



Original Research Article

Outcome in multifetal pregnancy - A cohort study

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ABSTRACT

Background and Objectives: Twin pregnancies remain a major health problem given the increased incidences of both maternal and foetal complications in the country. This study provides relevant clinical and public health information that will help the clinicians on how to manage multiple pregnancies and prevent complications.

Purpose of the Study: 1. To determine maternal complications in multifetal pregnancy; 2. To determine the foetal and postnatal outcomes in multifetal pregnancy.

Materials and Methods: Research approach and design -A Prospective and Retrospective Cohort study.

Study Setting: Department of Obstetrics and Gynaecology, Amala Institute of Medical Sciences Thrissur, Kerala.

Study Population: All antenatal patients satisfying the inclusion criteria were included in the study.

Results: The incidence of multifetal pregnancy was 1.55% in our institution. Preterm labour complicated 25.6% of multiple pregnancies, 4.3% were complicated by abruptio placentae and 0.9% were complicated by placenta praevia. Gestational hypertension complicated 12% of pregnancies. Majority (55.6%) were delivered by LSCS, whereas 39.2% delivered vaginally and 5.2% had operative vaginal deliveries. Postpartum haemorrhage complicated 17.9% of twin deliveries. The incidence of prematurity among babies of multiple pregnancy was 53%. The total fetal loss was 3.4%. There was no maternal mortality in our study.

Conclusion: Multiple pregnancies had a higher likelihood of adverse maternal and perinatal outcomes than singleton pregnancies. Mothers carrying multifetal pregnancy should be properly counselled regarding all the complications and should be kept under constant monitoring.

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1. Introduction

Twin pregnancies had by itself a very prominent place in human mythology since ancient times. Hindu mythology had enshrined the twins Luv & Kush, sons of Lord Ram. Ancient Rome was said to have been founded by the twins Remus and Romulus.¹

Natural higher order multiple conceptions are usually uncommon. The reported incidence ranges from 0.01% to 0.07% of all pregnancies.² Multiple births are much more common today than in the past. Throughout the world, the prevalence of twin pregnancies varies from approximately 2-20 /1000 live births. This surprising increase in multiple

gestation rates can be explained by the social shift in women's attitude regarding child bearing which has resulted in more women choosing to postpone child bearing in favour of work and career commitments. This delayed childbearing has resulted in an increased maternal age at conception, which in turn lead to infertility treatment such as ovulation induction, in vitro fertilization and intra cytoplasmic sperm injection as one of the predisposing factors of twin gestation, since fertility decreases with age.³

Multiple pregnancy is associated with higher risks for the mother and the babies singleton pregnancies. Women with multifetal pregnancies are at high risk of than miscarriage, anaemia, hypertensive disorders, postpartum haemorrhage, operative delivery and postnatal morbidity. The risk of pre-

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eclampsia for women with twin pregnancies is almost three times that for singleton pregnancies, while the risk for triplet pregnancies is increased by nine-fold. In general, maternal mortality associated with multiple pregnancy is 2.5 times that for singleton births. Women with multiple pregnancies are also more likely to have more marked symptoms of minor ailments of pregnancy (such as nausea and vomiting) than women with singleton pregnancies.⁴

Multiple pregnancy warrants special attention because they have considerable contribution to the maternal / perinatal morbidity/mortality as well in excess of that due to multiplication of singleton risk by fetal number.³ Overall complications occur in approximately 83% of twin pregnancies when compared to 25% in singleton pregnancies. Hence twin pregnancies are to be considered as high risk pregnancies. Vigilant obstetric care not only decreases the maternal morbidity and mortality but also helps to improve the fetal outcome.

1.1. Relevance

Twin pregnancies remain a major health problem given the increased incidences of both maternal and fetal complications in the country. Monochorionicity carries definitive risks when compared to a dichorionic pregnancy which can be detected early with newer imaging techniques nowadays.⁴ There are only limited studies based on the subject in our country. Therefore this study provides relevant clinical and public health information that may help the clinicians on how to manage multiple pregnancies in the country. In addition, the findings from this study may also help as basis for further interventional research studies that could help to improve maternal and foetal outcomes.

This study is being done to bring out the incidences of both maternal and fetal complications among women carrying multiple pregnancies in a tertiary care centre in Thrissur, Kerala so as to provide better care for those women at risk.

