

**STUDY OF OBSTETRIC COMPLICATIONS & OUTCOME OF TWIN PREGNANCY**Swati Kagne<sup>1</sup>, Yogesh Thawal<sup>2</sup>, Sanjay Kumar Tambe<sup>3</sup>**HOW TO CITE THIS ARTICLE:**

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**ABSTRACT: INTRODUCTION:** Twin pregnancy is a rare phenomenon and significantly related to increased maternal & fetal morbidity and mortality as compared to singleton pregnancy. It is important that every physician must know the complications related to twin pregnancy and how to manage these complications. **DESIGN:** Prospective observational study **AIMS AND OBJECTIVE:** (1) To study incidence of various obstetric complications in twin pregnancy (2) To study outcome of twin pregnancy in terms of average duration of gestation, mode of delivery & neonatal outcome. **METHODS:** 59 Patients with sonographically confirmed twin pregnancy attending ante-natal care outpatient department (ANC OPD) & labor room at a tertiary care hospital in our Unit in specified period of 18 months as mentioned above were enrolled in this study and followed till delivery and thereafter in the neonatal period. **RESULTS:** In this study twin pregnancies were slightly more in multigravida. The rate of preterm delivery was 77.9%.PIH & Anaemia was more common in primigravida. Monochorionic twins had more complications than dichorionic twins. NICU admission rate in this study was 23.6%, perinatal mortality rate was 16.9% and neonatal mortality rate was 12.2%. **CONCLUSION:** Twinning in pregnancy is a high risk factor which can cause various maternal as well fetal complications. Prompt ANC care and timely intervention is required to avoid these complications.

**KEYWORDS:** Twin pregnancy, complications, neonatal outcome.

**INTRODUCTION** The human female is programmed by nature to mono-ovulate, to nurture one fetus, and to take care of one neonate at a time. This natural pattern resulted in the relatively rare birth of twins (about 1 per 80 to 100 births).<sup>1</sup>

Approximately 80% of twin pregnancies experience antepartum complications versus 25% of singletons<sup>2</sup> and hospitalization for hypertensive disorders, anemia, preterm labour, preterm premature rupture of membranes (PPROM), placental abruption and postpartum hemorrhage are elevated sixfold.<sup>3</sup>

Mothers with two fetuses are at increased risk for myocardial infarction, left ventricular heart failure, pulmonary edema, Gestational Diabetes Mellitus (GDM), operative vaginal or cesarean delivery, hysterectomy, blood transfusion, longer hospital stay and the three major causes of maternal mortality: post-partum hemorrhage, venous thromboembolism and hypertensive disorders.<sup>3</sup>

Twins have an increased risk of intrauterine fetal demise (fourfold), Twin Transfusion Syndrome (TTTS), congenital malformations, intraventricular hemorrhage, sepsis, necrotizing enterocolitis, respiratory distress syndrome and neonatal death and surviving infants of preterm multi fetal have higher rates of developmental anomalies.<sup>4</sup>

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The numbers of twin gestations have increased significantly in the past two decades, now accounting for up to 2.5-3% of all live births<sup>5</sup>. This change can be attributed to an increase in the use and success of assisted reproductive technologies.

### AIMS AND OBJECTIVES:

1. To study incidence of various obstetric complications in twin pregnancy.
2. To study outcome of twin pregnancy in terms of
  - i. Average duration of gestation
  - ii. Mode of delivery
  - iii. Neonatal outcome

**MATERIALS & METHODS:** 59 Patients were enrolled in a study from January 2012 to June 2013. Patients were studied from ANC OPD and labor room. Patients who were included in study were having sonographically confirmed twin gestation. Once included in the study patients were followed till delivery and outcome of the pregnancy was noted. 59 of such patients were studied and evaluated in detail with history, general & obstetric examination, investigation and follow up till delivery and thereafter in the neonatal period.

### INCLUSION & EXCLUSION CRITERIA:

**Inclusion Criteria:** Sonographically confirmed twin pregnancy.

**Exclusion Criteria:** Triplets or higher order multiple pregnancy.

### OBSERVATIONS AND RESULTS:

#### A) CLINICAL PROFILE:

1. **AGE:** Among the total 59 cases of twin pregnancy, 66.1% cases were between age 20 to 24, while 30.5% cases were between 25 to 30 years. Only 2 cases i.e.3.4% were more than 30 years age. (Table 1).

