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## Original Research Article

# Incidence and maternal outcome of twin pregnancy

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### ABSTRACT

**Background:** Twin pregnancy is a high-risk pregnancy with different prevalences in different regions of world which is on the rise due to growing use of assisted reproductive technology. The objective of this study is to determine the incidence and maternal complication and outcome of twin pregnancies.

**Methods:** This is a prospective observational study conducted in 2016-2017 in NSCB medical college and hospital, Jabalpur on 67 twin deliveries. Final outcome was given in terms of percentage and ratio.

**Results:** After assessment of 5995 deliveries during the period 2016-2017 the incidence of twin pregnancy was 1.12 percent. In present study 83.6% of patients were in the age group of 21-30 years. Majority 56.7% were unbooked. 50.7% were primipara. Family history of twin pregnancy was found in 31.3% cases and 17.9% cases have history of ovulation inducing agent. Maximum 65.7% delivered between the gestational age 29-37weeks. Mostly 59.7% were dichorionic-diamniotic twins. Preterm delivery occurred 72.5% in Diamniotic Dichorionic and 85.7% in Monoamniotic Monochorionic. 49.3% cases were having both babies with cephalic presentation. 29.9% twins delivered by cesarean section. most common indication for LSCS in twin pregnancy was malpresentation. Most common complication was preterm labour (52.2%) followed by anaemia and preeclampsia.

**Conclusions:** Twin pregnancy had higher likelihood of maternal adverse effect. The higher morbidity and mortality is due to high percentage of patient being unbooked and majority receive no therapeutic intervention until admission. So all efforts should directed towards better quality antenatal care of twin carrying mother.

**Keywords:** Anaemia, Maternal complication, Maternal outcome, Twin pregnancy

### INTRODUCTION

Development of two fetuses simultaneously in the uterus is termed as twin pregnancy.<sup>1</sup> Such pregnancies are associated with increased risk for both mother and child, and this risk increases with the number of offsprings.

Twinning is a result of fertilisation of two separate ova (dizygotic) and about one third of cases arise from division of a single ovum into two separate embryo (monozygosity).<sup>2</sup> 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<sup>3</sup>.

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.<sup>4</sup>

The incidence of monozygotic twins is uniform throughout the world, 3.5 per 1000 live births. In contrast the incidence of dizygotic twins is affected by multiple

factors and varies between 4 to 50 per 1000 livebirths. This wide variation in the incidence of dizygotic twins is due to multiple variables such as the use of artificial reproductive technology, ethnic differences, and maternal age.<sup>5</sup> The aims and objectives of this study are to study the incidence of twin pregnancies and to evaluate the maternal complications and outcome in twin pregnancy.

## METHODS

Study design: Prospective observational study. Study period: 1<sup>st</sup> March 2016 to 31<sup>st</sup> March 2017. Study area: Department of Obstetrics and Gynaecology NSCB Medical College and Hospital, Jabalpur, Madhya Pradesh. Sample size: 67 twin deliveries were observed. Fisher's exact test and chi square test were applied. Final outcome of maternal and perinatal complications was given in terms of percentage and ratio.

### Inclusion criteria

- All women in reproductive age group i.e. 15-45 years.
- Twin gestation with 20 completed weeks.
- All women booked or unbooked delivered in our hospital.

### Exclusion criteria

- Women with gestational age less than 20 weeks.
- Women with more than 2 fetuses (triplets, quadruplets).

### Procedure planned

This study included subjects, fulfilling inclusion criteria, admitted and delivered in GLR, Department of Obstetrics and Gynaecology, NSCB Medical College and Hospital, Jabalpur, Madhya Pradesh.

- Informed consent was taken from the subjects to be included in study.
- History of spontaneous conception, intake of ovulation inducing agent and previous medical diseases were taken.
- Detailed Obstetrics history was recorded.
- General physical examination, per abdominal examination, pelvic examination was done.
- Required investigations were done.
- Socio-demographic data collected.
- Placenta examined to confirm the chorionicity.
- Study was conducted during antenatal, labour and post-natal period till the patient discharged.
- Appropriate statistical methods were applied.

