

ORIGINAL ARTICLE

## Singleton versus twin pregnancy: maternal complications and neonatal outcome

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### ABSTRACT

**BACKGROUND:** Twin pregnancies are associated with increased perinatal morbidity and mortality as well as higher rate of cesarean deliveries. The obstetric complications include preterm labor, anemia, pregnancy induced hypertension, postpartum hemorrhage, prematurity and low birth weight. are more associated with twin pregnancy. **MATERIALS AND METHODS:** All patients with twin pregnancy coming to labour room during one year were included and same no. of controls were taken to carry out the prospective observational case control study. **RESULTS:** In our study, there were 21.1% cases of preeclampsia, 3.5% cases of antepartum eclampsia, 40% cases of preterm labour, 32.9% cases of cesarean section, 17.6% cases of PROM, 85.8% cases of anemia, 1.1% PPH, 1.1% APH and 1.1% GDM. 47(55.2%) babies in case group were premature while only 25(29.4%) babies in control group were premature. **CONCLUSION:** Our study indicates that twin pregnancy is associated with increased risks of preterm delivery, preeclampsia, anemia and cesarean section delivery. Prematurity is the main cause for higher incidence of neonatal morbidity.

**Key words:** Twin pregnancy, Singleton pregnancy, Obstetrics complications, Prematurity.

### INTRODUCTION

Twin pregnancy is the simultaneous development of two embryos in the uterus. Twins are inherently different from singletons by their very nature and at higher risk of maternal and fetal complications.<sup>1</sup>

The incidence of twin pregnancy varies in different parts of world. In developed countries it has increased mainly due to widespread availability of ovulation inducing agents, assisted reproductive techniques and delayed child bearing by women.<sup>2</sup> Other factors include family history of twinning, maternal height, weight, previous history of twin pregnancy.<sup>3</sup>

Although twin pregnancy are usually welcome, the excitement of twin pregnancy can often be overshadowed by unforeseen complication. This study

aims to compare maternal and fetal complications, as well as the obstetric outcome of twin pregnancies in comparison with singleton pregnancies.

### MATERIALS AND METHODS

Our study is a prospective observational case control study. All patients with twin pregnancy coming to labour room during 1<sup>st</sup> January, 2015 to 30<sup>th</sup> December, 2015 fulfilling exclusion and inclusion criterias were included and same no. of controls were taken to carry out the study..

#### Inclusion criteria for the control:

A patient who had singleton pregnancy

- Primi or multigravida
- Booked, emergency or referred.
- Gestational age more than or equal to 28 weeks
- Patient in labour
- Patient immediately delivered before or after following twin delivery and not having any complication related to pregnancy.

#### Inclusion criteria for the cases:

A patient who had twin pregnancy

- Primi or multigravida
- Booked, emergency or referred.
- Gestational age more than or equal to 28 weeks

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- Patient in labour

### Exclusion criteria for cases and controls:

- Medical disease (e.g. heart disease, renal disease, respiratory disease, chronic hypertension etc).
- Patient delivered outside hospital.

All data related to prenatal admission and intrapartum and postpartum details of the mother and infants, were collected on a specially designed proforma for both, the cases and controls.

Multiple factors like maternal age, parity, gravidity, socio-economic status, past and family history of multiple pregnancy were noted.

Main outcome measures are prenatal maternal complications (Hypertensive disorders of pregnancy, Premature labour, Anaemia, Antepartum haemorrhage, Postpartum haemorrhage), gestation at delivery, mode of delivery, birth weight and perinatal morbidity and mortality. These were compared between the multiple pregnancy and singleton gestation.

All data were entered into an excel sheet. Statistical analysis was performed using SPSS or other equivalent software. Chi square test was used and p value of <0.05 was considered significant.

### RESULTS

Out of 114 cases, 85 were enrolled for the study after excluding cases who didn't fulfill inclusion criteria. Patients with singleton pregnancy delivering before and after each twin, which satisfy inclusion and exclusion criteria were taken as control. Out of 85, 39(45.8%) in case group and 35(41.1%) in control group were booked in our hospital, while 46(54.11%) were unbooked in cases and 50(58.82%) were in control group.

