



A Cross sectional Study on Maternal and Foetal Outcomes in Multifoetal Pregnancies in a Tertiary Care Centre in Kerala

Authors

Dr Omana .E.K¹, Dr Nikhil.E², Dr Sumangali.P.K³

¹Associate Professor, Department of Obstetrics and Gynaecology, Pariyaram Medical College

²Junior Resident, Department of Obstetrics and Gynaecology, Pariyaram Medical College

³Professor, Department of Obstetrics and Gynaecology, Pariyaram Medical College

*Corresponding Author

Dr Omana .E.K

Associate Professor, Department of Obstetrics and Gynaecology, Pariyaram Medical College

Email: dromanambr@gmail.com, Phone: 9447472602

Abstract

Multifetal gestations are one among the high risk pregnancies. The twinning rate increased 76% to 33.2 per 1000, in 2009. In 2015 over all multifetal birth rate was 34.5 per 1000 live births. It is important to understand the complications associated with multifetal pregnancies, manage them in an effective manner in order to improve the outcome of multifetal gestations. Study subjects were all women who were admitted at department of Obstetrics and Gynaecology. Maternal data was collected from the case sheets of pregnant who were admitted in the labour wards and neonatal data were collected from case sheets of the babies.

Results: In our study total deliveries were 5957 of which the total number of multifetal pregnancies were 193. There were 180 twins and 13 triplets [6.73%]. Total number of newborns were 399. There was a history of invitro conceptions and ovulation inductions in 18 cases. In our study we found out that preterm delivery is the most common complication accounting for 26.94% of the total cases, followed by PPRM [14.5%], Anaemia [12.4%], Hypertensive disorders [9.8%] and GDM [7.7%]. No maternal mortality was reported during the present study. Major neonatal complications in the multifetal pregnancies is charted in Table 3. Prematurity is the most common complication noted [14.78%] out of the 361 live births. This is followed by neonatal hyper bilirubinemia [11.52%], Respiratory distress syndrome [2.25%], hypoglycemia [1.75%] and 3 cases of sepsis [.075%].

Conclusion: Multifoetal pregnancy is an high risk pregnancy which is associated with adverse effects on maternal and neonatal outcomes. There is an increased incidence of multifoetal pregnancies in recent times when compared to last century.

Keywords: Multifoetal Pregnancies, Preterm Labour.

Introduction

Multifetal gestations are one among the high risk pregnancies.¹ Studies done in the past proves that multifoetal pregnancy is associated with a higher

risk of maternal and neonatal complications than singleton pregnancies^{3,4,16,17}. Due to infertility therapy, the incidence of multifetal pregnancies are rising steadily in the world for the past 30

years.¹ The twinning rate increased 76% to 33.2 per 1000, in 2009. In 2015 over all multifetal birthrate was 34.5 per 1000 live births. Maternal mortality is also increased to 3 to 7 times in multifetal gestation². The increased rate of multifetal pregnancies increases the risk of preterm delivery, post-partum hemorrhage and hypertensive disorders etc making it a public health problem. There is also increased chances of low birth weight and small-for-gestational-age (SGA) and these are known risk factors for prenatal mortality and morbidity.¹ Perinatal mortality and maternal is an indicator of the national health standards. It is important to understand the complications associated with multifetal pregnancies, manage them in an effective manner in order to improve the outcome of multifetal gestations. Hence this study aims to analyze the causes of poor outcomes, maternal and fetal comorbidities, mode of delivery, intra partum complications and perinatal demises in order to help in formulating new institute specific directives in managing multi fetal pregnancies. There were no neonatal deaths reported in the deliveries after 28 weeks to 33 weeks 6 days gestational age.

Study Design and Methodology

Study subjects were all women who were admitted at department of Obstetrics and Gynaecology, ACME Pariyaram from 1st January 2014 to 31st December 2016. Maternal data was collected from the case sheets of pregnant who were admitted in the labour wards and neonatal data were collected from case sheets of the babies. We excluded all multifetal pregnancies before 24 weeks.

