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Socio-demographic characteristics and feto-maternal outcome in twin pregnancies at a tertiary care center: A 2 year study

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Abstract
Background: Multiple gestation is considered a high-risk pregnancy. In India, 1% of the pregnancies are twin gestation and 10% of perinatal mortality can be attributed to twin pregnancies.
Materials and Methods: This was a retrospective record-based study conducted in obs and gynae department of pt B. D Sharma PGIMS, Rohtak over a period of 2 years. Hospital records were analyzed. Maternal demographic factors, Obstetrical associated complications and fetal outcome were also recorded.
Results: Incidence of twin delivery was 11.4%. 56.1% of patients belongs to an age group of 21-25 years.64.6% delivered between 32-37 weeks, 67.6% landed into spontaneous labour and anaemia was seen in 48% and preterm labour (69.2%) accounting for low birth weight babies.
Conclusion: There is an increased risk of adverse maternal and fetal otcome in twin pregnancy therefore there is a need of a special antenatal care in such patients and timely referral.

Keywords: Twins, pretem labour, multiple pregnancy, low birth weight

Introduction
The incidence of twin pregnancy has shown to increase over the decade because of delayed marriage prompting to the high incidence of subfertility. Thus, there is increased use of ovulation induction and requirement for IVF. With the increased number of patients undergoing IVF, there has been an increased incidence of multiple pregnancies [1]. Twin pregnancies represent for 2 to 4% of the total number of births [2].
The Worldwide incidence of multiple pregnancies varies considerably, it is around 2 -20 1000 births [3]. The Highest burden of multiple pregnancies has been found in Sub-Saharan Africa, with an average twinning rate of 20 per 1,000 deliveries compared to 10 per 1,000 deliveries in Europe and around 5-6 per 1,000 deliveries in Asia [4-6]. According to the World Health Organization (WHO), it is estimated that annually 287,000 maternal deaths and 3 million neonatal deaths occur globally, 99% of which occur in developing countries [8].
Multiple gestation is considered a high-risk pregnancy. Currently, multiple gestations constitute up to 3% of all pregnancies [9]. In India, up to 1% of the pregnancies are twin gestation and 10% of perinatal mortality can be attributed to twin pregnancies [10]. Smith *et al.* reported that India has twining rates below 9 per 1000 births [11].
The obstetric complications of multi-fetal pregnancy incorporate preterm labor, preterm premature rupture of membranes, anemia, pregnancy-induced hypertension, postpartum hemorrhage, etc. [3, 4] The study of twin or multiple births is important because of the elevated health risks for both mothers and babies and accompanying greater health care cost [5].
Because of differences in the incidence of twin pregnancy and its related complications in terms of maternal and foetal outcomes, this retrospective study has been initiated at PGIMS, Medical College, Rohtak. We aimed to determine the incidence of twin pregnancy, its related socio-demographic factors, and Feto-maternal outcome.

Materials and Methods
Study design: This was a retrospective record-based study conducted in the obs and gynae department of pt B. D Sharma PGIMS, Rohtak which is a tertiary care center in the Rohtak district of Haryana over a period of 2 years from January 2018 to December 2019.

Inclusion criteria: All the antenatal patients delivering with twin pregnancy included in the study.

Exclusion criteria: Antenatal patients with a twin pregnancy who were not in labor are excluded from the study.

Data collection and analysis: The hospital records of the designed study period were recorded and analyzed. Maternal demographic factors such as Age, gravida/parity, educational–status, booking–status, socioeconomic-status, mode of conception, type of chorionicity, presentation of both fetus, mode of onset of labor and delivery were recorded. Obstetrical associated complications that were seen in twin pregnancy were recorded such as anemia, preterm labor, Preeclampsia, PROM, antepartum hemorrhage, Oligohydramnios, etc and fetal outcome in terms of APGAR score at birth, NICU admission, birth weight, and perinatal death also recorded.

