

An Analytical Study of Multifetal Gestation in a Teaching Institute

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Abstract

Multifetal pregnancies are high risk pregnancies. The rising trend has necessitated this study in order to assess the associated high risk factors and emphasize for the availability of antenatal services to address them. This paper presents incidence, antenatal profile and maternal outcomes of multifetal pregnancies. A prospective study conducted in a teaching hospital over 2 years. Demographic features, antenatal profile, intrapartum and postpartum outcomes of cases were evaluated. Out of 18979 deliveries, there were 239 pairs of twins (1/79) and 6 sets of triplets (1/3163). Incidence was highest in age group 20 to 24 years. Amongst 245 cases, 243 (99.18%) were registered. Treatment for infertility was taken by 19 cases (7.76%) and 16 cases (6.53%) had family history of twinning. Maternal complications were anaemia (61.63%), preterm labour (35.10%) and hypertensive disorders of pregnancy (26.12%). Out of 245 cases, 80 cases delivered by caesarean section and 7 cases needed caesarean section for second twin. There were 2 maternal deaths (case fatality 0.81%). Cause of death in both was acute respiratory distress syndrome secondary to antepartum eclampsia. Better surveillance, specialised antenatal services and improved neonatal care can reduce complications in multifetal pregnancies.

Keywords

Multifetal pregnancy, twins, triplets.

I. Introduction

The study of twins and the phenomenology of twinning are called Gemellology [1]. Worldwide the incidence of multifetal pregnancies varies considerably. The available evidence indicates that the incidence is 2-20 per 1000 birth [2]. A traditional approximation of the incidence of multifetal pregnancy is 1:80 and triplets 1:6400. In India, incidence of twins is considered to be almost 1% of total deliveries [3].

Multifetal pregnancies warrant special attention because they make a disproportionate contribution to maternal/perinatal morbidity/mortality well in excess of that due to multiplication of singleton risks by fetal number [4, 5].

Women with multifetal gestations are at increased risk of preeclampsia, preterm labour and PROM, anaemia, antepartum or postpartum haemorrhage, polyhydramnios, caesarean section delivery, maternal and perinatal deaths as compared to women with singleton gestation [6]. In addition, multifetal gestations are associated with increased cost to families and health care systems [7, 8].

The objective of this hospital based prospective study is to determine the incidence, antenatal profile and factors influencing multifetal pregnancies as well as intrapartum and postnatal course, complications and outcome of multifetal pregnancies at a tertiary care referral centre.

II. Material and Methods

This was a prospective observational study of multiple pregnancies conducted at a tertiary care centre/ teaching hospital over a period of 2 years. Ethical clearance was obtained by the ethics committee of the institution before starting the data collection. All patients with multiple/multifetal pregnancy who delivered at the hospital during the study period, have been included in the study. Those patients who were admitted for observation and then discharged but did not come for follow up have been excluded from the study.

III. Results and Discussion

During the study period of 2 years (1st October 2014 to 30th September 2016), there were a total of 18979 deliveries. Of these, 245 were multifetal pregnancies, including 239 pairs of twins and 6 sets of triplets. Hence, the incidence of multifetal pregnancies was 1.29% or 1 in every 77 pregnancies. Of this, the incidence of twins was 1.26% (1 in 79 pregnancies) and that of triplets was 0.03% (1 in 3163 pregnancies). Majority of the multifetal pregnancies (97.55%) were twin pregnancies. Only 2.45% were triplet pregnancies.

Studies on multifetal pregnancy across the world report varying incidences of twin and triplet births, ranging from 0.9% to 3.2%. Maximum incidence was seen in Nigeria. In Kano, Northern Nigeria, Yakasai IA et al., [9] found rate of twinning to be 2.3 % (349 pairs of twins and 11 sets of triplets among 15247 deliveries over 1 year). Incidence of multifetal pregnancies is dependent on several factors including age, parity, ethnicity, race, family history and use of Assisted Reproductive Technology (ART). Nigerian studies give higher incidence owing to the Igbo and Yoruba natives of Southwest Nigeria. This is attributed to a high rate of consumption of a specific type of yam containing a natural phytoestrogen which is postulated to stimulate superovulation.