2. Materials and Methods

2.1. Research approach and design

Prospective and retrospective cohort study.

2.2. Maternal variables

1. Demographic variables
2. Obstetric score
3. Type of multiple pregnancy
4. Chorionicity
5. Type of conception
6. Contraceptive use
7. Mean gestational age
8. Hydramnios (Oligo – Poly sequence)
9. Preterm Premature Rupture of membranes(PPROM)

10. Preterm Labor
11. Antepartum haemorrhage
12. Gestational hypertension sequence(GHTN)
13. Gestational diabetes mellitus(GDM)
14. Anaemia
15. Timing of delivery
16. Mode of delivery
17. Postpartum complications

2.3. Foetal and neonatal variables

1. Discordant growth
2. Twin - Twin transfusion syndrome
3. Prematurity
4. Single Foetal demise/Intrauterine death
5. Low birth weight
6. Neonatal Intensive Care Unit admission(NICU) – Duration and cause
7. Postnatal visit

2.4. Study setting

Department of Obstetrics and Gynaecology, Amala Institute of Medical Sciences, Thrissur, Kerala

2.5. Study duration

Eighteen months from January 2016 to June 2017

2.6. Study population

All antenatal patients satisfying the inclusion criteria were included in the study

2.7. Inclusion criterion

1. Antenatal women with multifetal pregnancy attending our labor room and Outpatient Department at 13 weeks of gestation and they will be followed up throughout pregnancy.
2. Antenatal women with multifetal pregnancy who attended our department for the previous two years. (2014-2016)

2.8. Exclusion criterion

1. Women unwilling for the study.

2.9. Sample size calculation

$$N = \frac{Zpq}{d^2}$$

Alpha = 0.05

P = prevalence of Intra Uterine Growth Restriction in monochorionic twins = 46% (Intrauterine growth restriction in twin pregnancies: incidence and associated risk factors. Study by Fox N S).

By applying different variables in the above formula

Power- 80%

$q = 1-p$

$N = 117$

Appropriate proportion and mean will be used to achieve our objectives.

2.10. Design of the study

After getting clearance from the institutional ethical and research committee, the study was conducted. Patients were selected according to the inclusion criteria. Informed consents were taken from the patients. Personal details and clinical history were noted during the study. The subjects were followed up till delivery and postpartum checkup. All antenatal, antepartum, intrapartum and postpartum complications, the timing of delivery, the mode of delivery were assessed. The babies were assessed for their birthweight, APGAR, NICU admissions cause, duration of admissions if any. The subjects and the babies were followed up till discharge from the hospital and during the postnatal checkup. All the antenatal women with multifetal pregnancy who attended our department during the previous two years (2014-2016) were also reviewed based on their case sheets and by necessary modes of communication. The pregnancy outcome and complications if any are assessed as per the variables and results are obtained.

2.11. Analysis and interpretation

A total of 117 women were studied. Their personal details, clinical history and investigation results were collected with the help of a proforma and sequentially entered in Microsoft Excel sheet.

Data were analysed using Statistical Package for Social Sciences (SPSS) software version 23.

The results were interpreted in the form of tabular columns and bar diagrams.

3. Results and Discussion

In the present study, we considered twin and triplet pregnancies. The incidence of multifetal pregnancy was 1.55% in our institution for the year 2016. According to various studies conducted since the 1970s, the incidence of multifetal gestation was approximately 3%. Four of our subjects showed a positive family history, none of them had a past history of multiple pregnancy.

We noticed that the incidence of multiple pregnancy was highest in the age group 21-25yrs (55.6%) followed by the age group 26-30yrs(29.1%). The least incidence was seen in women above 31yrs(5.1%). The mean age calculated was 24.487. This may be due to the fact that majority of patients attending our outpatient department were of younger age group.

As for the incidence of multiple pregnancy with regards to the parity, we found that the highest incidence was among primigravidae (62.4%) and the least was in multi para with parity more than 3 (0.9%). The highest incidence may be because most of our patients were of younger age group and they were mostly primigravidae.

Highest incidence was for twins (113 cases) (96.6%). The incidence of triplets was (3.4%)(4 cases).

Dichorionic twin pregnancies had the highest incidence (72.6%) followed by monochorionic twins (25.6%).