Results

During the duration of the study period of 2 years, a total of 260 twin deliveries took place out of total 22,782 deliveries making a twinning rate of 11.4% per 1000 live births or 1.14%.

Table 1 shows the distribution of patients according to their sociodemographic characteristics. Most of the patients (56.1%) with twin delivery belongs to an age group of 21-25 years as this age group comprises most of the reproductive age group delivering at our institute.

Most of the patients (42.3%) were primigravida. There was no significant difference between the booked and unbooked status of the patients with twin delivery as 53% were unbooked and 46.9% were booked.

OBased on Educational status there was no significant difference. Most of the patients belong to low socioeconomic status. 71.5% of patients were housewives. Only 8.4% of patients conceived through IVF, the rest of them were spontaneous conception.

The majority of the patients (64.6%) delivered between 32-37 weeks of gestation. Only 9.2% of patients were delivered beyond 37 weeks of gestation.

Based on the distribution of chorionicity the most common type of chorionicity was Di amniotic Dichorionic (66%) followed by Monochorionic Di amniotic 931.5%) and Monochorionic Monoamniotic (2.3%) was the least common.

The majority of the patients (67.6%) went into spontaneous labour.63.8% of patients who underwent spontaneous vaginal delivery. Assisted breech delivery was conducted in 11.5% of patients because of 2nd twin with breech presentation and in 23% of patients, the cesarean section was done. (Table 2)

Based on the distribution of the presentation of twins in utero, the most common presentation was vertex-breech (37.6%) followed by vertex-vertex (23%), breech-breech (20%), breech-vertex (13%), Transverse cephalic, and transverse-transverse were the least common presentation. Maternal complications associated with a twin pregnancy are listed in the table 3. In some of the patients, more than one complication was present. Anemia (48%) was the most common complication in the present study. Preterm labor resulting in preterm delivery was found in 69.2% of patients. Other associated complications were PROM (20%), PIH (17%), post-partum haemmorgahe (8.4%), abruption (3.8%), IUGR (3.8%), Gestational diabetes (1.5%) and so on.

On the basis of the fetal outcome, out of 520 newborn babies,206 newborns (39.6%)were admitted to nursery.69.2% of babies were delivered with a birth weight less than 2.5 kg, and 30% of babies were weighing more than 2.5 kg.(table 4)

64% of newborns were born with an APGAR > 7 at 5 mins and 36% with an APGAR <7 at 5 min.

Perinatal death was reported in 24 fetuses (4.6%).

Table 1: Demographic characteristics of patients

Sr.no	Characteristics	Number	Percentage
1.	**Maternal age**		
	<20 yrs.	24	9.2%
	21-25 yrs.	146	56.1%
	26-30 yrs.	68	26.1%
	>30 yrs.	22	8.4%
2.	**Gravida/Parity**		
	G1	110	42.3%
	G2	94	36.1%
	G3	50	19.2%
	>G3	6	2.3%
3.	**Booking status**		
	Unbooked	138	53%
	Booked	122	46.9%
4.	**Educational status**		
	Illiterate	56	21%
	Primary Education	64	24.6%
	High school	58	22.3%
	Higher secondary	62	23.8%
	Graduate	20	7.6%
5.	**Socioeconomic status**		
	Upper (I)	22	8.4%
	Upper middle (II)	42	16.1%
	Lower middle (III)	84	32.3%
	Upper lower (IV)	72	27.6%
	Lower (V)	40	15.3%
6.	**Occupation**		
	Housewife	186	71.5%
	Employed	74	28.4%
7.	**Mode of conception**		
	IVF conceived	22	8.4%
	Spontaneous conception	238	91.5%
8.	**Period of gestation**		
	<28 wks.	12	4.6%
	28-32 wks.	56	21.5%
	32-37 wks.	168	64.6%
	> 37 wks.	24	9.2%
9.	**Chronicity**		
	Di chorionic Di amniotic	172	66%
	Monochorionic Diamniotic	82	31.5%
	Monochorionic Monoamniotic	6	2.3%

Table 2: Distribution of patients on the basis of foetal presentation, mode of onset of labour and delivery.

