

Incidence of Vaginal Delivery versus Caesarean Section in Twin Pregnancy in Primigravida and Its Maternal and Fetal Outcome.

Dr. S.V.Mobeen Taj¹, Dr.S.Jayasri²

¹(Assistant Professor, Department Of Obstetrics And Gynaecology , Government Maternity Hospital , Institute Of Pregnant Women , Tirupathi, Andhra Pradesh, India.

²(Resident , Department Of Obstetrics And Gynaecology , Government Maternity Hospital , Institute Of Pregnant Women , Tirupathi, Andhra Pradesh, India)

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Corresponding Author: Dr. S.V.Mobeen Taj

Abstract: BACKGROUND: Multiple gestations are becoming a problem of increasing dimensions with a dramatic increase in numbers in the last decade due to pregnancy at older age and widespread use of assisted reproductive technology

Objectives:To study the incidence of vaginal delivery versus caesarean section in twin pregnancy in primigravida. To study maternal and fetal outcome in twin pregnancy among primigravida.

METHODS: A Prospective observational study carried out in the Department of Obstetrics and Gynaecology, Sri Venkateswara Medical College, Tirupati conducted over one year from October 2017 to September 2018.

RESULTS: In one year, total of 11,242 deliveries were conducted and amongst them 48 were twin pregnancies in primigravida, giving an incidence of 4.26%. Incidence of twin pregnancy in primigravida is more common in the age group of 21-25 years (62.5 %).

Preeclampsia was found to be the most common medical disorder (70.8%), followed by anemia in 13 cases (27.1%).

LSCS was the most common mode of delivery for 31 patients (64.6%), followed by vaginal delivery in 17 patients(35.4%). In majority of cases, indication for LSCS was 1st twin non cephalic presentation.

Perinatal mortality rate of monchorionic pregnancy was 4.6% and dichorionic pregnancy was 3.48%

CONCLUSION : Twin pregnancy is a high risk pregnancy with increased incidence of antenatal→ and intrapartum complications like anemia, preeclampsia, gestational diabetes mellitus, polyhydramnios, premature rupture of membranes, antepartum haemorrhage, post-partum hemorrhage, preterm labour, cord prolapse and fetal complications like prematurity, low birth weight, IUGR, discordant growth, NICU admissions etc.

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I. Introduction

Multiple gestations are becoming a problem of increasing dimensions with a dramatic increase in numbers in the last decade due to pregnancy at older age and widespread use of assisted reproductive technology. Incidence of twin births varies considerably i.e. 2-20 per 1000 births throughout the world¹. More than 3% of all pregnancies were multiple & twins accounted for 94% of all multiple births. Majority of increase is seen in primiparous women².

According to Hellin's rule, twins occur in about 1 in 80² pregnancies, triplets 1 in 80³ so on but there is a changing trend in twins from 1 in every 30 infants born in 2009 compared to 1 in 53 babies in 1980³. Twin pregnancies have increased rates of complications such as Hyperemesis gravidarum, anemia, preeclampsia, gestational diabetes mellitus, polyhydramnios, premature rupture of membranes, placental abruption, placenta praevia, post-partum hemorrhage and preterm labour, which is increased to six-fold, compared to singleton pregnancy which are known risk factors for maternal and perinatal mortality⁴. The adverse fetal outcomes in

twin pregnancies are prematurity, fetal growth restriction, discordant twin growth, low birth weight, IUD and NICU admissions etc.

Twin pregnancy is a high risk for both mother and fetus, this study is to evaluate both obstetric and neonatal outcome in tertiary care hospital which can help us improve the same.

II. Materials And Methods

Source of Data -This study "Incidence of vaginal delivery vs. cesarean section, maternal and fetal outcome in twin pregnancy in primigravida" was a hospital based prospective observational study carried out in the Department of Obstetrics and Gynaecology, Sri Venkateswara Medical College, Tirupati.