Continuous maternal and fetal monitoring was implemented throughout labor. Mode of delivery was planned with the decision based on fetal conditions, presentation and other obstetrical indication. Help from

other faculties as competent pediatrician and anesthetist were called for in anticipation of any fetal and maternal complications respectively. Careful watch was kept over mother and babies.

## RESULTS

During one-year study period 67 patients presented with twin pregnancy out of 5995 deliveries. This yielded an incidence of 1.12%. Majority (56.7%) of the patient had not received quality antenatal care, they were unbooked. Maximum twin pregnancy mothers were in age group of 21-30 years (83.6%). The next larger group is more than 30 years age (Table 1).

**Table 1: Demography and obstetrics characteristics of the study (n=67).**

Demography and obstetrics characteristics	Frequency	Percentage
<b>Age (year)</b>		
<21 years	5	7.5
21-30 years	56	83.6
>30 years	6	9.1
Total	67	100
<b>Gestational Age</b>		
≤28 weeks	6	9
29-36 weeks	44	65.7
≥37 weeks	17	25.4
Total	67	100
<b>Parity</b>		
Primi	34	50.7
2-3	23	34.3
>3	10	14.9
Total	67	100

Majority cases were from rural area (67.2%) and 32.8% from urban area. In our study 38.8% cases are educated up to middle class, 26.9% cases educated up to primary level and 6% cases were illiterate. 70% cases belonged to lower Socio-economic status. Family history of twin pregnancy was present in 31.3% cases. In the present study conception occurred spontaneously in 82.1% cases, while in 17.9% cases conception occurred after the use of ovulation inducing agent (Table 2).

**Table 2: Distribution of cases according to probable etiological factors.**

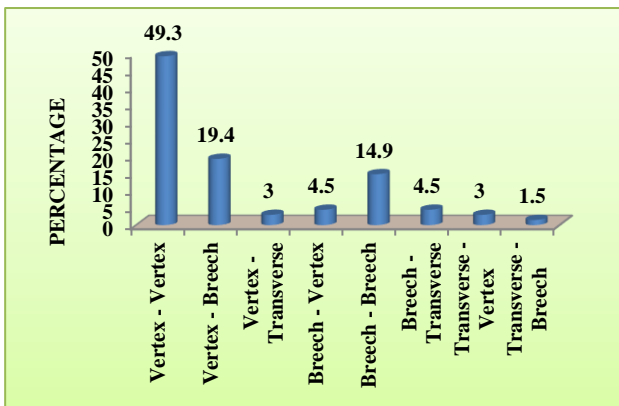
Parameters	Frequency	Percentage
<b>Family history of twin pregnancy</b>		
Present	21	31.3
Absent	46	68.7
Total	67	100
<b>History of taking ovulation inducing agent</b>		
Present	12	17.9
Absent	55	82.1
Total	67	100

In present study 74.6% (65.7%+9%) twin pregnancy cases delivered preterm (before 37 weeks gestation) and 25.4% cases delivered after term gestation. Majority 50.7% twin pregnancy cases were primipara (Table 3).

**Table 3: Distribution of cases according to maternal complication.**

Complication	Frequency	Percentage
Anaemia (moderate and severe)	20	29.9
Preeclampsia	20	29.9
Abruptio placenta	3	4.5
Preterm (<34 weeks)	35	52.2
Hyperemesis gravidarum	1	1.5
Eclampsia	10	14.9
PROM	16	23.9
PPH	3	4.5
Total	108	>100

In this study 49.3% cases were having both babies with cephalic presentation and this was the commonest of all combination of presentation. Second most common presentation was vertex-breech (19.4%) and third common presentation was breech-breech (14.9%) (Figure 1).



