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Original Research Article

Study of maternal and perinatal outcome in twin pregnancy at a tertiary care hospital

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ABSTRACT

Background: Twin pregnancy refers to the presence of two fetuses in the uterus. The phenomenon of twinning has fascinated mankind throughout its recorded history. The major problems occurring in twin pregnancy are prematurity, Lbw, IUGR, birth trauma, birth asphyxia and congenital anomalies. The most serious risk is preterm delivery, which accounts for most of the increased perinatal mortality, neonatal morbidity, and long-term morbidity of twins.
Methods: This prospective observational study included analysis of 250 women with twin pregnancies, over a period from 01st November 2021 to 31st October 2022 with 28 completed weeks of gestation, admitted at PDMC, Udaipur, Rajasthan.
Results: In our study 250 twin pregnancies delivered Out of total 15209 deliveries were studied in our institute. incidence of twin pregnancy was 1.64%. The majority of study participants were in the age group 20 to 29 year and delivered between the gestation age 34-37week, multigravida was 51.2% and in primi it was 48.8%. The 4% patients underwent caesarean section and 48% delivered by vaginal delivery.
Conclusions: Twin pregnancy is a great challenge to the concerned obstetricians. Complications associated with twin pregnancies cannot be prevented but can be detected early and controlled adequately by proper and prompt management. Timely diagnosis and treatment of nutritional anaemia and pre-eclampsia helps in preventing additional complications. Hence the need for better obstetric care, neonatal care, health services to get a better fruitful outcome.

Keywords: Glucocorticoids, Tocolytics, Twin pregnancy

INTRODUCTION

Twin pregnancy refers to the presence of two fetuses in the uterus. The phenomenon of twinning has fascinated mankind throughout its recorded history. Twins have often been regarded as being inherently different from Singletons, and Soci et al. responses to their birth have ranged from awe to fear.[1] Twin fetuses commonly result from fertilization of two separate ova and are termed as double ovum, dizygotic or fraternal twins. About a third as often, twins arise from a single fertilized ovum that subsequently divides into two similar structures, each with the potential for developing into a separate individual. These twins are termed as single-ovum, monozygotic, or identical twins.[2] All dizygotic twins and one-third of monozygotic twins have two separate placentas and amniotic cavities and are thus dichorionic-diamniotic. Two thirds of monozygotic twins have a common placenta and two amniotic cavities (mono chorionic diamniotic) and about 1% of twins have a single placenta and a common amniotic cavity i.e. monochorionic-monoamniotic.[3]

Globally, in the last two decades, with advances in assisted reproductive technology (ART), older maternal age and widespread use of ovulation inducing drugs, the incidence

of twin gestation has witnessed a steep increase.[4] In India, the occurrence of twin gestation is approximately 1% of all gestations but accounts for 10% of perinatal mortality. There is 2.5-fold increased risk of maternal mortality in twin gestation than in singleton pregnancies.[5] The incidence of twins varies with ethnicity and geographical distribution.[6]

Twin pregnancies have been increasing in incidence over a few decades. Use of ovulation induction with drugs, in vitro fertilization and increasing age of the mother during conception are two primary causes for the increase in incidence.[7] Twin pregnancies though accounting for only a lesser percentage for live births, are associated with higher rates of almost every potential complication of singleton pregnancy.

The major problems occurring in twin pregnancy are prematurity, low birth weight, intra uterine growth restriction, birth trauma, birth asphyxia and congenital anomalies and fetal complications peculiar to twin pregnancies. The most serious risk is preterm delivery, which accounts for most of the increased perinatal mortality, neonatal morbidity, and long-term morbidity of twins. Higher rates of fetal growth restriction and congenital anomalies also contribute to adverse outcome in twin births. About one fourth of twins require neonatal (NICU) admission.

Twin pregnancy has been associated with many maternal complications such as anemia, hyperemesis, pre-eclampsia, antepartum hemorrhage, preterm labor, polyhydramnios, varicose veins and gestational diabetes.

Until the latter decades of the 20th century twins were relatively rare with only 7.44 per 1,000 births in the UK in 1938, the first year distinguishing maternities with multiple births, while higher order births were even rarer with only 54 triplets recorded.[8] The number of multiple births has increased greatly over the decades. An international study looking at twin and triplet births during the 1980s and 1990s in Canada, England and Wales, France and the United States reports an increase in the rate of twins from 1981 to 1997 of between 28% to 45% in these countries.[9]

The most recent statistics available from the United States show the twin birth rate rising by 2% in 2004 to 32.2 per 1,000 total births. Although triplet and higher order rates have declined by 6% numbers had soared during the 1980s and 1990s and the current rate is still 1.8 per 1,000 total births.[10] Rates for the United Kingdom (UK) are considerably lower with the rate of twins only 10.5 per 1,000 births for 2005, however the rate of multiples continues to rise here too, from a reported 14.1 per 1,000 births in 1995 to 14.9 in 2005.[11,12] The introduction to this thesis will explore some of the reasons for this increase and whether it should be seen as a cause for concern.

