



A CLINICAL STUDY ON COMPLICATIONS OF TWIN GESTATION

Obstetric & Gynaecology

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ABSTRACT

Background and objectives: Twin pregnancies are associated with an increased risk of obstetric complications as well as perinatal morbidity and mortality especially in developing countries. The objective of present study was to determine fetomaternal complications in twin pregnancy at a tertiary care center. **Methods:** This prospective observational study was conducted in the department of OBG, VIMS, Ballari from the period of 1st January 2021 to 31st December 2021. Consecutive sampling was done till the sample size of 75 was reached for women with twin pregnancies admitted in labor room or ANC ward with 28 completed weeks of gestation. **Results:** The incidence of twin pregnancies in this study was 1.31% and the highest incidence was observed in the age group of 21-25 years. They were seen more in multigravida (58.7%) as compared to primigravida (41.3%). Dichorionic placentation accounted for 78.7% and monochorionic 21.3%. Preterm labor (76%), hypertensive disorders (44%) anemia (21.3%) and PPH (12%) were the most common complications. Incidence of LSCS was 42.66%, most common indication was malpresentation accounting for 46.87%. In this study, 95.33% of the babies were LBW and 77.14% were referred to NICU, prematurity being the most common indication for NICU admission. Perinatal mortality rate of monochorionic pregnancy was 28.12% and it was 16.9% for dichorionic pregnancy which shows a significant association of perinatal mortality rate and chorionicity. **Interpretation and conclusion:** Twin pregnancy is a high risk pregnancy associated with significantly increased maternal morbidity, neonatal morbidity and mortality. Such pregnancies require good antenatal care, early detection of maternal and fetal complications together with thorough intranatal and postnatal vigilance and timely referral to a center well equipped for management of such cases.

KEYWORDS

Multiple pregnancies; Incidence; Monochorionic; Dichorionic; Preterm labor; LBW; IUGR; Perinatal mortality rate.

INTRODUCTION:

Multiple gestations are becoming a problem of increasing dimensions with the dramatic increase in numbers due to a trend towards late childbearing and the widespread use of assisted reproduction. The Worldwide incidence of multiple pregnancies varies considerably, it is around 2 - 20 per 1000 births. Highest burden of multiple pregnancies has been found in Sub-Saharan Africa, with an average twinning rate of 20 per 1,000 deliveries compared to 10 per 1,000 deliveries in Europe and around 5-6 per 1,000 deliveries in Asia.²⁻⁴

The number and rate of twin, triplet and higher order multiple births have also increased in India at an unprecedented pace over the past two decades and this increase in multiple births is a public health hazard as such pregnancies are associated with increased risk for both mother and the child. Maternal complications like anaemia, pregnancy induced hypertension, PPH are notably increased. In general, all potential complications with multiple pregnancies are more frequent and more serious as the number of fetuses increases.⁵

Thus, major priorities in the management of twin gestations are early and accurate prenatal diagnosis, detection and management of maternal complications and fetal growth restriction. Planning the time and mode of delivery in complicated twin pregnancies and early detection of monochorionic placentation and managing its consequences are crucial steps leading to a higher probability of successful outcome.⁶ Hence the current study is to analyze the prevalence of fetal, maternal complications, perinatal mortality and morbidity associated with twin gestation and emphasize the role of regular antenatal check up to improve the maternal and perinatal outcome in patients of twin pregnancies.

MATERIALS AND METHODS:

This prospective observational study was conducted in the department of obstetrics and gynecology, VIMS, Ballari from the period of 1st January 2021 to 31st December 2021.

Inclusion Criteria being patients admitted in labor room or antenatal ward who delivered with clinical or ultrasound diagnosis of multifetal pregnancy after 28 weeks of gestation. All consecutive cases meeting the inclusion criteria were enrolled till the sample size of 75 was reached. They were followed from admission through delivery upto

discharge of the mother from the hospital and babies were followed upto 7 days postdelivery. A pretested semi structured proforma was used for data collection. Data related to maternal age, parity, maternal medical and obstetrical complications, ultrasonography for chorionicity, fetal viability, malformations, evidence of abnormal vascular communications and presentation of both the fetuses was collected in the proforma.