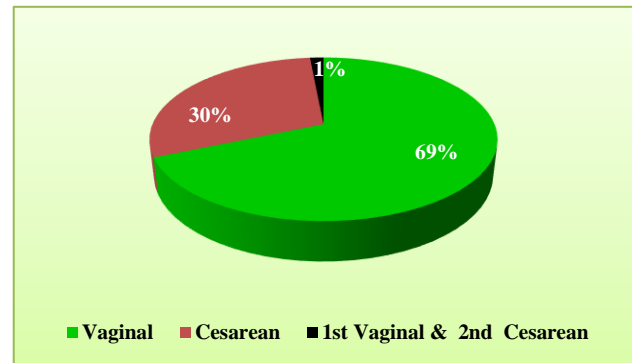
**Figure 1: Distribution of cases according to presentation at the time of birth.**

In present study mostly 59.7% were dichorionic-diamniotic twins, 29.9% monochorionic-diamniotic twins, and 8.9% were monochorionic-monoamniotic twins. According to mode of delivery most of 68.7%

**Table 4: Association between onset of labor and placenta chorionicity.**

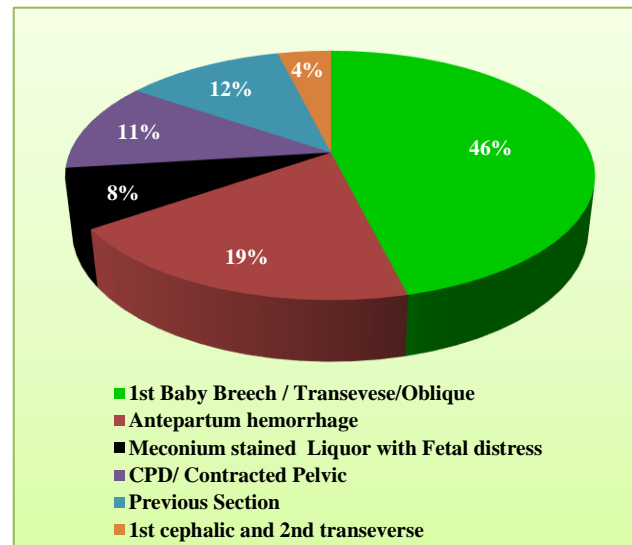
Onset of labor	Diamniotic-dichorionic	Diamniotic-monochorionic	Monoamniotic-monochorionic
Preterm labor (<37 weeks)	31 (72.1%)	14 (77.8%)	5 (83.3%)
Term labor	12 (27.9%)	4 (22.8%)	1 (16.7%)
Total	43 (100%)	18 (100%)	6 (100%)

cases of twin pregnancy delivered vaginally, cesarean section was done in 20% cases. Only one case 1<sup>st</sup> baby delivered vaginally and 2<sup>nd</sup> baby delivered by cesarean section (Figure 2).



**Figure 2: Distribution of cases according to mode of delivery.**

Most common indication for caesarean section in twin pregnancy was 1<sup>st</sup> baby other than cephalic presentation which was 57.1%, 2<sup>nd</sup> most common 23.8% was antepartum eclampsia. In only one case reason was 1<sup>st</sup> cephalic and 2<sup>nd</sup> baby transverse lie (Figure 3).



**Figure 3: Distribution of cases according to indication of LSCS.**

In present study, interval between the delivery of two fetuses was not more than 20 minutes, except only in one case where caesarean section was performed for delivery of second twin. Preterm deliveries more in monoamniotic-monochorionic twins (83.3%) as compared to diamniotic-monochorionic twins (77.8%) and diamniotic-dichorionic twins (72.1%) (Table 4).

#### *Maternal outcome*

In this one-year study, out of 67 cases 2 cases died due to antepartum eclampsia and severe anaemia. Both cases were unbooked. Most common maternal complication was preterm labor occurring in 52.2% cases, followed by anaemia in 29.9% cases, preeclampsia in 29.9% cases, premature rupture of membrane occurred in 23.9% cases followed by eclampsia in 14.9% cases. Other complications were abruptio placentae, postpartum haemorrhage and hyperemesis gravidarum. Maternal complications mostly occurred in unbooked cases (Table 2).