The study population included all the primigravida with twin pregnancy admitted to Government Maternity Hospital, Tirupati. The study was conducted over one year from October 2017 to September 2018. Informed written consent was obtained from all the patients in the study, after explaining about the study in all aspects. A master chart was prepared which included all the data about the primigravida, age, mode of conception, maternal and fetal complications and their mode of delivery etc. The results were analyzed. The analyzed data was compared with different studies and discussed.

Inclusion criteria: Primigravida with sonographically confirmed twin gestation attending antenatal outpatient department & labor room at Government maternity hospital, Tirupati.

Exclusion criteria: Triplet or high order pregnancy.

Procedure methodology:

• Data was collected as per the redesigned proforma with informed and written consent from all cases of primigravida with twin pregnancy attending antenatal outpatient department and labor room in government maternity hospital, Tirupati. • Assessment during antenatal period include history taking in detail i.e presenting complaints, menstrual history, medical history, infertility treatment, clinical and obstetrical examination was carried out. • Maternal outcome is studied in terms of preeclampsia, anaemia, GDM, hypothyroidism, polyhydramnios, premature rupture of membranes, placental abruption. **Intrapartum assessment:** Obstetric examination was done for detecting fetal presentations like cephalic-cephalic, cephalic-breech, breech-breech, breech-transverse etc. Mode of delivery whether spontaneous or induced vaginal delivery, operative vaginal delivery, emergency or elective lower segment cesarean section will be observed. Maternal outcome was studied in terms of postpartum hemorrhage, perineal tears, wound infections etc. Fetal outcome is studied in terms of prematurity, discordant twin growth, low birth weight, fetal growth restriction, intrauterine death, NICU admissions, live birth, still births, neonatal deaths.

Statistical Analysis

The statistical software namely SPSS 20.0 were used for analysis of data and Microsoft word and Excel have been used to generate graphs and tables. Percentage distribution of age group, Socio-economic status etc. Descriptive and inferential statistical analysis has been carried out in the present study. Results on continuous measurements are presented on mean \pm SD (Min-Max) and results on categorical measurements are presented in number (%). Significance is assessed at 5% level of significance. The following assumptions on data was made. Paired t test was used to find the significance of study parameters between complications of patients and chi-square test has been used to find the significance of study parameters on categorical scale between two variables .

III. Results

In one year, total of 11,242 deliveries were conducted and amongst them 48 were twin pregnancies in primigravida. So, the incidence of twin pregnancy in primigravida in the present study was 4.26%.

Table No.1: Distribution of primigravida in relation to the age

Age	No. of Patients	Percentage
Below 20 years	15	31.3%
21 - 25 Years	30	62.5%
26 - 30 Years	3	6.3%
> 30 Years	0	0
Total	48	100

Incidence of twin pregnancy in primigravida was more common in the age group of 21-25 years (62.5 %), followed by the age group of below 20 years (31.3 %). No case was reported in more than the 30 years age group.

History	No of Patients	Percentage
Spontaneous conception	34	70.84 %
Ovulation induction	9	18.75 %
ART	1	2.08 %
Family history	4	8.33 %

Table No.2: Influence of ovulation induction and heredity on twin gestation in primigravida

The maximum twin pregnancies were result of spontaneous conception 34cases(70.84%), followed by 9 cases (18.8%) conceived after ovulation induction. 4 patients gave positive family history of twins. 1 case reported after ART. None of them had recent use of oral contraceptive pills.

