maternal problems, and the management of fetal growth restriction are primary concerns in the management of twin pregnancies. Planning the time and mode of delivery in complicated twin pregnancies, identifying monochorionic placentation early, and coping with its effects are essential steps that increase the likelihood of a favorable outcome. An early diagnosis of chorionicity may help in risk stratification, screening for malformations, and increasing surveillance for the development of discordant growth in monochorionic twins. The perinatal

morbidity and mortality are significantly correlated with the chorionicity of twin pregnancies. The early detection of chorionicity and amniocity is crucial for better antenatal treatment of multiple pregnancies and planning for the birth time. [3]

Thus, this study was done in the Department of Obstetrics & Gynaecology, GMC Bhopal over a period of 18 months to evaluate the maternal morbidity and mortality in twin pregnancies and to compare outcome based on chorionicity of twin pregnancies. [4-7]

## Materials and Methods

### Study Design: Prospective analytical study

**Study Site:** Department of Obstetrics and Gynaecology, Hamidia Hospital & Gandhi Medical College, Bhopal.

**Study Duration:** 18 months (1 January 2021-30 June 2022).

**Study Population Sample Size:** All Women with twin pregnancies attending the antenatal OPD, antenatal ward, labour reporting to the Department of Obstetrics and Gynaecology, Hamidia Hospital & Gandhi Medical College, Bhopal.

### Inclusion Criteria:

- 1) All Women with twin pregnancies admitted in department of Obstetrics and Gynaecology.
- 2) Patients who are willing to give consent.

### Exclusion Criteria:

- 1) Pregnant women with triplet/quadruplet pregnancies
- 2) Study participants with known history of chronic hypertension, diabetes mellitus, chronic renal disease and other chronic medical disorders.
- 3) Women not willing to give consent.

**Consent:** Written informed consent was taken from the patient. All the study participants were explained in detail about the purpose of the study in their own language which they could understand. They were also explained that they could withdraw from study any time. They were assured about confidentiality of their information which would be strictly maintained. They were also explained that there is no possible risk in the study.

**Ethical clearance:** Obtained from the ethical committee of Gandhi Medical College, Bhopal.

**Method of data collection:**

- Permission from the institutional ethics committee and university clearance was obtained, Certificate no: 27135.
- All Women with twin pregnancies attending the antenatal OPD, antenatal ward, labour reporting to the Department of Obstetrics and Gynaecology, Hamidia Hospital & Gandhi Medical College, Bhopal were included in the study, according to inclusion criteria.
- Informed written consent was obtained after explaining about the purpose, nature, and process of the study and then data collection was started.
- All the data were collected with the help

of pre structured pre tested proforma.

- The detailed history and through physical and obstetric examination along with relevant investigation were done, risk factors if any were noted.
- The information pertaining to the study like age, parity, gravida, residence, family history of twin pregnancy was obtained from the patients.
- Determination of chorionicity was done using sonography during pregnancy and by clinical assessment of placenta during delivery and described as dichorionic, monochorionic, diamniotic, monochorionic monoamniotic.
- Maternal outcome in terms of morbidity and mortality were noted.

**Outcome variables:** maternal morbidity and mortality outcomes

**Maternal outcomes-** Anaemia, pre term labour, PIH, APH, GDM, PROM, PPRM, PPH, ICU admission and Maternal Mortality.

**Foetal Outcome-** NICU admission, Birth weight, Gestational Age at delivery, mode of delivery, Foetal Growth retardation, Congenital anomaly, and Neonatal mortality.

**Observation Chart**

**Table 1: Distribution of chorionicity among study participants**

Type of chorionicity	Monochorionic (n=64)		Dichorionic(n=188)	Total
	MCMA	MCDA	DCDA	
Number	12	52	188	252
Percentage	4.4	20.4	75.2	100

Among 252 twin pregnancies, 188(75.2%) were dichorionic. 64(24.8%) were monochorionic out of which 52(20.4%) were monochorionic diamniotic and 12(4.4%) were monochorionic monoamniotic.

