

Maternal and Perinatal Complications in Triplet Pregnancies in Retrospective Study

Abstract

Background: A retrospective study of maternal and neonatal complication of triplet pregnancies in Basrah Maternity and Child Hospital and in Kammal Al-Samarayei Hospital for period of 2011-2012.

Aim: Assess frequency of obstetrical and perinatal complication and factors affecting outcome

Methodology: We reviewed the obstetrical files, the data collected included maternal age, parity, fetal weight, mode of delivery and mode of conception from period the 1st of June 2011 to 31st of June 2012.

Result: The rate of triplet increase with increasing of maternal age (30-39) and in primigravida due to ovulation induction also increase rate of C. S, PE, PROM, Anemia, PPH, preterm delivery were (88.89%, 19.4%, 30.5, 55.55%, 11.11%, 83.33%) respectively. The higher rate of deliveries occurred between 32-34 weeks and birth weight between 1550-2000 gm (36.36%, 39.81%) respectively. increase rate of abortion 18.1%.

Conclusion: There were increasing rate of complication both maternal and fetal with triplets prematurity, still birth congenital abnormality and C.S.

*Basrah Medical College / specialist in Basrah Maternity and Child Hospital/ Iraq.

**Basrah Medical College / specialist in Basrah maternity and child hospital/ Iraq.

Introduction

Triplets are commonest of higher order pregnancies (3) or more fetuses [1].

Multiples birth siblings are either monozygotic or dizygotic. The former result from single fertilized egg or zygote splitting into two or more embryo's each carrying the same genetic material (genes) and siblings created from one egg common called identical, since identical multiple shares the same genetic material, they are always the same sex [3].

The dizygotic or fraternal multiples instead result from multiple ova being ripened and released in same menstrual cycle by the women's ovaries. They are fertilized

to grow into multiples no more genetically alike than ordinary full siblings. Multiples called polyzygotic which represent some combination of fraternal and identical siblings [3].

The incidence of higher order pregnancies increase significantly over all last few years which attributes to delay child bearing, assisted reproductive technology and wide spread availability of fertility therapies [2]. There is dramatic increase in triplet rate, Natural incidence of spontaneous triplet in 1953 were 1 in 6000-8000 [3].

By comparing with triplet's birth accounts for 153.5 per 100000 live birth in



2009, fewer than 20 % are natural conceived [4].

Incidence of triplet pregnancies in King Fahad hospital 1 in 1099 deliveries over 15 years period [5]. While in Kuwait 0.8 per 1000 deliveries [6].

Epidemiology

The incidence is remarkably influenced by age, race, hereditary, infertility therapy and assisted reproductive technology.

1-Maternal age:

there is increase in higher order multiple pregnancies with increasing maternal age; this maybe due to more women delay child birth[6]

2- Race:

Spontaneous triplet occurs more commonly in white, In USA chance of triplets in white Americans: 1 in 8100 chance, while in black Americans: 1 in 9800 chance [7]

3- Multiparty:

polyovular pregnancy are more frequent beyond the second pregnancy[7]

4- Genetic:

The occurrence of multiple births in mother's family is more important for the frequency of dizygotic and trizygotic than such an occurrence in the father's family.[7]

5- Fertility treatment and ART:

Most widely known that ART increase the rate of higher order pregnancy 8,9 (75%) of triplet occurs with fertility treatment, (6-8%) of multiple birth occurs after induction of ovulation with clomiphin citrate, (20-30%) occurs with gonadotrophine, 26%of triplet occurs after ART [8].

Maternal complication

Prematurity:

the most common maternal complication is preterm labor, the rate of preterm gestation for triplet varies between 75%-100%[10].

1- Hypertension:

Mother with triplets is also at increasing risk of hypertensive disorders which occurs 9

times more frequent than singleton, the incidence of PE range from 6.7% to 46%[11].

3-Anemia:

The increased demands on the iron reserves of the mother from the larger placental masses and fetal demands and for erythropoiesis from three or more fetuses virtually guarantees that higher-order multiple gestational mothers are at risk for anemia. The reported incidence of anemia in triplet pregnancies ranges from 13% to 35%. 21% of triplets need blood transfusion. [11, 12].

4-Premature rupture of membrans:

Occur more frequent in triplets the incidence 6-26% [12, 13]

5-Postpartum haemorrhage:

The possibility of postpartum hemorrhage presents an additional risk. Its incidence in triplets ranges from (13%) to (35%).due to overdistension[14].

6-Maternal mortality:

In Europe the rate of maternal death is 14.9 per 100000 in multiple%[14].

7-caesarean section:

In triplets there is increase caesarean section rate when compare to the vaginal birth ,risk of caesarean section is > 80% [15].