Table No. 3: complications encountered by mothers

Complications	No. of Patients	Percentage
Anaemia	13	27.1 %
PIH	34	70.8%
GDM	2	4.2%
Hypothyroidism	4	8.3%
Polyhydramnios	4	8.3%
Preterm Labour	23	47.9%
PROM	13	27.1%
APH	1	2.1%
PPH (Atonic)	13	27.1%
Wound Infection	13	27.1%
Perineal Tears	4	10.4%
Abortion	1	2.1%

In the present study we encountered preeclampsia in 34 cases (70.8%).• Preeclampsia was found to be the most common medical disorder followed by• anemia in 13 cases (27.1%). 13 patients (27.1%) had atonic postpartum hemorrhage, (8patients delivered vaginally and 5patients underwent LSCS)

Table No.4: Distribution of patients by fetal presentations

Fetal Presentation	No. of Patients	Percentage
Cephalic - Cephalic	13	27.1%
Cephalic -Breech	12	25 %
Breech-Cephalic	7	14.6 %
Breech-Breech	7	14.6 %
Breech-Transverse	5	10.4 %
Both Transverse	4	8.3%
Total	48	100.0 %

In the present study ,cephalic – cephalic was the most common presentation in 13 patients(27.1%), followed by cephalic-breech presentation in 12 cases(25%) and least was both transverse lie in 4 patients(8.3%)

Table No.5: Table showing distribution of patients according to mode of delivery.

	Mode of delivery	No. of Patients	Percentage
Vaginal(17)	spontaneous	14	29.2%
	Outlet Forceps	2	4.2%
	Vacuum	1	2.1%
LSCS(31)	ELLSCS	5	10.4%
	EMLSCS	26	54.2%
Total		48	100%

LSCS was the most common mode of delivery for 31 patients (64.6%), followed by vaginal delivery in 17 patients(35.5%). In majority of cases indication for LSCS was 1st twin non cephalic presentation

Table No.7: Indications for cesarean section

Indication	No. of Patients	Percentage
1 st twin non cephalic presentation	20	41.7%
Fetal distress	2	4.2%
Hypertensive disorders	6	12.5%
Failed Induction	4	8.3%
Failed progression	3	6.3%
CPD	1	2.1%

The most common indication for cesarean section was 1 st twin non-cephalic presentation (41.7%), followed by hypertensive disorders of pregnancy (12.5%).

Table No.8 : Distribution of twins in relation to fetal complications

Fetal complication	No. of Twins	Percentage
IUGR	24	25.0%
Discordant growth	16	16.7%
LBW	76	79.2%
Preterm	52	54.2 %
Admission in NICU 17 17.7	17	17.7 %
IUD	2	2.1 %
Early neonatal deaths	4	4.2%
Undiagnosed twin (Fetal papyraceous)	1	1.0 %

In the present study Low birth weight (LBW) babies were 76 (79.2%), preterm were 52 (54%), Intrauterine growth restriction (IUGR) were 24 (25%), admissions in NICU were 17 (17.7%). One case of undiagnosed twin (fetal papyraceous) was reported.

Table No.9: Distribution of twins according to birth weights

Birth weight Twin 1	No. of babies	Percentage
< 1.5kg	5	10.4%
1.51 - 2.5 kg	38	79.2%
>2.5 kg	5	10.4%
Total	48	100.0%
Mean birth weight	2.10 ± 0.403	

Birth weight Twin 2	No. of babies	Percentage
< 1.5kg	12	25 %
1.51 - 2.5 kg	31	64.58 %
>2.5 kg	5	10.46%
Total	48	100.0%
Mean birth weight	1.94 ± 0.511	

In the present study the mean birth weight of twin 1 was 2.10 ± 0.403 kg and mean birth weight of twin 2 was 1.94 ± 0.511 kg.

Table No.10: Comparison between mode of delivery and maternal outcome

S.no.	Complications	Mode of delivery		p-value
		Vaginal (n=17)	LSCS (n=31)	
1	Anemia	0.41±0.507	0.19±0.402	P>0.05
2	PIH	0.71± 0.470	0.71±0.461	P>0.05
3	Hypothyroid	0.01 ± 0.00	0.13±0.341	P>0.05
4	Polyhydramnios	0.12± 0.332	0.06±0.250	P>0.05
5	Preterm labour	0.53± 0.514	0.45±0.506	P>0.05
6	PROM	0.24± 0.437	0.29±0.461	P>0.05
7	APH	0.06± 0.243	0.00±0.000	P>0.05
8	ATONIC PPH	0.47± 0.514	0.16±0.374	*significant P<0.05

There is not much significance in antepartum, intrapartum complications of primigravida and their mode of delivery. Atonic PPH is only complication which is statistically significant. Out of 13, 8 patients delivered vaginally had atonic PPH.