Sr. No.	Age	No. of cases (n=59)	Percentage
1.	20-24	39	66.1
2.	25-30	18	30.5
3.	>30	2	3.4

TABLE 1: AGE

2. **GRAVIDITY:** Out of 59 patients, 44.1% were primigravidae whereas 55.9% were multigravidae (Table 2).

Sr. No.	Gravidity	No. of cases (n=59)	Percentage
1.	Primigravida	26	44.1
2.	Multigravida	33	55.9

TABLE 2: GRAVIDITY

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### B) OBSTETRIC/ FAMILY HISTORY:

HISTORY OF TWINS	No. of cases (n=59)	Percentage
Yes	4	6.8
No	55	93.2

Total 4 cases i.e. 6.8% cases had history of twin pregnancy in self or members (Table 3)

### C).OBSTETRIC COMPLICATIONS:

1. **PRETERM LABOUR:** As shown in table 4, amongst the 59 cases 22.1% cases delivered at term i.e. between 37 to 42 completed weeks whereas 77.9% cases delivered before term i.e. before 37 completed weeks.

Gestational age At time of delivery	No. of cases (n=59)	Percentage
Term	13	22.1
Pre Term	46	77.9

TABLE 4: GESTATIONAL AGE AT THE TIME OF DELIVERY

2. **Pregnancy Induced Hypertension (PIH):** Out of 59 patients 17(28.8%) patients developed PIH. One of the patients developed eclampsia whereas 3 patients developed severe preeclampsia. None of the patient was having chronic hypertension. Only 2 patients required antihypertensive drug postnatally for up to 7 days (Table 5).

PIH	No. of cases (n=59)	Percentage
YES	17	28.8
NO	42	71.2

TABLE 5: PIH

3. **ANEMIA:** 28 patients i.e. 47.6% had developed anemia at the time of admission of which 20 patients (34% of total cases) had mild anemia; 6 cases (10.2%) had moderate anemia. 2 of the patients (3.4%) had severe anemia requiring blood transfusion (Table 6).

Anemia (Hemoglobin %)	No. of cases (n=59)	Percentage
Mild (9-10)	20	34.0
Mod (7-8.9)	6	10.2
Severe (<7)	2	3.4

TABLE 6: ANEMIA

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**6. RUPTURE OF MEMBRANES:** 6.8% patients had rupture of membranes of which 5.1% patients had PPRM whereas 1.7% patients had PROM (Table 7).

Rupture of membranes	No. of cases (n=59)	Percentage
Yes	4	6.8
No	55	93.2

**TABLE 7: RUPTURE OF MEMBRANES**

### D) INVESTIGATIONS:

**CHORIONICITY:** The chorionicity could be confirmed from the earliest ultrasonography available preferably first trimester ultrasonography. 72.9% patients had diamniotic dichorionic twins while 16.9% twins were diamniotic monochorionic. 5 among the 59 patients (8.5%) had monoamniotic monochorionic twins. One patient who delivered outside our hospital did not have ultrasonography report mentioning chorionicity available (Table 8).

Chorionicity	No. of cases (n=59)	Percentage
Diamniotic/ Dichorionic	43	72.9
Diamniotic/ Monchorionic	10	16.9
Monoamniotic/ Monchorionic	5	8.5
Delivery Before Admission	1	1.7

**TABLE 8: CHORINICITY**

### E) PREGNANCY OUTCOME:

**MODE OF DELIVERY:** The majority of the patients i.e. 79.6% delivered vaginally spontaneously while 8 patients (13.6%) required caesarean section for various emergency obstetric indications of which 2 patients required caesarean section for section for second fetus in transverse lie, while one patient had undergone elective caesarean section (Table 9).

Mode of delivery	No. of cases (n=59)	Percentage
<b>VAGINAL</b>		
Spontaneous	47	79.6
Insuction	3	5.1
<b>LSCS</b>		
Emergency	8	13.6
Elective	1	1.7

**TABLE 9: MODE OF DELIVERY**

### F) PERINATAL OUTCOME

1. **LOW BIRTH WEIGHT:** Out of the total 118 babies delivered among study group, 17 (14.4%) babies had birth weight less than 1 kilogram, of which 9 fetuses had died in utero.

Among the 23 (19.5%) babies weighing 1 to 1.5 kg, three had died in utero while among the 12 patients requiring NICU admission, 5 died in NICU in first 28 days of life due to either RDS or complications secondary to prematurity or low birth weight (Table 9).

