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## Original Research Article

# Study of obstetric and perinatal outcome of twin pregnancy

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### ABSTRACT

**Background:** Multifetal pregnancy constitutes a significant portion of high-risk pregnancies. This is due to the increasing obstetric and perinatal morbidity and mortality rates associated with it. Maternal and perinatal outcome of twin pregnancies has been evaluated in this study.

**Methods:** Total 30 patients with twin pregnancy and having gestational age more than 28 weeks were included in this observational study.

**Results:** Incidence of twins in the study was found to be 2%. Twin pregnancies were more common in multiparous women aged between 20 and 30 years. Most common foetal presentation was vertex- vertex presentation. Most common maternal complication was preterm labour seen in 67% women, followed by anaemia seen in 50% women. Most of the women were delivered by caesarean section (63.3%). Most common perinatal complication was birth hypoxia (41.6%). Other perinatal complications were jaundice, septicemia, intrauterine growth restriction. 71% of the neonates had birth weight less than 2.5 kg. Perinatal mortality was found to be 11.6%.

**Conclusions:** Twin pregnancies are high risk pregnancies associated with higher obstetric and perinatal morbidity. Perinatal morbidity was more common for the second coming twin. Regular antenatal visits, planned delivery and better NICU facilities can help combat these complications. A team of skilled obstetricians and pediatricians along with a multidisciplinary approach is essential for the effective management of twin pregnancies.

**Keywords:** Maternal and perinatal morbidity, Preterm labour, Twin pregnancy

### INTRODUCTION

Multiple pregnancy constitutes a significant portion of high-risk pregnancies. Maternal adaptation to twin pregnancy leads to various complications. It is of importance to obstetricians and paediatricians due to its significant maternal and perinatal risk. Twin pregnancies are associated with complications like antepartum haemorrhage, post-partum haemorrhage, preeclampsia, eclampsia, polyhydramnios, anaemia, increased incidence

of caesarean sections and preterm deliveries in comparison with singleton pregnancies.<sup>1-4</sup> Multiple pregnancies are also associated with complications like acardiac twins, conjoined twins and twin-twin transfusion syndrome. Such complications are exclusive to twin pregnancy. Prematurity, low birth weight, IUGR, sepsis, jaundice and respiratory distress are some of the perinatal complications seen in twins. Due to better NICU facilities and trained personnel, perinatal outcome of twins has improved. The incidence of multiple pregnancies in the

world is 2-20 per 1000 births.<sup>5</sup> Due to the increasing use of assisted reproductive techniques, decline in fertility and increasing number of women becoming pregnant at an advanced age, the incidence of multiple pregnancies is increasing dramatically. This study consists of evaluation of feto-maternal outcome in twin pregnancies.

**METHODS**

The type of study is prospective observational study. It was carried out in the department of obstetrics and gynecology, SVPIMSR, Ahmedabad, Gujarat, India from July 2019 to December 2019 (6 months).

Out of 1500 patients delivered in the hospital during this time period, 30 were twin pregnancies. They were received either from the emergency department, outpatient department or referred from other hospitals.

A total 30 patients were selected for the study after applying the criteria.

**Inclusion criteria**

- Women with twin pregnancy, gestational age more than 28 weeks.

**Exclusion criteria**

- Singleton pregnancy, triplets and higher order pregnancies, gestational age less than 28 weeks.

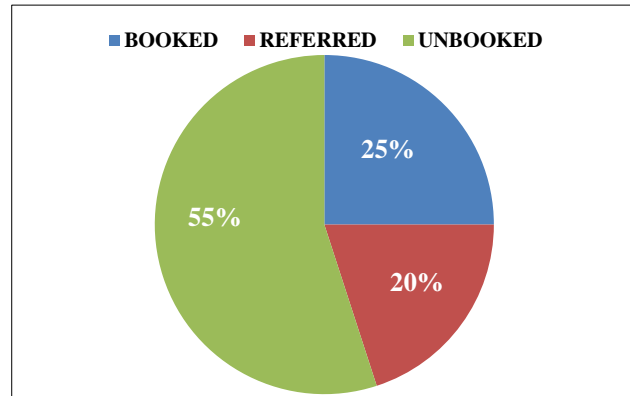
The diagnosis of twin pregnancy was established by transabdominal ultrasonographic imaging. Detailed history of patients including age, parity, menstrual history, obstetric history, family history of multiple pregnancy and gestational age was noted. Patients were also asked about the use of assisted reproductive techniques. Causative factors for twin pregnancy were noted. Maternal complications such as preeclampsia, preterm labour, anaemia, urinary tract infection, antepartum and postpartum haemorrhage were studied. Patients were monitored throughout labour. Outcome of each twin pregnancy was studied in which the number of twins delivered spontaneously vaginally, those requiring instrumental delivery, assisted breech deliveries or caesarean section was noted. Perinatal complications such as prematurity, low birth weight, jaundice, sepsis, birth hypoxia was studied. Apgar scores and twins requiring NICU admissions were noted.

