
Neonatal Outcome of Twin Pregnancy In Al-Yarmouk Teaching Hospital

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Abstract

Background: -If twin pregnancy has not risen in our country yet, it will do so sooner, largely due to the extended use of assisted reproductive technologies. International data points that approximately 50% of twin pregnancies deliver preterm, and major complications associated with prematurity. These complications drive the perinatal mortality rate of twins to seven times that of singletons. Optimizing the route of delivery for twins is an important component of care that must be thoughtfully considered.

Objective: - To assess the current outcome of twin pregnancy in Al Yarmouk Teaching Hospital, with special emphasis on the determinants of the outcome of the twins born second.

Methods: -prospective analysis of every twin delivery had born in the period from Aug. 2010 till the end of Aug. 2011. Review of the antenatal care card, or review the antenatal period with patients if the card not available. Recording the plan of delivery, and the intradelivery events. The primary outcome was a composite measure of neonatal mortality and morbidity, including birth asphyxia, respiratory distress, neonatal trauma, and infection. Logistic regression models were used to study the potential confounders. Risk of adverse outcome of the second twins relative to the first-born-co-twins was determined by matched-pair analysis.

Results: - during this period, there was 15035 deliveries, with 260 twin pairs (1.73%). The mode of delivery was a planned vaginal delivery in 57 twin pairs, elective caesarian section in 171, and emergency section in 30 patients, in two cases the initial vaginal delivery ended in section for the second twin. The first twins had less morbidity and mortality than the corresponding second twins, 64 vs 73 for morbidity, and 13 vs. 17 mortality. The total percentage of death was 10.4% among twin pregnancy. The birth weight discordance and planned caesarian section at term had positive correlation with adverse outcome of the second twin, where the respiratory distress syndrome was the major contributors to those below 32 weeks, while birth asphyxia, and sepsis in those born 32 weeks and above.

Conclusion: -A larger prospective study should be designed to appraise the management of twin pregnancy in Al- Yarmouk Hospital. The higher rate of adverse outcome in the second twin in comparison with the first necessitates special emphasis since this may be related to the mode of the delivery.

Keywords; twin pregnancy, outcome of second twin

Introduction:

If twin pregnancy has not risen in our country yet, it will do so sooner, largely due to the extended use of assisted reproductive technologies. International data points that approximately 50% of twin pregnancies deliver preterm, and major complications associated with prematurity include respiratory distress syndrome, necrotizing enterocolitis, intraventricular hemorrhage, and sepsis. These complications drive the perinatal mortality rate of twins to seven times that of singletons. Optimizing the route of delivery for twins is an important component of care that must be thoughtfully considered⁽¹⁾.

We can find no much controversy about the increase risk of perinatal mortality and morbidity among twin pregnancies, but controversy exists when we compare the outcome of the first coming twin versus the second. Large registry study of twin in the united states during 1995-1997 showed no difference in neonatal mortality between first and second twins⁽²⁾. The reported higher mortality was explained as an artifact because a dead fetus is more likely to be

delivered second. In report from Scotland during 1985-2001, the risk was five- fold higher for the second than the first for those delivered by vaginal delivery, whereas no association was found at caesarean section⁽³⁾.

There is considerable controversy about the intrapartum management of twin pregnancies, which is due primarily to an absence of well-designed clinical trials and to conflicting recommendations in the literature⁽⁴⁾.

The purpose of this study is to assess the current outcome of twin pregnancy in Al Yarmouk Teaching Hospital, with special emphasis on the determinants of the outcome of the twins born second.

Patients and methods:

From August 2010 till August 2011, each twin delivery that had been received in the neonatal care unit at al-Yarmouk teaching hospital, were registered using word excel database. Information was collected on maternal, obstetric, and medical conditions, prenatal complications, labor and delivery events, perinatal outcomes, and maternal demographic

information. A written consents were taken from each family to use their data in this analysis. Then the project was approved by the ethical committee in both obstetric and paediatric departments in the Hospital.

