

Perinatal Outcome of Second Twin in Third Trimester of Pregnancy

Pramisha Baral,¹ Ganesh Dangal,² Gehanath Baral,³ Kirtipal Subedi¹

ABSTRACT

Background: With increasing trend of twin pregnancy and along with increasing advancement in neonatal care, survival rate of twin pregnancy has increased. However there is worse perinatal outcome in second twin in comparison with the first twin.

Methods: Hospital based observational cross-sectional study of 42 pregnant women with twin pregnancy at Paropakar Maternity and Women's Hospital was conducted from November 2019 to October 2020. The outcome of second twin was assessed in relation to gestational age, chorionicity, mode of delivery, delivery interval. McNemar test was used for analysis with 0.05 as the level of significance.

Results: Among 42 pair of twins, Apgar score of the second twin was found to be lower than the first twin ($p=0.00$) in general and in preterm gestation ($p=0.115$). Among twin who had monochorionic placenta; higher number of twin 1 had Apgar score of ≥ 7 ($p=0.004$). Among twin who had inter-delivery interval of < 30 min; higher number of twin 1 had Apgar score of ≥ 7 at 5 minutes. ($p=0.00$).

Conclusions: Second twin has lower Apgar score in relationship to period of gestation, mode of delivery, inter-delivery interval, and chorionicity.

Keywords: Apgarscore; chorionicity; twin pregnancy

INTRODUCTION

Multifetal pregnancies possess adverse perinatal outcomes in comparison to singleton pregnancies because the second twin is at a higher risk than the first one. The main causes of adverse neonatal outcomes in multiple pregnancies are associated with prematurity, fetal growth restriction and low birth weight.¹

The twin pregnancies at Paropakar Maternity and Women's Hospital (PMWH) in the year 2076; prior to study; was 206 out of 22213 total deliveries (9.3/1000).² In a cohort study conducted in Saralahi, Nepal, twinning rate was 16.1/1000 pregnancies.³

Study done in India showed that perinatal outcome of second twin was unfavourable in terms of mode of delivery, apgar score and birth weight.⁴ This study was done to find out the outcome of second twin in terms of Apgar score at 5 minutes and need for Neonatal Intensive Care Unit (NICU) admission of the second twin in relation to gestational age, chorionicity, mode of delivery, delivery interval between first and second twin.

METHODS

This was a hospital based cross-sectional study conducted among 42 pregnant women with twin pregnancy at PMWH, Nepal from November 2019 to October 2020. First and second twin were termed as twin 1 and twin 2 respectively. All pregnant women of more than 28 weeks of gestation confirmed through ultrasonography were included in the study. Patient were followed up during each antenatal visit. Intrauterine fetal death (IUFD) twins and gross congenital anomalies were excluded. Apgar score was confirmed by pediatrician who receive the baby and confirmation of chorionicity was done through placental examination by obstetrician. Apgar score and admission to NICU was compared between them in relation to gestational age, chorionicity, mode of delivery, inter-delivery interval and birth weight. Data were analyzed using the Statistical Package for Social Science (SPSS), version 23 software. Approval was taken from the institutional review committee of the hospital and written informed consent from patient was taken. McNemar test was used and p-value was considered significant at < 0.05 .

Correspondence: Dr Pramisha Baral, Paropakar Maternity and Women's Hospital, Thapathali, Kathmandu, Nepal. Email: baralpramisha123@gmail.com, Phone: +9779846901165.

RESULTS

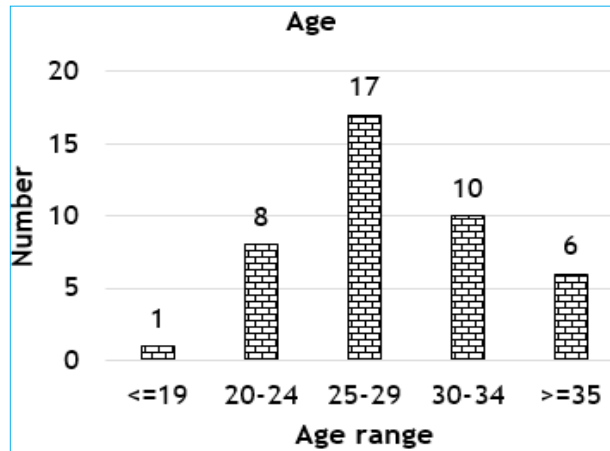


Figure 1. Age range of participants.