All the data was entered in excel sheets and relevant tables and charts were prepared.

**RESULTS**

Out of the total 1500 patients delivered in study hospital from July 2019 to December 2019, 30 women had twin pregnancy. The incidence of twins in the study was 2%.

A total 55% patients were un-booked, 20% patients were referred from peripheral hospitals and 25% were booked (Figure 1).

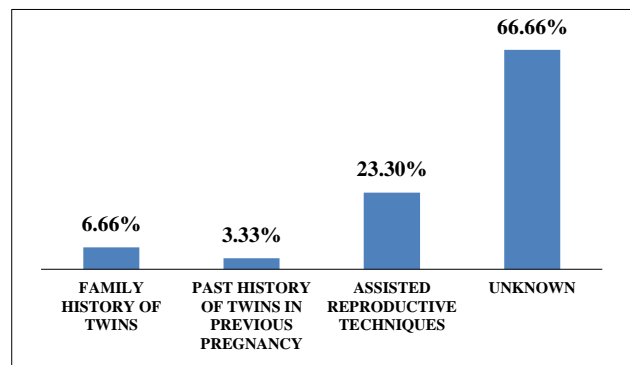


**Figure 1: Incidence of multiple pregnancy according to booking status.**

**Table 1: Demographic and obstetric profile of the patients (n=30).**

Parameter	Number (N=30)	Percentage
<b>Age</b>		
<20 years	2	6.6%
20-30 years	18	60%
>30 years	10	33.3%
<b>Parity</b>		
primipara	6	20%
multipara	24	80%

A total 60% patients were aged between 20 and 30 years. 80% were multipara and 20% were primipara (Table 1).

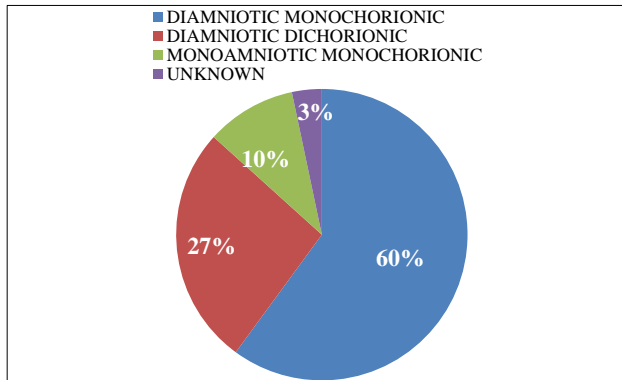


**Figure 2: Causes of twin pregnancy.**

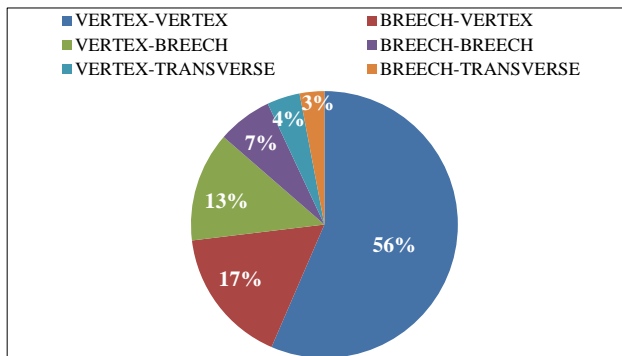
The use of assisted reproductive techniques was found to be a cause of twins in 23.3% women. Family history of twins was seen in 6.66%. Past history of twins in previous pregnancy was present in 3.33%. No causative factor was found in 66.66% women (Figure 2).

On determination of chorionicity, 60% were diamniotic monochorionic, 26.6% were diamniotic dichorionic and

10% were mono chorionic-monoamniotic. Chorionicity was not known in 3.3% cases (Figure 3).



**Figure 3: Distribution of patients according to chorionicity.**



**Figure 4: Distribution of twin pregnancies according to presentation.**

Most common presentation in twins is vertex-vertex presentation (56.6% patients). Second most common is Breech-vertex in 16.6% women (Figure 4).

