Pregnancy Outcome of Twin Pregnancy in Ramathibodi Hospital

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Objectives: *To evaluate maternal and neonatal complications and pregnancy outcomes of twin pregnancies.*
Material and Method: *The retrospective analysis included data on the twin pregnancies delivered at Ramathibodi Hospital between January 1995 and December 2000. The data retrieved from the medical records included demographic data, complications of pregnancy, and maternal and neonatal outcomes. Statistical analysis was performed.*
Results: *Of 374 twin pregnancies, 321 cases had completed medical records. Incidence of twin pregnancies was 8.6 per 1,000 births. Most common maternal complication was preterm delivery (49.2%). Other maternal complications were anemia (21.5%), pregnancy induced hypertension (13.4%), premature rupture of membranes (10%), postpartum hemorrhage (5.6%) and antepartum haemorrhage (1.9%), respectively. Median gestational age at delivery was 37 weeks. Most common route of delivery was caesarean section (58.3%). Most common neonatal complication was low birth weight (62.3%). Perinatal mortality rate was 45 per 1,000 births. Prematurity was the most common cause of neonatal death. No neonatal death was found after 34 weeks of gestation.*
Conclusion: *Twin pregnancy has high maternal and neonatal complications, especially preterm delivery that increases risk of significant neonatal morbidity and mortality.*

Keywords: *Twin pregnancy, Pregnancy outcome, Complication, Preterm delivery*

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Throughout the world, the prevalence of twin births varies considerably, between 2-20 per 1000 birth[1]. The trend of incidence of multiple gestation has increased. In the United States, between 1980 and 1996, the twin gestation rate increased by 47%[2]. This dramatic rising in multiple gestation, especially in higher order multiple gestation, has been attributed to the increase use of ovulation inducing agents, use of assisted reproductive technologies, and a shift toward bearing children at older maternal ages when multiple gestation are more likely to occur naturally[3]. In Ramathibodi Hospital, the incidence of multiple gestation after IVF-ET treatment was 20%[4].

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Multiple pregnancies are recognized as high risk pregnancy, associated with increased incidence of adverse pregnancy outcomes and risk for both maternal and fetal morbidity and mortality[5-9]. Women carrying multiple pregnancies must be advised of the potential harm. The complications were preterm birth, congenital anomalies, twin-twin transfusion syndrome, etc.

The objective of this study was to assess maternal and neonatal complications and pregnancy outcomes of twin pregnancy.

Material and Method

A retrospective review of medical records of twin pregnancy delivered at Ramathibodi Hospital, Mahidol University, Bangkok, Thailand during the 6-year period from January 1995 to December 2000 was performed. The clinical details were obtained from

medical records of both maternal and neonates data. A record form was used to collect data concerning maternal and neonatal parameters including maternal complications, antepartum complications, intrapartum presentations, neonatal outcomes, neonatal complications, and perinatal mortality.

Statistical analysis was performed using percentage, mean, median and standard deviation. The data processing was carried out on SPSS program for Window version 10.0.

Results

During the period of 6 years, there were a total of 43,418 deliveries with 374 pairs of twins. The overall incidence was 8.6 per 1,000 births. The yearly incidence had not increased much during the period of study (range 0.7-1.04 per 1,000 births). Three hundred and twenty-one twin pregnancies were available for evaluation; 212 (66.04%) pregnancies were dichorionic and 109 (33.96%) pregnancies were monochorionic. The mean maternal age was 29.59 $\pm$ 4.88 years (range 16-43 years). Most of them were nulliparous (58.3%). Twin pregnancies conceived by assisted reproductive techniques were found only 17 pairs of twins (5.3%). Maternal complications were shown in Table 1. The three leading maternal adverse outcomes were preterm delivery, anemia, and pregnancy - induced hypertension with an incidence of 49.2%, 21.5%, and 13.4%, respectively. The median gestational age at delivery was 37 weeks (range; 26 - 41 weeks). Birth weights of first and second twins were not significantly different ($p > 0.05$). Mean birth weight of first twin was 2,314 $\pm$ 531 grams and second twin was 2,238 $\pm$ 576 grams. Forty-eight cases were discordant twins in 321 cases of twin pregnancies (14.95%). The most common intrapartum fetal presentation was vertex-vertex presentation (49.5%) followed by vertex-breech (24.3%), breech-vertex (9.3%) and breech-breech (6.9%), respectively. Mode of delivery was shown in Table 2. Ceasarean section was the most common route of delivery (58.3%).

Table 3 shows the neonatal outcomes. Low birth weight (less than 2,500 grams) was the most common complication (62.3%). Very low birth weight (less than 1,500 grams) was 9.8%. NICU admission, respiratory distress syndrome, intraventricular hemorrhage and necrotizing enterocolitis were found in 3.7%, 3.1%, 1.6% and 1.1%, respectively.