### **DISCUSSION**

Twin pregnancy is a high-risk pregnancy with unique complications which have important implications on the maternal outcome, compared to singleton pregnancy. It is also a high-risk delivery especially so for the second twin. The present study was carried out in 67 cases of twin pregnancy admitted and delivered in Department of Obstetrics and Gynaecology, N.S.C.B Medical College, Jabalpur, Madhya Pradesh, India from 1<sup>st</sup> March 2016 to 1<sup>st</sup> March 2017.

#### *Incidence*

Incidence of twin pregnancy varies from country to country. Highest rate is seen in African American women and lower in white women, Hispanic, Asian and Native American women comparatively. In this study, the Incidence of twin deliveries during the period 2016-17 observed was 1.12 percent. Sanjay P et al, 2016 reported incidence was 1.7%.<sup>1</sup> Latasingh et al, 2017 showed incidence was 1.85%.<sup>3</sup> Pandey MR et al, 2015 showed incidence of twin pregnancy is 1.9/1000 live births.<sup>5</sup> Assucao RA et al, 2010 reported the incidence of twin pregnancy 3.4%.<sup>6</sup>

#### *Maternal age*

In this study, it was found that 83.6% of patients were in the age group of 21-30 years. 7.5% were <21 year and 9% were >30 years old. Mean age is higher in twin pregnancy. Sanjay P et al, 2016 reported 89% of the mothers were in age group of 21-30 years.<sup>1</sup> Pandey MR et al, 2015 showed mean maternal age was 20-25 year in 37.4% cases.<sup>5</sup> Bhavanas et al, 2014 reported, 73.3% cases were in mean age group of 20-25 years.<sup>7</sup> In all study higher incidence of twinning was in age group of 21-30 years.

#### *History of twin pregnancy in family*

In this study, family history of twinning was found in 31.3% of cases, which is similar to the study conducted by Pandey MR et al, 2015 reported family history of twin pregnancy in 4.3% cases.<sup>5</sup> Sultana et al, 2011 reported that 36% of mothers showed family history of twin pregnancy.<sup>8</sup>

#### *History of ovulation inducing agent*

In this study 17.9% cases have history of ovulation inducing agent for conception. Sanjay P et al, 2016 reported that 34% of the twins occurred after the use of ovulation inducing agent.<sup>1</sup> Pandey MR et al, 2015 showed 2.2% of twin occurred after use of ovulation inducing agent.<sup>5</sup>

#### *Quality care (booked/ unbooked)*

In this study 56.7% cases were unbooked. This shows lack of accessibility to antenatal services by majority of women. Sanjay P et al, 2016 showed 41% cases were unbooked.<sup>1</sup> Pandey MR et al, 2015 showed 95.7% cases were unbooked.<sup>5</sup>

#### *Parity of mother*

In this study, 50.7% females were primipara and 14.9% were multipara. Sanjay P et al, 2016 showed mostly cases were primigravida (70%).<sup>1</sup> In Veronica et al most cases were primigravida (48%).<sup>9</sup> This may be attributed to the increasing number of patients with infertility, treated with ovulation induction.

#### *Gestational age*

In this study maximum (65.7%) delivered between the gestational age 29-37 weeks. Pandey MR et al, 2015 showed mean gestational age was 34.6 week and mostly delivered between 33-36 week of gestation.<sup>5</sup> Rizwana et al (2010) most of the women presented with preterm labour at before 36 weeks (84%).<sup>10</sup> The duration of gestational age is shorter in multiple pregnancy due to undue stretching of uterus and excessive enlargement of uterus leading to early ripening of cervix and loss of polarity of uterus.

#### *Presentation of twins*

In this study 49.3% cases were having both babies with cephalic presentation and this was the commonest of all combination of presentation. Second most common presentation was vertex-breech (19.4%) and third common presentation was breech-breech (14.9%). In Sultana et al (2011) showed 98% vertex-vertex, 16% vertex-nonvertex and 36% nonvertex (first twins).<sup>8</sup> Thus there is high incidence of malpresentation at the time of delivery in twin gestation.

