

**Original Article****Maternal and Perinatal Outcome in Twin Pregnancy**Pratibha Kaphle <sup>1\*</sup>, Gehanath Baral <sup>1</sup>, Amar Nath Chaudhary <sup>1</sup>, Sandeep Acharya <sup>2</sup><sup>1</sup>Department of Obstetrics and Gynaecology, <sup>2</sup>Department of Radiology, Nobel Medical College Teaching Hospital, Biratnagar, NepalArticle Received: 15<sup>th</sup> May, 2025; Accepted: 28<sup>th</sup> July, 2025; Published: 31<sup>st</sup> July, 2025DOI: <https://doi.org/10.3126/jonmc.v14i1.83341>**Abstract****Background**

The incidence of twin pregnancy has significantly risen over past decade along with the use of various assisted reproductive technologies. Twin pregnancy is associated with increased maternal and perinatal complications and is a high-risk pregnancy which necessitates close supervision of both mother and fetuses during antenatal period. This study aims to evaluate maternal and perinatal outcome of twin pregnancy.

**Materials and Methods**

This was the observational cross-sectional study conducted in 130 pregnant women with twin pregnancy  $\geq 28$  weeks gestation in Department of Obstetrics and Gynecology from 24 March 2024 to 24 March 2025 at Nobel Medical College Teaching Hospital, Biratnagar, Nepal. Data were collected defining various maternal and neonatal characteristics and outcomes were evaluated in terms of maternal complications and obstetric outcome and statistical analysis was performed for comparison of perinatal outcomes between twins.


**Results**

Out of total 7006 births during this period, 130 were twin pregnancies and 2 were triplets. The incidence of twins was 1.85%. The most common maternal complications observed was preterm labor (44.6%) followed by PROM (16.1%), hypothyroidism (13%), pregnancy induced hypertension (13%), anemia (8.4%), and PPH (8.4%). The most common mode of delivery was cesarean section in 91 females. Among the fetal complications low birth weight was seen as the most common complication in both twins. In first twin, low birth weight, respiratory distress, neonatal sepsis, and NICU admission were seen in 83.8%, 22.3%, 13.8% and 18.4% respectively and was higher than second twin. Similarly, intrauterine fetal demise and low Apgar score at 5 min was 3.8% and 18.4% in second twin and was higher than the first one. Perinatal mortality was similar in both twins. Prolonged NICU stay was seen in second twin.

**Conclusion**

Preterm labor was the most common maternal complication while Low Birth Weight as a sequelae of prematurity was most common complication of both twins. RDS and sepsis was higher in first twin while low APGAR @ 5 min was higher in second twin. Considering high risk pregnancy, special care for mothers with twin pregnancies is necessary to mitigate adverse pregnancy outcomes.

**Keywords:** Assisted reproductive technology, Maternal, Perinatal, Twin pregnancy

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## Introduction

Twin pregnancies are considered as the high-risk pregnancies which are associated with several maternal and fetal complications [1]. The incidence of twin pregnancy has significantly risen over the past decade all over the world [2].

The increased rate of twin pregnancies are mostly attributed to increased maternal age at child bearing, use of ovulation induction agents and other various assisted reproductive techniques [3]. Thus, it warrants strong vigilance of the pregnant females during her antepartum and intrapartum period.

This study aims to identify the maternal and fetal outcomes in twin pregnancies, and to compare outcome of twin one with twin two.

## Materials and Methods

This was the observational cross-sectional study in which all pregnant women  $\geq 28$  weeks gestation with twin pregnancy who got admitted in the Department of Obstetrics and Gynecology from 24th March 2024 to 24th March 2025 at Nobel Medical College Teaching Hospital, Biratnagar, Nepal were recruited. Ethical approval was obtained from Institutional Review Committee and informed consent was taken from all recruited participants. Detailed history of the patient including age, parity, menstrual history, obstetric history, past, family, personal history was recorded. The clinical, systemic and obstetric examination, with required investigation was done. The mode of delivery of each baby, time interval between delivery of twins, the associated complications, type of intervention and complication of third stage of labor were recorded. The placenta of all cases was examined for chorionicity. Babies' birth weight, Apgar score at 1 and 5 minutes, associated early neonatal comorbidities, NICU requirement and mortality was recorded. The triplet pregnancy and twin pregnancy with vanishing twin in first trimester were excluded from the study. Sample size was calculated using the formula  $N = Z^2 \cdot PQ/E^2$ ,  $Z = 1.96$  (for 95% confidence interval),  $E = 5\%$  precision,  $P = 16.7\%$  for perinatal mortality of twins observed in a study [4],  $Q = (1 - P) = 83.3\%$ ,  $N = 214$  for twins. For pregnant females:  $n = N/2 = 107$ . The data so obtained was analyzed by SPSS version 21. Descriptive statistics was used to define maternal and neonatal characteristics. Comparisons between the first and second twins were conducted using chi-square test and