As shown in figure 1, during the study period, 42 twin deliveries were recorded. Maximum number of women participated in the study were in the age group of 25-29 years.

Table 1. Apgar Score at 5 minutes in relation to period of gestation (POG).

Period of gestation	Twin 1		Twin 2		p-value
	<7 n (%)	≥7 n (%)	<7 n (%)	≥7 n (%)	
<37 Weeks	0 (0)	14 (38.9)	13 (37.1)	1 (14.3)	0.115
≥37 Weeks	6 (100)	22 (61.1)	22 (62.9)	6 (85.7)	0.00
Total	42 (100)		42 (100)		

In this study, comparing the Apgar score at 5 min according to period of gestation; at ≥37 weeks of gestation 62.9%(n=22) second twin has apgar score of <7 and was statistically significant(p=0.00)

Table 2. Apgar score at 5 minutes in relation to chorionicity (n=42).

Chorionicity	Twin 1		Twin 2		p-value
	<7 n (%)	≥7 n (%)	<7 n (%)	≥7 n (%)	
Monochorionic	3 (50)	16 (44.4)	15 (42.9)	4 (57.1)	0.004
Dichorionic	3 (50)	20 (55.6)	20 (57.1)	3 (42.9)	0.002
Total	42 (100)		42 (100)		

Among twin who had monochorionic placenta; higher number twin1; (n=16) had Apgar score of ≥7 It was found to be statistically significant (p=0.004).

Table 3. Apgar Score at 5 minutes in relation to inter-delivery interval (n=42).

Inter-delivery interval	Twin 1		Twin 2		p-value
	<7 n (%)	≥7 n (%)	<7 n (%)	≥7 n (%)	
<30 Min	6 (100)	32 (88.9)	32 (91.4)	6 (85.7)	0.00
≥30 Min	0	4 (11.1)	3 (8.6)	1 (14.3)	0.508
Total	42 (100)		42 (100)		

Among twin who had inter-delivery interval of <30min; higher number of twin1 had Apgar score of ≥7 at 5 minutes. It was found to be statistically significant(p=0.00).

Table 4. APGAR Score at 5 minutes in relation to mode of delivery.

Mode of Delivery	Twin 1		Twin 2		p-value
	<7 n (%)	≥7 n (%)	<7 n (%)	≥7 n (%)	
VD	3 (50)	12 (33.3)	11 (31.4)	4 (57.1)	NA
VD-CS	0 (0)	3 (8.3)	3 (8.6)	0 (0)	NA
CS	3 (50)	21 (58.3)	21 (60)	3 (42.9)	NA
Total	42 (100)		42 (100)		

*Mc Nemars test used to calculate p-value.

DISCUSSION

The frequency of twin pregnancies varies among different regions, countries and population mostly due to variation in dizygotic twinning. The overall increase in prevalence of multiple pregnancy is of concern because of the corresponding increase in rate of preterm birth compromising neonatal survival.⁵

In 2076 out of 22689 deliveries twin delivery was found to be 206 i.e. (0.8%) Since PMWH is a government and tertiary hospital where there is very low cost of ANC and there is various safe motherhood program conducted and where patient at the time of discharge get financial incentive and delivery and hospital admission is free of cost.²

Compared to first twin, the second twin has increased incidence of operative birth along with associated increase in birth trauma and low Apgar score. Due to the increased incidence of fetal malpresentation, preterm labor, intrauterine growth restriction (IUGR) appropriate management is important to improve the perinatal mortality and morbidity.⁶

During the study period, 42 twin deliveries were recorded. Twin pregnancy was seen to be concentrated at maternal ages ranging from 20-34 years compared to the extreme of the maternal ages. Similar study done by Lee et al where 1936 twin pregnant women were included, of which maximum twinning was seen in maternal age group 30-35 years of age.⁷ So, the twinning was basically spread over the age group of 20-35 years with less incidence in the extreme of the ages <20 years and over 35 years. This may be due to the reason that majority of women have their pregnancies in 20-34 years and is common age.⁷