**Table 2: Distribution according to maternal age**

Maternal age in years	Monochorionic (n=64)		Dichorionic (n=188)	Total	Percentage
	MCMA	MCDA	DCDA		
<20 y	1	10	25	36	14.4
21-25 y	6	9	68	83	32.8
26-30 y	3	22	42	67	26.6
>30y	2	11	53	66	26.2
Total	12	52	188	252	100

The most common age group for the incidence of twins according to our study was 21 to 25 years- 83(32.8%) followed by 67(26.6%) patients who had age between 26-30 years. There were 66(26.2%) patients who had age more than 30 years whereas 36(14.4%) had age less than 20 years.

**Table 3: Distribution according to parity**

Gravida	Monochorionic (n=64)		Dichorionic (n=188)	Total	Percentage
	MCMA	MCDA	DCDA		
Primigravida	7	22	110	139	54.8
Multigravida	4	19	50	73	29.4
Grandmulti	1	11	28	40	15.8
Total	12	52	188	252	100

**Table 4: Distribution according to mode of conception**

Mode of conception	Monochorionic (n=64)		Dichorionic (n=188)	Total	Percentage
	MCMA	MCDA	DCDA		
Spontaneous	10	46	160	216	85.6
Ovulation induction by drugs	2	6	28	36	14.4
Total	12	52	188	252	100

Out of the 252 twin pregnancies, 216(85.6%) patients conceived spontaneously, and 36(14.4%) pregnancies were induced by drugs.

**Table 5: Showing genetic predisposition of twinning in relation to chronicity.**

Genetic predisposition	Monochorionic (n=64)		Dichorionic (n=188)	Total	Percentage	P Value
	MCMA	MCDA	DCDA			
Family history oftwinning present	6	18	13	37	14.8	0.01
Family history oftwinning absent	6	34	175	215	85.2	
Total	12	52	188	252	100	

There was a positive family history of twinning in only 37(14.8%) of twin pregnancies and it was absent in 215(85.2%) twins. Family history of twinning was more common in monochorionic pregnancies as compared to dichorionic and the difference was significant (p value= 0.01).

**Table 6: Showing various maternal risk factors complicating twin pregnancies**

Maternal risk factors	Monochorionic (n=64)			Dichorionic (n=188)		Total	Percentage	P Value
	MCMA	MCDA	N%	DCDA	N%			
Hypertensive disorders	2	24	40.6	48	25.5	74	29.6	0.04
GDM	0	5	7.8	2	1.1	7	2.8	
APH	0	2	3.1	6	3.2	8	3.2	
Anemia	0	7	10.9	16	8.5	23	9.2	
Hydramnios	0	0	0	2	1.1	2	0.8	
PROM	0	5	7.8	32	17	37	14.8	
PPROM	2	28	46.8	42	22.3	72	28.8	
PPH	3	10	20.3	30	16	43	17.2	

**Table 7: Distribution of gestational age in relation to chorionicity**

Gestational age	Monochorionic (n=64)		Dichorionic (n=188)	Total	Percentage	P value
	MCMA	MCDA	DCDA			
<20 week	1	1	2	4	1.5	0.001
21-28 week	2	9	15	26	10.3	
28-33 week	1	5	24	30	12	
34-36 week	5	20	41	66	26.2	
>37 week	3	17	106	126	50	
Total	12	52	188	252	100	

**Table 8: Showing mode of delivery in relation to chorionicity**

Mode of delivery	Monochorionic (n=64)		Dichorionic (n=188)	Total	Percentage	P Value
	MCMA	MCDA	DCDA			
LSCS	12	25	66	103	40.8	<0.001
Vaginal	0	24	122	146	58.4	
Assisted delivery	0	3	0	3	0.8	
Total	12	52	188	252	100	

**Table 9: Showing various types of presentation in relation to chorionicity**

Types of presentations	MCMA	MCDA	DCDA	Total	Percentage
Vertex-Vertex	5	26	62	93	36.4
Vertex-Breech	2	6	28	36	14.4
Breech-breech	2	12	44	58	23.2
Breech-vertex	0	6	42	48	19.2
Vertex-transverse	1	2	11	14	5.6
Breech-transverse	2	0	1	3	1.2
Transverse-breech	0	0	0	0	0
Total	12	52	188	252	100

**Table 10 Showing various indications for LSCS in relation to chorionicity**

Indication for LSCS	Monochorionic (n=64)		Dichorionic (n=188)	Total	Percentage	P Value
	MCMA	MCDA	DCDA			
Malpresentation	5	10	28	43	41.2	0.98
APH	0	1	3	4	4	
Fetal distress	2	5	11	18	17.6	
Repeat LSCS	3	6	21	30	29.4	
Cephalopelvic disproportion	1	3	4	8	7.8	
Total	11	25	67	103	100	