**Table 1: Distribution according to presentation**

Presentation	Cases (n=85)
Vertex- Vertex	53 (62.35%)
Vertex-Breech	08 (9.41%)
Vertex-Transverse	02 (2.35%)
Breech-Vertex	15 (17.64%)
Breech-Breech	04 (4.7%)
Transverse-vertex	01 (1.17%)
Transverse-breech	01 (1.17%)
Total	84 (100%)

The above table shows 53(62.35%) cases were presented as vertex-vertex which was most common presentation. Second most common presentation was breech-vertex 15(17.6%) and third most common presentation was vertex-breech 08(9.41%).

**Table 2: Mode of delivery in twin 1 according to presentation**

	Vertex (n=63)	Breech (n=20)	Transverse (n=2)
Normal vaginal delivery	51(60%)	00	--
Forceps	00	00	--
Vacuum	00	00	--
Assisted vaginal breech delivery	00	08(9.4%)	--
Spontaneous vaginal breech delivery	00	00	--
LSCS	12(14.1%)	12(14.1%)	02(2.3%)

Out of 85 patients, 63(74.11%) were having vertex presentation, 20(23.52%) were having breech presentation, 02(2.3%) were having transverse lie in twin 1.

Out of 63(74.1%) patients having vertex presentation in twin 1, 51(60%) were delivered vaginally and 12(14.1%) were delivered by LSCS.

Out of 20(23.55) patients having breech presentation in twin 1, 08(9.4%) were delivered by assisted vaginal breech delivery and 12(14.1%) were delivered by LSCS.

2 (2.3%) patients were having transverse lie, delivered by LSCS.

**Table 3: Mode of delivery in twin 2 according to presentation**

	Vertex (n=69)	Breech (n=13)	Transverse (n=02)
Normal vaginal delivery	47(55.95%)	--	--
Forceps	00	00	--
Vacuum	00	--	--
Assisted vaginal breech delivery	00	08(9.52%)	--
Spontaneous vaginal breech delivery	00	01(1.19%)	--
LSCS	22(26.19%)	04(4.76%)	02(2.38%)

Out of 84 patients, 69(82.14%) were having vertex presentation, 13(15.47%) were having breech presentation, 2(2.38%) were having transverse lie in twin 2.

Out of 69 patients having vertex presentation in twin 2, 47(55.95%) were delivered by normal vaginal delivery, 22 (26.19%) were delivered by LSCS.

Out of 13 patients having breech presentation in twin 2, 08(9.5%) were

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delivered by assisted vaginal breech delivery, 01(1.1%) was delivered by spontaneous vaginal breech delivery, 04 (4.7%) were delivered by LSCS.

02 (2.3%) patients having transverse lie were delivered by LSCS.

**Table 4: Birth weight comparison between cases and controls.**

Weight (grams)	Cases(n=85)		Controls (n=85)
	1 <sup>st</sup> twin	2 <sup>nd</sup> twin	
<999	04(4.7%)	03(3.52%)	00
1000-1499	13(15.29%)	20(23.52%)	08(9.41%)
1500-1999	32(37.64%)	30(35.29%)	05(5.88%)
2000-2499	28(32.94%)	26(30.58%)	16(18.82%)
2500-2999	07(8.23%)	05(5.88%)	38(44.70%)
>3000	01(1.17%)	00	18(21.17%)
Mean (SD)	1913.36 (479.44)	1782.66 (420.46)	2555.24 (613.14)

The above table shows that 77(90.58%) in twin 1, 79(92.94%) in twin 2 and 29(34.11%) babies in control group were having low birth weight.

Out of them, 13[15.2%]had very low birth weight while 4[4.7%]were having extremely low birth weight in twin 1 . In twin 2,29[34.11%]and 3[3.52%]were having very low and extremely low birth weight respectively.

. None of the baby in control group was having extremely low birth weight..

**Table 5: table showing factors responsible for neonatal morbidity**

Morbidity	Cases(n=85)		Controls (n=85)
	1 <sup>st</sup> twin	2 <sup>nd</sup> twin	
Jaundice	12(14.1%)	14(16.4%)	06(7.05%)
Prematurity	47(55.2%)	47(55.2%)	25(29.41%)
Septicemia	01(1.1%)	02(2.3%)	00
MAS	02(2.3%)	01(1.1%)	08(9.41%)
RDS	17(20%)	18(21.17%)	09(10.5%)
HMD	06(7.05%)	09(10.5%)	03(3.52%)
IVH	01(1.1%)	02(2.3%)	00
Asphyxia	05(5.8%)	07(8.23%)	03(3.52%)
Others	00	00	00

Most common neonatal morbidities were prematurity 47(55.2%), RDS 35(20.58%), jaundice 26(15.29%), HMD 15(8.82%) in case group whereas in control group they were respectively 25(29.41%), 09(10.5%), 06(7.05%) and 03(3.52%). 12(14.11%) in case group whereas 03(3.5%) in control group were having asphyxia.