The mode of delivery, intrapartum and postpartum complications, neonatal outcome in terms of birth weight, NICU admissions and perinatal death was taken into account. Examination of placenta was done to confirm the chorionicity.

RESULTS:

Table 1: Incidence of twin pregnancy.

Total No. of births	Total no. of twin pregnancies	Number of twins in percentage	Report of twin pregnancies in 1000/births
8842	116	1.31	13.11

During the study period of one year there were 8842 deliveries including 116 twin deliveries giving incidence of 1.31%.

Table 2: Maternal characteristics

Demographic variables	Most common	%
Maternal age	21-25 years	50.7
Gravida	Primigravida	41.3
	Multigravida	58.7
Gestational age	28-32 weeks	25.3
	33-37 weeks	53.3
	>37 weeks	21.3
Mode of delivery	Vaginal	43
	Caesarean section	30
	2 nd twin Caesarean	02
Presentation	Vertex -vertex	52

Maximum number of women were of 21-25 years (50.7%). Twins were seen more in multigravida (58.7%) as compared to primigravida (41.3%). 53.3% belong to 33-37 weeks of gestational age.

57.3% of twins were delivered vaginally and 40% delivered by LSCS route. Out of the 16 monochorionic pregnancies, 6(37.5%) were

delivered by LSCS and 10(62.5%) by vaginal. Out of the 59 dichorionic pregnancies, 24(40.67%) were delivered by LSCS and 33(55.93%) were delivered by vaginal.

In 2 cases, caesarean delivery was done after the delivery of first twin vaginally in view of second twin transverse lie in second stage of labour.

Most common indication is malpresentation (non-cephalic 1st twin) followed by repeat Lscs for previous caesarean cases.

Out of the 75 twin deliveries, 52% were of both vertex presentation, 18.66% of both breech, 13.33% Vx breech, 10.6% breech Vx and 5.33% vertex transverse presentation.

Table 3: Distribution according to placental morphology

Chorionicity	Frequency	Percent
Dichorionic (DCDA)	59	78.66
Monochorionic	MCDA	14
	MCMA	02
Total	75	100.0

Table 4: Etiology of twin pregnancies

Spontaneous (68)	Family history of twins (13)	Maternal side (07)
	No family history (62)	Paternal side (06)
Infertility treatment (07)	Ovulation drugs (6)	
	Ovulation drugs with IUI (01)	

Among 75 twin pregnancies, 68 conceived spontaneously and 7 had infertility treatment history. 6 among them were conceived after ovulation induction drugs and 1 conceived after ovulation induction drug along with IUI. There was a positive family history of twinning in only 13(17.33%) of twin pregnancies and it was absent in 62(82.66%) of twins. Among positive family history, 6 had paternal side history and 7 had maternal side.

Table 5: Maternal complications

MATERNAL COMPLICATIONS		No of cases (n=75)	Total Percent	Dichorionic (n=59)		Monochorionic (n=16)		P value
				No of cases	Percent	No of cases	Percent	
Antepartum	Preterm Labour	57	76	44	74.6	13	81.3	0.579
	HDP	33	44	28	47.5	5	31.3	0.247
	Anaemia	16	21.33	14	23.7	2	12.5	0.331
	PPROM+PROM	6	8	5	8.5	1	6.3	0.771
	Pulmonary oedema	1	1.33	1	1.7	0	0	
	Oligohydramnios	2	2.66	2	3.4	0	0	
	Polyhydramnios	2	2.66	1	1.7	1	6.3	
Postpartum	Antepartum haemorrhage	1	1.33	1	1.7	0	0	
	Atonic PPH	9	12	9	15.3	0	0	0.03
	Pulmonary oedema	1	1.33	1	1.7	0	0	

Preterm labor was the most frequently encountered complication seen in 76% patients, followed by hypertensive disorders of pregnancy (44%), anemia (21.33%), PPRM/PROM (8%). No maternal deaths were recorded in the study group.