METHODS

This prospective observational study included analysis of 250 women with twin pregnancies, over a period of 1 year with 28 completed weeks of gestation, admitted for delivery in labour room at Pannadhay Mahila Chikitsalaya, associated to RNT Medical College, Udaipur, Rajasthan. This study was conducted from 01st November 2021 to 31st October 2022. All women with twin pregnancy with > 28 weeks of gestation delivered at Pannadhay Mahila Chikitsalaya, associated to RNT Medical College, Udaipur, Rajasthan.

Sample size

All women with twin pregnancy with >28 weeks of gestation delivered in at Pannadhay Mahila Chikitsalaya, associated to RNT Medical College, Udaipur, Rajasthan during the period of data collection.

Inclusion criteria

Inclusion criteria was women with twin pregnancy, gestational age more than 28 weeks.

Exclusion criteria

Exclusion criteria were singleton pregnancy, triplets and higher order pregnancies, gestational age less than 28 weeks, women with pre-existing medical disorders like chronic hypertension, pre gestational diabetes, cardiac disease, renal disease or collagen vascular disorder.

Methodology

Permission from the institutional ethical committee was obtained. All women with twin pregnancy who delivered at Pannadhay Mahila Chikitsalaya, associated to RNT Medical College, Udaipur, who fulfil inclusion and exclusion criteria were included in the study. The patients were provided with the study information sheet and consent form and were explained about the relevant details about the study in a language best understood by them. Informed written consent was obtained after explaining about the purpose, nature and process of the study and then data collection was started. All the data were collected with the help of pre structured peer reviewed performa. Maternal and foetal monitoring was performed according to standard guidelines. Maternal and foetal outcome in terms of morbidity and mortality were noted.

RESULTS

Analysis of 250 twin gestations satisfying the inclusion criteria was done and following observations and results were made. Majority (90%) of patients conceived by spontaneous conception (Table 1).

In our study majority of patients studied were in the age group of 20-29 years (Table 2).

In this current study among 250 cases, most of the women (56.4%) were booked (Table 3).

Table 1: Mode of conception (N = 250).

Mode of conception	N
Spontaneous conception	**225**
Conceived by ART	**25**

Table 2: Distribution of women according to age (N=250).

Maternal age	Frequency	Percentage
<20	10	4.0
20-29	181	72.4
30-39	50	20.0
>40	9	3.6
Total	250	100.0

Most of the women (54%) at the time of delivery were between gestation age 34-37 weeks (Table 4).

Table 3: Distribution of booked and emergency women (N=250).

Type	Frequency	Percentage
Booked	141	56.4
Emergency	109	43.6

In our study, 51.2% were multigravida and 48.8% were primigravida among 250 cases (Table 5).

Table 4: Distribution of women according to period of gestation at the time of delivery (N=250).

Gestational age (week)	Frequency	Percentage
28-34	75	30.0
34-37	135	54.0
>37	40	16.0
Total	250	100.00

Preterm labor was the most frequently encountered complication seen in 76% patients, followed by anemia (60.8%), hypertensive disorders of pregnancy (24%), premature rupture of membranes (20%) and PPH (8%) (Table 6).

Table 5: Distribution of women according to parity (N=250).

Parity	Total	Percentage
Primigravida	122	48.8
Multigravida	128	51.2
Total	250	100.0

Mode of delivery was vaginal delivery in 46% versus 54% by caesarean section (Table 7).

Table 6: Maternal complications (N=250).

Outcome	Frequency (%)
Premature labor	190 (76.0)
Hypertensive disorders of pregnancy	60 (24.0)
Anemia	152 (60.8)
Gestational diabetes mellitus	15 (6.0)
Polyhydromnios	4 (1.6)
Antipartum hemorrhage	10 (4.0)
PROM	50 (20.0)
Postpartum hemorrhage	20 (8.0)
Maternal mortality	3 (1.2)
Others	5 (2.0)

Table 7: Mode of delivery (N=250).

Mode of delivery	Frequency	Percentage
Vaginal	115	46.0
Caesarean section	135	54.0
Total	250	100.0

Table 8: Perinatal outcome (N=250).

