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A HOSPITAL BASED STUDY ON NEONATAL OUTCOME IN MONOCHORIONIC AND DICHORIONIC TWIN PREGNANCIES

Gynaecology

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ABSTRACT

Background: Twin pregnancies account for 2 to 4% of the total number of births. Twin pregnancies are associated with significantly higher morbidity and mortality than are singleton pregnancies. Among the twin pregnancies, Dichorionic pregnancies occur in 70% of the total twin pregnancies. Monochorionic twins are at higher risk twins for perinatal complications. The objective of the present study is to analyze neonatal outcomes associated with Monochorionic and Dichorionic twin pregnancies.

Material and Methods: The study was Retrospective and Hospital based study conducted in Tertiary Care Hospital in Mumbai in 2018. The sample size was 50 (N=50). The patients with maternal co-morbidities like DM or other systemic illness were excluded from the study. The patients were divided into two groups, viz. Monochorionic or Dichorionic twins. The maternal age and its association with Monochorionic and Dichorionic twin pregnancy are studied. The neonatal outcome in Monochorionic and Dichorionic twins were then analyzed in terms of Birth weight, NICU stay, Neonatal deaths, etc.

Statistical analysis: The maternal age and the various neonatal outcomes in Monochorionic and Dichorionic twin pregnancy were recorded. The student t test was used to compare the difference in both groups.

Results: The maternal age was almost similar in both Monochorionic and Dichorionic twin pregnancies. The mean Birth Weight was more in Dichorionic group ($p < 0.05$). The Neonatal Outcomes like IUFD, TTTS and Discordant growth were more common in Monochorionic group as compared to Dichorionic group.

Conclusion and Recommendations: Twin pregnancy rates have increased in the past 25-30 years, particularly in developing countries. The reasons may be more advanced maternal age and increased use of assisted reproductive techniques. The neonatal mortality and morbidity in twin deliveries is high in Monochorionic pregnancy as compared to Dichorionic pregnancy. The early identification of chorionicity in early pregnancy is necessary to prevent neonatal complications.

KEYWORDS

Monochorionic, Dichorionic, Neonatal Outcome

INTRODUCTION:

Twin pregnancies account for 2 to 4% of the total number of births.[1,2,3] The twin pregnancy is associated with higher maternal and perinatal risks. The rate of perinatal mortality is two to three times higher in twins than among singleton newborn infants, primarily due to preterm birth, fetal growth restriction (FGR), low birth weight (LBW) and intrapartum anoxia.[4,5]

Twin pregnancy may result from the fertilization of two oocytes by two sperms, generating dizygotic twins, or from the fertilization of a single oocyte that will subsequently split into two similar structures, each capable of developing an individual, generating monozygotic twins.[6] Twin pregnancies are classified according to either zygosity or chorionicity, and chorionicity rather than zygosity determines the outcome.[7]

During pregnancy, twins are classified as monochorionic (MC) or dichorionic (DC) according to placentation, and MC twin pregnancies are further differentiated as monoamniotic or diamniotic. The dizygotic pregnancies are the more common than monozygotic pregnancies. The Dizygotic pregnancies, which are always dichorionic, the chorionicity in monozygotic pregnancies is determined by the time of the division of both cell masses. About 75% of the monozygotic pregnancies are monochorionic and, among the monochorionic pregnancies, and around 2% are monoamniotic.[8,9]

Chorionicity is the one of the important determinant of perinatal outcome in twin pregnancy. Monochorionic twin pregnancies are at higher risk of perinatal mortality and morbidity compared with dichorionic pregnancies due to the excess risk of preterm birth, growth discordance and complications unique to MC placentas, such as twin – twin transfusion syndrome (TTTS), twin reversed arterial perfusion (TRAP) sequence and selective intrauterine growth restriction [10,11,12,13]

Among the risk factors for twin pregnancy, advanced maternal age is well documented. [1,14]. It results from ovarian hyperstimulation due to increased gonadotrophins between the ages of 35 and 39 years old.