08(9.4%) babies in control group had MAS. In case group, 3(3.52%) were having MAS.

There was 1 (1.1%) case of septicemia and 1(1.1%) case of IVH in twin 1 group. There were 2(2.3%) cases of septicemia and 2(2.35%) cases of IVH in twin 2

group. IVH was not noticed in control group.

In twin 1 group, one baby was diagnosed with G 6 PD deficiency . In another case, twin 2 was having anencephaly with omphalocele.

**Table 6: table showing factors responsible for maternal morbidity**

Morbidity	Cases(n=85)	Controls(n=85)	P value
Preeclampsia	18(21.17%)	08(9.41%)	0.05
Antepartum eclampsia	03(3.52%)	02(2.35%)	----
Anemia	73(85.8%)	78(91.76%)	0.33*
GDM	01(1.17%)	00	----
PROM	15(17.64%)	02(2.35%)	----
Preterm labour	34(40%)	06(7.05%)	0.0001
APH	01(1.17%)	01(1.17%)	----
Cesarean section	28(32.9%)	15(17.64%)	0.0034
PPH	01(1.1%)	01(1.17%)	----

\*not significant

Most common maternal morbidities were anemia 73(85.8%), preterm labour 34(40%), cesarean section 28(32.9%), preeclampsia 18(21.17%) and PROM 15(17.64%) in case group whereas in control group they were respectively 78(91.76%), 06(7.05%), 15(17.64%), 08(9.41%) and 02(2.35%). Observed difference was statistically significant in case of preterm labour, cesarean section and preeclampsia with p value of <0.05. PROM was more common 15(17.6%) in case group compared to 02(2.35%) in control group.

In case group there were 01(1.1%) cases of PPH, 1(1.1%) case of APH and 1(1.1%) case of GDM and In control group there were 1(1.1%) case of APH, 1(1.1%) case of PPH.

## DISCUSSION

- In our study, majority of patients from case 52(61.17%) were between 21-25 years of age. Mean age was 24.7 (3.7) whereas in other studies like NJ Obiechina et al, it was 30 (2.3) and in Enid Simon Chiwanga et al, it was 29 (5.7). Majority of patients in case group 40(47%) were nullipara.
- In our study group, mean parity was 0.7 whereas in NJ Obiechina, et al. mean parity was 1.96(1.87) and Enid Simon Chiwanga, et al. mean parity was 2(1.7). Increasing parity has been shown to independently increase the incidence of twinning in all populations studied.

Antsaklis and coworkers noted a progressive increase of twinning in multiparity during a 30-year period, but cautioned that some of this increase is presumably due to ART.<sup>12</sup> According to Painter et al, dizygotic twinning frequency increases almost fourfold between the ages of 15 and 37 year<sup>4</sup>.

- In present study, 47(55.2%) patients in case group presented with labour at <37 weeks of gestation while only 24(28.23%) in control group presented to labour room at <37 weeks of gestation. In our study mean gestational age was 35.5 weeks whereas in NJ Obiechina et al, it was 34 weeks and in Enid Simon Chiwanga et al, it was 36 weeks. The duration of gestation decreases with increasing fetal number<sup>7</sup>. Prematurity is increased six fold and tenfold in twins and triplets, respectively<sup>8</sup>.

In our study, most common presentation was vertex-vertex (62%) and second most common was breech-vertex 08[9.41%] which is comparable to other studies, like Farooqui et al and Cherrenak et al having most common presentation vertex-vertex and second most breech-vertex respectively.<sup>13,14</sup> malpresentation was common in our study[ 25.8%] whereas in Masuda Sultana, et al it was 36%<sup>7</sup>.

- Out of 53 patients having vertex-vertex presentation, 41(48.2%) were delivered by normal vaginal delivery whereas 12(14.1%) were delivered by LSCS. Only in one case twin 2 was delivered by LSCS. The recent randomized trial by Barrett and coworkers affirms that planned cesarean delivery does not improve outcome when both twins are cephalic<sup>9</sup>
- In case group 28(32.9%) patients had LSCS whereas 15(17.6%) patients had LSCS in control group. This difference was statistically significant with p value of <0.05. The rate of cesarean section in twin pregnancy of 32.9% agrees with other studies such as 41.3% in Jos and 36.6% in Enugu<sup>10,11</sup>.
- In our study, 25(29.4%) out of 85 pairs were different sex twin. Rest 60(70.5%) were same sex twin, which may be dizygotic or monozygotic. In Masuda

sultana et al, different sex twin were 32% and same sex twin were 68%<sup>15</sup>.