Potential determinants of perinatal outcome, including mode of delivery, presentation, birth weight discordance, chorionicity, and infant sex, were evaluated. Weight discordance is defined as $\geq 25\%$ difference between twins and it is calculated according to the following equation (weight of large twin-weight of smaller/weight of larger x100) expressed as a percentage.(5) Chorionicity was determined by placental examination of all twin births. The study cohort was stratified into the following gestational age categories: 37 weeks or more, 34–36 weeks, and less than 34 weeks. Stratification of the cohort according to maternal age was into the following groups: less than 20 years, 20-29 years, 30-34 years, and those ladies in the age of 35 years and above. The primary outcome was a composite measure of perinatal mortality, and the serious neonatal morbidity, which included perinatal death, birth asphyxia, respiratory distress syndrome, neonatal infection, and birth trauma was the secondary outcome.

Perinatal death was defined as intrapartum fetal death or neonatal death at 28 days or less after birth. Birth asphyxia was defined as Apgar scores of 3 or less at 5 minutes. Respiratory distress syndrome (RDS) was described as moderate-to-severe RDS based on clinical and radiologic parameters. Serious neonatal infection required culture-proven sepsis or necrotizing enterocolitis. trauma included skeletal fracture, peripheral nerve injury, spinal cord injury, or traumatic intracranial hemorrhage. Clinically suspected neonatal trauma was confirmed by appropriate diagnostic imaging techniques.

Information about the total number of deliveries, perinatal mortality, and number of caesarean section during the same period was

conducted from the local hospital registry with official permission.

Data analysis was performed using SSP version 19, and the online calculator quikcalc for rapid calculations. Since the two infants in each twin pair are closely matched, so McNemar matched-pair test used to compare the relative risk of composite adverse outcome in the second twins relative to the first one. The focus was on the pairs in which one infant was affected and the other was normal. This way, McNemar test, enable us to control for the maternal demographic, medical, obstetrical factors. The last point explained why we did not compare the outcome between different categories within the same group, for example those who are delivered at different gestational age.

Results: -

During this period, there were 15035 deliveries; the total number of twin born during the same period was 260 twin pairs, so the overall incidence was 1.73%. The distribution of twin pairs according to the age of the mothers, mode of presentation, mode of delivery, chorionicity, and discordance in the birth weight and sex of the twin, all are presented in table 1. From the table we can see that around 80% of the mothers were between 20 years age and 34 years. The most common mode of presentation was vertex (first twin) and non-vertex (second).the mode of delivery was elective caesarean section in 65.8% of cases, planned vaginal delivery in 21.9%, and emergency caesarean section in 11.5%. In two cases only, the initial vaginal delivery ended in caesarean for the second twin.

From table one; we can see that less than one third of the mothers had been delivered after 37 weeks of gestation, and 24.6% of the mothers had been delivered before 34 weeks. More than 10% difference in the body weight between the twins was seen in 44.6% of the twin pairs. The sex discordance was seen in 46% of the twins.

Table (1): Description of the 260 twin pairs and their maternal parameters

Parameter	Number	percentage		
Maternal age(years)				
<20	14	5.4		
20—29	131	50.4		
30—34	79	30.4		
=>35	36	13.8		
Mode of presentation				
Vertex/Vertex	58	22.3		
Vertex/Non vertex	173	66.5		
Nonvertex/Other	29	11.2		
Mode of delivery				
Vaginal	58	22.3		
Elective CS	171	65.8		
Emergency CS	30	11.5		
Vaginal ended with CS	1	0.4		
Gestational age (weeks)				
=>37	75	28.8		
34—36	121	46.5		
<34	64	24.6		
Body weight discordance				
<10%	144	55.4		
First>Second	62	23.8		
Second>First	54	20.8		
Sex				
Female:Female	72	27.7		
Male:Male	68	26.2		
Female:Male	56	21.5		
Male:Female	64	24.6		
Chorionicity				
Dichorionic	120	46.2		
Monochorionic	140	53.8		
Apgar score				
	First twin		Second twin	
	number	%	number	%
=>5	251	96.5	7	71.9
<5	9	3.5	253	97.3