The maternal and infant morbidities following multiple pregnancies have not been thoroughly described in developing countries.[15,16,17,18]

This study was, therefore, conducted to determine the neonatal outcomes of twin pregnancies viz. Monochorionic and Dichorionic twins in terms of Birth weight, NICU stay, Neonatal deaths, and other neonatal morbidities.

MATERIAL AND METHODS:

The study was Retrospective and Hospital based study conducted in Tertiary Care Hospital in Mumbai in 2018. The hospital records of the twin pregnancies delivered in the hospital were anlyzed. The sample size was 50 (N=50). The patients with maternal co-morbidities like DM or other systemic illness were excluded from the study. The patients were divided into two groups, viz. Monochorionic or Dichorionic twins. The maternal age and its association with Monochorionic and Dichorionic twin pregnancy are studied. The neonatal outcome in Monochorionic and Dichorionic twins were then analyzed in terms of Birth weight, NICU stay, Neonatal deaths, etc.

Statistical analysis:

Data was first tabulated and entered in Microsoft Excel and then

analyzed. The maternal age was recorded and the various neonatal outcomes in monochorionic and dichorionic twin pregnancy were studied. The student t test was used to compare difference in both groups. A p value less than 0.05 was considered as a level of statistically significance.

RESULTS AND DISCUSSION:

Table 1: Maternal age and Type of Placenta in Twin Pregnancies (N=50)

Maternal Age	Monochorionic (23)	Dichorionic (27)
Mean Age (Years)	27.17	28.56
SD	2.04	3.65
Range	24-30 yrs	21-40 yrs

(Student't' Test, p > 0.05, Not Significant)

In the present study, the age range of the participants were between 21 to 40 yrs, with the average age being 27.17 years among Monochorionic group (SD = 2.04) and 28.56 years among Dichorionic group (SD = 3.65). The difference in maternal age in monochorionic and dichorionic group was statistically not significant (p > 0.05).

Table 2: Comparison of Mean Birth Weight (kg) among groups (N=50)

Type of Placenta	Mean Birth Weight (kg)			
	N	T1 (Mean SD)	N	T2 (Mean SD)
Monochorionic	23	01.51 00.77	22	01.44 00.69
Dichorionic	27	02.26 00.35	27	02.27 00.36
p value		*0.0001		*0.0000

(Student 't' Test, p > 0.05, Statistically Significant; T1 = Twin One, T2 = Twin Two)

The comparison of the Mean Birth Weight (kg) among Monochorionic and Dichorionic groups showed that the mean birth weight among Monochorionic group was 1.51 kg, which was significantly less as compared to 2.26 kg among Dichorionic group for Twin One (T1).

Similarly, for Twin Two (T2), the mean birth weight among Monochorionic group was 1.44 kg, which was significantly less as compared to 2.27 kg among Dichorionic group. The difference in Mean Birth Weight (kg) for T1 and T2 among for both Monochorionic and Dichorionic groups was statistically significant (p > 0.05)

Table 3: Comparison of the Mean NICU Stay (Days) among the groups

Type of Placenta	Mean NICU Stay (Days)			
	N	T1 (Mean SD)	N	T2 (Mean SD)
Monochorionic	17	12.59 10.61	15	13.47 09.87
Dichorionic	10	05.60 06.84	10	06.43 09.73
p value		*0.03268		0.0437

(Student 't' Test, p > 0.05, Statistically Significant; T1 = Twin One, T2 = Twin Two)

The Mean NICU Stay (Days) was calculated for both monochorionic and dichorionic groups, for both T1 and T2. The analysis showed that, mean NICU stay among Monochorionic was 12.59 days, which was significantly more as compared to 5.60 days among Dichorionic group for T1 (Twin One); it was statistically significant (p < 0.05).