Among 642 twin babies, there were 29 perinatal deaths (including all live born babies with birth weight more than 500 grams who died during the first 28 days and all stillborn babies more than 20 weeks of gestation) with 21 stillborn fetuses and 8 neonatal deaths. The overall perinatal mortality rate in this study was 45 per 1000 births (Table 4). In 21 stillborn fetuses, 5 cases were single fetal demise and 8 cases were both fetal demise. According to gestational age at delivery, perinatal death was decreased along with increased weeks of gestation. In neonatal mortality, there was no neonatal death if born after 34 weeks' gestation. Unfortunately, autopsies were performed only in some cases, so the causes of death cannot be explained. Only 8 babies of neonatal death had the autopsy reports. Prematurity was significantly related to the incidence of neonatal death (5 cases) followed by sepsis (4 cases) and congenital malformation (2

Table 1. Maternal complications and pregnancy outcomes (n = 321 cases)

Maternal Complications	No.	%
Preterm delivery	158	49.2
Anemia	69	21.5
Pregnancy induced hypertension	43	13.4
Premature ruptured membrane	32	10.0
Postpartum hemorrhage	18	5.6
Antepartum hemorrhage	6	1.9
Placenta previa	3	0.9
Prolapsed cord	3	0.9
Abruptio placenta	2	0.6

Table 2. Mode of delivery

Mode of Delivery	First twin no. (%)	Second twin no. (%)	Total no. (%)
Spontaneous	122 (38)	84 (26.2)	206 (32.1)
Breech assisting	2 (0.6)	36 (11.2)	38 (5.9)
Instrument	15 (4.7)	9 (2.8)	24 (3.7)
Cesarean section	182 (56.7)	192 (59.8)	37 (58.3)
Total	321 (100)	321 (100)	642 (100)

* Instrument = vacuum extraction, forceps extraction

Table 3. Neonatal outcomes

Neonatal outcomes	1st Twin (%) N = 321	2nd Twin (%) N = 321	Total (%) N = 642
LBW	194 (60.4)	206 (64.2)	400 (62.3)
VLBW	28 (8.7)	35 (10.9)	63 (9.8)
Apgar < 7 at 5 min	1 (0.3)	4 (1.3)	5 (0.8)
Admit NICU	12 (3.7)	12 (3.7)	24 (3.7)
RDS	9 (2.8)	11 (3.4)	20 (1.6)
IVH	6 (1.9)	4 (1.2)	10 (1.6)
NEC	4 (1.3)	3 (0.9)	7 (1.1)
Sepsis	11 (3.4)	15 (4.7)	26 (4.1)
Congenital anomaly	8 (2.5)	5 (1.6)	13 (2.0)
Perinatal death	12 (3.7)	17 (5.3)	29 (4.5)
TTS	6 (1.9)	6 (1.9)	12 (1.9)

LBW = low birth weight, VLBW = very low birth weight, NICU = neonatal intensive care unit, RDS = respiratory distress syndrome, IVH = intraventricular hemorrhage, NEC = necrotizing enterocolitis, TTS = twin-twin transfusion syndrome

Table 4. Perinatal mortality

GA at delivery	Patient		Perinatal mortality			
	No.	%	P	N	Total	%
26-28	7	2.2	2	3	5	35.7
29-31	21	6.5	3	3	6	14.3
32-34	42	13.1	5	2	7	8.3
35-37	161	50.2	8	0	8	2.5
>37	90	28	3	0	3	1.7
Total	321	100	21	8	29	4.5

P = during pregnancy, N = neonatal

cases). Two cases of congenital malformation were one pair of conjoined twin, thoraco-omphalopagus type with single heart.

Discussion

This retrospective study of twin pregnancy at Ramathibodi Hospital from 1995 to 2000 found that the incidence of twin delivery was 8.6 per 1,000 births and corresponded with the Asian twin incidence[1]. The trend of incidence was not increased as reported from the United States[2]. The possible reason may be the small number (5.3%) of twins conceived from assisted reproductive techniques was delivered in this report. The dramatic rising in multiple gestations, especially in higher order multiple gestations, has been attributed to the increase use of ovulation inducing agents, used of assist reproductive technologies, and a shift toward bearing children at older maternal ages when multiple gestations are more likely to occur naturally[3].

Preterm delivery was the most common maternal complication. Our preterm delivery incidence of 49.2% was in general agreement with those reported from other series (29-54%)[5,6,8,10,11]. In this study, we did not demonstrate the relationship between preterm delivery and zygosity, level of care or time of antenatal diagnosis of twin pregnancy, because of the limitation of the study design. The average length of twin pregnancy is 35 weeks. Preterm delivery occurs in about one-half of twins and accounts for 10-12% of all preterm births[12]. The proportion of twins delivering very preterm (< 32 weeks) is higher in monochorionic twins (9.2%) than dichorionic twins (5.5%)[12]. Such babies are more likely to suffer serious, lifelong health problems, such as cerebral palsy and disability. The risk per pregnancy of producing a child with cerebral palsy is eight times greater in twin pregnancy than in singleton pregnancy[13]. Other maternal complications were anemia (21.5%), pregnancy induced hypertension (13.4%).