Out of the 16 monochorionic pregnancies, preterm labor was present in 81.25%, HDP in 31.25%, anemia in 12.5% and PPRM+PROM in 6.25%. Out of the 59 dichorionic pregnancies, preterm labor was present in 74.57%, HDP in 47.45%, anemia in 23.72% and PPRM+PROM in 8.47%.

Table 6: Fetal complications

FETAL COMPLICATIONS	No of cases (n=150)	Total percent	Monochorionic (n=32)		Dichorionic (n=118)		P Value
			Count	%	Count	%	
Prematurity	114	76	88	74.5	26	81.2	0.646
IUGR	83	55.33	62	52.5	21	62.6	0.726
Discordancy	17	11.33	14	23.7	3	18.7	0.56

Single fetal demise	6	4	3	2.54	3	9.37	0.076
Congenital anomalies	6	4	4	3.33	2	6.25	0.657
Cord prolapse	2	1.33	0	0	2	6.25	0.01
Cord presentation	1	0.66	0	0	1	3.12	0.065

Prematurity was the most frequently encountered complication seen in 114(76%), followed by IUGR in 83 (55.33%) and 17(11.33%) babies had birth weight discordancy.

6 were single fetal demise, 6 had congenital anomalies, cord prolapse was seen in 2 and cord presentation in 1.

Out of the 32 monochorionic babies, prematurity was present in 81.2%, IUGR in 62.6%, discordancy in 18.7%, single fetal demise in 9.37%, congenital anomalies in 6.25%, cord prolapse in 6.25% and cord presentation in 3.12%. Out of the 118 dichorionic babies, prematurity was present in 74.5%, IUGR in 52.5%, discordancy in 23.7%, single fetal demise in 2.54%, congenital anomalies in 3.33% and there was no cord prolapse/cord presentation.

Table 7: Congenital anomalies

Congenital anomalies	DC	MC	Frequency
Tracheo-esophageal fistula with polydactyly	00	01	01
Semilobar holoproccephaly	02	00	02
PUV with B/L gross hydronephrosis with distended bladder	01	00	01
Bowel atresia with anal target sign	01	00	01
Cardiac anomaly	00	01	01
Total	04	02	06

Table 8: Perinatal outcome

Perinatal outcome	Dichorionic(n=118)		Monochorionic(n=32)	
	No.	%	No.	%
Alive	98	83.05	23	71.87
ENND	13	11.01	06	18.75
IUFD	03	2.5	03	9.37
Still birth	04	3.38	00	00

Among 150 babies, there were 29 perinatal mortalities i.e.19.33% perinatal mortality.

ENND were 19, IUFD were 6 and still birth were 4. Among 140 alive babies in our study 77.14% of babies needed NICU admission. MC twins needed the NICU admission (86%) more than DC twins (75%). Among 118 dichorionic babies, 13 were ENND, 3 were IUFD and 4 were still birth. Among 32 monochorionic babies, 6 were ENND, 3 were IUFD and no still birth. Prematurity and IUGR constituted for 68.42% of perinatal death followed by congenital anomalies (15.78%), birth asphyxia (10.52%) and neonatal sepsis (5.26%).

Table 9: Relationship of birth weight and perinatal mortality

Birth weight	ENND	IUFD	Still birth	Total	Percent
< 1.5 kg	12	3	4	19	65.5
1.5 - 2 kg	7	2	0	9	31.03
2.01 - 2.5 kg	0	1	0	1	3.44
> 2.5 kg	0	0	0	0	0
Total	19	6	4	29	100

Most of the deaths were in babies weighing less than 1.5 Kg (65.5 %) and higher survival rates were seen as the birth weight increased. Perinatal loss was 31.03% in birth weight 1.5kg – 2kg, 3.44 % in birth weight 2.01-2.5 kg and there were no deaths above 2.5 kg.

Table 10: Relationship of chorionicity and perinatal mortality

Type	1 st twin No.	PNM	2 nd twin No.	PNM	Total	PNM
MCMA	2	1(50%)	2	1(50%)	4	2(50%)
MCDA	14	4(28.6%)	14	3(21.42)	28	7(25%)
DCDA	59	9(15.3%)	59	11(18.6%)	118	20 (16.9%)

Table 11: Relationship of gestational age at the time of delivery and perinatal mortality

Gestational age	No. of deaths	Percent
28-32 weeks	16	55.17
31- 37 weeks	12	41.37
>37 weeks	1	3.44
Total	29	100

Perinatal mortality rate of monochorionic pregnancy was 9/32 (28.125%) compared to 20/118 (16.9%) for dichorionic pregnancy, which showed a significant association of perinatal mortality and chorionicity.

