

# Perinatal Outcome of Twins Delivered Vaginally in a Tertiary Care Hospital

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## Author's Contribution

<sup>1,2</sup> Conception of study

<sup>1,2</sup> Experimentation/Study conduction

<sup>1,2,3</sup> Analysis/Interpretation/Discussion

<sup>3,4,5</sup> Manuscript Writing

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## Abstract

**Objective:** To determine the perinatal outcome of first and second twin delivered vaginally in terms of frequency of poor APGAR score and NICU admission in the patient at term in a tertiary care health facility.

**Introduction:** This study aims to improve the perinatal outcome of twin pregnancies through awareness of the need for antenatal care, the recommendation of regular antenatal visits, early recognition of complications, and the presence of neonatal intensive care facilities to improve neonatal outcome by knowing the burden of adverse outcomes in our population.

**Materials and Methods:** This is a descriptive study, conducted at the Department of Obstetrics and Gynaecology at DHQ Hospital, Rawalpindi from January 2019 to June 2019.

A total of 91 individuals (female pregnant ladies) who delivered twins (Dichorionic Diamniotic) babies through normal vaginally were selected for descriptive study in the Department of Obstetrics and Gynaecology, DHQ hospital Rawalpindi. All consecutive patients admitted in the labour ward with twin pregnancies were included. Before delivery, the fetal wellbeing of both the twins was evaluated also by ultrasonography. Data collection was done by interview schedule from the patients. Data were analyzed using descriptive statistics using SPSS version 17. For all the quantitative variables like age, gestational age and intertwine interval in seconds.

**Results:** Out of 6278 deliveries during the study period, 91 twin births gave a frequency of 15.16/1000 births. Patients' mean age was 30.14±2.64 years, and mean gestational age was 37.47±0.72 weeks. The mean inter twin delivery interval (mins) in the study was 23.74±4.75. Perinatal outcome of first and second twin in terms of frequency of poor APGAR score and NICU admission in a patient at term was 09 (9.9%) and 27 (29.7%), (p<0.001) respectively.

**Conclusion:** The study concludes that there was a high risk of perinatal outcomes in the second twin as compared to the first twin delivered vaginally. Poor Apgar score and neonatal intensive care admission were more so for the second twin.

**Keywords:** Twin pregnancy, APGAR score, term, Perinatal outcome, APGAR scores at birth, and NICU admission.

## Introduction

Multiple births are more common today than they were a few decades back. The birth rate of twins has increased by 50% and so is the rate of higher-order pregnancies respectively.<sup>1</sup> Various factors attribute to the increase in the rate of multiple pregnancies. Advancement in assisted reproductive techniques, amplified use of ovulation-inducing agents has played a tremendous role in the rising incidence of multi-fetal pregnancies.<sup>2</sup> The frequent use of technology to enhance fertility has led to an increased incidence of multiple pregnancies) Twin gestation comprises 1-3% of all pregnancies. The incidence of Twin pregnancy varies worldwide. In the USA it has been reported constant as 32/1000 births, whereas the incidence of high order multiples is 147/100000 live births. In the United Kingdom, twin pregnancy rates are 14.7/1000 maternities. Japan has the lowest incidence 4/1000, whereas African countries have a higher incidence of twins and up to 54/1000 births reported from Nigeria.<sup>3</sup>

Twin pregnancies are a unique but common obstetrical occurrence that has attracted the attention of both the obstetrician and the common man since time immemorial.

Multiple pregnancies pose definite risks not only to the mother but also to the fetuses. Despite advances in obstetrics and neonatology, the perinatal mortality rate among twins remains high, estimated as accounting for approximately 10% of all perinatal mortality.<sup>4</sup> The babies born after a prolonged second stage of labour were found to be at a greater risk for a combination of health issues, for being admitted to the neonatal intensive care unit, and for having a low score on the 5-minute Apgar test.<sup>5</sup> Of the two twins, the second twin has always been said to be at a greater risk of birth asphyxia and poorer outcome. Twins account for between 5% and 10% of all cases of cerebral palsy in the United States. This increased risk for cerebral palsy is attributed to their lower birth weight or earlier delivery.<sup>6</sup>

Because of the increase in preterm birth, there is also an increase in the incidence of cerebral palsy, Mal-presentations, birth asphyxia, increased rates of perinatal death, and a depressed APGAR score. Labour that takes too long can be dangerous to the baby. It may cause low oxygen levels and abnormal heart rhythm in the baby. The birth weight, the gestational age, and the survival rate of the studied second twin significantly increased after the suggested

management of the delayed second twin delivery in dichorionic diamniotic pregnancies.<sup>7</sup>

Several studies have recommended dichorionic pregnancies around 38 weeks, at 36 weeks for monochorionic (devoid of complications), and 32-34 weeks in cases of single amniotic.<sup>8</sup>

The main causes of adverse neonatal outcomes in multiple pregnancies are related to prematurity, fetal growth restriction, and low birth weight.