Sr.no	Characteristics	Number	Percentage
1.	**Presentation of fetus**	Nu	%
	Vertex-Vertex	98	37.6%
	Breech-Vertex	34	13%
	Vertex-Breech	60	23%
	Breech-Breech	54	20%
	Vertex-Transverse	4	1.5%
	Breech-Transverse	6	2.3%
	Both Transverse	4	1.5%
2.	**Onset of labor**		
	Spontaneous labor	176	67.6%
	Induced Labor	84	32.3%
3.	**Mode of delivery**	Nu	%
	Spontaneous vaginal delivery	166	63.8%
	Assisted Breech delivery	30	11.5%
	Cesarean section	60	23%
	Forceps	4	1.5%

Table 3: Obstetrical complications associated with Twin pregnancies.

Sr no	Complications	Number	Percentage
1.	Anemia	252	48%
2.	Antepartum Hemmorhage	24	4.6%
3.	Cord Prolapse	8	1.5%
4.	Hypertension/PIH	92	17%
5.	Intrauterine Death	24	4.6%
6.	PROM	104	20%
7.	Preterm Labour	180	69.2%
8.	Oligohydramnios	16	3%
9.	Gestational Diabetes	8	1.5%
10.	Postpartum Hemmorhage	44	8.4%
11.	IUGR	20	3.8%
12.	Abruptio Placentae	20	3.8%
13.	Cholestasis	8	1.5%

Table 4: Distribution of patients on the basis of their fetal outcome. (n= 520)*

Sr no	Fetal outcome	Number	Percentage
1.	NICU admission	206	39.6%
2.	APGAR < 7 at 5 min	192	36%
3.	APGAR > 7 at 5 min	328	64%
4.	Birth weight < 2.5 kg	362	69.2%
5.	Birth weight > 2.5 kg	158	30%
6.	Perinatal death	24	4.6%

* n = 520 as total number of baies were 520 from 260 twin deliveries.

Discussion

In the present study, the incidence of twin delivery was found to be 11.4 per 1000 live births. This high incidence may be because our institute is a tertiary care center and most of the patients with twin pregnancy refereed for better management of patients and neonatal care. the same incidence of twin deliveries was found in the study done by Rizwan *et al.* [6] where they found the incidence of the twin was 14.4%. It is also comparable to 1 in 80 (1.2%) reported by Usta from U.S.A. [7]

In the present study majority of the patients (56.1%) were in the age group between 21-25 years with a mean age of 24.5 years. Similar mean age was reported by Pandey MR *et al.* [12] and Upreti P [13] in their respective studies. This is consistent with a study done by Singh L *et al.* [14] where they found mean age with twin pregnancy was 21-26 years. This can be explained as this is the peak reproductive age because of early marriages.

In the present study, 42.3% were primigravida and the rest of them were multigravida. Similar findings were observed by Singh L *et al.* [14] and Chowdhury who reported the order of twin multigravida (64.2%) as compared to primigravida (35.5%) [15].

Out of the total women, 53% were unbooked and mostly were refereed for better management of preterm pregnancy. Pandey, MR *et al.* also reported 87.8% cases were unbooked in their study [12], however, Present finding is contrary to that of Bangal *et al.* who reported that 24% of cases were unbooked [17].

In the present study, 91.5% conceived spontaneously only 8.4% of women were conceived by IVF which is a very low figure. It could be due to that usually, couples who are economically strong are opting for IVF conception, and they ultimately choose some private hospital rather than a govt set up for further management of pregnancy and delivery. This is comparable to the finding of Pandey MR. [12] *et al.* who reported spontaneous conception in 97.8% of women with a twin pregnancy. Twin pregnancy after taking ovulation-inducing agents was observed 2.2%, 8%, and 14% in studies by Pandey MR *et al.*, Masuda S *et al.* and Sultana H *et al.* respectively [12, 17, 18].