**Table 2: Obstetric profile of patients.**

Gestational age at delivery		
Parameter	Number	Percentage
28-30 weeks	1	3.3%
30-34 weeks	16	53.3%
34-38 weeks	10	33.3%
>38 weeks	3	10%

**Table 3: Distribution of patients according to the mode of delivery.**

Mode of delivery	1 <sup>st</sup> twin (%)	2 <sup>nd</sup> twin (%)	Total number (%)
Spontaneous	8 (26.6%)	4 (13.3%)	12 (20%)
Assisted breech	3 (10%)	4 (13.3%)	7 (11.6%)
Instrumental	1 (3.3%)	2 (6.6%)	3 (5%)
LSCS	18 (60%)	20 (66%)	38 (63.3%)
Total	30 (100)	30 (100)	60 (100)

A total 53% patients delivered between 30- and 34-weeks gestational age. 33% patients delivered between 34 and 38 weeks, 10% beyond 38 weeks and 3% between 28 and 30 weeks (Table 2). A total 4 patients delivered the first and second twin spontaneously. Another 4 patients delivered the first twin spontaneously, but for the second twin, one was delivered by assisted breech method, one by forceps and two by caesarean section. Both the twins were delivered by assisted breech delivery in 3 patients and by instrumental delivery in 1 patient (Table 3).

Mode of delivery in 63.3% women was by caesarean section. Out of 30 women, 18 underwent caesarean section for the first twin itself. Two women, who delivered the first twin spontaneously vaginally, were taken for caesarean section for the second twin due to transverse lie and fetal distress respectively. In 83.3% twins, interval of deliveries between first and second twin was <15 min (Table 4).

**Table 4: Interval of delivery between the two twins and indication of caesarean section.**

Interval of delivery between the first and second twin		
Interval	Number	Percentage
<15 min	25	83.3%
15-30 min	4	13.3%
31-60 min	1	3.3%
Indication of LSCS in twins (n=20)		
Malpresentation	11	55%
Previous CS	3	15%
Fetal distress	3	15%
PIH	1	5%
Non progress of labour	1	5%
Antepartum haemorrhage	1	5%

**Table 5: Complications found in antenatal patients (n=30).**

Complication	Number	Percentage
Anaemia	15	50%
Hyperemesis gravidarum	2	6.6%
Hypertension (PIH/preeclampsia)	12	40%
Polyhydramnios	2	6.6%
APH (abruption, placenta previa)	1	3.3%
PROM	10	33.3%
UTI	5	16.6%
Gestational diabetes	2	6.6%
No associated complications	5	16.6%
Complications inherent to twinning		
TTTS	1	3.3%
SIUFD (single intrauterine fetal demise)	1	3.3%

(Note: total percentage will not be equal to 100% as some patients had more than one complication).

Most common maternal complication found in twin pregnancy was preterm labour seen in 67% patients. Other complications were anaemia (50%), PIH (40%), premature rupture of membranes (33%) and post-partum haemorrhage (16.6%).

**Table 6: Distribution of intrapartum complications associated with twin pregnancies (n=30).**

Complication	Number	Percentage
Preterm labour	20	67%
PPH	5	16.6%
Sepsis	1	3%
Preterm LSCS	8	27%
Post-partum eclampsia	1	3.3%
No complication	8	27%

(Note: total percentage will not be equal to 100% as some patients had more than one complication).

One patient with monochorionic twins was associated with twin-twin transfusion syndrome (TTTS) and one patient with dichorionic twin pregnancy was associated with single intrauterine fetal demise (SIUFD) in first trimester and delivered in 3<sup>rd</sup> trimester in which one of the fetus was healthy and the other fetus was dead with weight 250 grams (Table 5 and 6). Patients who presented with preterm labour pain were managed conservatively. Antibiotics, tocolytic drugs (nifedipine, progesterone), magnesium sulfate as well as glucocorticoids were administered. They help in prevention of preterm labour as well as help in improving the neonatal outcome by reducing RDS (respiratory distress syndrome), IVH (intraventricular haemorrhage),

and NEC (necrotising enterocolitis). Magnesium sulfate acts as a neuroprotective agent.

Respiratory distress and birth hypoxia constitute a major part of perinatal morbidity (41.6%). IUGR constitutes 16.6%, jaundice constitutes 16.6% whereas neonatal sepsis constitutes 8% of perinatal complications (Table 7).

