

## Assessment of Frequency of Twin Pregnancy and Neonatal Outcome in Deliveries of Mo'tazedi Hospital, Kermanshah in 2004–2007

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### Abstract

**Introduction** Twin pregnancy is a high-risk pregnancy with different prevalences in different regions of the world which is on the rise due to growing use of assisted reproductive technology. The objective of this study is to determine the frequency of twin pregnancy and the neonatal outcome of these pregnancies.

**Materials and Methods** This is a descriptive-analytic study conducted in 2004–2007 in Mo'tazedi Hospital, Kermanshah on 142 twin deliveries as well as the singleton deliveries before and after twin pregnancy as the control group. The required information, including maternal age, gestational age, newborn's gender, presentation of twins, birth weight, Apgar score, fetal anomalies, and neonatal mortality were extracted from medical files and analyzed statistically.

**Findings** After assessment of 29,438 deliveries performed from 2004 to 2007, the frequency of twin pregnancy was found out to be 1 in 208 cases (48 %). The mean age of mothers was higher in twin pregnancies. The mean gestational age of twin pregnancy was 34.3 weeks. Apgar score and neonatal weight were significantly lower in twin pregnancy compared to singleton pregnancy ( $p < 0.001$ ). Furthermore, visible anomalies and mortality were significantly

higher in neonates born to twin pregnancies compared to singleton pregnancies ( $p < 0.0001$  and  $p = 0.009$ , respectively). The ratio of male to female neonates was 1.

**Conclusion** This study indicated that twin pregnancy is a high-risk condition and entails greater neonatal complications compared to singleton pregnancy. Therefore, it is recommendable to have greater perinatal care and perform deliveries in well-equipped centers under supervision of an obstetrician.

**Keywords** Twin pregnancy · Neonatal outcome · Mo'tazedi hospital

### Introduction

During the last 25 years, the prevalence of twin and higher-order multiple pregnancies has been rising considerably due to novel therapies of infertility. One study reported the prevalence of twin pregnancies to have risen from 18.9 cases per 1,000 live births in 1980 to 32.1 cases in 2005 [1, 2]. The frequency of monozygotic twins is almost constant throughout the world (1 per 250 births) and is independent from race, heredity, age, and parity. On the other hand, the incidence of dizygotic twin pregnancy is considerably influenced by race, heredity, maternal age, parity, and especially drugs affecting reproduction, thus giving rise to different frequencies throughout the world [3, 4]. Unusual increase in multiple pregnancies is a public health concern. The higher rate of preterm labor in these pregnancies

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compromises the survival of neonates and increases their risk of life-long morbidities. Different studies have indicated that in addition to perinatal mortality and morbidity attributable to preterm labor, fetuses in multiple pregnancies are susceptible to certain complications, such as anomalies, as well as twin–twin transfusion syndrome. Moreover, multiple pregnancies increase the rate of maternal complications [5–7]. Considering the different frequencies of twin pregnancies and their complications reported in different studies, we undertook this study to determine the prevalence of twin pregnancies and their neonatal outcome in Mo'tazedi Hospital, Kermanshah from 2004 to 2007.

## Materials and Methods

This is a descriptive-analytic study conducted in Mo'tazedi Hospital in 2004–2007. In this study, all twin pregnancies were considered as the case group and all singleton pregnancies before and after twin pregnancy were considered the control group. It must be noted that all participants in the study had a gestational age of above 28 weeks, had no history of systemic diseases, and used no medicines. The information collected included maternal age, gestational age, neonate's gender, presentation of twins, Apgar score, fetal anomalies, and neonatal mortality which were derived from the medical files. The data were recorded in SPSS software and analyzed using Chi square and independent *t* test.

## Findings

In our study, the total number of deliveries from 2004 to 2007 was 29,438 cases with 142 cases of twin pregnancy, yielding a frequency of 1 in 208 pregnancies or 48 cases per 1,000 live births.

In singleton pregnancies, the maternal age ranged from 16 to 45 years, while in twin pregnancies it was from 18 to 45 years. The minimum and maximum gestational ages were 32 and 42 weeks for the singleton group and 29 and 38 weeks for the twin group. No significant difference was found between the two groups in terms of parity (Table 1). Also, the two groups were not significantly different in terms of 1- and 5-min Apgar scores (Table 2).

The singleton group contained neonates with a minimum weight of 1,650 g and maximum weight of 4,500 g. In the twin group, the minimum and maximum weights of the first and second twins were 1,450 and 3,300 g, respectively. Although cephalic presentation was the most frequent type in both groups, the incidence of breech presentation was significantly higher in the twin group

( $p < 0.001$ ). The most frequent type of presentation was cephalic–cephalic in the twin group (36.36 %). In the singleton group, 95 % of fetuses were in cephalic and 5 % were in breech presentation (Table 3).

The singleton group contained 46.8 % girls and 53.2 % boys, and the twin group contained 50 % girls and 50 % boys, indicating no significant difference between the groups ( $p = 0.504$ ).

Visible anomalies (anencephaly, hydrocephaly, club-foot, etc.) were discovered in 4.1 % of singleton pregnancies and 11.8 % of twin pregnancies, indicating a significant difference ( $p < 0.001$ ).