**Table 11 Showing relationship between foetal complications and chorionicity**

Foetal complications	Monochorionic (n=128)			Dichorionic (n=376)		Total	Percentage	P value
	MCMA	MCDA	N%	DCDA	N%			
Congenital anomalies	4	7	8.6	4	1.1	15	3	0.01
IUGR	6	3	7.0	6	1.6	15	3	
Discordant growth	6	8	10.9	18	4.8	32	6.4	
IUFD	2	7	7.0	9	2.4	18	3.6	
SB	1	2	2.4	7	1.8	10	2	

## Results

Among 252 twin pregnancies, 188(75.2%) were dichorionic, 64(24.8%) was monochorionic out of which 52(20.4%) were monochorionic diamniotic and 12(4.4%) were monochorionic monoamniotic. Higher maternal age group was noted in dichorionic group (50.5%) as compared to monochorionic group(45.2%). In monochorionic and dichorionic twin pregnancies, primigravida contributed the largest percentage which was 54.8%(139 out of 252). MCMA group was found to be associated with use of ART(16.7%). In present study, significant family history of twinning was seen in MCMA group (50%).

GDM was most seen with MCDA group (9.6%). Hypertensive disorders (25.5%), anaemia (8.5%), and APH (3.2%) was most seen with DCDA group. The results of a study showed that the average gestational age of monochorionic twin pregnancies was 34-36 week (39% of MC twins) which was significantly lower from gestational

age of dichorionic twin pregnancies which was 37 week (42.4% of DC twins).

LSCS was comparatively higher in monochorionic twins (57.8%) as compared to dichorionic twins (35%). In present study, most common indication for LSCS was fetal malpresentation in both MC (23.4%) and DC(14.4%) pregnancies. Incidence of 1<sup>st</sup> baby with non-vertex presentation was most common in DCDA group (46.3%).

**Statistical Analysis:** Data was collected and entered simultaneously in statistical package for social sciences (SPSS) version 23 and coded appropriately. The data was analysed keeping in view the aim and objectives of the study. Descriptive statistics were calculated to summarize the sample characteristics in terms of frequency and percentage. Graphs and Charts were made. Analytical and inferential analysis was done. Significant was set at standard 0.05.

## Discussion

The incidence of twin pregnancy was found to be 1.2% of total obstetric admissions. Salient results of the study are discussed below-

**Chorionicity:** In present study, incidences of monochorionic monoamniotic (MCMA) twins, monochorionic-diamniotic (MCDA) and dichorionic diamniotic (DCDA) twins were 12(4.4%), 52(20.5%) and 188(75.2%) respectively which indicate that monochorionic twins were 64(24.9%) and dichorionic were 188(75.1%). Radhkrishnan et al did a study to study the effect of chorionicity in perinatal outcomes in 200 twin pregnancies and reported that 124 out of 200(62%) were DCDA, 74(37%) were MCDA and 1(0.5%) were MCMA. These findings are in accordance with ours. Gigi A, et al (2020) in their study among 106 twin pregnancies reported that the incidence of monochorionic twins was 41(38.70%) and dichorionic twins was 65(61.30%). According to Dubey S et al, among 862 twin pregnancies, 59.8% of them were diamniotic dichorionic (DCDA), 37.5% were diamniotic monochorionic (MCDA), and 2.5% were monoamniotic monochorionic (MCMA) twins. [8-12]

**Age group:** In this present study, it was noted that there was no statistically significant difference in all three groups based upon chorionicity of twin pregnancies with respect to maternal age. Although higher age group was noted in DCDA group, where out of 188 study participants, 42(22.3%) were between the ages of 26-30 years and 53(28.2%) were more than 30 years of age. [13] The longer duration of infertility and ovulation induction therapy may be to blame for the older average age of the pregnant women in dichorionic twin pregnancies. In MCMA group, most common age group involved was 21-25 years which was observed in 6 out of 12 pregnancies (50%) and in MCDA group, 22(42.3%) belonged to 26-30-year age group. In the study of Gigi A, et al it

was noted that among 106 twin pregnancies the maximum incidence of monochorionic twin pregnancy was in the age group of 20 to 24 years which was 22(53.7%). In dichorionic twins, higher incidence was in the age group of 25 to 29 years which was 27(41.5%). [14,15]