## Materials and Methods

A total of 91 individuals (female pregnant ladies) who delivered twins (Dichorionic Diamniotic) babies through normal vaginally were selected. A descriptive study (prospective observational study) was carried for a period of six months, between January 2019 to June 2019 in the Department of Obstetrics and Gynecology, DHQ hospital Rawalpindi. Women with twin pregnancy with a gestational age of 37 weeks or more admitted and delivered in the maternity ward of our hospital during the study period were included in study All consecutive patients admitted in labour ward with twin pregnancy, Age of mother between 22 to 35 years, Vaginal delivery, Gestational age at or more than 37 weeks, First twin with the cephalic presentation were included. All those patients who have problems of Prematurity, Congenital malformations, Ante-partum fetal death, Low birth weight (< 2.5Kg), Difficult manipulative delivery of the second twin, Pregnancy with more than two fetuses, C-section indicated deliveries were excluded from the study.

Fully informed consent was obtained from every participating patient. A detailed history of patients and their chief complaints were recorded. Age, parity, gestational age, menstrual history, obstetric histories were noted along with the family history of multiple pregnancies before delivery. The fetal well-being of both the twins (Dichorionic Diamniotic) was evaluated also by ultrasonography. A detailed history was taken and a thorough physical examination was performed on admission. Data collection was done by interview schedule and observation checklist for assessing the intertwined delivery interval in minutes and Apgar score at 1 min and 5-minute intervals. Informed consent was taken from the patients participating in the study. The study was approved by the ethical committee. The perinatal outcome measures were based on APGAR scores at birth and NICU admission. Data were analyzed using descriptive statistics using

SPSS version 17. For all the quantitative variables like age, gestational age and intertwin interval in seconds, APGAR scores at one minute and five minutes after delivery for both first and second twins. The mean, standard deviation was calculated. For qualitative variables, like gender, admission in NICU, twins with low APGAR scores, frequencies, and percentages were calculated. To compare the perinatal outcomes of both twins in terms of APGAR scores and NICU admission chi-square test was calculated and a p-value of  $< 0.05$  was significant. To see the effect of maternal age and gestational age on perinatal outcome, Stratification was done and a chi-square test was applied.

## Results

A total of 91 patients were included according to the inclusion criteria of the study. The minimum age of the patient was 23 years and the maximum age included in the study was 35 years. Descriptive statistics of the age (years) of the patient were also calculated in terms of mean and standard deviation. The mean age (years) in the study was  $30.14 \pm 2.64$ .

**Table 1: Descriptive statistics of Age (years) of patients**

	<i>N</i>	<i>Mini mum</i>	<i>Maxi mum</i>	<i>Mean</i>	<i>Std. Deviation</i>
<b>Age (years)</b>	91	23	35	30.14	2.64

Descriptive statistics of gestational age (years) of the patient were also calculated in terms of mean and standard deviation. We studied patients with a minimum gestational age of 37 weeks and maximum gestational age of 40 weeks. The mean gestational age (weeks) in the study was  $37.47 \pm 0.72$ , as shown in Table 2.

**Table 2: Descriptive statistics of Gestational Age (weeks) of patients**

	<i>n</i>	<i>Mini mum</i>	<i>Maxi mum</i>	<i>Mean</i>	<i>Std. Deviation</i>
<b>Gestational Age (weeks)</b>	91	37	40	37.47	0.72

We studied the time interval of twins delivered through spontaneous vaginally. Minimum Intertwin Delivery Interval was 11(mins) and maximum Intertwin Delivery Interval was 30(mins). Descriptive statistics of intertwin delivery interval (mins) of the patient were also calculated in terms of mean and standard deviation. The mean intertwin delivery interval (mins) in the study was  $23.74 \pm 4.75$ , as shown in Table 3.