Su RN et al., [10] studied 15194 pregnancies in Beijing, China over 1 year. It was a retrospective study conducted in 15 hospitals. There were 253 multifetal pregnancies, making the incidence of the study 1.7% with significantly more number of cases more than 25 years age. Pandey MR et al., [11] observed 7,666 deliveries from 2012 to 2014, at a teaching hospital in Pokhara, Nepal and found 144 sets of multifetal pregnancies, including 139 pairs of twins and 5 sets of triplets, making the incidence 1.9 per 1000 births.

From 1980s onwards a surge in multifetal pregnancies was noted owing to higher grades of education among women, later age at marriage, increasing age of women wanting to conceive and thereby the evolution of ART (including ovulation induction drugs).

The age of cases had a wide range in our study, from 18 years to 48 years with a mean of 25.54 ± 3.96 years. The median age was 23 years. Maximum incidence of multifetal gestation was seen in young age group of 20 to 24 years (Table 1).

REGISTERED PATIENTS:

In his study in Nepal, Pandey MR et al [11] reported that 126 cases of 144 (87.5%) were unregistered while only 17 cases were registered. Even in Pakistan, Rizwan N et al [12] stated that 81 % (52) cases were unregistered and only 18% were registered. On the contrary, in the study of Bangal V et al

[13], 76% cases were found registered. In 2014, Chiwanga ES et al.,[14] in Tanzania reported that 99.3% of their case had received antenatal care. Similarly, in the present study, 243 cases were registered in either the hospital of study or outside hospitals (either public or private hospitals).

EDUCATION, GRAVIDITY AND TREATMENT FOR INFERTILITY:

Of 245 cases, 20 were uneducated, 133 had primary education and only 14 had higher secondary education. Majority cases (157) were multigravidae and only 19 cases (07.76%) had taken treatment for infertility. Rest conceived spontaneously. Only 16 cases gave family history of twinning.

GESTATIONAL AGE AND HAEMOGLOBIN AT ADMISSION:

Majority (173 of 245) presented to the labour room between 34 to 38 weeks of gestation (Table 2).

Mean haemoglobin level of the patients at the time of admission to the labour room was 10.19 ± 1.42 gram%. Of the 245 cases, 94 cases were not anaemic. Remaining 151 cases

were anaemic. Severity of anaemia was further categorized as mild, moderate and severe as per WHO classification of anaemia in pregnancy. Amongst anaemic patients, maximum cases were moderately anaemic contributing to 60.26% of the total anaemic cases (Table 3). Both cases with unregistered pregnancies were anaemic, (one moderate and one severe).

It was observed that 3 of the 4 cases (75%), with severe anaemia were uneducated and the remaining 1 had primary education. Of the 14 patients with higher secondary education, 5 cases were not anaemic, 6 cases had mild anaemia and none were severely anaemic. While correlating anaemia with literacy, severe anaemia was found to be significant amongst the illiterate group as against the literate; though haemoglobin percentage appeared to have statistically insignificant difference for non-anaemic subjects (Table 4).

MODE OF DELIVERY:

One of the most controversial subjects is the mode of delivery in twin pregnancies. The greatest problems are associated with the second twin and exist especially in the vertex-non vertex presentations.

Opinions regarding the mode of delivery have been changing over the decades. Prior to 1970, the route of delivery of twin gestation was dictated by the presentation of the first twin; with delivery of the first twin complete, maneuvers then considered appropriate to deliver the second twin included internal podalic version and complete breech extraction.

Taylor ES[15] in 1976 suggested caesarean delivery for all twins with malpresentation of the second twin regardless of the fetal weight. A study by Su RN et al., [10] also shows caesarean delivery as the more prevalent mode of delivery. Others recommended that vaginal delivery, irrespective of the presentation of the second twin, is valid as long as the fetal weight is more than 1500 grams and gestational age is more than 32 weeks [16,17] It is presently agreed that mode of delivery should be customized as per patient profile, fetal profile, services available and estimated prognosis.