Neonatal outcome	Frequency	Percentage
IUD		
Twin 1	7	2.8
Twin 2	12	4.8
Congenital malformation		
Twin 1	1	0.4
Twin 2	1	0.4

In our study IUD was observed in 7 (2.8%) first twins and 12 (4.8%) second twins and congenital malformation was present in 1 in first twin as well as in second twin (Table 8).

Table 9: Birth weight (n=250).

Birth weight	Frequency	Percentage
Twin 1		
<1.5 kg	52	20.8
1.5-2.49 kg	147	58.8
2.5-3.49 kg	48	19.2
>3.5 kg	3	1.2
Twin 2		
<1.5 kg	62	24.8
1.5-2.49 kg	162	64.8
2.5-3.49 kg	26	10.4
>3.5 kg	0	0.0

Most of the neonates had birth weight between 1.5-2.49 kg {in twin 1 (58.8%) and twin 2 (64.8%)}, less than 1.5 kg in twin 1 (20.8%) and in twin 2 (24.8%). LBW and ELBW was observed more in second twin (Table 9).

Among 250 twins in our study 57.2% of first twin babies and 58.4% of second twin babies needed NICU admission (Table 10).

Table 10: NICU admission.

NICU admission	Frequency	Percentage
Twin 1	143	57.2
Twin 2	146	58.4

DISCUSSION

The present study was an observational study conducted in the Department of Obstetrics and Gynaecology at Pannadhay Mahila Chikitsalaya, associated to RNT Medical College, Udaipur, Rajasthan. All twin deliveries beyond 28 weeks of gestations and fulfilling the inclusion and exclusion criteria were included in the study. After explaining the purpose of the study and taking written informed consent, data was collected.

In the current study out of total 15209 total deliveries during one year study period in our institute 250 were the twin deliveries so overall Incidence of twins in this study was 16.43 per 1000 births (1.64%). Incidence of twin delivery in present study is close to incidence reported by Bassey et al (2014) 16 per 1000 births in their study.[16] Higher incidence was reported by Gajera et al (2015) 17.6 per 1000 births, Singh et al (2017) 1.85%, Gupta et al (2017) 2.82%, Upreti et al (2018) 1.9%, Rami et al (2019)[18] 1.78% whereas less incidence than over study reorted by Bangal et al (2012) (1.49%).[10,6,17,9,13,18,12]

We observed the highest incidence of twins in the maternal age group of 20-29 years 72.4%. Similarly higher incidence in age group 20-29 year reported by Bangal et al (2012), Gajera et al (2015), Chaudhary and Kumari (2018), Mehta et al (2020), Yadav et al (2020), Irene et al (2007), Sultana, et al (2011) in their studies.[12,10,19-23] As 20-29 year is the peak reproductive age group the majority of patients were in this age group . The least were after the age of 40 years 3.6%. 20% twin deliveries were observed between 30-39 year age group and 4% in less than 20 year age group. However Rizwan et al (2010) found a greater number of women in age group above 30 years.[24]

The incidence among primigravidae and multigravida was almost the same (48.8% in primigravida and 51.2% in multigravida). The corresponding incidence was reported in the study by Rami et al (2019) 47.7% in primipara and 52.3% in multipara otherwise According to study by Lata et al (2017), the incidence of twin pregnancy was 70.7% in multigravida and 29.3 % in primigravida.[18,14]

The rate of cesarean section in the delivery of twin pregnancies was (54%). Chaudhary et al reported cessarian section rate of 67.4%, Mehta CV et al (2020) 63.3%, Arora et al 20.32%, Bangal et al 33%.[11,20,25,12] The increase in the use of cesarean section to deliver twin pregnancies may be due to increased incidence of other obstetric indications for cesarean deliveries such as hypertensive disorders, malpresentation, cord prolapse, and premature rupture of membranes, fetal distress, precious pregnancy conceived after infertility as observed in this study.

Maximum number 54.4% of the women delivered between 34-37 weeks of gestation age. The incidence of preterm delivery was higher 84.4% in the current study as compared to Chowdhury et al (44%).[11] However, the incidence reported by Bangal et al was much higher (88%).[12] A higher incidence could be due to a higher rate of preterm termination due to obstetric complications.

The incidence of preterm labor in present study was 76% somewhere in between that found by two researchers, Chowdhury et al and Bangal et al.[11,12] The incidence of preterm delivery was high (88%) in the study done by Bangal et al and it was (44%) as reported by Chowdhury et al.[12,11] In Australia in 2009 (Australia's Mothers and Babies, AIHW, 2011) the overall rate of preterm birth (birthbefore 37 weeks) amongst women with twins was 52.2%.