Presentation at delivery of twins was mostly in vertex-vertex presentation which was similar to the previous studies[14,15]. In mode of delivery, cesarean section was the most common route of delivery; this finding was the same as the previous study[9,11].

Low birth weight was the most common neonatal complication, occurred in 62.3% of twins. It was slightly more than the previous studies[5,6,10]. The perinatal mortality rate in this study was 45 per 1,000 births, lower than the previous studies[5,6,8,10,15]. The reduction of perinatal mortality of twins may due to better antenatal care, early diagnosis, early detection of complications, tocolysis and steroid administration for management of preterm labor and better neonatal care.

According to gestational age at delivery, perinatal death was decreased when gestational age increased. In this study, there was no neonatal mortality found after 34 weeks' gestation at delivery. This result may reflect the unnecessary inhibition of preterm labor occurred after 34 weeks' gestation.

From this study, prematurity was shown to be the major factor to increase the risk of neonatal death in twins. Further study of the causes of preterm delivery, particularly spontaneous preterm labor and appropriate preventive procedures, are necessary to reduce twin morbidity and mortality.

In conclusion, twin pregnancy has high maternal and neonatal complications, especially preterm delivery that increases risk of significant neonatal morbidity and mortality.

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ผลการคลอดของครรภ์แฝดในโรงพยาบาลรามาธิบดี

อภิชาติ จิตต์เจริญ, ดวงทิพย์ สิงหกุล, ณัฐพงศ์ อิศรางกูร ณ อยุธยา

วัตถุประสงค์: *เพื่อประเมินภาวะแทรกซ้อนที่เกิดกับมารดาและทารกแรกเกิด และผลลัพธ์ของการคลอดของครรภ์แฝด*

วัสดุและวิธีการ: *การศึกษาย้อนหลังในการตั้งครรภ์แฝดที่คลอดที่โรงพยาบาลรามาธิบดี ระหว่างเดือนมกราคม พ.ศ. 2538 ถึงเดือนธันวาคม พ.ศ 2543 โดยเก็บข้อมูลจากเวชระเบียนของผู้ป่วย ซึ่งข้อมูลที่ได้ เพื่อมาวิเคราะห์คือ ข้อมูลพื้นฐานของผู้ป่วย ภาวะแทรกซ้อนของการตั้งครรภ์ ผลลัพธ์การคลอดของมารดาและทารก โดยจะนำข้อมูลที่ได้มาวิเคราะห์ผลทางสถิติ*

ผลการศึกษา: *ในช่วงเวลาที่ทำการศึกษาพบว่า มีการตั้งครรภ์แฝดจำนวน 374 ราย ในจำนวนนี้พบว่า 321 ราย มีข้อมูลครบถ้วนเพียงพอในการวิเคราะห์ อุบัติการณ์ของครรภ์แฝดพบ 8.6 ราย ในการคลอด 1,000 ราย ภาวะแทรกซ้อนในมารดาที่พบบ่อยที่สุดคือ การคลอดก่อนกำหนด (ร้อยละ 49.2) ภาวะแทรกซ้อนอื่นๆ ที่พบคือ ภาวะซีด (ร้อยละ 21.5) ภาวะความดันโลหิตสูงขณะตั้งครรภ์ (ร้อยละ 13.4) ถุงน้ำคร่ำแตกก่อนกำหนด (ร้อยละ 10) ตกเลือดหลังคลอด (ร้อยละ 5.6) และตกเลือดก่อนคลอด (ร้อยละ 1.9) อายุครรภ์เฉลี่ยเมื่อคลอดคือ 37 สัปดาห์ วิธีการคลอดที่บ่อยที่สุด คือ การผ่าตัดคลอดทางหน้าท้อง (ร้อยละ 58.3) ภาวะแทรกซ้อนในทารกแรกเกิดที่พบบ่อยที่สุดคือ น้ำหนักแรกเกิดต่ำ (ร้อยละ 62.3) อัตราการตายของทารกปริกำเนิด พบเป็น 45 รายในการคลอด 1,000 ราย ภาวะการคลอดก่อนกำหนดเป็นสาเหตุการตายของทารกแรกเกิดที่พบบ่อยที่สุด ไม่พบการตายของทารกแรกเกิดเลย เมื่ออายุครรภ์ตั้งแต่ 34 สัปดาห์เป็นต้นไป*

สรุป: *การตั้งครรภ์แฝดพบว่า มีภาวะแทรกซ้อนเกิดได้สูง ทั้งในมารดาและทารกแรกเกิด โดยเฉพาะภาวะการคลอด ก่อนกำหนด ซึ่งเป็นผลทำให้เกิดการตายและภาวะทุพพลภาพของทารกแรกเกิดสูงขึ้นได้*