- Mean birth weight for twin 1 was 1913.36 (479.44), twin 2 was 1782.66(420.46) and for control was 2555.24 (613.14) in our study. In NJ Obiechina et al, mean birth weight was 2.3+\_1.0 kg whereas in Masuda Sultana et al, it was 1.8kg<sup>15</sup>. The difference in mean birth weight may be due to nutritional and genetic factors. It is concluded that twin pregnancy is associated with low birth weight. In general, the degree of growth restriction increases with fetal number<sup>7</sup>.
- In our study prematurity was 55.2% whereas in Masuda Sultana et al, it was 64% and in Vidyadhar B. Bangal, et al it was 70%<sup>15,16</sup>. 14.11% babies were having asphyxia in our study whereas in Masuda Sultana et al, it was 17%<sup>15</sup>. 12(14.11%) babies were having asphyxia in our study whereas in Masuda Sultana et al, it was 17%<sup>15</sup>
- Prematurity is the main cause for higher incidence of neonatal morbidity. HMD, RDS, Jaundice were more common in premature babies<sup>17</sup>. In twin 1, one baby was diagnosed with G 6 PD deficiency. In another case twin 2 was having anencephaly with omphalocele.
- Perinatal mortality was more common in case group who had not taken ANC compared to their singletons. Perinatal mortality was 12.94% in case group compared to 2.3% in control group those who hadn't taken ANC. Perinatal mortality was higher in both twin groups having birth weight <1.5 kg. perinatal mortality was 17.6% which was comparable to 11% in Masuda Sultana, et al<sup>15</sup>.
- The incidence of hypertensive disorders of pregnancies were very high in twin pregnancies. 18(21.1%) patients in case and 08[9.4%] in control were having preeclampsia. This difference was statistically significant with p value of <0.05. In Sarojini et al, 17.9% patients were having preeclampsia. With multifetal gestation, hypertension not only develops more often but also tends to develop earlier and be more severe<sup>18</sup>.

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- In case group, 28(32.9%) whereas 15(17.6%) in control group had LSCS. This difference was statistically significant with p value <0.05. The rate of cesarean section in twin pregnancy of 32.9% agrees with other studies such as 41.3% in Jos and 36.6% in Enugu<sup>10,11</sup>.
- 34(40%) patients in cases whereas 06(7%) patients in control had preterm labour which was also observed statistically significant with P value <0.05. This is also comparable to other studies like in Sarojini et al, 47.9% patients were having preterm labour.
- In case group 15(17.6%) patients had PROM whereas only 02(2.3%) patients had PROM in control group. The duration of gestation decreases with increasing fetal number. Chauhan and associates reported that, similar to singleton pregnancies, approximately 60 percent of preterm births in twins are indicated, about a third result from spontaneous labor, and 10 percent follow prematurely ruptured membranes.<sup>19</sup>
- In case group there were 01(1.1%) cases of PPH, 1(1.1%) case of APH and 1(1.1%) case of GDM. The lower PPH rate in our study could be attributed to increased access to quality emergency obstetric care, in particular use of active management of third stage of labour. In Sarojini et al, 8% patients were having PPH and 3% patients were having APH. In control group there were 1(1.1%) case of APH, 1(1.1%) case of PPH.

### CONCLUSION

- In this study it is observed that twin pregnancy is associated with poor neonatal and obstetric outcome.
- It is concluded that Prematurity is the main cause for higher incidence of neonatal morbidity. HMD, RDS and Jaundice are more common in premature babies. The increased rate of perinatal death is observed in case group because of lack of ANC, preterm deliveries and low birth weight. Many management strategies have been proposed to reduce the perinatal mortality due to prematurity in twin gestations. However none of the measures including bed rest, cervical

cerclage and tocolytic agents have shown any significant benefit.

- Our study indicates that twin pregnancy is associated with increased risks of preterm delivery, preeclampsia, anemia and cesarean section delivery. This calls for the increased access to early diagnosis by providing regular antenatal care. Close antenatal, intrapartum care are needed in order to improve the obstetric outcome and decrease the complications associated with twin pregnancy.

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