In this study incidence of PROM in twin pregnancies was 20%. Incidence of PROM in other studies Singh et al 2017 was 10.67%, 8.5% in Rami BD et al (2019), Bangal et al in 16%.[17,18,12]

In this study ante partum hemorrhage was seen in the 4% which was similar to Singh L et 4% in their study.[17] Less incidence of APH was seen 2% by Irene et al.[22]

In our study postpartum hemorrhage occured in 8%. Incidence of PPH in other studies was like 3% in Gajera et al (2015), 13.33% in Singh et al (2017), Sharma et al (2018) 13.92%.[10,17,27] Improvement in PPH is due to active management of third stage of labour and use of newer prostaglandins.

In this study incidence of gestational diabetes was 6% and incidence of polyhydramnios was 1.6%. In the study by Taj et al, polyhydramnios was 8.3%, gestational diabetes was 4.2%.[26] In the study by Rami et al, polyhydramnios was 3.1%, gestational diabetes was 0.8% cases.[18]

In our study 2.8% intrauterine deaths were observed in twin 1 and 4.8% intra uterine deaths were observed in twin 2. IUD observed by Yadav et al, 3.8%, Rani et al, 1.4%.[28] Only 1 case of first twin and 1 case of second twin of congenital malformation was observed. Congenital malformation observed by Mehta et al was 3.3%.[20]

In our study Low birth weight (<2.5kg) was observed in 199 out of 250 first baby of twins (79.6%) and 224 out of 250 second baby of twins (89.6%). Taken together for both babies, LBW was seen in 84.6% twins. The incidence of having a baby of LBW in the study Taj et al was 79%, in the study Bengal et al was 82%, in the study Singh et al was 78.67%.[26,12,17] This high incidence of low birth weight

babies may be due to poor nutritional status of patients in this area and high incidence of preterm deliveries.

NICU admissions were required for 289 babies among twins (57.8%). First baby of twin required NICU admission in 143 out of 250 first babies (57.2%), second baby of twin required NICU admission in 146 out of 250 second babies (58.4%). More than half of the twins required NICU admission in this study. NICU admission reported by Deepthi et al was 36.6%, Richa et al (2018) was 54%, Rani et al (62.3%), Yadav et al (2020) 36.8%.[29,30,28,21] Most common cause of NICU admission was prematurity and low birth weight.

This study has some limitations. There is enough number of patients in our study but time duration if taken more then data could be more precised. Secondly as its our study done at tertiary care centre which got many high risk referrals from villages, so result may vary if study would done at tertiary care centre with city area as periphery.

CONCLUSION

Diagnosis of twin pregnancy and determination of chorionicity is essential to anticipate abnormalities of monochorionicity. Antenatal care, with increased rest and nutritional supplementation, early detection of foetal and maternal complications together with thorough intranatal and postnatal vigilance, has much to its credit in lowering both maternal and foetal dangers. Most of the complications in multiple gestations are preventable. High risk units in the obstetric ward and well developed NICU set up would reduce the maternal, perinatal morbidity and mortality. The knowledge of maternal and fetal complications helps in better surveillance, and in prevention of the morbidity and adverse outcome. Hence the need for better obstetric care, neonatal care, health services to get a better fruitful outcome.