The outcome of the 260 pregnancies are shown in table two, where 176(67.7%) twin pregnancies end smoothly with good outcome, in 11 twin pregnancies, the first twin was affected only and the second was well, the reverse was seen in 20 pregnancies, and this difference was statistically significant($p < 0.001$). while both twin were affected in 53 pregnancies (20.4%). Respiratory distress syndrome was seen in 83% of the affected twin pairs, 12% was affected by sepsis, and 5% with asphyxia. The same table shows that in 13 twin pairs, the first twin died, in 17 twin pairs the second twin died ($p < 0.04$), while in 12 twin pairs,

both twin died. So the total number of death will be 54 infants (10.4%).

The causes of death were respiratory distress syndrome in 41 cases of death, while it was secondary to sepsis in 13 cases.

Table (3) shows the result of McNamara test, where the difference in the risk between the first and second twin was statistically not significant taking in consideration mode of delivery, presentation, gestational age and the discordance in the body weight and sex. The risk in the second twin is higher

in those delivered from mothers aged between 20-29 years (OR 3, CI 1.036-10.5, p=0.04)

Table (2): Outcome of the 260 twin pairs

Outcome	No	%
Both well	176	67.7
Only first with complications	11	4.2
Only second with complications	20	7.7
Both with complications	53	20.4
Death		
Both alive	218	83.8
First dead/ Second alive	13	5.0
First alive/ Second dead	17	6.5
Both dead	12	4.6

Table (3): The McNamara test, comparing the relative risk between the first and the second twin.

	Outcome							
	Both well		Complications in first		Complications in second		Both complication	
	No	%	No	%	No	%	No	%
Maternal age (years)	11	78.6	-	-	1	7.1	2	14.3
<20*								
20—29&	86	65.6	5	3.8	15	11.5	25	19.1
30—34*	55	69.6	5	6.3	3	3.8	16	20.3
=>35*	24	66.7	1	2.8	1	2.8	10	27.8
Mode of delivery	39	67.2	4	6.9	7	12.1	8	13.8
Vaginal*								
Elective CS*	119	69.6	5	2.9	12	7.0	35	20.5
Emergency CS*	18	60.0	2	6.7	1	3.3	9	30.0
Vaginal ended with CS*	-	-	-	-	-	-	1	100
Mode of presentation	39	67.2	4	6.9	7	12.1	8	13.8
Vertex/Vertex*								
Vertex/Non vertex*	120	69.4	5	2.9	12	6.9	36	20.8
Nonvertex/Other*	17	58.6	2	6.9	1	3.4	9	31.0
Body weight discordance <10%*	100	69.4	6	4.2	8	5.6	30	20.8
First>Second*	38	61.3	3	4.8	9	14.5	12	19.4
Second>First*	38	70.4	2	3.7	3	5.6	11	20.4
Sex Female:Female*	52	72.2	2	2.8	4	5.6	14	19.4
Male:Male*	50	73.5	2	2.9	6	8.8	10	14.7
Female:Male*	37	66.1	2	3.6	3	5.4	14	25.0
Male:Female*	37	57.8	5	7.8	7	10.9	15	23.4
Chorionicity Dichorionic*	74	61.7	7	5.8	10	8.3	29	24.2
Monochorionic*	102	72.9	4	2.9	10	7.1	24	17.1
Gestational age (weeks) =>37*	70	93.3	2	2.7	2	2.7	1	1.3
34—36*	85	70.2	6	5.0	13	10.7	17	14.0
<34*	21	32.8	3	4.7	5	7.8	35	54.7

*In all these parameters the relative risk was not significant & the OR ratio was 3, CI 1.036-10.55, p=0.04

The distribution of the 84 twin pairs that had complications (morbidity and mortality) according to the maternal age, gestational age, mode of delivery, and body weight is shown in table (4). seventy four mothers (88%) were in the range between 20-35 years. Three cases were reached to 36 weeks

gestation, while 48.8% were below 32 weeks, and similar percentage was between 32 and 36 weeks.