In the present study we noticed that the maximum twin pregnancies were a result of spontaneous conception which was 75.2% followed by conceptions from ovulation induction with clomiphene citrate. Similar results were also noted in studies conducted by Amiben V. Gajera et al.⁵

57.3% of women never used any contraceptives, 30.8% used natural methods and 11.1% used barrier contraceptives. None of them used Oral Contraceptive Pills or Intrauterine Contraceptive Devices.

The incidence of polyhydramnios in our study was 1.7% and oligohydramnios was 14.5%. Both polyhydramnios and oligohydramnios were found in 0.9% which was a case of Twin Twin Transfusion Syndrome. Since the incidence of Dichorionic Diamniotic twins were high in our study, oligohydramnios may be due to the independent risk factor for each twin.

Preterm labor complicated 25.6% of multiple pregnancies.(Figure 1) The incidence was comparable to those obtained from the studies conducted by Simi et al.⁶ The incidence were lower when compared to studies by Bhattacharya et al. (44%)and Bangal et al. (88%).^{7,8}

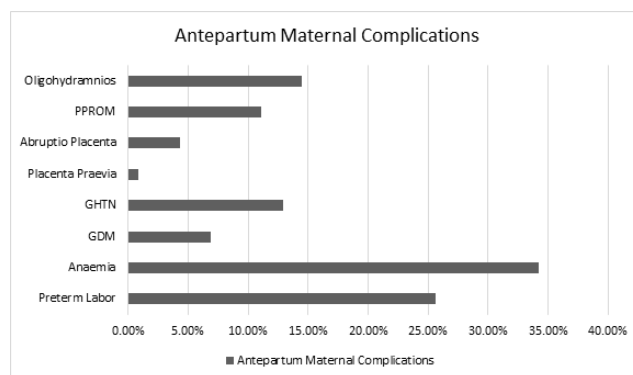


Fig. 1: Antepartum maternal complications

In our study we found that 11.1% of multiple pregnancies were complicated by preterm premature rupture of membranes (Figure 1). This was similar to the study conducted by Wong L.⁹

Among the multiple pregnancies that we studied 4.3% were complicated by abruptio placentae and 0.9% were complicated by placenta praevia (Figure 1). The incidence of abruptio placentae (3%) was comparable and placenta

praevia (3%) was low when compared to the study conducted by Simi et al.⁶

Gestational hypertension complicated 12% of pregnancies (Figure 1). This was comparable to that of the study by Laine K et al.¹⁰ (12.9%) and 0.9% were complicated by eclampsia which was comparable to the study by Simi et al.⁶ (0.5%).

In our study we found out that 12.8% of multiple pregnancies were complicated by gestational diabetes (Figure 1). Those on oral hypoglycemics was 6% and 0.9% were on insulin. 5.1% had gestational glucose intolerance. 0.9% had pre gestational diabetes. The incidences were comparable to the study conducted by Simi et al.⁶

The incidence of anaemia in our study was 34.2% (Figure 1). This incidence was higher when compared to the studies conducted by Simi et al. (21.5%).⁶

In our study 46.2% of women with multiple pregnancies delivered by 37 weeks of gestation, 32.5% delivered by 36 weeks, 7.7% delivered by 34 weeks and 13.7% delivered less than 34 weeks of gestation. This was comparable to the study conducted by Amiben V. Gajera et al.⁵ (46% of the women delivered before 36 weeks of gestation and 18% delivered at 29 – 32 weeks of gestation.)

In our study 55.6% of multiple pregnancies were delivered by Lower segment Caesarian section(LSCS), whereas 39.2% delivered vaginally. 5.2% had operative vaginal deliveries with instruments (vacuum was used in 4.3% and forceps was used in 0.9%)(Figure 2).