8-Antepartum hemorrhage

9-Diabetes mellites

Fetal complication

1- prematurity and low birth weight:

In triplet pregnancy the risks of prematurely are enhanced 7-40 fold and of low birth weight 10-75 fold [16].

2- Perinatal mortality rate:

Triplets are associated with a higher risk of perinatal death than singletons, excess deaths are ultimately due to prematurely [17].

3-Intrauterine Growth Restriction (IUGR)

Intrauterine growth restrictions occurs more frequently in triplet pregnancy than in singleton pregnancy [18]



4-Birth defects:

triplets also have a higher risk of birth defects compared to singletons. For example, central nervous defects, cardiovascular defects, alimentary tract defects [19]

5-Neonatal respiratory distress syndrome syndrome:

Increases The frequency of neonatal respiratory distress increased with increasing number of siblings (23%) in triplets [20].

6-miscarrige

Materials and Methods

A retrospective study done in Basra maternity and children hospital (BMCH) which is tertiary referral centre in Basra and in Kammal Al-Samarayie hospital (infertility servicing hospital in Baghdad), from the period of June 2011-June 2012 :

*44 cases of triplet pregnancies were collected. (all cases of triplet in both hospitals had no any medical complication to

started with like diabetes, hypertension, or haemoglobinopathies.

*14 cases from BMCH and 30 cases from Kammal Al-Samarayei.

Data were collected from obstetrical files including age, parity, mode of conception, maternal and neonatal complication, mode of delivery and pregnancy outcome were estimated.

Hypertension diagnosed when blood pressure 140\90 or more as reported.

Haemoglobin, PCV and HB electrophoresis were taken from medical reported to assess degree of anaemia and exclude haemoglobinopathies

*8 cases aborted before 28 weeks of gestation, 3 of them in first trimester cause of abortions were unknown and five cases in second trimester mostly due to cervical incompetence as mentioned

*36 cases delivery after 28 weeks of gestation.

Result

Table (1): maternal age and parity in triplet pregnancies.

Age	NO.	Percentage
< 20	1	2.3%
21-29	15	34.1%
30-39	24	54.5%
>40	4	9.1%
Parity		
Primigrivda	36	81.8%
1-3 babies	4	9.1%
4-5 babies	2	4.5%
> 5	2	4.5%
Total	44	100

Showed the incidence of triplet pregnancy increase with Increasing ,maternal age, most of cases triplets 54.5% Occurred in 30-39 age

most of triplet occurred in primigravida (36cases) 81.8% followed by (4cases) 9.1% in 1-3babies.



Table(2): table show pregnancy outcome in the 44 set of triplets (n=132).

Out Come	NO.	%
live birth	105	79,54%
still birth	3	2.27%
Abortion	24	18.1%
Total	132	100

105 neonates 79.54% live birth, 24 aborts 18.1%, 2.27% (3 case) still birth (macerated)

Table(3):Mode of conception and delivery.

Mode of Delivery		NO.	percentage
Vaginal		4	11.11%
C.S		32	88.89%
Mode of Conception			
Spontaneous		6	13.6%
Non IVF cycle	Ovulation induction clomid	13	29.5%
	Ovulation induction gonodotrophin	10	22.72%
IVF		15	34.1%

Shown mode of conception, (23cases) 52.3%of triplet resulted from (non IVF) ovulation induction drug, 13 cases (29.5%) by clomphin cetrate, 10cases (22.7 %) by gonadotrophine injection (15cases) 34.1%

result from IVF and only 6 cases 13.6%in spontaneous cycle and mode of delivery in 36 cases, most of them (32 cases) 88.88% by caesarian section, (4cases)11.11% vaginal delivery

Table (4): gestational age at delivery.

Birth Age	NO.	Percentage
< 28 week	8	18.18%
28-31 week	3	6.8%
32-34 week	16	36.36%
35-36 week	11	25%
≥ 37 week	6	13.63%
Total	44	100

(16 cases) 36.36% delivery at 32-34 weeks, (11cases) 25%delivery at 35-36 weeks, (8 cases) 18.18% Ended by abortion,

(6 cases) 13.63% delivery at term more >37 completed weeks.



Table(5): Maternal complication.

Obstetric Complication	NO.	percentage
Anemia	20	55.55%
PE	7	19.4%
PROM	11	30.5%
Gestational Diabetes	4	11.11%
Preterm Delivery	30	83.33%
APH	2	5.55%
PPH	4	11.11%
C.S	32	88.88%

(N.B: more than one complication may occurred in one case.)
 (30 cases) 83.3% had preterm delivery, (20 cases) 55.55% showed anemia, (7cases)

19.4% developed PE , PROM occurred in (11cases) 30.5%, gestation diabetes occurred in (4cases) 11.11%, (4 cases 11.1%) PPH, (2 cases) 5.5% APH.