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REFERENCES

1. Gabbe SG NJ, Simpson J.L, editor. Obstetrics normal and problem pregnancies. 4th ed. Elsevier Health Sciences; 2002: 411-416.
2. Cunningham LK, Blood SL, Hauth JC, Gilstrap III LC, Wenstrom KD, editor. Williams Obstetrics. 22nd ed. Apleton and Lange 25 Vant Street, East Norwak; 2005: 307-310.
3. Corsello G, Piro E. The world of twins: an update. Neonatal Med. 2010;23 Suppl 3:59-62.
4. Daftary SN, Desai SV. Multiple fetal gestations. In: Daftary SN, Desai SV, eds. Textbook of Selected Topics in Obstetrics and Gynaecology-2, for Postgraduates and Practitioners. 19th ed. New Delhi: BI Publications Pvt Ltd. 2004:52-72.
5. National Institute for Health and Clinical Excellence. Multiple pregnancy. The management of twin and triplet pregnancies in the antenatal period. NICE clinical Guideline, 2011. Available at: http://guidance.nice.org.uk/cg129. Accessed on 22 April 2023.
6. Blondel B, Kaminski M. Trends in the occurrence, determinants, and consequences of multiple births. Semin Perinatol. 2002;26(4):239-49.
7. Assunção RA, Liao AW, Brizot MD, Krebs VL, Zugaib M. Perinatal outcome of twin pregnancies delivered in a teaching hospital. Rev Assoc Med Bras. 2010;56(4):447-51.
8. National Statistics. Births: 1938-2004, maternities with multiple births; 2006.
9. Rizwan N, Abbasi RM, Mughal R. Maternal morbidity and perinatal outcome with twin pregnancy. J Ayub Med Coll Abbottabad. 2010;22(2):105-7.
10. Gajera AV, Basavannayya HP, Kavitha C, Hiremath R. Feto-maternal outcome in twin pregnancy. Int J Reprod Contracept Obstet Gynecol. 2015;4(6):1836-9.
11. Chowdhury S, Hussain MA. Maternal complications in twin pregnancies. Mymen Med J. 2011;20(1):83-7.
12. Bangal VB, Patel SM, Khairnar DN. Study of maternal and fetal outcome in twin gestation at tertiary care teaching hospital. IJBAR. 2012;03(10):758-61.
13. Upreti P. Twin pregnancies: incidence and outcomes in a tertiary health centre of Uttarakhand, India. Int J Reprod Contracept Obstet Gynecol. 2018;7(9):3520-5.
14. Gupta D, Mital P, Meena BS, Benwal D, Saumya, Singhal S, et al. Comparative assessment of fetomaternal outcome in twin pregnancy with singleton pregnancy at tertiary care centre. Int J Reprod Contracept Obstet Gynecol. 2017;6(6):2395-400.
15. Oraekwe OI. Appraisal of maternal outcome of twin gestation. Saudi J Heal Sci. 2018;7(3):163.
16. Bassey G, Inimgba NM. Fetomaternal outcome of twin gestation in Port Harcourt, South-South, Nigeria. Nigerian Journal of Medicine. 2014;23(4):282-7.
17. Singh L, Trivedi K. Study of maternal and fetal outcome in twin pregnancy. Int J Reprod Contracept Obstet Gynecol. 2017;6:2272-8.
18. Rami BD, Kaul S. Study of fetomaternal outcome in twin pregnancy. Int J Reprod Contracep Obstet Gynecol. 2019;8(12):4762-6.
19. Choudhary R, Kumaru G. An observational study on maternal and foetal outcome in twin Pregnancy. JMSCR. 2018;6(9):493-8.
20. Mehta CV, Patel BS, Shah A, Jani SK, Shah DC, Patel VB, et al. Study of obstetric and perinatal outcome of twin pregnancy. Int J Reprod Contracept Obstet Gynecol. 2020;9(6):2530-5.
21. Yadav MC, Mehta K, Bhati I. Study of fetomaternal outcome in twin gestation at tertiary care centre in western Rajasthan. J Dent Med Sci. 2020;19(2):25-9.

22. Irene YV, Kaur V. An analytical study of pregnancy outcome in multifetal gestation. J Obstet Gynecol India. 2007;57(6):509-12.
23. Sultana M, Khatun S, Ara R, Saha AK, Akhter P, Shah ABS. Maternal and perinatal outcome of twin pregnancy in a tertiary hospital. Ibrahim Card Med J. 2011;1(2):35-9.
24. Rizwan N, Abbasi RM, Mughal R. Maternal morbidity and perinatal outcome with twin pregnancy. J Ayub Med Coll Abbottabad. 2010;22(2):105-7.
25. Arora GG, Bagga GR, Arora GC. Study of neonatal outcome in multiple gestation. Int J Reprod Contracept Obstet Gynecol. 2016;5(11):4025-30.
26. Australian Institute of Health and Welfare Canberra. Australia's Mothers and Babies 2011. Perinatal statistics series no. 25. Cat no. PER 52i. Available at: https://www.aihw.gov.au/getmedia/265f3a72-1ea2-4bff-8a44-b16ca55d00f4/15639.pdf.aspx. Accessed on 22 April 2023.
27. Sharma A, Kumari S. Study of maternal and perinatal outcome in twin pregnancy at a tertiary care hospital: an observational study. JMSCR. 2018;6(9):288-92.
28. Rani PS, Prathyusha IS, Kumari R. A study of feto-maternal outcomes in twin gestation. International Archives of Integrated Medicine. 2020;7(1):73-7.
29. Deepthi HR, Pradeep MR, Lalitha S. Retrospective study of maternal and perinatal outcome of twin pregnancy in a teaching hospital. J Dental Med Sci. 2015;14(1):29-32.
30. Choudhary R. An observational study on maternal and foetal outcome in twin pregnancy. JMSCR. 2018;6(9).

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