**Table 7: Causes of perinatal morbidity (n=60).**

Morbid condition	Number	Percentage
Prematurity	50	83.3%
Birth weight		
<1 kg	5	8.3%
1-1.5 kg	20	33.3%
1.6-2.5 kg	18	30%
>2.5 kg	17	28.3%
IUGR	10	16.6%
Birth asphyxia /hypoxia/RDS	25	41.6%
Septicaemia	5	8.3%
Jaundice	10	16.6%
Anaemia	10	16.6%
Congenital malformations	2	3.3%

**Table 8: Comparison of birth weights between first and second twins.**

Parameter	Twin 1	Twin 2
Mean birth weight (grams)	1900 grams	1560 grams

**Table 9: Comparison of incidence of birth hypoxia amongst first twin and second twin.**

Birth hypoxia	Twin 1 (T1) N	Twin (T1) Percentage	Twin 2 (T2) N	Twin 2 (T2) Percentage	Total N (T1+T2)	Percentage
Present	10	33.3%	22	73.3%	32	53.3%
Absent	20	66.6%	8	26.6%	28	46.6%
Total	30	100%	30	100%	60	100%

**Table 10: Comparison of Apgar scores between the first and second coming twins.**

Apgar scores	Twin 1 (T1)	Twin 1 (T1) Percentage	Twin 2 (T2)	Twin 2 (T2) Percentage	Total N (T1+T2)	Percentage
<7 at 1 min	12	40%	16	53.3%	28	46.6%
>7 at 1 min	28	60%	14	46.7%	32	53.3%
Total	30	100%	30	100%	60	100%

Second of the coming twins were associated with more perinatal complications than the first twin. Birth weight less than 2.5 kg is defined as low birth weight (LBW). In this study, 71.7% of the new-borns were low birth weight. Birth weight of the second coming twins was found to be lower than the first coming twins. The mean birth weight of first coming twins (twin 1) was 1900 grams and that of second coming twin was 1560 grams

(twin 2) (Table 8). The second coming twins had a higher incidence of birth hypoxia (73.3%) as compared to the first twin (26.6%) (Table 9).

A total 46% neonates had Apgar score less than 7 at 1 minute. Out of this, percentage of first and second coming twins having Apgar score of less than 7 at 1 minute was 40% and 53.3% respectively (Table 10).

A total 55% of total neonates were admitted in NICU (twin 1: 43.3% and twin 2: 66.6%). Out of 60 twins delivered, 59 were live births.

There was 1 macerated IUD baby weighing 250 grams. Due to perinatal complications, 6 babies died in the first

week. Perinatal mortality in this study was 11.6%. Out of the 2 babies delivered instrumentally, 1 died. Hence highest mortality was associated with instrumental delivery (50%) (Table 12). Neonatal outcome is summarized (Table 13). As gestational age increases, perinatal morbidity and mortality decreases.

**Table 11: Comparison of NICU requirement in first twin and second coming twin.**

NICU requirement	Twin 1 N	Twin 1 %	Twin 2 N	Twin 2 %	Total N (T1+T2)	Percentage
Required	13	43.3%	20	66.6%	33	55%
Not required	17	56.6%	10	33.3%	27	45%
Total	30	100%	30	100%	60	100%

**Table 12: Perinatal death in twin 1 and twin 2 (N=60) in relation to the mode of delivery.**

Mode of delivery	1 <sup>st</sup> Twin	2 <sup>nd</sup> Twin	Perinatal death (Twin 1)	Perinatal death (Twin 2)	Total perinatal death	Perinatal mortality %
Spontaneous	8	4	1	3	4	57.14%
Assisted breech	3	4	0	1	1	14.28%
Instrumental	1	2	0	1	1	14.28%
LSCS	18	20	0	1	1	14.28%
Total	30	30	1	6	7	100%

**Table 13: Neonatal outcome (n=60).**

Parameter	Number	Percentage
Live births	59	98.3%
NICU admission	33	55%
Neonatal death at 1 <sup>st</sup> week	6	10%
Single intrauterine fetal demise	1	1.6%
Fresh still born	0	0%
Macerated still born	0	0%