Caesarean section was the mode of delivery in 75% of these twin pairs that had complications. From the same table, we can see that more than 90% of the infant are below 2500 gram, one third of them were below 1500 gram

Table (4);Description of the 84 twin pairs with complications.

parameter	Number	percentage
Maternal age(years)		
<20	3	3.6
20--35	74	88
>35	7	8.4
Mode of delivery		
Vaginal	19	22.6
CS	63	75
Vaginal ended with CS	2	2.38
Gestational age (weeks)		
=>37	3	3.57
32--36	40	47.6
<32	41	48.8
Body weight (gram)		
<1500	31	36.9
1500-2500	46	54.8
>2500	6	7.2

Discussion

The incidence of twin pregnancy has been increase and now account for approximately 3% of all births, largely due to the increase use of assisted reproductive technologies(ART)⁽⁶⁾. Still the center reports 1.73% of all birth in the study period, probably with the increasing availability of ART may increase the incidence in our department in the near future.

Although it is not mentioned in the result, the maternal mortality among this group was zero, in a study published by Vogel JP, et al. they conducted a secondary analysis of WHO Global Survey(WHOGS) of twin pregnancies in low and middle income countries⁽⁷⁾, the maternal mortality was 0.3% , this should be interpreted cautiously where we are working in a tertiary center and the WHO data was taken from any medical service that can do caesarian section. But still the absence of maternal mortality among twin pregnancy is an encouraging point to be considered.

The overall perinatal mortality in our center was 104 per 1000 delivery, i.e. it is four times the perinatal mortality in our center in that period, different studies had reported the increase in

mortality of twin in comparison with singleton. Armson et al reported perinatal mortality among twin 22.5/1000 birth in 1542 twin in Canada⁽⁸⁾. There is big difference in the perinatal mortality between our study, and Armson et al. even when we return to Vogel JP data which reported perinatal mortality around 40 per 1000 delivery. The percentage of Caesarian section as a mode of delivery in twin pregnancies was 19% in the Canadian report, and it is 43% in WHOGS analysis, the while in our study, it was 77%, this high incidence of caesarian section may explain the difference in the mortality between the two reports, where it is known that optimizing the route of delivery for twins is an important component of care that must be thoughtfully considered.

In 2011, an evidence based approach to determine the route of delivery for twin gestations had been published by Diane Christopher, et al⁽⁹⁾, and they suggested that if the presenting twin is cephalic, the option of vaginal delivery must be contemplated⁽⁹⁾. Here we need a big stop in our study because we have high incidence of caesarian section in spite of 88% of twin presented with a vertex presentation.

The causes of death were respiratory distress syndrome in 41 cases of death, while it was secondary to sepsis in 13 cases. The higher percentage of preterm in our cohort can explain the higher incidence of RDS in comparison with Armson et al. The significant difference in the morbidity (11 in the first twin vs. 20 in the second, $P=0.001$), and mortality (13 vs. 17, $p=0.04$) goes with different studies that showed the higher risk for the second in comparison with the first⁽¹⁰⁾.

Trying to identify the determinants of the poorer outcome in the second, using McNamara test, was unyielding and this may be related to the sample size

Conclusion:-a larger prospective study should be designed to appraise the management of twin pregnancy in Al- Yarmouk Hospital, in spite of the absence of maternal mortality, we have reported high incidence of perinatal mortality in comparison with high-, middle-, and low-income. The higher rate of adverse outcome in the second twin in comparison with the first necessitates special emphasis since this may be related to the mode of the delivery.

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