**Table 3: Descriptive statistics of Intertwin Delivery Interval (mins) of patients**

	<i>n</i>	<i>Mini mum</i>	<i>Maxi mum</i>	<i>Mean</i>	<i>Std. Deviation</i>
<b>Intertwin Delivery Interval (mins)</b>	91	11	30	23.74	4.75

Descriptive statistics of Apgar score at one and 05 mins in twin one and twin deliveries was calculated. Minimum and Maximum APGAR scores in Twin one at 01 min were 4 and 8 respectively. Minimum and Maximum APGAR score in Twin one at 05 min was 2 and 7 respectively. Mean Apgar score at one and five min of twin one delivery women was  $6.34 \pm 0.79$  and  $8.23 \pm 0.92$  respectively. The minimum and Maximum APGAR score in Twin two at 01 min was 4 and 9 respectively. Minimum and Maximum APGAR score in Twin One at 05 min was 2 and 7 respectively. Similarly, mean APGAR score at one and five min of twin two delivery women was  $5.67 \pm 1.09$  and  $7.57 \pm 1.24$  respectively, as shown in Table 4.

**Table 4: Descriptive statistics of APGAR score at 01 min & 05 mins**

		<i>n</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>
Twin One	APGAR score at 01 min	91	4	8	6.34	0.79
	APGAR score at 05 min	91	2	7	8.23	0.92
Twin Two	APGAR score at 01 min	91	2	7	5.67	1.09
	APGAR score at 05 min	91	4	9	7.57	1.24

Perinatal outcomes of first and second twin delivered vaginally in terms of frequency of poor APGAR score in a patient at term was 09 (9.9%) and 27 (29.7%) respectively. Chi-square test was used to compare poor APGAR score among first and second twin delivered vaginally at term which statistically significant (p-value 0.001), as shown in Table 5.

**Table 5: Comparison of Poor APGAR score NICU admission among twin one and twin two**

Poor APGAR	Vaginally delivered		P-value
	Twin one	Twin two	
yes	9 (9.9%)	27 (29.7%)	0.001
no	82 (90.1%)	64 (70.3%)	
Total	91 (100.0%)	91 (100.0%)	

Similarly, the perinatal outcome of the first and second twin delivered vaginally in terms of frequency of NICU admission in the patient at term was 9 (9.9) and 27 (29.7) respectively. Chi-square test was used to compare NICU admission among first and second twin delivered vaginally at term which statistically significant (p-value 0.001), as shown in Table 6.

Effect modifier like age group was compared with the first twin delivered vaginally in terms of frequency of poor APGAR score and NICU admission, which was statistically not significant (p-value 0.416) respectively, as shown in Table 6.

**Table 6: Effect modifier like Age stratification with Poor APGAR & NICU admission in Twin one vaginal delivery**

Age group	Poor APGAR/NICU Admission		P-value
	yes	no	
22 - 30 years	6 (66.7%)	43 (52.4%)	0.416
31 - 35 years	3 (33.3%)	39 (47.6%)	
Total	9 (100.0%)	82 (100.0%)	

Similarly, effect modifier like gestational age (weeks) was compared with the first twin delivered vaginally in terms of frequency of poor APGAR score and NICU admission, which was statistically not significant (p-value 0.134) respectively, as shown in Table 7.

**Table 7: Effect modifier like Gestational Age stratification with Poor APGAR& NICU admission in Twin one vaginal delivery**

Gestational age	Poor APGAR/NICU Admission		P-value
	yes	no	

37 - 38 weeks	7 (77.8%)	76 (92.7%)	0.134
39 - 40 weeks	2 (22.2%)	6 (7.3%)	
Total	9 (100.0%)	82 (100.0%)	

## Discussion

Multiple pregnancies are a high-risk situation because of their inherent risks to the mother and the foetus. Twin or multiple pregnancies are gaining importance worldwide because of rising incidence attributable to assisted reproductive technologies. Perinatal mortality is four times higher in twins and six times higher in triplets.<sup>9</sup>

The conduct of a twin delivery remains one of the most challenging events in the daily practice of obstetrics as the perinatal death rate is 4-10 times higher than the singleton pregnancy.<sup>10</sup> The delivery of the second twin is considered to be more challenging due to multiple factors and hence is at increased risk of perinatal morbidity than the first twin.