Data were taken in terms of Parity, Gestational age at delivery, Order of multifetal gestation. Mode of delivery: Spontaneous vaginal delivery, Induced vaginal delivery, Caesarian section with indication for CS. We also enquired about maternal co morbidities like Gestational Diabetes Mellitus, Gestational Hypertension, Preeclampsia, APH, Anaemia, Polyhydramnios, Preterm labour,

PROM, PPRM. Additionally data were collected in terms of Comorbidities like Prematurity, IUGR, TTTS, LBW, Birth Asphyxia, Septicemia along with Single fetal demise, Intrauterine fetal demise and early Neonatal Death. The study was approved by the ethical committee of ACME Pariyaram.

Definitions

Multiple pregnancies was defined as twins or triplets. Anemia was defined by hemoglobin levels <10.5 during pregnancy. Gestational age was based on the number of days between the first day of the last menstrual period (LMP) and date of delivery and was expressed in completed weeks after the LMP. The SGA was defined as a birth weight below the 10th percentile for gestational age. The GDM was diagnosed by a diagnostic 2-h 75 g OGTT at the 24th–28th week of gestation.

Results

In our study total deliveries were 5957 of which the total number of multifetal pregnancies were 193. There were 180 twins and 13 triplets [6.73%]. Total number of newborns were 399.

In the present study total vaginal deliveries were 78 [40.4%] and caesarian section were 78 [40.4%]. In our study we noticed highest incidence in primigravida which is 103 in number [53.36%]. Mean maternal age is found to be 27 years. There was a history of invitro conceptions and ovulation inductions in 18 cases. Based on types of chorionicity most in number were DCDA twins which was 128 [66.38%] followed by MCDA [34.35%]. The results are plotted in Graph 1.

Maternal complications associated with multifetal pregnancies were plotted on Table 1. In our study we found out that preterm delivery is the most common complication accounting for 26.94% of the total cases, followed by PPRM [14.5%], Anaemia [12.4%], Hypertensive disorders [9.8%] and GDM [7.7%]. No maternal mortality was reported during the present study. We also had 62 cases which did not have any maternal

complication. Comparison of four major maternal complications with gestational age at delivery was also done [Graph 2]. It was found out that most number of cases of hypertensive disorders, preterm labour, GDM were delivered at 34 weeks to 36 weeks 6 days of gestational age. PPRM tends to be more presented at 28 weeks to 33 weeks 6 days gestational age and delivered around the same time window.

The overall incidence of caesarian section is 57.5%, which is 111 in number. Indications for caesarian section are detailed in the Table 2. Most common indication for CS is first twin non cephalic presentation [41.44%]. Previous caesarian section comes second in the list 18.01%, followed by triplets [8.1%], severe preeclampsia and HELLP spectrum [7.2%] and discordant twins being the major ones. We noted that there were only five failed induction cases and two cases of foetal distress.

Major neonatal complications in the multifetal pregnancies is charted in Table 3. Prematurity is the most common complication noted [14.78%] out of the 361 live births. This is followed by neonatal hyper bilirubinemia [11.52%], Respiratory distress syndrome [2.25%], hypoglycemia [1.75%] and 3 cases of sepsis [0.075%]. We noticed 15 cases of neonatal deaths.

During the study period we noticed 13 cases of intrauterine foetal demise [IUFD] and 5 cases of

single foetal demise. The perinatal mortality rate is 77.69% per 1000 live births and neonatal mortality rate is 48.91% per 1000 live births. Comparison of neonatal death with IUFD was done and are listed in Table 4. We noticed an increased chance of IUFD before 28 weeks. 57.14% of total cases in this group were intrauterine foetal demises. All the single foetal demise cases were seen in the 28 weeks to 33 weeks 6 days gestational age.