Fisher's exact test for categorical variables and t-test for numerical variables. A p-value of less than 0.05 was considered statistically significant.

## Results

Among the 7006 deliveries in our institute during the study period, 132 were multiple pregnancies with 130 twins and 2 triplets deliveries. The incidence of twins was 1.85%. Two-thirds of the patients were in 20-30 years of age. Only 13% had conceived via IUI or IVF techniques. Parity was almost similar and only 3 cases had monochorionic-monoamniotic placentation. Half of them had in late preterm (33-36 weeks) delivery. (Table 1)

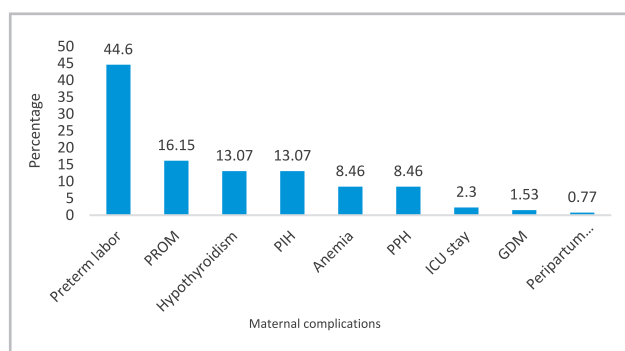
**Table 1: Patients demography and gestation at delivery**

	Parameters	Number (N=130)	Percentage (%)
Age in years	18-20	16	12.3
	21-25	48	36.92
	26-30	38	29.23
	31-35	21	16.15
	36-40	4	3.07
	$\geq 40$	3	2.3
Method of conception	Spontaneous	113	86.92
	IUI	1	0.76
	IVF	16	12.3
Parity	Primigravida	63	48.46
	Multigravida	67	51.5
Chorionicity	MCDA	68	52.3
	DCDA	59	45.38
	MCMA	3	1.67
Gestation at delivery (weeks)	28-32	16	12.3
	33-36	64	49.2
	$\geq 37$	50	38.46

*NB. IUI-intrauterine insemination, IVF-in-vitro fertilization, DCDA-dichorionic diamniotic, MCDA-monochorionic diamniotic, MCMA-monochorionic monoamniotic*

The most common maternal complication encountered was preterm labor (44.6%), followed by Prelabor rupture of membranes (PROM), pregnancy induced hypertension (PIH), hypothyroidism and postpartum hemorrhage (PPH). Six patients with PPH were managed medical methods, four by balloon tamponade, and one had peripartum hysterectomy due to atonic PPH. Eleven (8.5%) patients required blood transfusion. Gestational Diabetes Mellitus (GDM) and necessity of Intensive care unit (ICU) care were minimal. (Fig.1).





**Figure 1: Maternal complications of twin pregnancy**

Seventy percent of twins pregnancy had lower segment cesarean section (LSCS). Assisted breech vaginal delivery (ABVD) required longer time interval between two twins deliveries ( $12.7 \pm 9.3$  min). (Table 2)

**Table 2: Modes of delivery of first twin (T1), second twin (T2) and mean delivery interval**

Mode of delivery of T1-T2	Number (N)	Delivery interval in minutes (Mean $\pm$ SD)
LSCS-LSCS	91	1.08 $\pm$ 0.31
SVD-SVD	29	12.7 $\pm$ 9.3
SVD-ABVD	6	15 $\pm$ 7.6
ABVD-ABVD	2	20 $\pm$ 19.7
Vacuum-ABVD	2	6.5 $\pm$ 4.9