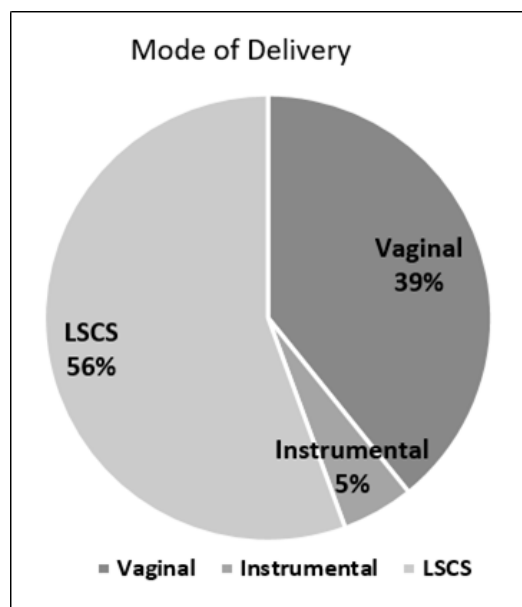


Fig. 2: Incidence of each mode of delivery

In our study, 17.9% of twin deliveries were complicated by postpartum haemorrhage. Out of the 21 cases of postpartum haemorrhage, 20 were medically managed and one of them required surgical intervention. The incidence

was comparable to the study conducted by Simi et al. (17%).⁶

In the present study, 25% of vaginal deliveries were complicated by perineal tears which included 1st degree tears of 4.3%, 3rd degree tears of 4.3% and para urethral tears of 2.6%. Postnatal urinary retention was found in 2.6% of vaginal deliveries, 6% of mothers required catheterisation postnatally. All of them required catheterisation for < 1 week. Catheterization was done for atonic bladder. Those catheterised before caesarian section were not included in this group.

The need for antibiotics postpartum among multiple pregnancies were also studied. 72.6% of mothers required antibiotics, 9.4% required intra venous antibiotics.

Puerperal fever was noted in 17.1% of mothers and urinary tract infections were found in 4.3%. Those cases of fever were self limiting and may not be attributed to febrile morbidity.

Discordant growth among multiples were found in 32.5%, and in them significant discordancy (>25%) was found in 12%. This was comparable to the result of the study by Miller et al (16%)¹¹

Incidence of twin transfusion syndrome in our study was found to be 0.9%. (1 case).

The incidence of prematurity among babies of multiple pregnancy was 53%.

In our study, the incidence of fetal loss was 3.4% (4 cases – 3 Intrauterine deaths and 1 Single fetal demise) 2.6% of the demise occurred in 30-35 weeks of gestation, and 0.9% between 20 – 24weeks.

We found that in our study, the birth weights of 37.6% of 1st babies and 36.8% of 2nd babies lies within the group between 2 and 2.4kg. All the third babies of triplets were <2.5kg. The low birth weights can be attributed to increased incidence of prematurity and IUGR among multiple pregnancy. None of the babies weighed above 3.5kg. The incidence was low when compared to the study by Bangal et al. (showed an incidence of 82%).⁸

We found that in our study 83.18% of 1st babies and 80.7% of 2nd babies and all of the triplet babies required Neonatal Intensive care.

Out of the 94 first babies and 92 second babies and 4 third babies who required admission, 54.25% of 1st babies and 54.38% of 2nd babies were admitted because of prematurity, followed by hyperbilirubinemia. 75% of triplet babies were admitted due to prematurity.

95% of babies recovered. We had 7 Neonatal deaths (4 first babies and 3 second babies) 95.74% of 1st babies and 96.74% of 2nd babies recovered within 1 week.

Incidence of congenital anomalies was 5.1% for 1st babies and 1.7% for 2nd babies. This may also be due to an independent risk factor for babies in multiple pregnancy, majority being Dichorionic diamniotic pregnancy while Simi et al. reported 2.6%.⁶

During the postnatal visit, babies were checked for the adequacy of breast feeding, weight gain, otoacoustic emission testing and retinal examination. 85.58% of babies had adequate weight gain whereas 14.42% had weight gain <100g. 3.7% of 1st baby, 7.27% of 2nd baby had abnormal otoacoustic emissions tests. With regard to the retinal examination test 2.78% of 1st babies had abnormal test results.

We did not observe any maternal mortality in our study.

4. Conclusion

Multiple pregnancies should always be considered as high risk. Mothers carrying multifetal pregnancy should be properly counselled regarding all the complications and should be kept under constant monitoring.

Most of the complications in multiple gestations are usually preventable. High risk units in the obstetric ward and a well-developed neonatal intensive care set up would help to reduce the maternal, perinatal morbidity and mortality.

In spite of all those advances, most of the complications remains the same, hence it needs further evaluation and necessary steps.

5. Source of Funding

None.

6. Conflict of Interest

None.

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