**Parity:** In monochorionic and dichorionic twin pregnancies, primigravida contributed the largest percentage 139(54.8%) and 133(45.2%) were multigravida in present study. Out of 64 monochorionic pregnancy, 29(45.3%) were in primigravida women, similarly out of 188 DCDA, 110(58.5%) were in primigravida women. Increased incidence in primigravida may be because they account for the largest group in the study is probably due to infertility treatment. Nulliparity contributed the largest group in both monochorionic and dichorionic pregnancies. Similar results were reported by Gigi et al(2020) who did a prospective observational study on 106 twin pregnancies and reported that 24(58.5%) were primigravida in monochorionic pregnancies and 34(52.3%) in dichorionic pregnancies. [16]

**Mode of conception:** Twin pregnancy has increased significantly over the last years. The use of ART has greatly contributed to this reality. In present study, in 216(85%) study participants conception was spontaneous where as in 36(14.4%) it was induced by drugs. In MCMA group out of 12, 2(16.7%) required induction, where as in MCDA group out of 52, 6(11.5%) required induction. In DCDA group out of 188, 28(14.9%) required induction. Similar results were reported by Bivar L et al, where authors reported that among DCDA group, 2.9% required ovulation induction agents, 19.8% required assisted reproductive technologies which was significantly higher when compared to monochorionic group. Chinmaye et al in their study reported that 50% pregnancies were conceived naturally, while 17% had ovulation induction, 33% had conceived

with either In vitro fertilization (IVF) or intra cytoplasmic sperm injection (ICSI) and Prior embryo reduction from higher-order multiples was performed in 9.09%. However, significantly higher number of MCDA twins had been spontaneously conceived compared with DCDA. [17]

**Genetic predisposition:** In present study, 37(14.8%) study participants had family history of twins. Among MCMA group out of 12, in 6(50%) family history was present as compared to 18(34.6%) out of 52 in MCDA group. In DCDA group out of 188, 13(7%) had family history of twins. Family history of twinning was more common in monochorionic pregnancies as compared to dichorionic and the difference was significant (p value= 0.01). [18]

**Maternal risk factors:** There is enough proof to conclude that having twins comes with several dangers for the mother. The prevalence of hypertensive diseases is rising, however there is conflicting evidence regarding whether gestational diabetes risk is also rising. In present study, 74(29.6%) study participants had PIH, 8(3.2%) had history of APH, 23(9.2%) had anaemia and GDM was seen in 7(2.8%) study participants with twin pregnancy. GDM was most seen with MCDA group which was 5(71.4%) out of 7 cases. PIH, anaemia, APH was most seen with DCDA group. PPH, PROM and PPRM was present in 43(17.2%), 37(14.8%) and 72(28.8%) respectively. Out of the 64 monochorionic pregnancies, PPH was present in 13(21%) and out of 188 dichorionic pregnancies it was present in 30(16%). Out of 64 monochorionic pregnancies, preterm PROM was present in 30(48.3%) and PROM was present in 5(8%). Out of 188 dichorionic pregnancies, preterm PROM was present in 42(22.3%) and PROM was present in 32(17%). Also statistical significance was seen between maternal risk factors with chorionicity. Bivar L et al did a retrospective observational cohort study of 550 women with twin pregnancy which were divided

into 419(76.2%) dichorionic and 131(23.8%) monochorionic pregnancies, and reported that incidence of hypertensive disorders were higher in dichorionic pregnancies, despite not statistically significant, and that there was a trend towards higher proportion of gestational diabetes in monochorionic pregnancies. PPRM was present in 66(15.8%) of dichorionic twins and 14(10.7%) monochorionic twin pregnancies. According to Feng B et al, some indices in the MCDA group were slightly higher than those in the DCDA group: hypertensive disorder (24.7% vs. 21.6%), gestational diabetes mellitus (16.7% vs. 15.5%), polyhydramnios (14.6% vs. 13.6%), premature rupture of membranes (18.2% vs. 17.5%), and abruptio placenta (4.6% vs. 3.9%). [19]