NB. LSCS-Lower Segment Cesarean Section, SVD-Spontaneous Vaginal delivery, ABVD-Assisted breech vaginal delivery

The low birth weight (LBW,  $p=0.02$ ), respiratory distress syndrome (RDS,  $p=0.007$ ) and neonatal sepsis ( $p=0.021$ ) were significantly higher in first twin. Low APGAR @ 5 min was more in second twin and the mortality rate was comparable in both twins. (Table 3)

**Table 3: Perinatal outcome of twin pregnancy**

	Twin 1 (N=130)	Twin2 (N=130)	p-value on $\chi^2$ test
IUFD	3 (2.3%)	5 (3.84%)	0.72 *
LBW(<2.5 kg)	109(83.84%)	96 (73.84%)	0.02
RDS	29(22.3%)	13 (10%)	0.007
Apgar at 5 min <7	17(13.07%)	24(18.46%)	0.23
Sepsis	18(13.84%)	7 (5.38%)	0.021
NICU	24 (18.46%)	16(12.3%)	0.16
Mortality	10 (7.69%)	9 (6.92%)	0.81

NB: IUFD - Intrauterine fetal demise, LBW-low birth weight, RDS-Respiratory distress syndrome, NICU - Neonatal intensive care unit

\*p-value on Fisher's exact test

The mean birth weight of first twin was slightly higher than second twin. However, the NICU stay ( $p=0.0001$ ) was significantly higher in second twin. (Table 4)

**Table 4: Weight and duration of NICU stay in twins**

	Twin 1	Twin 2	p-value on t-test
Birthweight (kg)	2.02 $\pm$ 0.47	2.01 $\pm$ 0.5	0.84
NICU stay (days)	3.7 $\pm$ 1.6	6.1 $\pm$ 2.06	0.0001

## Discussion

In present study, the incidence of twin pregnancy was found to be 1.8% which is comparable to the study by Ri-na S et al [5] and Upreti P [6] who reported incidence of 1.7% and 1.9% respectively. The majority of patients were in age group of 21-25 years, similar to the study by Upreti P[6] and Gajera et al[1] where higher number of twins were seen in age of 21-25 years. The higher incidence of twins in young age attributes to early marriage and conception in this region.

Conception was mostly spontaneous (86.9%) followed by IVF (12.3%) similar to the study by Baxi et al [7] where 79.3% females conceived spontaneously. However, incidence of twins in IVF conceived pregnancies is quite higher (12.3%) in our institute. The multigravida had higher twin incidence than primigravida consistent with the other studies [1,8]. However, MCDA twins were more (52%) than the DCDA (45%) ones in contrast to the other studies [8, 9] where DCDA twins outnumbered the MCDA ones. This difference is due to more number of referrals of MCDA twins in our tertiary center than DCDA, considering MCDA twins as high risk among these twins. Late Preterm birth (33 to <37 weeks) accounted to 49.2% which was similar to the other studies done by Gajera et al (46%) and Tejal et al (50%) [1,9]. Also, the most common gestational age at delivery was 29-36 weeks in Hada et al (47.1%) and Veronica et al (55%) depicting preterm birth is quite common among twins [2,10].

In this study, the most common maternal complication was preterm labor (44.6%) followed by prelabor rupture of membranes (16.1%), hypothyroidism (13%), PIH (13%), and anemia (8.5%). Similar comparable results were seen in other studies where rate of preterm delivery varies from 46%-54% and was among the leading cause of maternal complications.[5,9,11] Sheth et al and Mahendra et al showed PROMs in 13.2% and 8.6% of patients respectively. [8,12] which were lower than this study. Incidence of hypertensive disorders of pregnancy was higher in studies by Gajera et al (24%), Yeasmin et al (28.9%) and Sheth et al (28%) [1,11,12] compared to the present study while Tejal et al (11%) had lower rate of PIH than in our





study [9]. The rate of anemia in present study is 8.4%. The studies by Gajera et al (7%) and Spellacy et al (9.4%) report similar rate of anemia as in our study [1,13]. But it is significantly lesser than other studies [9-11]. This might be due varied prevalence of anemia based on different socio-economic status, provision of nutrition and iron supplements and accessibility to antenatal care in different regions. Although, postpartum hemorrhage was higher in study of Yeasmin et al (17.34%) compared to the present study (8.4%), we had one case who landed in peripartum hysterectomy following atonic PPH. There was no maternal mortality in this study consistent with other studies in tertiary care center who also reported no maternal deaths [8,9,11,].