Comparison of neonatal deaths with gestational age were carried out and are listed in Table 5. It is noted that more neonatal deaths were occurred in deliveries before 28 weeks. There were no neonatal deaths reported in the deliveries after 28 weeks to 33 weeks 6 days gestational age. Two cases of neonatal deaths were noted after 34 weeks. One was a case of septicemia and other was a case of neonatal pneumonia. Comparison of birth weight with neonatal death was also carried out and the details are listed in Table 6. It was found out that extremely low birth babies [<1 kg], were more prone for neonatal death. We noticed 16 cases of neonatal deaths in extremely low birth weight category. We had 1 each neonatal death in 1 kg to 1.5 kg group and 1.5 kg to 2.5 kg group. We also noticed that there is increased chance of neonatal death to baby 2 than baby 1 [Table 6]. There was 50% more chance for second twin for neonatal death than first twin.

Table-1

MATERNAL COMPLICATIONS ASSOCIATED WITH MULTIFETAL PREGNANCIES

Sl No.	RISK FACTOR	No. of Cases	PERCENTAGE
1	PRETERM LABOUR	52	26.94
2	PPROM	28	14.5
3	ANAEMIA	24	12.4
4	HYPERTENSIVE DISORDERS	19	9.8
5	DIABETES MELLITUS	15	7.7
6	POLYHYDRAMNIOS	9	4.6
7	PPH	6	3.1
8	ABRUPTIO PLACENTA	5	2.5
9	OLIGOHYDRAMNIOS	4	2
10	PLACENTA PRAEVIA	2	1
11	NO COMPLICATIONS	62	32.1

Table-2

INDICATIONS FOR CAESARIAN SECTION

Si. No.	INDICATIONS	No. OF CASES	PERCENTAGE
1	FIRST NON CEPHALIC	46	41.44
2	PREVIOUS CEASARIAN SECTION	20	18.01
3	TRIPLETS	9	8.1
4	SEVERE PRE ECLAMPSIA/HELLP	8	7.2
5	IUGR/DISCORDANCY	7	6.3
6	FAILED INDUCTION	5	4.5
7	MONOCHORIONIC WITH ABNORMAL DOPPLER	4	3.6
8	FOETAL DISTRESS	2	1.8
9	ABRUPTION	2	1.8
10	OTHERS	8	7.2

OTHERS : Single Foetal Demise, Cord Prolapse, Placenta Praevia, TTTS, Scar Tenderness.

Table-3

IUFD AND SINGLE FOETAL DEMISE

Si. No	COMPLICATIONS	No. Of Cases	PERCENTAGE
1	BOTH TWIN IUFD	13	6.73
2	SINGLE FETAL DEMISE	5	2.59

Table-4

MAJOR NEONATAL COMPLICATIONS IN MULTIFETAL PREGNANCIES

Si. No	COMPLICATIONS	No of CASES	PERCENTAGE
1	PREMATURITY	59	14.78
2	NNH	46	11.52
3	RDS	9	2.25
4	HYPOGLYCEMIA	7	1.75
5	SEPSIS	3	0.75
6	NND	15	3.75

Table-5

COMPARISON OF GESTATIONAL AGE AND IUFD

Si. No	GESTATIONAL AGE	TOTAL NO OF CASES	ALL FOETUSES	SINGLE FOETAL DEMISE
1	37-40 WEEKS	26	0	0
2	34-36 WEEKS 6 DAYS	76	1	0
3	28-33 WEEKS 6 DAYS	70	0	5
4	LESS THAN 28 WEEKS	21	12	0

Table-6

COMPARISON OF GESTATIONAL AGE AND NEONATAL DEATHS

Si. No	GESTATIONAL AGE	No. of Cases	BABY 1	BABY 2	BABY 3
1	37-40 WEEKS	26	0	0	0
2	34-36 WEEKS 6 DAYS	76	0	2	0
3	28-33 WEEKS 6 DAYS	70	0	0	0
4	LESS THAN 28 WEEKS	21	5	8	3