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Among the 73 fetuses more than 1500 grams, 5 babies required NICU admission. None of these babies required ventilator support and all were discharged home within 28 days of admission (Table 9).

Majority i.e. 61.9% of the fetuses weighed 1.6 to 2.5 kilogram (Table 9). Only 4.2% fetuses were more than 2.5 kg. 95.8% babies were low birth weight. Among the low birth weight babies, prematurity was the major contributor (Table 9).

Birth Weight (Kilograms)	No. of cases (n=118)	Percentage
<1	17	14.4
1-1.5	23	19.5
1.6-2.5	73	61.9
>2.5	05	4.2

**Table 9: Birth Weight**

**2. PERINATAL OUTOCME:** Among the 118 fetuses, one fetus was anomalous with omphalocele and had died in utero. Total 12 fetuses (10.2%) died in utero while among the live babies, 25 (23.6%) required NICU stay. Among the live born babies, 8 (7.5%) died in early neonatal period and 5 (4.7%) died in the late neonatal period. Thus perinatal mortality was 16.9%. Neonatal mortality was 12.2%. Overall, among 118 fetuses delivered, 78.8% survived till the neonatal period whereas, survival among the live born was 87.8% (Table 10).

Outcome of baby	No. of cases (n=59)	Percentage
IUD	12	10.2
Live Born	106	89.8
Outcome of born babies	No. of cases (n=106)	Percentage
NICU admission	25	23.6
Early NND (within 7 days)	8	7.5
Late NND (between 7 to 28 days)	5	4.7
Survival among the live born	93	87.8

**TABLE 10: OUTCOME OF THE BABY**

### G) COMPARATIVE ANALYSIS OF THE DATA:

1. **PRETERM DELIVERY AND GRAVIDITY:** Of the total 26 primigravida, 20 patients i.e. 76.9% delivered term while 78.7% (26/33) multigravida delivered before term ( $P = 0.88$ ). Hence the incidence of preterm labour among the primigravida and multigravida is almost similar (Table. 11).

GRAVIDITY	PRETERM	TERM	TOTAL
PRIMIGRAVIDA	20	06	26
MULTIGRAVIDA	26	07	3
<b>TOTAL</b>	46	13	59

**TABLE 11: PRETERM DELIVERY AND GRAVIDITY**

$P = 0.884$ , chi square (DF = 1) = 0.021

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2. **ANEMIA AND GRAVIDITY:** 50% Of the primigravida (13/26) with twin pregnancy developed anemia, while 45.4% (15/33) of the multigravida developed anemia (P = 0.93). Thus prevalence of anemia was slightly more in primigravidae with twin gestation than multigravida with twin gestation (Table 12).

GRAVIDITY	ANEMIA		TOTAL
	YES	NO	
PRIMIGRAVIDA	13	13	26
MULTIGRAVIDA	15	18	33
<b>TOTAL</b>	<b>28</b>	<b>31</b>	<b>59</b>

**TABLE 12: ANEMIA AND GRVIDITY**

P = 0.932, chi square (DF = 1) = 0.007

3. **PIH AND GRAVIDITY:** While 46.1% of the primigravida (12/36) developed PIH only 15.1% of the multigravida (5/33) developed PIH (p = 0.02). Thus primigravidae with twin gestation are three times more prone to develop PIH compared to multigravidae with gestation (Table 13).

GRAVIDITY	PIH		TOTAL
	YES	NO	
PRIMIGRAVIDA	12	14	26
MULTIGRAVIDA	05	28	33
<b>TOTAL</b>	<b>17</b>	<b>42</b>	<b>59</b>

**TABLE 13: PIH AND GRAVIDITY**

P value = 0.020, chi square (DF = 1) = 5.387

4. **CHORIONICITY AND PERINATAL DEATHS:** 26.6% of the fetuses with monochorionic placenta (8/30) died in perinatal period whereas 13.9% (12/86) of the fetuses with dichorionic placenta died in the perinatal period (p=0.19) (Table 14) Thus perinatal deaths in twins with monochorionic placenta were double the perinatal deaths in twins with dichorionic placenta. Though the difference was not statistically significant (p=0.19) due to the presence of confounding factors and smaller sample size.