Of the total 245 cases, there were 158 vaginal deliveries (64.49%), including 155 cases with twins and 3 with triplets. There were 80 (32.65%) caesarean sections which included 77 cases with twins and 3 with triplets. In 7 (02.86%) cases, first baby was delivered by vaginal route while second baby needed caesarean section for hand prolapse (5 of the 7 cases) and non-progress of labour (2 of the 7 cases). Amongst triplets, 3 of 6 cases (50%) had caesarean section (Table 5).

INDICATIONS OF CESAREAN SECTION:

Amongst indications for caesarean sections in the different studies, malpresentation was the most common in all. This was followed by a high incidence of cases with fetal distress in the studies of Yuel VI et al., [18], Erdemoglu M et al., [19] and in the present study (Table 6).

In contrast, the study of Yakasai IA et al., [9] showed high incidence of NPOL and cord prolapse in comparison with our study.

A high incidence of undelivered second twin for which caesarean section was needed, was recorded in the present study (of these 2 were due to NPOL and 5 due to hand prolapse)(Table 7) Also, the present study noted lowest incidence of APH and no cases of conjoined twins.

MATERNAL COMPLICATIONS:

Anaemia followed by preterm labour and hypertensive disorders of pregnancy remained the major maternal complications of this study. Case fatality rate was 0.81% wherein 2 women died due to acute respiratory distress secondary to antepartum eclampsia (Table 8).

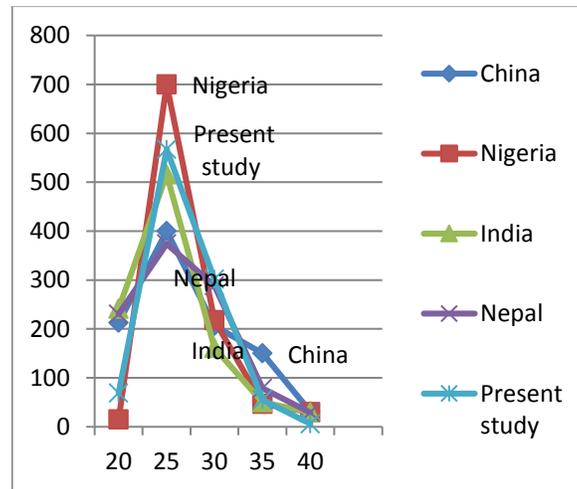


FIGURE 1:Graph: Incidence per 1000 deliveries in different age groups in different countries. Nigeria shows the highest rate per 1000 deliveries in the younger age group of 20 to 30 years. However, beyond 30 years of age, China shows a higher rate per 1000 deliveries, while Nigeria falls to a much lower incidence in the same age group.

Table 1: Age wise distribution of the cases

Age group	Number of patients
≤ 19 years	017 (06.92%)
20 – 24 years	139 (56.73%)
25 – 29 years	074 (30.20%)
≥30 years	015 (06.12%)
Total	245

Table 2: Distribution of cases as per their gestational age at the time of admission

Gestational age (weeks)	Number of patients
26 – 30	013 (05.31%)
> 30 – 34	046 (18.77%)
> 34 – 38	173 (70.61%)
> 38	013 (05.31%)
Total	245

Table 3: Haemoglobin level of cases at the time of presentation

Haemoglobin level (gram %)	Number of cases
≥11 (no anaemia)	94 (38.36%)
10 – 10.9 (mild)	56 (22.85%)
7 – 9.9 (moderate)	91 (37.14%)
<7 (severe)	04(01.63%)
Total	245

Table 4: Correlation of level of education with severity of anaemia

Anaemia	Uneducated	Primary	Secondary	Higher Secondary	Total
Severe	03	01	00	0	04
Moderate	10	50	28	3	91
Mild	01	31	18	6	56
No Anaemia	06	51	32	5	94
Total	14	82	46	9	245