Table(6) : neonatal complications.

Neonatal Complication	NO.	percentage
Preterm	90	83.33%
Still Birth	3	2.77%
Mechanical Ventilation	5	4.6%
Congenital Anomalies	7	6.48%
NICU Admission	80	74.07%

The most important complication is prematurity (90 cases) 83.33%, (80 cases) 74.07% necessity admission to NICU, (5 cases) 4.6% only need mechanical

ventilation at delivery, congenital anomalies accounted for 7 cases (6.48%), (3 cases) 2.77% still birth.

Table(7) : Birth weight of triplets (n=108).

Weight in Gram	NO.	percentage
< 1000	17	15.74%
1000-1500	20	18.31%
1550-2000	43	39.81%
2050-2500	13	12.03%
> 2500	15	13.88%
Total	108	100

Showed weight of neonate in grams at birth, maximum being in range of 1550-2000gm (43 cases) 39.81%, (20 cases)

18.31%at weight between 1000-1500gm and only (13 cases)12.03% at 2050-2500 gm.



Table (8): Apgar score of triplets at 5 minute (n=105).

Apgar Score at 5 Minute	Frequency	%
5	22	20.9
6	16	15.23
7	11	11.42
8	38	36.19
9	18	17.14
Total	105	100

Showed Apgar score at 5 min. in 105 neonate the majority at 8 (38 cases) 36.19%, (11cases)11.42% at 7and Apgar score 5 in (22 cases)20.9%

Discussion

Multiple pregnancies now warranted special attention from the obstetrician due to increase in prevalence of triplets during the last 15 years. And its association with increased obstetrical and perinatal morbidity and mortality.

Rate of triplet has been shown to increasing with increase maternal age and in those who have no previous pregnancies in our study maximum age group was 30 -39 and it agrees with all studies done in triplets since 1974 (21,22,23) explained by most of them had history of infertility and on ovulation induction drugs or did in vitro fertilization.

Limited availability of IVF centers in our country, thus most of triplets occurred in non IVF group (ovulation induction drugs with clomiphene citrate and gonodotrophine) (29.1%,33.7%) which agrees with Daw E.1978 etal, and in disagreement with study done in developed countries Which showed increased triplets is due ART. [24,25,26,]

Obstetrician faced with a lot of fetal and maternal complication. Risk of abortion increases in triplet as in our study 18.1%, which agrees with studies done by Annegret Geipel, Christoph Berg, Alexander Katalinic

[27] either due to fetal abnormalities which associated with increasing maternal age or over distension of uterus.

Prematurity and low birth weight were another important complication obstetrical faced in our study 83.3% and it agrees with (Albrecht and Tomich 1996, Devine el al.2001) [28]. mostly caused by overdistension of uterus.

Other maternal complication is hypertensive, PROM, PPH, APH occurred with increasing risk (19.4%,30.5%5.5%, 5.5%) in our study and that in agreement for other studies [29] may be due to uterine distension.

With increasing Number of triplet pregnancies resulting from assisted reproduction technology, obstetricians are increasingly becoming confronted with the question of the optimal mode of delivery, in general there is agreement to C.S benefit of this procedures to reduce risk of intrapartum complication.

In our study C.S rate was 32 cases 88.8%, only 4 cases 11.11% delivered vaginally (either advance labour or early preterm labor) and which agrees with studies done in Nigeria [30].



There is rise in rate of NICU admission (74.07%, 50%) mainly due to increase rate of prematurity and low birth weight which agrees with other studies(31)