**Gestational age:** According to chorionicity, out of 64 monochorionic twin deliveries, 25(39%) deliveries occurred at gestational age 34-36 week, 20(31%) deliveries took place at gestational age >37 weeks. The results of this study showed that the average gestational age of monochorionic twin pregnancies (34-36 week) was significantly lower from gestational age of dichorionic twin pregnancies (37 week). (p value= 0.001) Similar results were reported by Dubey S et al (2019), who conducted study on 431 twin pregnancies and reported that gestational age among MCMA and MCDA twins groups was comparatively less ( $34.45 \pm 3.1$ ) as compared to Dichorionic group ( $35.0 \pm 2.3$ ). (41) Anwar S et al (2021) in their study also reported that the average gestational age of monochorionic twin pregnancies was (33.4 weeks) significantly lower from mean gestational age (34.2 weeks) of dichorionic twin pregnancies. Gigi et al (2020) in their study among 106 study participants also reported that average gestational age in monochorionic group was 35 weeks with a standard deviation of 0.51 and in dichorionic group it was 36 weeks with a standard deviation

of 0.29. [20]

**Mode of delivery:** In present study, all the 12 cases of MCMA were delivered by LSCS. Among MCDA almost equal proportion of LSCS and Vaginal delivery was observed, that is 25 out of 52(48%) were LSCS and 24 out of 52(46.2%) were vaginal deliveries. 2 cases (3.8%) required assisted delivery. Among DCDA group only 66(35%) study participants required LSCS as compared to 122(64%) who delivered vaginally. Also statistical significance was found between mode of delivery and chorionicity. We can summarize from these findings that LSCS was comparatively higher in Monochorionic twins. In contrast to our findings, according to Cowherd R et al(2020), patients with monochorionic twins experienced a lower frequency of caesarean delivery (46.0 vs. 61.8%,  $p < 0.001$ ). [21]

**Types of presentation:** Out of the 252 twin deliveries, 93(36.4%) was of both vertex presentation, 36(14.4%) was of Vertex-breech, 48(19.2%) was breech-Vertex, 58(23.2%) of both breech, Vx transverse was seen in 14 cases (5.6%), 3 cases (1.2%) were breech-transverse. Incidence of 1<sup>st</sup> baby with non-vertex presentation was most common in DCDA group. According to study done by Gigi et al in 106 twin pregnancies, most common presentation frequency amongst both twins was that of vertex- vertex which was 28 out of 106(43.1%). Incidence of 1<sup>st</sup> baby in non-vertex presentation in monochorionic twins was 26.8% and that of dichorionic twins was 36.9%(24 out of 65), contributing a major indication for caesarean section. Also, commonest indication for caesarean section in monochorionic twin pregnancy was non vertex presentation of 1<sup>st</sup> baby. [22]

**Indications of LSCS:** In present study, most common indication for LSCS was fetal malpresentation seen in 42(41.2%) out of 102 women with twin pregnancy who

underwent LSCS. In both MC and DC pregnancies fetal malpresentation was the most common indication for LSCS, followed by repeat LSCS (29.4%) which was seen in 30 cases. Fetal distress was the indication in 18(17.6%) cases, followed by cephalopelvic disproportion seen in 8 cases (7.8%). Least common indication was APH (4%). Although no significant association was found. Gigi et al(2021), did a study on 106 twin pregnancies and reported higher incidence of caesarean section in dichorionic twins was due to high ratio of non-vertex presentation of 1<sup>st</sup> twin (36.9%) and also due to higher incidence of previous caesarean section cases.

**Foetal complications:** In present study we found out that higher fetal complication rates have been found to be associated with monochorionic twins as compared to dichorionic twins. The main cause for higher complication rate among monochorionic twins might be due to higher rate of vascular anastomoses between foetuses and presence of abnormal cord insertion as well as higher frequency of unequal placental sharing. Foetal complications were seen more in case of monochorionic pregnancies as compared to dichorionic pregnancies and the difference was found to be significant ( $p$  value= 0.01). In this study, 18(3.6%) twins had intrauterine death and maximum rate of intrauterine death were in monochorionic monoamniotic twins which was 2 out of 24(8.3%), followed by monochorionic diamniotic 7 out of 104(6.7%) and was lowest in dichorionic diamniotic twins 9 out of 376(2.4%). Similar result were reported by Dubey S et al. (2019), where authors reported that maximum rate of intrauterine death were in monochorionic monoamniotic twins 06 (27.3%), followed by monochorionic diamniotic 20 (6.2%) and was lowest in dichorionic diamniotic twins 09 (1.7%).(41) Anwar et al(2021) in their study also reported that rate of intrauterine death was significantly higher (28.57%) in women with MAMC twin