Table 5: Comparison of mode of delivery of in different studies

Author	Vaginal Delivery	Caesarean Delivery	Caesarean Delivery for Undelivered 2nd Twin
Erdemoglu M et al (2005)	52 (37.90%)	84 (62.10%)	00
Yuel VI et al (2007)	110 (55.00%)	90 (45.00%)	00
Su RN et al (2013)	33 (13.20%)	217(86.80%)	00
Yakasai IA et al (2013)	292 (70.60%)	57 (29.40%)	00
Chiwanga ES et al (2014)	469 (57.00%)	353(43.00%)	00
Present study(2016)	158 (64.49%)	80 (32.65%)	07 (02.86%)

Table 6: Indications for caesarean sections in different studies

Indication	Erdemoglu M et al (2005) (n=136)	Yuel VI et al (2007) (n=90)	Yakasai IA et al (2013) (n=57)	Present study(2016) (n=87)
Malpresentation	77 (47.50%)	64 (71.11%)	23 (40.30%)	30 (34.48%)
Fetal Distress	15 (09.20%)	03 (03.33%)	01 (01.70%)	14 (16.09%)
Failure of Induction	---	---	---	10 (11.49%)
Scar Dehiscence	22 (13.60%)	02 (02.22%)	02 (03.50%)	10 (11.49%)
NPOL	06 (03.70%)	03 (03.33%)	06 (10.50%)	04 (04.59%)
Monoamniotic Monochorionic	---	01 (01.11%)	---	05 (05.75%)
Cord prolapse	03 (01.90%)	02 (02.22%)	06 (10.50%)	03 (03.44%)
Triplets	---	---	---	03(03.44%)
Undelivered second twin	---	---	02 (03.50%)	07 (08.04%)
Placenta Praevia	03 (01.90%)	01 (01.11%)	01 (01.75%)	01 (01.15%)
Abruptio placentae	---	---	01 (01.75%)	---
Entanglement of umbilical cord	07 (04.30%)	---	---	---
Conjoined twin	01 (00.06%)	---	---	---
Others	---	14 (15.55%)	---	---

Table 7: Distribution of cases as per indications for caesarean section of the undelivered second twin

Indication for caesarean section for the undelivered second twin	Number of cases
Hand prolapse	5 (71.42%)
NPOL	2 (28.57%)
Total	7

Table 8: Comparison of complications associated with multifetal pregnancies in various studies

Complication	Agudelo AC et al (2000)	Yuel VI et al (2007)	Rizwan N et al (2010)	Su RN et al (2015)	Yakasai IA et al (2013)	Present study (2016)
Anaemia	1750 (11.3%)	56 (28.00%)	42 (65.50%)	73 (31.50%)	03 (01.50%)	151 (61.30%)
Hypertensive Disorders of Pregnancy	1591 (10.30%)	39 (19.50%)	20 (31.20%)	47 (19.00%)	25 (12.90%)	64 (26.12%)
Eclampsia	103 (0.70%)	---	00	00	00	02 (0.80%)
Preterm labour	6673 (43.10%)	115 (57.50%)	54 (84.40%)	136 (53.80%)	---	86 (35.10%)
PROM	1477 (09.50%)	36 (18.00%)		46 (18.20%)	15 (07.70%)	12 (04.89%)
PPROM	00	00	00	00	00	33 (13.46%)
Placenta Praevia	247 (01.60%)	02 (01.00%)	00	00	03(01.50%)	01 (00.40%)
Abruptio placentae		02 (01.00%)	04 (06.20%)	00		01 (00.40%)
PPH	1409 (09.10%)	16 (08.00%)	08 (12.50%)	43 (17.00%)	05 (02.60%)	10 (4.08%)
GDM	350 (02.30%)	01 (00.50%)	---	60 (23.70%)	---	00

*Some cases had more than one complication

IV. Conclusion

“Sustainable Development Goals number 3 - Ensure healthy lives and promote well-being for all at all ages” encompasses improvement in maternal and neonatal health and aims to reduce mortality and morbidity, especially in developing countries. As multifetal births can contribute significantly to maternal and perinatal morbidity and mortality, it is important to investigate the magnitude of the increase in feto-maternal risk so to address it accordingly.

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Conflicts of Interest: NIL

V. References

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