Mal- presentation of one or both babies occurs in about 60% of all twin pregnancies. Studies reported that the mortality rate of second twins is higher in vaginal deliveries.<sup>11</sup>In a study by Bhalla et al, the most common indication for cesarean section was 48.14% which is comparable with Erdemoglu et al where it was 46.3%.<sup>12,18</sup>

Our study focused on delivery-related perinatal outcomes of vaginally delivered second twins excluding the confounding effects of prematurity, congenital malformations, lower segment caesarean section, antepartum fetal death, and Low birth weight. In other studies of Chowdhury et al and Panwala et al, Bhalla et al, Yeasmin et al, vaginally delivered cephalic presentation at delivery were (47.5%), (51.4%), (52%), (48.21%) respectively.<sup>13, 18</sup>

In our study, the mean age was 30.14±2.64 years. Whereas a study reported by Saima & Nargis in 2012, showed that the patients' mean age was 27.51±4.2 years. The study findings of Yeasmin et al and Mahendro et al are 24.19 and 26 years respectively.<sup>13,14,17</sup>

In this study ages of studied patients were between 23-35 years while the study findings of Bhalla et al and Spellacy et al were aged between 20 -29 years.<sup>15,18</sup>

In our study Mean gestational age in the study was 37.47±0.72. Whereas in a study conducted by Aziz et al, Erdemoglu et al, Bhalla et al, Yeasmin et al and Mahendro et al mean gestational age was 34.76 weeks, 33 weeks, 34.2 weeks, 35.39 weeks, and 35 weeks respectively.<sup>12,18,13,14</sup>

In our study mean intertwin (between first and second twin) delivery interval (mins) was 23.74±4.75. Similarly, in another study mean interval was 10.55±14.01. In this research 27 (29.7%) of 2<sup>nd</sup> twins had poor APGAR and needed NICU admissions in our study.<sup>16</sup>

In research by Bhalla et al, the delivery interval between first and second twin was <15 min in 78% of patients and <30 min in 20% of patients. Neonatal morbidity in second-coming twins is higher especially in cases where the delivery interval between the two twins was more than 15 min. From this, we conclude that there should be a minimum delay in the delivery of the second coming twin to prevent post-natal complications.<sup>18</sup>

In our study, the mean APGAR score of twin one delivery women was 9.9% and twin two delivery was 29.7% respectively. Similarly, in another study, the 5 minute APGAR score was <7 in 11.2% of first and 24.03% of the second twin.<sup>17</sup> APGAR score of <7 at 1 min was observed in 34% of all babies. Of this, the incidence of 1min APGAR<7 among Twin 1 babies was 41.2 % and among twin 2 babies was 58.8%, showing that low APGAR score was more common amongst the second of the twins as compared to first of the twins in the present study. Sixty - six percent of the neonates required NICU admission owing to neonatal morbidity. Low birth weight and prematurity were the leading causes for perinatal morbidity in our study (88% and 70% respectively) followed by birth hypoxia in 58% of babies.

NICU requirement was in 66% of the babies owing to neonatal morbidities. Of these 30 of the first coming twins (45.45%) and 36 of the second twins (54.55%) required NICU admission.<sup>18</sup>

Delivery of the Second twin has increased NICU admission and APGAR scores <7 and this is similar to the study but there was an increased risk of fatality among second twins at term, caused by intrapartum anoxia or trauma those who delivered vaginally compared with those by caesarean section.<sup>19</sup>

Another study conducted on twin pregnancies has shown that a second twin at any gestational age is at higher risk of perinatal morbidity and the results of our study are in accordance with this study and similar results were observed.<sup>20</sup> We have found in the Study data that gestational age and infant sex don't modify the APGAR score of second twin and similar results have been shown by other studies.<sup>21,22</sup>

There was no maternal mortality in this study. Our study findings are consistent with the study of other

researchers who did not report any maternal mortality.<sup>14</sup>

## Conclusion

The study concludes that there was a high risk of perinatal outcomes in the second twin as compared to the first twin delivered vaginally in terms of poor APGAR score and neonatal intensive care admission. Improvement can only be possible through awareness about antenatal care, early recognition of obstetric complications, and the presence of neonatal intensive care facilities to improve neonatal outcomes in our population.

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