### ***Chorionicity of placenta***

In our study mostly 59.7% were dichorionic-diamniotic twins, 29.9% were monochorionic-diamniotic twins, and 8.9% were monochorionic-monoamniotic twins. Preterm delivery occurred 72.5% in diamniotic-dichorionic and 85.7% in monoamniotic-monochorionic. Katarzyna Kosinska Kaczunska et al (2016) this study shows dichorionic twins (76.6%) and monochorionic twins were 23.4%, including 1.7% monochorionic-monoamniotic twins.<sup>11</sup> In this study 66.5% of the women delivered before 37 weeks of gestation, significantly more women in the monochorionic than the dichorionic group.

### ***Mode of delivery***

In this study most common mode of delivery in twin pregnancies are vaginal (68.7%). Pandey MR et al, 2015 showed mostly 54% of cases delivered vaginally.<sup>5</sup>

### ***Indication for cesarean section***

In present study the most common indication for LSCS in twin pregnancy was 1<sup>st</sup> baby other than cephalic presentation which was 57.1%, 2<sup>nd</sup> most common 23.8% was APE. CPD and previous section present in 14.3% and 14.3% cases respectively. Sanjay P et al 2016, reported most common indication for caesarean section was malpresentation in 50% cases.<sup>1</sup>

### ***Maternal outcome***

In this study out of 67, 2 cases died due to maternal complication APE and severe anaemia. Most common complication was preterm labour (52.2%) followed by anaemia in 29.9% cases, preeclampsia in 29.9% cases, PROM occurred in 23.9% cases followed by eclampsia in 14.9% cases. Other complications were abruptio placentae, PPH and hyperemesis gravidarum. Maternal complication occurred more in unbooked cases.

Sanjay P et al, 2016 most common complication was preterm labor (70% cases).<sup>1</sup> Singh L et al, 2017 showed preterm labor in 74.7% cases, anaemia in 44% cases, PIH in 32% cases and PPH in 13.33% cases.<sup>3</sup> Pandey MR et al, 2015 showed four leading maternal complications were preterm 62.58% cases, anaemia 8.6% cases, PIH in 5% cases and APH in 2.2% cases.<sup>5</sup> Saravanan S et al, 2017 showed maternal complications was PROM in 13.3% cases, PPH in 6.7% cases, PIH in 20% cases and anaemia in 33.3% cases.<sup>12</sup> Thus the most common complication was preterm labor. Anaemia is found to be more frequent in twin pregnancy because, iron demand is increased due to increase in red cell mass and the additional iron requirement of two fetuses.

### **CONCLUSION**

Twin pregnancy had higher likelihood of maternal and fetal adverse outcome. Multiple pregnancies were more

frequently associated with complication like pregnancy induced hypertension, anaemia, malpresentation, preterm labor and postpartum hemorrhage. The incidence of low birthweight babies was quite high in twin pregnancy. The higher morbidity and mortality is due to high percentage of patient being unbooked and majority receive no therapeutic intervention until admission. In conclusion the basic mantra to prevent the maternal morbidity and mortality:

- Better quality antenatal care of twin carrying mother with frequent antenatal visits, awareness and educating them regarding antenatal care and taking extra precautions for better outcome.
- By prevention and early detection of complication like anaemia, preeclampsia, survival rate of women and babies can be improved to a great extent in developing countries.
- Early referral of twin pregnant mother to an Institution with proper ultrasound facilities and neonatal intensive care unit.
- Counselling and close monitoring of women using ovulation inducing therapies. We can also reduce the frequency of twins pregnancy in first place, includes limiting the number of embryos transferred in IVF.
- There is a need for quality obstetric care health services to get a better fruitful outcome.
- To combat this health problem, drastic changes are needed which requires active participation of community, government and nongovernment organization doctors and nurses every pregnancy should be culminate in: healthy mother and healthy baby.

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