References

- [1] Geipel A, Berg C, Catalinic A, Plate Hausmann M, Germen U and Gembruch (2005). prenatal diagnosis and obst. Out comes in triplet pregnancies in relation to chorinicity. *TOG*: 112:554-558.
- [2] Martin JA, Hamilton BE, Ventura SJ, Michelle MA, Osterman JK, Kirmeyer S, et al. Births: Final Data for 2009. *National Vital Statistic Report* 2011; 60: 1-33.
- [3] GUTTMACHER AF. the incidence of multiple births in man and some other obst. gynecology 1953;2:22.
- [4] Wikipedia. free encyclopedia. Multiple birth 4/14/2012:1-2.
- [5] S.A.AL-SULEIMAN, F.E.AL-J.RAHMAN, &M.SRAHMAN obstetric complication and perinatal outcome in triplet pregnancies in King Fahad hospital, Al-Khobar, Saudi Arabia, *journal of obstetrics and gynaecology*, April 2006;26(3):200-204.
- [6] Lulu AA1-Nuaim1, Turki M. Al-Kharfy2, Mohammed S Mustafal, Zeinab M Abotalib1, Fahmida Banu1. Manage-ment of Triplet Pregnancy *Kuwait Medical Journal* 2001, 33 (3): 220-225.
- [7] odd of Multiple child birth solutions <http://childbirthsolutions.com/articles/odds-of-multiples>
- [8] Stoll BJ, Chapman IA. The high-risk infant In: Behrman RE, Kliegman RM, Jenson HP (eds). *Nelson's textbook of pediatrics*. 18th Edition, Philadelphia. WB Saunders Co 2008: 698-710.
- [9] Schieve LA, Peterson HB, Meikle SF, et al. Live-birth rates and multiple birth risk using in vitro fertilization. *JAMA*. 1999;282:1832-1838.
- [10] Reynolds MA, Schieve LA, Jeng G, Peterson HB, Wilcox LS. Risk of multiple birth associated with in vitro fertilization using donor eggs. *Am J Epidemiol*. 2001;154:1043-1050.
- [11] Dafallah SE, Yousif EM. A comparative study of twin and triplet pregnancy. *Saudi Med Journal* 2004; 25(4): 502-506.
- [12] Eqwatu VE: Triplet pregnancy: A review of 27 cases. *Int J Gynaecol Obstet* 18: 460, 1980.
- [13] Sassoon DA, Castro LC, Davis JL et al: Perinatal outcome in triplet versus twin gestations. *Obstet Gynecol* 75: 817, 1990.
- [14] Senat MV, Ancel PY, Bouvier-Colle MH, Bréart G. How does multiple pregnancy affect maternal mortality and morbidity. *Clin Obstet Gynecol*. 1998; 41(1): 79-83.
- [15] Dera A, Breborowicz GH, Keith L. multiple pregnancy – physiology, complications and the mode of delivery. *Archives of perinatal medicine* 2007; 13(3): 7-14.
- [16] Fauser B C JM, Devroey P, Macklon NS. Multiple birth resulting from ovarian stimulation for subfertility treatment. *Lancet* 2005; 365: 1807-1814.
- [17] Albrecht JL, Tomich PG, the maternal and neonatal outcome in triplets *Am J. obstet gynecol* 1996; 174: 1551-1556
- [18] ons JC, C harlemaine C, Dubreail E et al, management and outcome of triplet pregnancies. *Eur J obstet gynecol Repro Bio* 1998; 76 :131-139.
- [19] Tang Y, Ma CX, Cui W, Chang V, Ariet M, Morse SB, et al. The Risk of Birth Defects in Multiple Births: A Population-Based Study. *Maternal and Child Health Journal* 2006; 10: 75-80.
- [20] Blickstein I, Shinwell ES: Plurality-dependent risk of respiratory Distress syndrome among very-low-birth-weight infants and Antepartum corticosteroid treatment. *Am J Obstet Gynecol* 2005.
- [21] Statistics Canada (2004). Births. Ottawa: Ministry of Industry. Low Birth



Weight & Preterm Multiple Births. A Canadian Profile. 2005: 2-4.

[22] Dr. Adebisi G. Adesiyun, p. o done . in Nigeria

E-mail :adebiyg@yahoo.com

[23] Leven Mi, Wild J, Steer P. 1992 .Higher multiple births and the modern management of infertility in Britain. Britain. British Journal of obstetrics and Gynaecology 99:607-613.

[24] Daw E. Triplet pregnancy. Br J Obstet Gynecol 1978; 85:505-509.

[25] Steptoe PC, Edward RG, Walters DR. Observations on 767 clinical pregnancies and 500 births after human IVF. Human Reprod 1986; 1:89-94.

[26] Schenker TG, Yarkoni S, Granat M. Multiple pregnancies following induction of ovulation. Fertil Steril 1981; 35:105-195.

[27] Annegret Geipel, Christoph Berg, Alexander Katalinic , Hanno Plath, Manfred Hansmann, Prenatal Diagnosis and obstetric out comes in triplet pregnancies in relation to chorionicity 16 FEB 2005 .7-15.

[28] Devine Pc, Malone FD, Athanassiou A, Harvey Wilkes K, D, Alton ME. 2001. Maternal and neonatal out come of 100 consecutive triplet pregnancies. American Journal of Perinatology 18:225-235.

[29] Syrop CH, Varner MW. Triplet gestation: Maternal and neonatal complications. Acta-Genet Med Gemellol (Roma) 1985; 34:81-88.

[30] Clark JP, Roman JD. A review of 19 sets of triplets: the positive results of vaginal delivery. Aust NZJ Obstet Gynecol 1994; 34:50-53.

[31] Seoud MAF, Toner JP, Kruithoff C, Muasher SJ. 1992. Outcome of twin, triplet and quadruplet in vitro fertilization pregnancies :the Norfolk experience. fertility and sterility 157:825-834.