The neonatal mortality rates for the singleton and twin groups were 15 cases (5.3 %) and 30 cases (10.5 %), indicating a significant difference ( $p = 0.009$ ).

## Discussion

In our study, the frequency of twin pregnancy was found to be 1 in 208 cases, while it was reportedly 1.4 % in a study by Basirat et al. [8] and 1.8 % in another study by Kavemanesh et al. [9]. The prevalence of twin pregnancy was reported to be 1 in 80 births by Usta in the United State [6], 1 in 48 births by Musili et al. in Kenya [10], and 1 in 43 births by Mutihir et al. in Nigeria [11].

In general, the growing use of assisted reproductive technology is causing an increase in the prevalence of twin pregnancy throughout the world [6, 10, 12]. In a study by Klasa et al. [13], the incidence of twin pregnancy was reported to be 1 %, while it was 0.84 % during the 1980s and 1.28 % during the 1990s. The prevalence of twin pregnancy is influenced by racial and genetic factors, as well as some environmental factors and use of assisted reproductive technology, accounting for the different figures reported from different regions. In our study, the mean maternal age was different between the two groups, as it was significantly higher in the twin group. Szymusik et al. [14] reported the mean maternal age of mothers with twin pregnancy to be significantly higher in women aged more than 40 years compared to those aged 35–39 years.

In a study by Basirat et al. [8], the two groups were not significantly different in terms of mean age, while Musilli et al. [10] reported the mean age of mothers with twin pregnancy to be lower. This discrepancy among different studies may be due to differences in age of marriage and pregnancy in different regions.

Our study observed no difference in parity between the groups, which corroborates the findings of Blickstein et al. [15]. However, Musilli et al. [10] reported twin pregnancy to be significantly more frequent in women with lower parity and Szymusik et al. [14] observed twin pregnancy to be significantly more frequent in multiparous women. This

**Table 1** Relationship between maternal age, gestational age, and parity with singleton and twin pregnancies

Characteristics	Singleton pregnancy	Twin pregnancy	<i>p</i> value
Maternal age	25	27	0/016
Gestational age	37/2	34/3	0/000
Parity	0/93	0/93	1

\* Data were present as median

**Table 2** Relationship between 1- and 5-min Apgar scores and neonatal weight with singleton and twin pregnancies

Characteristics of neonatal	Singleton pregnancy	Twin pregnancy		<i>p</i> value
		First	Second	
Apgar Min 1	8/6	7/7	7/9	0/000
Apgar Min 5	9/8	9/1	9/1	0/000
Neonatal weight (g)	2991	2122	2302	0/000

\* Data were present as median

**Table 3** Separated types of presentations of twins in twin pregnancies

%	Presentations
36/36	Cephalic–cephalic
34/45	Cephalic–breech
17/27	Breech–cephalic
11/81	Breech–breech
0/02	Others

difference may be accounted for by differences in genetics and use of assisted reproductive technology. Our findings indicate the mean gestational age of twin pregnancies to be 34.3 weeks, significantly lower than singleton pregnancies. Muzhar et al. in Pakistan reported the mean gestational age of twin pregnancies as 35.9 weeks, indicating a significantly higher rate of preterm labor in twin pregnancies compared to singleton pregnancies. This finding is consistent with those of Szymusik, Basirat, and Musilli [10, 14, 16].

In our study, the mean Apgar score values of the 1st and 5th minutes were significantly lower for the twin group compared to the singleton group, which is in line with the findings of Jhab, Kavehmanesh, and Melamed [7, 9, 17]. One reason may be the relationship of gestational age and birth weight with Apgar score; considering the higher prevalence of preterm labor in twin pregnancy as well as the lower birth weight, these neonates will tend to have lower Apgar scores compared to those born to singleton pregnancies. In the present study, the mean birth weight of newborns of twin pregnancy was significantly lower than

those of singleton pregnancy—2,122 g for the first twin and 2,320 g for the second twin. In a study by Kato et al. [18] the mean birth weight of twin pregnancies was lower: 2,590 g for the first twin and 2,560 g for the second twin. Also, Preis et al. [19] reported the mean birth weight to be 2,412 g for the first twin and 2,485 g for the second twin, which were lower compared to singleton pregnancy. The difference between weight of newborns may reflect the difference in quality of perinatal care and consequently the mean gestational age on delivery and fetal growth retardation.