The common mode of delivery was LSCS for both twins followed by SVD in this study. This is in accordance to the other studies [1,2,9]. The higher caesarean section rate in present study was due to malpresentation of first twin, preterm prelabour rupture of membranes, antepartum haemorrhage, fetal distress and previous caesarean section. The most common indication of LSCS was previous LSCS followed by breech presentation in first twin. The delivery time interval between both twins was least among LSCS ( $1.08 \pm 0.31$ ) min while it was higher in vaginal deliveries mostly in assisted breech vaginal deliveries. It was because it required different manoeuvres for twin 1, and most of twin 2 required internal podalic version (IPV) prior to breech delivery. The studies done by Axelsdottir et al [14] and Vasudeva et al [15], reported that in vaginal deliveries, T2 delivered within 30 min of delivery of T1 similar to this study where the twins delivery interval in vaginal deliveries was 12 min. In this study, low birth weight (LBW) was seen in both twins as most of the babies were born prematurely. However, T1 had higher rate of LBW than T2 which was statistically significant. This is consistent with study by Mahendra et al [8] where LBW in T1 was higher than T2. Also, neonatal complications like respiratory distress and early onset neonatal sepsis was more common in T1 as compared to T2 and was statistically significant. The other study showed results where sepsis was higher in T1 while RDS was common in T2 [8]. The study by Konar H et al [19] demonstrated higher comorbidities were seen in T2 rather than T1. The discrepancy in the study was because of higher number of referrals for NICU care and preterm deliveries in our center. Low Apgar score of <7 at 5 min was seen in T2 more than T1 which was consistent to other studies which showed similar results [16-18].

30% of neonates were admitted in NICU for different complications in this study which is similar to the other study of Kalyankar BV et al [20] where 32% neonates got admitted for NICU care. Perinatal death occurred in 27 twins, in which neonatal mortality was seen in 10 and 9 neonates in T1 and T2 respectively while IUFD occurred in 8 twins, in which 3 were in leading twin and 5 in the second twin. This study was similar to other study which also reported 27 perinatal mortality as in our study [8]. The average birth weight of both twins was comparable in this study with slightly higher weight in T1 than T2. This was in contrast to other study where T2 had higher birth weight than T1 [15]. The average duration of stay in NICU for T2 was seen significantly higher than that of T1 in present study. The study site doesn't have its own hospital protocol for the management of multiple pregnancy.

## Conclusion

In this study, the most common maternal complication was preterm labor and the most common neonatal complication was low birth weight in both twins as a result of prematurity. Perinatal morbidity in terms of RDS and sepsis was more in first twin while low APGAR@ 5 min and NICU stay was more in the second one. Considering high risk pregnancy, early diagnosis, regular antenatal visits, identification and anticipation of complications, planned delivery and good NICU care will help to decrease the perinatal morbidity and mortality.

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**Conflict of interest:** None

## References

- [1] Gajera AV, Basavannayya HP, Kavitha C, Hiremath R. Feto-maternal outcome in twin pregnancy. *Int J Reprod Contracept Obstet Gynecol.* 4:6 (2015) 1836-9. DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20151270>
- [2] Monden C, Pison G, Smits J. Twin Peaks: more twinning in humans than ever before. *Hum Reprod.* 36:6 (2021) 1666-73. DOI: 10.1093/humrep/deab029. PMID: 33709110
- [3] Blondel B, Kaminski M. Trends in the occurrence, determinants, and consequences of multiple births. *Semin Perinatol.* 26:4 (2002) 239-49. DOI: 10.1053/sper.2002.34775
- [4] S, R, BT B, KS K. Evaluation of perinatal outcome in twin pregnancy at tertiary care centre. *Int J Reprod Contracept Obstet Gynecol.* 3:4 (2017) 1015-21. DOI: 10.5455/2320-1770.ijrcog20141228
- [5] Ri-Na S, Zhu WW, Wei YM, Wang C. Maternal and neonatal outcomes in multiple pregnancy: A multicentre study in the Beijing population. *Chronic Dis Translational Med.* 1:04 (2015) 197-202. DOI: 10.