In this study, comparing the Apgar score at 5 min according to period of gestation; at ≥ 37 weeks of gestation 62.9% (n=22) second twin has apgar score of <7 and was statistically significant (p=0.00). Similar study was done where a 5 min Apgar score of <7 among twins was associated with inadequate prenatal care, extreme preterm birth, vaginal delivery intrapartum cesarean, and combined delivery. Twin pregnancy is associated with worse perinatal outcome, especially for the second twin. This could be due to reduced placental circulation after delivery of first twin and potentially greater susceptibility for Twin 2 to hypoxia.⁸

In this study among twin who had inter-delivery interval of <30min; higher number of twin1 had Apgar score of ≥ 7 at 5 minutes. It was found to be statistically significant (p=0.00). This can be explained by the fact that long inter delivery interval in between the twin can lead to fetal hypoxia due to diminished placental perfusion.

Lindros and colleague conducted a retrospective, study where second twin delivered with in twin-to-twin interval of 0-30 min had a higher pH in umbilical blood gas analysis than those who are delivered after 30 minutes. A correlation between longer twin-to-twin delivery intervals and decreasing pH in umbilical arterial blood gas, as well as a reduction of Apgar scores in the second twin, have been found.⁹

In this study among twin who had monochorionic placenta; higher number twin1; (n=16) had Apgar score of ≥ 7 It was found to be statistically significant (p=0.004).

Similar study done by Aksam et al where they mentioned about determining chorionicity at early pregnancy can help obstetricians to plan the care of these patients in managing twin pregnancies and in counseling according to the local perinatal outcome.

Monochorionic twins, even if healthy and uncomplicated,

are at high risk for perinatal mortality.¹⁰

Compared to the first twin second twin has worse perinatal outcome. This could be due to (a) risk of oxygen deficiency in second twin due to premature separation of placenta after first twin delivery, (b) due to reduced placental circulation, (c) increased interval between delivery of second twin leading to deficiency of oxygen and (d) more frequent breech delivery among second born twin (e) A tendency of macerated fetus to be delivered after a birth of live born twin.¹¹

In this study twin 2 delivered by cesarean section and apgar score <7 was 60% (n=21) whereas 31.4% (n=11) were delivered by vaginally and had apgar score <7.

Similar study was done by lester and colleagues where planned cesarean section showed a higher perinatal mortality and morbidity rate as compared to vaginal delivery.¹²

Overall, in this study, major differences between the first-born twin and second twin could not be proven statistically, the favorable outcome for both first and second born twin in this study may be due to small group of patients, appropriate and timely antenatal diagnosis of twin, careful intrapartum monitoring.

Many prior studies have shown that twin 2 is more prone to birth asphyxia related to prolong delivery interval, umbilical cord prolapse, placental separation, impaired placental perfusion, abnormal presentation and increase operative vaginal delivery which has led to much higher perinatal mortality in second twin. Many of these factors were not seen in this study which may be due to higher number of cases undergoing caesarean section.

Major cofounding factor like presentation of twin is not included which affect the outcome of second twin. The present study was a hospital based and was conducted in a short duration of time involving only one center and with relatively small sample size which could not be generalized in another setting or large sample size.

CONCLUSIONS

In this study, the Apgar score of the second twin was lower than first twin, perinatal mortality was seen more in second twin. Second twin are likely to have lesser Apgar score (<7) than the first-born twins especially in terms of period of gestation (<37 weeks), chorionicity (monochorionic placentation), mode of delivery (cesarean section), inter delivery interval (<30 min).

Author Affiliations

¹Department of Obstetrics and Gynecology, Paropakar Maternity and women's Hospital, Kathmandu, Nepal

²Department of Obstetrics and Gynecology, Kathmandu Model Hospital, Kathmandu, Nepal

³Department of Obstetrics and Gynecology, Nobel Medical College, Biratnagar, Nepal

Competing interests: None declared

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