In our study, boys composed 53.2 % of neonates in singleton pregnancies and 50 % of neonates in twin pregnancies, yielding a boy-to-girl ratio of 1.134 in singleton and 1 in twin pregnancies. Actually, the number of male newborns was smaller in twin pregnancies, but the difference was not significant. Mutihir et al. [11] reported 54.7 % of twin pregnancies to be boys, which was not significantly different from singleton pregnancies. In the study by Kavehmanesh et al. [9], 58.2 % of neonates were girls and 41.8 % were boys. However, Melamed et al. and Chittacharoen et al. [17, 20] indicated that female neonates are significantly more frequent in twin pregnancies. This may be due to the tendency of genetically female zygotes for division or the nutritional and spatial limitations associated with the presence of multiple fetuses may reinforce this tendency. Our study indicates that fetal anomalies are significantly more frequent in twin pregnancies, which is consistent with findings of Jadranko, Mazhar, Melamed, and Wennerhoim [12, 16, 17, 21]. This may be accounted for by the nutritional and spatial limitations during pregnancy, greater genetic disorders of divided zygotes, or assisted reproductive technology. In our study, the mortality rate was significantly higher in the twin group, in line with studies by Jadranko, Mutihir, Mazhaar, and Chittacharoen [11, 12, 16, 20], whereas Basirat et al. did not observe any difference between the two groups in terms of mortality. This discrepancy may be due to the sample size and different geographical regions of the latter study. The greater mortality rate of twin pregnancies may be accounted for by the higher frequency of preterm labor and fetal anomalies and intrauterine growth retardation, fetal accidents, and preeclampsia.

## Conclusion

Twin pregnancy is a high-risk condition with higher rates of fetal and maternal complications. It is recommended to conduct pregnancy cares in shorter intervals and higher precision for twin and higher-order multiple pregnancies to reduce the complications as much as possible. Moreover, twin pregnancies should be delivered in centers with

facilities for special care of low-weight and premature newborns.

## References

- Martin J, Hamilton B, Sulton P, et al. Final data for 2006. National vital statistics reports, vol 57, no 7, Hyattsville, National center for Health statistics, 2009.
- Aston K, Peterson C, Carrell D. Monozygotic twinning associated with assisted reproductive technologies: a review. *Reproduction*. 2008;136:377
- Choi Y, Bishai D, Minkovitz C. Multiple births are a risk factor for postpartum maternal depressive symptoms. *Pediatrics*. 2009;123(4):1147.
- Francois K, Ortiz J, Harris C. Is peripartum hysterectomy more common in multiple gestations? *Obstet Gynecol*. 2005;105:1369.
- Walker M, Murphy K, Pan S. Adverse maternal outcomes in multifetal pregnancies. *BJOG*. 2004;111:1294.
- Usta I, Nassar A, Awwad J, et al. Comparison of the perinatal morbidity and mortality of the presenting twin and its co-twin. *J Perinatol*. 2002;22(5):391–6.
- Jhab M, Anwar H, Johnny T, et al. Comparison of the perinatal morbidity and mortality of the presenting twin and itsco-twin. *J Perinatol*. 2002;22(5):391–6.
- Basirat Z, Hajiahmadi M. Comparison of maternal and fetal outcomes in twin and single pregnancy. *Baol univ J*. 1385;8(2): 47–50.
- Kavemanesh Z, Amirjalari S, Torkaman M, et al. Frequency of multiple pregnancy and its outcomes in Tehran hospitals. *Pediatrics of Ir J*. 1386;17:261–7.
- Musilli F, Karanja J. Multi fetal pregnancies at a maternity hospital in Nairobi. *East Afr Med J*. 2009;86(4):162–5.
- Mutihir J, Pam V. Obstetric outcome of twin pregnancies in Jos. Nigeria Niger J Clin Pract. 2007;10(1):15–8.
- Jadranko S. Twin pregnancy in virovitica general hospital maternity ward. *Gynaecologia et Perinatologia*. 2006;15(4): 205–11.
- Kalsa M, Debaniak J, Milczek T, et al. Comparative analysis of patients with multiple pregnancy hospitalized the gynecology and obstetrics department of the medical university of Gdansk in 1981–1990 and 1991–2000. *Ginekol Pol*. 2005;76(2):115–21.
- Szymusik I, Jarosz K, Wielgos M, et al. Comparative analysis of labor in twin pregnancies in years 1997–2001. *Ginekol Pol*. 2005;76(1):42–8.
- Blickstein I, Goldman R, Mazkereth R. Incidence and birth weight characteristics of twin born to mothers aged 40 years or more compared with 35–39 years old mothers. *J Perinat Med*. 2001;29(2):128–32.
- Mazhar S, Peerzada A, Mahmud G. Maternal and perinatal complications in multiple versus singleton pregnancies. *J Pak Med Assoc*. 2002;52(4):143–7.
- Melamed N, Yogev Y, Glezerman M. Effect of fetal sex on pregnancy outcome in twin pregnancies. *Obstet Gynecol*. 2009;114(5):1085–92.
- Kato N. Reference birthweight range for multiple birth neonates in Japan. *BMC pregnancy and childbirth*. 2004;4(1):2.
- Peris K, Swiatkowska M, Kulikowska K, et al. The analysis of twin pregnancy and labor in the department of obstetrics Medical Academy Gdansk. *Ginekol Pol*. 2005;76(3):214–8.
- Chittacharoen A, Singhakun D, Ayudhya N. Pregnancy outcome of twin pregnancy in Ramathibodi hospital. *Med Assoc Thai*. 2006;89(4):76–80.
- Wennerhoim U, Hamberger L, Lundin K, et al. Incidence of congenital malformation in children born after ICSI. *Hum Reprod*. 2000;15(4):944–8.