Table No.11: Comparison between mode of delivery and fetal outcome

S.No.	Complications	Mode of delivery		p-value
		vaginal(n=17)	LSCS (n=31)	
1	IUGR	0.29±0.470	0.35±0.486	P>0.05
2	Discordant Growth	0.06± 0.243	0.23±0.425	P>0.05
3	LBW	0.88± 0.332	0.74±0.445	P>0.05
4	Preterm	0.71 ± 0.470	0.45±0.506	P>0.05
5	Undiagnosed Twin	0.00±0.000	0.03±0.180	P>0.05
6	Admission in NICU	. 0.47± 0.514	0±0.301	P < 0.01
7	IUD	0.00±0.000	0.03±0.180	P>0.05

There is not much significance in fetal outcome in relation to mode of delivery, except NICU admissions which is statistically significant. More NICU admissions are found in vaginal delivery

IV. Discussion

Twin gestation is a high-risk pregnancy due to high maternal morbidity and perinatal mortality.

During the period of study there were a total of 11,242 deliveries of which 48 were twin pregnancies in primigravida. The incidence was 4.26 per 1000 live births. This is compared to the incidence of 5.75 per 1000 live births in a study conducted by Pyrbot JE et al. (2017)⁵, a total of 14 twin pregnancies in primigravida were recorded out of 2431 deliveries. This study is carried out from April 2015 to March 2017 in a tertiary hospital in north east India. The incidence of 9.75 per 1000 live births is recorded in the study conducted by Matthew R et al. (2017)⁶ is a retrospective study in Kerala, South India over a period of 5 years between 1st July 2010 to June 30th, 2015. This study included 53 primigravida with twin pregnancies. In study by Lata Singh et al. ⁷(2017) and Bangal et al.(2012)⁸, the incidence of twin pregnancy in primigravida is 2.2 and 7.7 per 1000 live births

	Incidence per 1000/ live births
Present study	4.26
Pyrbot JE et al.(2017)	5.75
Matthew R et al.(2017)	9.75
Singh L et al.(2017)	2.2
Bangal et al.(2012)	7.7

Table no. 12: Comparison of incidence of twin pregnancy in primigravida in the present study with others.

In the present study, incidence of twin pregnancy in primigravida is more common in age group of 21-25 years (62.5%), followed by age group of below 20 years (31.3%). In 26-30 years, 3 patients (6.8%) were found. Similar incidence occurred in the age group of 20-30 years in a randomized prospective study of 100 cases of twin pregnancies conducted by Gajera AV et al. ⁹(2015) from July 2009 to October 2011.

Table no.13: Comparison of influence of ovulation induction on twin gestation in present study with other study

History	Present Study	Pyrbot JE et al. (2017)	Gajera AV et al. (2015)	Matthew R et al. (2017)
Spontaneous conception	70.84%	75.5%	75%	74%
Ovulation induction including IVF	20.75%	25%	25%	35%

Most of the women conceived spontaneously (70.84%)34 cases, followed by 9 cases (18.8%) conceived after ovulation induction in the present study. This is compared to study conducted by Pyrbot JE et al.

(2017) 39, where spontaneous conception was seen in 36 patients (75%) and 12 (25%) patients conceived following ovulation induction including IVF. In studies by Gajera AV et al. and Mattew et al., majority of the cases conceived spontaneously (75%) and (74%) respectively.