## DISCUSSION

Twin pregnancies require multidisciplinary approach towards their management as twin pregnancies are high risk pregnancies. The incidence of twin pregnancy in this study was 2% which is similar to the traditional incidence of 0.2-2%.<sup>5</sup> Owing to the increasing trend towards late child bearing and widespread use of assisted reproduction techniques, there is a higher incidence of twin pregnancies. 23.3% patients became pregnant after receiving treatment with ovulation induction drugs and IVF. Therefore 23.3% pregnancies were the result of iatrogenic twinning in contrast to the study by Sultana et al where the rate of iatrogenic twinning was 14%.<sup>6</sup> 60% women were aged between 20-29 years. This finding is similar to a study by Spellacy et al where 55% were aged between 20-29 years.<sup>7</sup> 80% women were multipara which is consistent to a report by Spellacy et al where 84.2% women were multipara. Most common indication of

caesarean section was malpresentation found in 55% which is comparable to Erdemoglu et al (46.3%).<sup>8</sup> Most common presentation at birth was vertex-vertex (56.6%) which was found to be similar with another study by Chowdhury et al (47.5%) and Panwala et al (51.4%).<sup>9,10</sup>

Most common method of delivery in this study was by lower segment cesarean section (63.3%), consistent to studies by Chowdhury and Sultana (49.1% and 56% respectively).<sup>6,10</sup> 20% of the total twins delivered vaginally spontaneously, 11.6% twins underwent assisted breech delivery and 5% twins underwent instrumental delivery. The delivery interval between first and second twin was <15 min in 83.3% women and <30 min in 13.3% women. In one patient delivery interval between first and second twin was 50 minutes. Higher neonatal morbidity was found in the second coming twins when the delivery interval was >15 min. To reduce perinatal risk, the delay between the two deliveries should be minimized. Most common maternal complication in twin pregnancy was found to be preterm labour (67%). A higher pre term caesarean section rate of 27% was found. This is in contrast to previous studies by Papićnik, Chowdhury and Sultana where preterm delivery rates were 50.7%, 41.5% and 44% respectively.<sup>6,10,11</sup>

Due to increased association with medical complications, there was a higher rate of earlier caesarean deliveries. Second most common complication in this study seen in 50% women was anaemia which was higher than the corresponding figures reported by Chowdhury and Brown

et al were 35.8% and 35.5%.<sup>10,12</sup> However, a much higher incidence of anaemia was reported by Bangal et al (84%).<sup>13</sup> This variation could be due to difference in the prevalence of anaemia in different regions. Respiratory distress was observed in 41.6% of neonates. 73% of the second coming twin suffered from respiratory distress while 33% of first twins had distress. Hypertensive disorders were reported in 40% women in the present study. This is higher when compared to that observed in studies by Bangal et al and by Chowdhury et al where they were seen in 18% and 22.6% cases respectively.<sup>10,13</sup>

PPH complicated 16.6% cases in present study which was similar to the study by Chowdhury (18.9%).<sup>10</sup> 33.3% of the patients were had premature rupture of membranes (PROM). But Chowdhury and Sultana reported lower rate of PROM for twin pregnancy (3.8% and 10% respectively).<sup>6,10</sup> Twin-twin transfusion syndrome was seen in one patient where one twin had intrauterine growth restriction with oligohydramnios and the other twin had polyhydramnios. There was no maternal mortality in this study.

Perinatal mortality of 11.6% was found in this study which was higher than that found by Chowdhury and Sultana et al.<sup>6,10</sup> Higher perinatal mortality was observed in unbooked patients (55%) and patients referred from peripheral centres (20%) in comparison to booked patients (25%). This demonstrates the importance of regular and effective antenatal care for better outcome in the mother and baby. Still birth comprises of 1.6% of the total live births. About 55% of the neonates were admitted in NICU. Of these, 13 of the first coming twins and 20 of the second twins required NICU admission. 71% of twins were low birth weight (<2.5 kg) and 83.3% of neonates were preterm. 3.3% twins in this study were congenitally malformed. Second coming twin was worse affected in comparison to the first twin. The incidence of discordant growth in this study was 30%. Apgar score of <7 at 1 min was observed in 56% of all babies. The incidence of 1 min Apgar score of <7 among twin 1 babies was 40 % and among twin 2 babies was 53%, showing that the second twin had lower Apgar score. Reasons for increased perinatal risk in twins are low birth weight and prematurity. It was found that earlier the gestational age at which delivery occurs, more are the chances of hypoxia, NICU admissions and deaths in neonates.

## CONCLUSION

There is an increasing incidence of twins due to infertility treatment and advancing maternal age. Hence the associated maternal and fetal complications are higher.

Moreover, these complications are higher when twins are delivered at earlier gestational age. High-risk cases should be identified early and managed. Regular antenatal visits, adequate rest, administration of steroids, good nutrition are important to improve the outcome. Early hospitalisation, careful intrapartum monitoring and better NICU facilities are essential to reduce the risk to mother and baby.

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