CHORIONCITY	PERINATAL DEATH		TOTAL
	YES	NO	
MONOCHORIONIC	08	22	30
DICHORIONIC	12	74	86
<b>TOTAL</b>	<b>17</b>	<b>96</b>	<b>116</b>

**TABLE: 14**

P value = 0.191, chi square (DF = 1) = 1.707

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(Because one patient, who delivered outside this hospital and referred after delivery, was not having USG report commenting the chorionicity and her placenta could not be examined post-delivery, chorionicity of only 58 deliveries were compared with their perinatal outcome of babies.)

**DISCUSSION:** The perinatal morbidity and mortality are increased in twin gestations so practitioners of obstetrics should familiarize themselves with these complications and their management and prevention.

The increased rate of various obstetric complications in twin pregnancy emphasises the need to study the incidence of these complications in various populations. Spellacy et al (1990),<sup>6</sup> compared 1253 twin pregnancies with 5119 singletons. The results showed that the women with twin pregnancies were complicated by increases in hypertension, abruption, anemia, preterm labour, congenital anomalies and fetal and neonatal mortality.

Twin pregnancies in low - resource settings poses higher fetomaternal risks due to scarcity of human and material resources, which translate into insufficient care during pregnancy and delivery. This is particularly true of countries like India with limited health infrastructure<sup>7</sup> Therefore, twin pregnancies in developing countries expose mother and infants to extremely high risks. As twin gestations can contribute significantly to maternal and perinatal morbidity and mortality, it is important to investigate the magnitude of the increase in fetomaternal risk.

In the present study, two third of the cases were between 20 to 24 years of age, while one third of the cases were between 25 to 30 years.

Even with increasing age of twin pregnancy all over the world, the twinning rate in this study peak around such a younger age of 23. Is it because of the early marriages still prevalent in this part of the world...?

Twin pregnancies were slightly more in multigravida (55.9%) than primigravida (44.1%) in our study (Table 2). Spellacy et al (1990)<sup>6</sup> found that women with twin pregnancies were slightly older and had a higher parity.

Our study includes 2 patients who had history of twin pregnancy in previous pregnancy whereas one of the patients was herself a twin. One of the patient's mother was a twin herself. Thus total 4 cases i.e. 6.8% cases had history of twin pregnancy in self or family members (Table 3). Hamamy et al (2004)<sup>8</sup> from their study of an extended multi-generation family reported familial monozygotic twinning compatible with autosomal dominant inheritance with reduced penetrance.

The rate of preterm delivery in our study was 77.9%. Mean gestation age at the time of delivery was 34 week 02 days. Approximately 45% of twins deliver before 37 weeks according to vital and health statistics United States (1988)<sup>9</sup> which make us think about other factors responsible for preterm labour in twin gestation in developing countries.

Rate of preterm labour in twin gestation may be influenced by many factors like anemia, PIH, recurrent infections, racial differences in cervical incompetency and many other factors which may be more prevalent in developing countries. Surprisingly, preterm births in our study are much more than those in United States even though the mentioned data in the US statistics is 25 year old which make us believe that further research is needed to find out those inherent factors influencing preterm labour which are not affected by geographical variations.

According to Aziz, Soomro (2012), Twin pregnancies in women of low socioeconomic profile result in very high rates of pre-term births and mean gestational age was 34.76 weeks<sup>10</sup> similar to



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observations in present study (34.43 weeks). Rate of preterm birth was 58.82% which was lower than the rate of 77.9% in the current study. The higher rate of preterm delivery in present study can be attributed to multiple factors other than twins like, anemia infections, PIH etc.

While 78.7% of the multigravidae delivered preterm, 76.9% primigravidae also delivered preterm. Thus there was almost no difference in preterm delivery rate among the primigravidae and multigravidae. Jaspinder Kaur and Kawaljit Kaur (2012)<sup>11</sup> when compared obstetric complications in primiparous and multiparous women found different results and concluded that compared to multiparity, primiparity had a higher tendency to have preterm labour.<sup>11</sup>

While 46.1% of the primigravida developed PIH, only 15.1% of the multigravida developed PIH. Thus we found that, PIH was three times more common in primigravidae with twin gestation compared to multigravidae with twin gestation. Owiredu et al (2012) in their study of risk factors of pregnancy-induced hypertension among Ghanaian pregnant women concluded that nulliparity was not a risk factor for pre-Eclampsia but was a risk factor for Gestational Hypertension.<sup>12</sup>

Jaspinder Kaur and Kawaljit Kaur (2012) compared obstetric complications in primiparous and multiparous women and concluded that compared to multiparity, primiparity had a higher tendency to have Pregnancy Induced Hypertension (15.38%).<sup>11</sup> Similar results were found by Long et al (1987).<sup>13</sup> In their study of 642 twin pregnancies, incidence of preeclampsia was 35.2% in primiparas with twins and 20.4% in multiparas with twins.