- 1016/j.cdtm.2015.08.004
- [6] Upreti P. Int J Reprod Contracept Obstet Gynecol. 7:9 (2018) 3520-5. DOI:<http://dx.doi.org/10.18203/2320-1770.ijrcog20183375>
- [7] A B, M K. Outcome of twin pregnancies conceived after assisted reproductive techniques. J Hum Reprod Sci. 1:1 (2008) 25-8. DOI: 10.4103/0974-1208.39593. PMID: 19562060
- [8] Mahendra RP, Bikash JK, Deepak D. Maternal and perinatal outcome in multiple pregnancy. A study at teaching Hospital. Am J Public Health Res. 5a:3 (2015) 135-8. DOI:10.12691/ajphr-3-5A-29
- [9] Patel TL, Diwan BA. Maternal and perinatal outcome in multifetal gestation. Int J Reprod Contracept Obstet Gynecol. 11:4 (2022) 1171-6. DOI: <https://doi.org/10.18203/2320-1770.ijrcog20220899>
- [10] Hada A, Baghela AS, Sethi D. Study of maternal and foetal outcome in multiple pregnancy. J Evolution Med. Dent Sci. 5:59 (2016) 4069-73. DOI:10.14260/jemds/2016/932
- [11] Yeasmin MS, Uddin MJ, Khanam SA. Maternal and Perinatal Outcome of Multiple Pregnancy in a Tertiary Care Hospital of Bangladesh. Chatt Maa Shi Hosp Med Coll J. 18:2 (2019) 54-8. DOI:<https://doi.org/10.3329/cmshmcj.v18i2.47778>
- [12] Sheth K, Sheikh AM, Shah MA. Study of feto-maternal outcome in twin pregnancy. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 12:1 (2023) 231-3. DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20223499>
- [13] Spellacy WN, Handler A, Ferre CD. A case-control study of 1253 twin pregnancies from a 1982-1987 perinatal data base. Obstet Gynecol. 75:2 (1990) 168-71. PMID: 2300344
- [14] Axelsdóttir Í, Ajne G. Short-term outcome of the second twin during vaginal delivery is dependent on delivery time interval but not chorionicity. Journal of Obstetrics and Gynaecology. 39:3 (2019) 308-12. DOI:10.1080/01443615.2018.1514490
- [15] Vasudeva B, Khadri SN, Kanakannavar SS. Comparison of perinatal outcome of the second twin with respect to twin 1 at a tertiary care hospital. Int J Acad Med Pharm. 6:3 (2024) 705-9. DOI: 10.47009/jamp.2024.6.3.159
- [16] Baral P, Dangal G, Baral G, Subedi K. Perinatal Outcome of Second Twin in Third Trimester of Pregnancy. J Nepal Health Res Counc. 19:03 (2021) 622-5. DOI:<https://doi.org/10.33314/jnhrc.v19i3.3584>
- [17] Hartley RS, Hitti J. Birth order and delivery interval: analysis of twin pair perinatal outcomes. J Matern Fetal Neonat Med. 17:6 (2005) 375-80. DOI: 10.1080/147670505000132484
- [18] Zulfiqar A, Sadaf M, Abbasi A, Ashraf S, Zulfiqar OA, Sadaf M, et al. Perinatal Outcome of Twins Delivered Vaginally in a Tertiary Care Hospital. J Rawalpindi Med Col. 25:1 (2021) 66-71. DOI: <https://doi.org/10.37939/jrmc.v25i1.1477>
- [19] Konar H, Sarkar M, Paul J. Perinatal Outcome of the Second Twin at a Tertiary Care Center in India. J Obstet Gynaecol India. 66:6 (2016) 441-7. DOI:10.1007/s13224-015-0724-7
- [20] Kalyankar BV, Kalyankar VY, Gadappa SN, Gaikwad P. A clinical study of maternal and fetal outcome in multiple gestations. New Indian J Obstet Gynecol. 10:1 (2023) 178-82. DOI: 10.21276/obgyn.2023.10.1.31