In the present study, there was no significant difference between the twinning incidence and educational status of patients.

In our study, most of the patients belong to the middle class of socioeconomic status and 71.5% of the women were housewives.

64% of women with twin pregnancy delivered before 37 weeks of gestation. In this present study, the mean gestational age of delivery was found to be 35.4 weeks. This shows that preterm delivery is very common in twin pregnancy. This is in agreement with the study done by Mazhar *et al.* from Pakistan and Upreti P where the mean gestational age was 35.2 weeks [19, 13].

In our study, there were 66% Diamniotic Dichorionic twins followed by Monochorionic Diamniotic (31.5%) and Monochorionic Monoamniotic twins (2.3%). Similar results were found by a study done by Singh L *et al.* [14] and Radhakrishnan R *et al.* who found that 62 percent of the cases were dichorionic diamniotic pregnancy, 37% were monochorionic diamniotic pregnancy [20].

67.6% of patients went into spontaneous labor, however, 32.3% were induced because of some associated maternal complications such as preeclampsia, abruption, etc.

In the present study, 63.8% of patients had a spontaneous vaginal delivery, 11.5% had assisted breech delivery and 23% of patients underwent cesarean section and 1.5% were delivered by forceps. It is comparable with a study done by Pandey M.R. *et al.* and Ri-Na, Su *et al.* where they reported the incidence of spontaneous vaginal delivery was 62.5% and 53.8% respectively [12, 21].

In the present study, the most common presentation for twin was vertex-vertex, accounting for 37.6% followed by vertex-breech (23%), breech-breech (20%), breech-vertex (13%), and least common presentation was transverse-transverse and vertex-transverse accounting for 1.5%. Masuda S *et al.* in their study reported 48% cephalic-cephalic presentation, 16% cephalic-non-cephalic, and 36% non-cephalic first twin [17].

Among the patients, it was found that in the present study anemia was present in 48% of cases which was the most common maternal complication, followed by PROM in 20% of cases, PIH/Hypertension in 17% cases, APH in 4.6% of cases, abruption in 3.8% of cases, gestational diabetes in 1.5% of cases and post-partum hemorrhage was present in 8.4% of cases. Bangal *et al.* and Chowdhury *et al.* also reported anemia as the most common complication in their study accounting for 66% and 35.8% [23, 15]. The prevalence of anemia varies from place to place. The main reason is higher demand in twin gestations resulting in iron, Vitamin B12, and folic acid deficiency anemia.

Bangal *et al.* and Chowdhury *et al.* reported hypertension as 18% and 22.6%, antepartum hemorrhage as 8% and 5.7%, PROM as 16%, and 3.8%. Postpartum hemorrhage was present in 18.9% of cases [23, 15].

In the present study out of total 520 neonates, 362(69.2%) were low birth weight (<2.5 kg) which was due to preterm labor resulting in preterm delivery and due to which 36.2% of neonates required nursery admission. This finding was a little bit lower with that of Bangal *et al.* who reported 82% of twins born with low birth weight and higher than reported (46.6%) by Ri-Na Su *et al.* from Bejing [23, 21].

36% of total neonates were born with an APGAR score of <7 at 5 min. Perinatal death was reported in 4.6% of all babies and the major cause was respiratory distress because of prematurity.

Conclusion

"It's double the giggles and double the grins, and also double the trouble if you're blessed with twins." Hence, in our study we have concluded that Twin pregnancy can have adverse maternal and fetal outcome, Therefore there should be awareness and special antenatal care in such patients so as to avoid and timely detect the complications that can be arise due to twin pregnancy so that proper action can be taken accordingly to decrease maternal and fetal morbidity and mortality.

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