Table-7

COMPARISON OF BIRTH WEIGHT AND NEONATAL DEATH

Si. No	BIRTH WEIGHT	BABY 1	BABY 2	BABY 3	TOTAL
1	2.5-4 KG	0	0	0	0
2	1.5-2.5 KG	0	1	0	1
3	1-1.5 KG	0	1	0	1
4	LESS THAN 1 KG	5	8	3	16
5	TOTAL	5	10	3	18

TYPES OF CHORIONICITY

- DCDA : 128
- MCDA : 47
- MCMA : 5
- MCTA : 11
- TCTA : 2

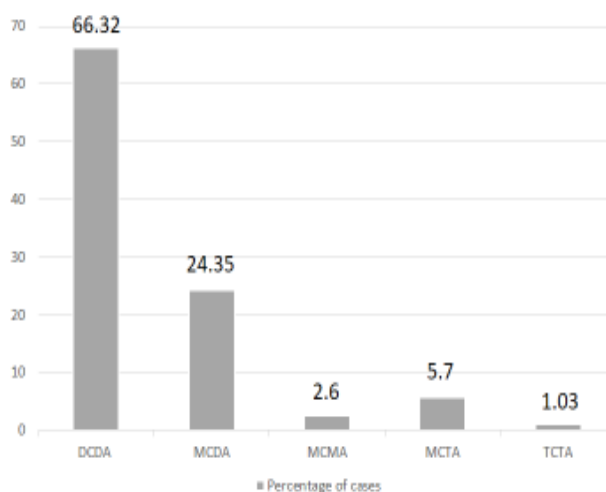


Figure: 2

COMPARISON OF MATERNAL COMPLICATIONS AND GESTATIONAL AGE AT DELIVERY

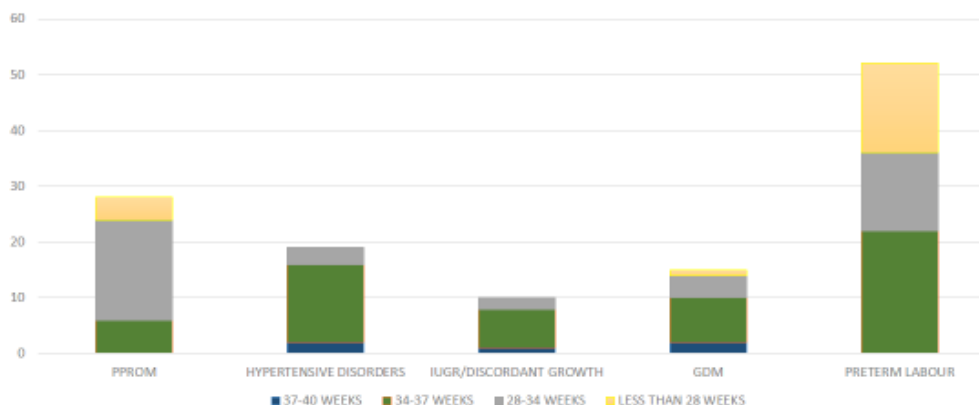


Figure: 2

Discussion

The study showed an incidence of 3.24%, when it is compared to worldwide incidence [3.4%]¹, it correlates well. The increase in prevalence is commonly attributed to increase in Assisted Reproductive Techniques [ART] worldwide, most notable in the developing world. But we found out only 18 cases with a history of ovulation induction or Invitro Fertilization [IVF]. This is comparable to previous study done by Apichart Chttachareon et al⁴. This shows that infertility treatment is not a major cause of multifetal pregnancies in south and south east asia. Multifetal pregnancies are said to be more common in multigravida, but in our study we had more incidence of multifetal pregnancies in primigravida. This is comparable to study by Yuel Veronica Irene et al³. This can be explained by the fact that ACME Pariyaram is a apex tertiary institute in this geographical area and there are more referral in terms of primigravida than multigravida. We also found out that mean maternal age is not advanced. When it is compared to previous studies like Yuel Veronica Irene Et al³ [more than 50% twinning in 20-25 age group] our finding is different. All these points to identify other aetiological causes for the occurrence of multifetal pregnancies which were out of scope of the present study.