Similarly, for T2 (Twin Two) the mean NICU stay among Monochorionic group was 13.47 days, which was more as compared to 6.43 days among Dichorionic group and the difference was statistically significant (p < 0.05). Further analysis also revealed that, 73% of the total Monochorionic twins require NICU admission, while only 37.03% of the Dichorionic twins require NICU admission.

Table 4: Comparison of Neonatal Deaths among groups

Groups	Neonatal Deaths	
	No	%
Monochorionic (23)	5	21.73%
Dichorionic (27)	0	-

In the present study, total 5 neonatal deaths were reported, all in monochorionic group only. Monochorionic group had 23 twin pregnancies and 5 neonatal deaths were reported (21.7%); whereas dichorionic group had 27 twin pregnancies and the no neonatal death was reported.

Table 5: Comparison of Congenital Malformations among the groups

Congenital Malformations	Monochorionic (N=23)		Dichorionic (N=27)	
	T1	T2	T1	T2
Total	03 (13%)	09 (39%)	0	0

(T1 = Twin One, T2 = Twin Two)

In this study group 13.0% of cases about T1 (Twin One) and 39.1% T2 (Twin Two) had a congenital malformation in Monochorionic group but no case with congenital malformation was reported from Dichorionic group.

Table 6: Comparison of other neonatal morbidities and mortalities among groups

Groups	IUFD		TTTS		Discordant Growth	
	No	%	No	%	No	%
Monochorionic (23)	2	8.7%	4	17.4%	5	21.7%
Dichorionic (27)	0	-	0	-	0	-

The analysis showed that **8.7%** of the participants among Monochorionic group had IUFD (Intra Uterine Fetal Death), whereas no case was of IUCD was observed among Dichorionic group. The analysis also showed that, **17.4%** of the participants among Monochorionic group had TTTS (twin–twin transfusion syndrome), whereas no case was observed among Dichorionic group. Also, **21.7%** of the participants among Monochorionic group had had discordant growth, whereas no case was seen among Dichorionic group.

DISCUSSION:

In the present study, the maternal age was almost similar in Monochorionic and Dichorionic Twin pregnancies. The scientific evidence suggests that advanced maternal age as an important factor for twin pregnancies.[1,14]

The mean Birth Weight of both T1 and T2 was more in Dichorionic group as compared to Monochorionic Group. Similar findings also reported from various studies.[9,19,20] The lower birth weight may be due to the difference in gestational age at delivery.

The mean NICU stay (Days) was more in Monochorionic group. Similar finding also reported in some studies.[21] The possible reason may be the neonatal morbidities occurring more commonly in Monochorionic twins as compared to Dichorionic twins and the need for Neonatal Intensive Care Unit (NICU) services.

In the present study, neonatal mortality was seen exclusively in Monochorionic group. The neonatal morbidity like LBW, congenital malformation, etc. are more common in Monochorionic Twins.[8]

Some studies advocates that in uncomplicated dichorionic twin pregnancies the delivery should be considered at 37 weeks' gestation; in monochorionic pregnancies delivery should be considered at 36 weeks.[22]

Neonatal morbidities like congenital malformations, TTTS, Discordant growth and IUFD was seen in Monochorionic group in the present study. A study reports that Monochorionic twins had worse pregnancy outcomes compared with dichorionic twins, irrespective of mode of conception.[23]

CONCLUSION AND RECOMMENDATIONS:

Twin pregnancy rates have increased in the past 25-30 years, particularly in developing countries. The reasons may be more advanced maternal age and increased use of assisted reproductive techniques. The neonatal mortality and morbidity in twin deliveries is high in Monochorionic pregnancy as compared to Dichorionic pregnancy. The chorionicity is evaluated by an ultrasonography performed early in the pregnancy, within the first 12-13 weeks of gestation. The lambda sign, typical of dichorionic pregnancies, is detected.[6,19] The early identification of chorionicity in early pregnancy is necessary to prevent neonatal complications.

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