It is observed in our study that perinatal mortality largely depend on gestational age and is greater with gestational age less than 37 weeks.

Table 12: Intertwin delivery interval and perinatal mortality

Interval(min)	Frequency	Percent	Perinatal deaths	
			1 st twin	2 nd twin
0-5	46	61.33	8	11
6-10	10	13.33	2	1
11-15	6	8.00	0	0
16-30	7	9.33	2	1
31-60	4	5.33	1	2
>60	2	2.66	0	1
Total	75	100	13	16

In 46% of deliveries the intertwin delivery interval is within 5 minutes. In present study 53.84% of perinatal deaths in second twin occurred who delivered after 15 minutes of first twin delivery and 35.48% of perinatal deaths in second twin occurred who delivered within 15 minutes of first twin delivery. We observed from this study perinatal deaths in second twin is directly proportional to intertwin delivery interval. This can be explained due to premature separation of placenta after delivery of first twin, leading to hypoxia.

DISCUSSION-

Traditionally multiple pregnancies are regarded to be unfavourable, probably due to the poor perinatal outcome, increased maternal mortality and morbidity, long term developmental issues and the expensive treatment involved. In present study, we have analyzed the complications and fetomaternal outcome in twin pregnancy. We conducted a study on 75 multiple pregnancies admitted in our hospital. In the present study the incidence of twin pregnancy was 1:76 (1.31%). Incidence seen in study done by Bijal D et al¹ was 1.78% and in study done by Lata S et al⁶ was 1.85%. The high incidence of such cases may be because our institute being a tertiary care hospital and maximum number of high-risk patients are referred from other centers.

When maternal complications were analyzed, preterm labor was the most frequently encountered complication seen in 76% patients, followed by hypertensive disorders of pregnancy (44%), anemia (21.33%) and PPROM+PROM (8%). No maternal deaths were recorded in the study group.

Out of 150 babies, IUGR was found in 55.33%, birth weight discordancy (birth weight difference more than 20%) was seen in 11.33% and congenital anomalies in 4%. All these fetal complications were seen more in MC twins than in DC twins.

There were 2 cord prolapse and 1 cord presentation seen, and all three were seen in MC twins. The perinatal mortality in twins in present study was 19.33% which was comparable to the perinatal mortality (18%) by Lata S et al.⁶ Neonatal deaths were higher than still births in twins, implicating prematurity as a major cause of perinatal mortality of twins. For first twin baby, perinatal mortality was 18.66% and that in the second baby was 20%. Besides prematurity and low birth, which largely accounted for high perinatal mortality of twins, malpresentation added to the 16% of perinatal mortality.

CONCLUSION-

Multiple pregnancies bear additional hazards both for the mother and the baby. From this study we can conclude that multiple pregnancies contributes to a significant health burden and is an important cause of maternal and perinatal morbidity and mortality. Maternal complications caused by multiple gestation were preterm labour, hypertensive disorders, anemia, postpartum hemorrhage being most common. LBW mainly due to preterm labour and intrauterine growth retardation were the most important factors responsible for the neonatal deaths. Birthweight less than 1.5 kg and intertwin delivery interval were other important determinants of perinatal mortality. Monochorionicity was associated with high perinatal mortality. Therefore diagnosis of multiple pregnancy and determination of chorionicity is essential to anticipate abnormalities of monochorionicity.

All patients with multiple gestation should have a thorough first and

second trimester ultrasound examination to assess for chorionicity, amnionity, individual fetal growth and congenital malformations. Hence twin clinics should be established to focus on education about prevention of preterm birth, intensive maternal surveillance and more importantly a consistent care could reduce the incidence of very low birth weight deliveries due to preterm labour and associated perinatal mortality. Twin clinics can also provide a base for what has been an under researched aspect of obstetrics.

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