pregnancy in comparison to 6.94% and 2.78% in MCDA and DCDA groups respectively.(32)Also among MC pregnancies, discordant growth was found in 14(10.9%) (most commonly seen with MCMA group) and in 18(4.8%) DC pregnancies in present study. Out of these there were 4 cases of TTTS and 1 case of TRAP. In this study, discordant twins were more commonly associated with monochorionic pregnancy that co-relates with increased perinatal morbidity and mortality in monochorionic pregnancy. The high incidence of discordant growth in monochorionic twins may be due to twin-to-twin transfusion. Although, no definitive causes of discordant twin have been determined but it has been co-related with conception with ovulation induction, multiple pregnancy reduction and foetal malformation. Radhakrishnan R et al (2019)in their study reported that In relation to chorionicity, discordancy was there in 31 cases (25%) of dichorionic pregnancy and 21 cases (28%) of monochorionic pregnancy.

Neonatal outcome- In present study, there were total 47 neonatal deaths out of which 4(16.7%) were MCMA, 17(16.3%) were MCDA and 26(7%) were DCDA. Neonatal death was most associated with monochorionic group which was 21(18.8%) (more in MCMA) than dichorionic group 26(7.2%), and the difference was found to be significant (p value= <0.001). According to Radhakrishnan R et al (2019), Perinatal mortality rate of mono- chorionic pregnancy was, 180/1000 (18%) compared to 60.5/1000 (6%) for dichorionic pregnancy, which shows a significant association with perinatal mortality and chorionicity. According to Gigi et al (2020), there were 19 perinatal deaths among 82 monochorionic cases and 13 perinatal deaths out of 130 dichorionic cases. According to Singh et al (2019), Perinatal mortality rate of monochorionic pregnancy was 30% and it was 10.2% for

dichorionic pregnancy which shows a significant association of perinatal mortality rate and chorionicity.

### Conclusion

Twin pregnancies increase the risk of morbidity and death for both the mother and the foetus, making it more difficult for the obstetrician to adequately treat and handle twin pregnancy-related issues. The current study has demonstrated that monochorionic twins have a higher risk of complications and poor perinatal outcomes than dichorionic twins. All the twins should have their chorionicity assessed via ultrasound, preferably in the first trimester. The practicality of reducing multifetal pregnancies, invasive diagnosis and therapy of discordant abnormalities, and counselling parents about their risk of prenatal morbidity and death all depend on the chorionicity of the mother. If unfavourable results are to be avoided, every effort should be taken to identify any foetal abnormalities as early as feasible and to perform the necessary interventions.

### Declarations:

**Funding:** None.

**Availability of data and material:** Department of Obstetrics and Gynaecology, Hamidia Hospital & Gandhi Medical College, Bhopal.

**Code availability:** Not applicable.

**Consent to participate:** Consent taken.

**Ethical Consideration:** There are no ethical conflicts related to this study.

**Consent for publication:** Consent taken

**What this Study Add to Existing Knowledge:** The prenatal outcome is improved by early detection of the twin pregnancy and thorough monitoring throughout the pregnancy. Regular ultrasound for the growth and wellbeing of twins especially in case of monochorionic twins. Also, perinatal mortality of monochorionic twins is much higher than

that of dichorionic twins. Reducing perinatal mortality requires good prenatal care, early diagnosis, identification and treatment of antenatal risk factors, prevention of preterm labour, close foetal surveillance, especially of monochorionic twins, and rapid therapeutic intervention. A better outcome will result from strict intrapartum monitoring, skilled obstetricians performing the delivery, liberal use of LSCS, and effective neonatal intensive care, especially for premature babies.

**Limitation and Scope of Study:** The sample size was small and the patients were recruited from health care setting. A community-based study involving large sample size and conducted at multiple centres would have revealed the actual foetal-maternal outcome in twin pregnancies and its relation to chorionicity.

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