Table.no 14: Comparison of Maternal complications with various studies

Complications	Present study	Pyrbot JE et al. (2017)	Singh L et al. (2017)	Mattew R et al. (2017)	Gajera AV et al. (2015)	Bangal et al. (2012)
Preclampsia	70.8%	27.08%	32%	22.93%	24%	18%
Anemia	27.1%	27.08%	44%	8.25%	7%	66%
Preterm labour	47.9%	58.33%	74.7%	64.22%	6.9%	84%
PROM	27.1%	10.42%	10.67%	-	-	16%
PPH	27.1%	27.08%	13.22%	13.76%	3%	-
GDM	4.2%	-	-	25.68%	1%	-
Hypothyroidism	8.3%	8.3%	-	14.67%	-	-

In the present study hypertensive disorders accounts for high incidence of 70.8%, most common medical disorder, when compared to Pyrbot JE et al. (2017) study, preeclampsia incidence was 27% and in study conducted by Singh L et al.(2017) , preeclampsia is reported to be 32%. In study by Mattew et al. (2017), Gajera AV et al. (2015), Bangal et al. (2012) incidence of preeclampsia is 22.93%, 24% and 18% respectively. Anemia was found in 13 cases (27.08 %), it is the second most common medical disorder in the present study, same incidence is reported in study by Pyrbot JE et al. (2017) with 27.08%.Bangal et al. in 2012 conducted a study for fifteen months period, there were total 6613 deliveries including 100 twin deliveries, giving twin delivery rate of 1.49%. This observational study was carried out at Pravara Rural hospital, 750 bedded tertiary care hospital attached to Rural Medical College situated in rural area of Ahmednagar district of Maharashtra. Prevalence of anemia varies from place to place, very high incidence of anemia is reported by Bangal et al.(2012) is 66% . The incidence of 35.8%is reported in a study by Chowdary et al.(2011)¹⁰. In study by Singh L et al, Mattew et al., Gajera AV et al., incidence is 44%, 8.25% and 7 % respectively. The main reason of anemia in twin gestations from these studies is poor socio-economic status, nutritional deficiency, physiological anemia and increased iron demand etc.

Preeclampsia and anaemia reported to be the most common medical disorders in the above discussed studies similar to the present study.

PROM reported in 13 cases (27.1%) in the present study. Incidence of PROM reported in study by Pyrbot JE et al. (2017) is 10.42% and Singh L et al.(2017)is 10.67% which is comparatively less than our study.

Incidence of PPH in present study is found in 13 twin pregnancies (27.1%), all cases are found to be atonic PPH treated by medical management. Out of 13 patients, 8 patients delivered vaginally, and 5 patients underwent LSCS. One patient delivered by emergency caesarean section, atonic PPH developed could not be controlled by medical management, Hayman sutures applied. No cases of Peripartum hysterectomy noted. Pyrbot JE et al. (2017) recorded 10 cases (20.83%), Singh L et al.(2017) recorded 13.33%, Mattew et al., Gajera AV et al. study it is 13.76% and 3% respectively. Incidence of PPH which is relatively less compared to the present study.

V. Conclusion

Twin pregnancy is a high risk pregnancy with increased incidence of antenatal and intrapartum complications like anemia, preeclampsia, gestational diabetes mellitus, polyhydramnios, premature rupture of membranes, antepartum haemorrhage, post-partum hemorrhage, preterm labour, cord prolapse and fetal complications like prematurity, low birth weight, IUGR, discordant growth, NICU admissions etc. Twin pregnancies once diagnosed require frequent antenatal check-ups for early diagnosis of complications and management.

More vigilance during antenatal period and early reference of twins to tertiary hospital for active fetal surveillance and intervention should be done as perinatal morbidity and mortality is high in twin gestation. Availability of Obstetric ICU (Intensive care unit) and well equipped NICU set up would improve maternal and perinatal outcome in twin gestation in primigravida.

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