Almost half of our patients developed anemia (Table 12). Cunningham et al<sup>14</sup> (2001) concluded that, the "Physiologic anemia" which is the relative anemia occurring in pregnancy owing to a 40% to 45% increase in blood volume with a corresponding increase in red blood cell volume of only one third, is more pronounced in twin gestations. According to Aziz and Soomro (2012) Twin pregnancies in women of low socioeconomic profile result in very high rates of anemia, of which 18.48% patients had severe anemia.<sup>10</sup>

Comparatively, even though half of our patients were anaemic, only 3.4% patients had severe anemia. 50% of the primigravidae with twin pregnancy developed anemia, while 45.4% of the multigravida with twin gestation developed anemia Thus anemia was slightly more common in primigravidae than multigravidae. Jaspinder Kaur and Kawaljit Kaur (2012) compared obstetric complications in primiparous and multiparous women and concluded that Compared to multiparity, primiparity had a higher tendency to develop anemia.<sup>11</sup>

Among the patients presenting to labour room or OPD during the study period, 6.8% patients had rupture of membranes of which 5.1% patients had preterm premature rupture of membranes (PPROM) whereas 1.7% patients had premature rupture of membranes (PROM) at term. Mercer et al (1993).<sup>15</sup> compared outcomes of PPRM in 99 twin pregnancies versus 99 matched singletons. They found that PPRM was twice as common in twins as in singletons (7.4% versus 3.7%).

72.9% patients had diamniotic dichorionic twins, 16.9% patients had diamniotic monochorionic twins while 8.5% patients had monoamniotic monochorionic twins. Perinatal deaths in twins with monochorionic placenta were double those of the twins with dichorionic placenta. The difference was not statistically significant ( $p = 0.19$ ) due to the presence of confounding factors and smaller sample size.

Manso et al (2011)<sup>16</sup> studied a case series over 10 years and tried to find out the association of chorionicity and perinatal complications in twin Pregnancy and concluded that, as the morbidity and mortality associated with Pregnancy and concluded that, as the morbidity and mortality



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associated with monozygotic pregnancies are higher, it is essential to perform an early detection of chorionicity by ultrasound (11-13 weeks) in order to place differentiated prenatal and appropriate peripartum surveillance.

Hack et al (2008) <sup>17</sup> proved that perinatal mortality was 11.6% in monozygotic twin pregnancies and 5.0% in dizygotic twin pregnancies.

Lopriore et al (2008) <sup>18</sup> studied that perinatal mortality was 2% (3/148) in monozygotic twins and 0% (0/766) in dizygotic twins (P = 0.004) and concluded that at term, monozygotic twins have a higher risk for perinatal mortality.

Majority of our patients i.e. 79.6% delivered vaginally spontaneously while 3 patients (5.1%) required induction of labour.

Price and Marivate (1986)<sup>19</sup> studied Induction of labour in twin pregnancy and concluded that induction of labour is an acceptable form of management of high-risk twin pregnancy.

Only 4.2% fetuses were more than 2.5 kg whereas 95.8% fetuses were having low birth weight (Table 9), with prematurity as the major contributor of the low birth weight. 10.2% of the fetuses died in utero.

Singh et al (2013) <sup>20</sup> studied associations for birth weight of twin pairs in south India and concluded that birth weight of twins was significantly associated with chorionicity, obesity, PIH and nulliparity in their study population.

Murata et al (2013) <sup>21</sup> studied perinatal outcome of monozygotic monoamniotic twin gestation. In the study of 38 MM twin pregnancies (76 fetuses), the perinatal mortality rate was 2% and the neuro morbidity rate was 8%. The overall survival rate was 75%.

**CONCLUSION:** Thus in this prospective observational study of 59 twin gestations, we found increased maternal complications like preterm labour, anemia, PIH. We also found higher perinatal morbidity and mortality, more so in twins with monozygotic placenta.

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