The incidence of DCDA twins are slightly lesser than what the previous studies have showed. Also the incidence of MCDA twins are found to be slightly more. This could be due to increased referral from periphery in case of monochorionic placentation than dichorionicone. Similar results are given by Hung Gi Kweon et al in 1992, where it was 65.7% for DCDA and 27.1% for MCDA.⁵ The maternal comorbidities associated with multiple pregnancies, such as Preterm labour, PPROM, Anaemia, and Hypertensive disorders were consistent with previous studies^{10,11}. Preterm labour is the most common and important complication of multiple pregnancy and its occurrence is more common than singleton pregnancy with the outcome being worsen. The rate of preterm labour is 26.94 percentage, which is higher than studies conducted in developed and developing countries. However Goldberg RL et al¹² showed that 40% of the study population delivered before 37 weeks. This also can be attributed to the fact that there is an increased chance of referral from the periphery.

Indications of caesarian sections were studied, and revealed that the major indications were first non cephalic presentation and previous caesarian section [41.11 and 18.01 % respectively]. We noticed that there were only 5 cases of failed

induction and foetal distress. Apart from non modifiable indications like first non cephalic presentation, triplets, failed inductions etc., modifiable indications like previous caesarian section, hypertensive emergencies, IUGR etc makes up to 33 percentage. This shows that reducing primary caesarian section rates and preventing the occurrence of complications will reduce the rate of caesarian section. Americal College of Obstetricians and Gynaecologists [ACOG] has recommended a consensus regarding the appropriate mode of delivery in case of twin pregnancies.¹³

In the present study there were total 13 cases of IUFD and 5 cases of single foetal demise. The study can be compared with results published by Blodel et al¹⁴, and Refuerzo et al¹⁵. in term a of common neonatal complications. We observed that prematurity, and NNH were the two most common complications. As most of these babies were also detected to have Low birth weight and Small for date, it is safe to say that LBW and SFD are the most common complicayion. We also observed 15 cases of neonatal deaths. The perinatal mortality rate [PNMR] is 77.69% per 1000 live births and neonatal mortality rate is 48.91% [NNMR] per 1000 live births. There is a decrease in perinatal mortality with increase in gestational age and birth weight. Similar studies like Apchart Chitta Chareon et al [2006]⁴ and Naushaba et al[2010]⁶ observes that gestational age and birth weight are the most determining factors of PNMR. Perinatal mortality is mostly high in less than 28 weeks pregnancies and birth weight less than 1000 grams. The incidence of neonatal death is observed more in second twin. This may be explained by the fact that second baby has more chance of hypoxia due to prolonged inter twin delivery time. In Armson Et al⁸ study and C-Kouam et al⁹ study it's found that prolonged intertwine delivery interval increases the perinatal death in second twin. We also noticed that all the incidences of single foetal demise [5 cases] occurred between 28weeks to 33 weeks 6 days. This may be due to the fact that in

pregnancies between 24 to 28 weeks, mother may not be able to notice decreased foetal movemets of the dead foetus due to extreme prematurity. The incidence of single foetal demise id 2.59 which is less compared to worldwide statistics which is 5%.⁷

Conclusion

Multifoetal pregnancy is an high risk pregnancy which is associated with adverse effects on maternal and neonatal outcomes. There is an increased incidence of multifoetal pregnancies in recent times when compared to last century. This may not be due to the increase in infertility treatment, or advanced maternal age. We need to enquire and study about other unknown factors which can increase the incidence. The emphasis should be given to proper and sophisticated antenatal care to prevent complications. Inmultifoetal pregnancies decrease in caesarian section can be achieved only by decreasing primary caesarian section rate and preventing complications. Easly gestational age and low birth weight are the most important determining factors of perinatal mortality and morbidity. It is also directly related to neonatal care facilities of the centre. Adding more skilled man power and accepting most advanced protocols can positively influence the perinatal outcome.

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