

(Multifetal Pregnancy Reduction)

Factors Affecting Complete Fetal Loss Following Multifetal Pregnancy Reduction

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Objective: To identify the factors affecting the complete fetal loss following multifetal pregnancy reduction (MFPR).

Design: Retrospective clinical study.

Methods: A total of 256 consecutive treatments of MFPR in IVF-ET cycles performed between 1992 through 2000 in Samsung Cheil hospital were analyzed. MFPR was done around 8 weeks of gestation by transvaginal ultrasono-guided aspiration in multiple pregnancies and reduced to singleton or twins. Stepwise logistic regression was performed to identify the factors affecting the final outcome of pregnancy after MFPR. Dependent variable was complete fetal loss and the independent variables were maternal age, paternal age, initial number of gestational sac (iGSNO), initial number of fetal heart beat, the number of remaining live fetus after MFPR, and chorionicity.

Results: The total survival rate was 87.9%, and total fetal loss rate after MFPR was 12.1%. Total fetal loss occurred within four weeks from MFPR procedure was 1.95%. Total loss occurred after four weeks of procedure and before 24 gestational weeks was 8.2%. Seventy nine percent (202/256) of pregnancies delivered after 34 weeks of gestation. The survival rate of pregnancies reduced to singleton was significantly higher than that of pregnancies reduced to twins (93.5% vs. 86.7%, $p < 0.05$). The mean (\pm SEM) gestational age at delivery was 36.2 ± 1.0 and 34.1 ± 0.5 weeks for pregnancies reduced to singletons and twins, respectively ($p = 0.065$). Logistic regression analysis revealed that the maternal age, the number of initial gestational sac (iGSNO), and the number of remaining live fetus after MFPR significantly affected the rate of total fetal loss ($Z = 0.174 \text{ age} + 0.596 \text{ iGSNO} + 1.324 \text{ remaining fetuses} - 12.07$), ($p < 0.05$).

Conclusions: MFPR seems to be a relatively safe and efficient method to improve the obstetric

outcome in high order multiple pregnancy. Because the maternal age, the number of initial gestational sac and the remaining live fetuses after MFPR affect the total fetal loss rate, restriction of the number of transferred embryos according to the age and MFPR to singleton fetus could be considered for the better obstetric outcome in IVF pregnancy.

Key Words: Multifetal pregnancy reduction, Complete fetal loss

(ART)
 가 .1999
 1 3,206
 (live birth) 31.3%, 1992 1 2001 5
 0.5% , 가 3%
 10 가 269
 Dickey 2
 , 36%, 53%,
 65%가 12 (spontaneous reduc- , 13
 tion) , 256
 가 8
 (MFPR, Multifetal Pregnancy Reduction) (1.0 gm, IV, cepha-
 1980 가 line) (50 mg, IM, meperidine) ,
 3,4 (fornix)
 5
 .Melgar 6 1
 가
 , 가
 , Antsaklis 7
 가
 , logistic regression analysis
 5
 가
 , Evans 9 가
 (monochoirionicity)
 ,
 가
 (complete fetal loss) chi-square test ,
 independent t-test

Table 1. Result of logistic regression analysis

Variables	B	S.E.M	df	p-value
Maternal age	.174	.059	1	.003
Initial number of G-sac	.596	.215	1	.005
Residual fetal number	1.324	.614	1	.031
Constant	-12.071	2.646	1	.000

B: coefficient of variables, S.E.M.: standard error of mean, df: degree of freedom
(Z = 0.174' age + 0.596' iGSNO + 1.324' remaining fetuses -12.071)

35 7.4%, 35

Table 2. Total fetal loss and survival rate after MFPR in multiple pregnancy

Age	No. (%) of pregnancies reaching the end of gestational week after MFPR					Total
	< 12 wks	12~23 wks	24~27 wks	28~34 wks	> 34 wks	
< 35	3 (1.4%)	16 (7.4%)	5 (2.3%)	20 (9.3%)	171 (79.5%)	215 (100%)
? 35	2 (4.9%)	5 (12.2%)	0 (0.0%)	3 (7.3%)	31 (75.6%)	41 (100%)
Total	5* (1.95%)	21* (8.2%)	5* (1.95%)	23 (9.0%)	202 (78.9%)	256 (100%)

* Number of total fetal loss

			12.2%		35	
					256	8.2%
	256			24~27		5
(total survival rate)		(complete	(1.95%)	35		
fetal loss)	87.9% (225/256)	12.1% (31/256)	3.			

1. Stepwise forward logistic regression analysis

logistic regression analysis (p=0.003), (p=0.005), (p=0.031)가 (Table 1). 46, 93.5%, 210, 86.7% 가 (p<0.05) (Table 3).

2. 32.8, 30.7, 36.2, 34.1

35 (Table 2). 256 2,872.1 g, 2,410.9 g 31.11 ±3.4 (yr) 가

4 1.95%, 35, 215 1.4%, 35 41 4.9%, 35 12~23

No. of total fetal loss (%)	3 (6.5)	The number of remaining fetus	28 (13.3)	31 (12.1)
Maternal age (Mean ±SEM)	32.8 ±4.3		30.7 ±3.1	31.11 ±3.4
Mean gestational weeks	36.2 ±1.0		34.1 ±0.5	35.2 ±0.9
Mean body weight (g)	2872.1		2410.9	2641.5

a vs. b : p<0.05

4.

Table 4. Total fetal loss rate according to the initial number of gestational sacs and live fetus (es) after MFPR

No. of live fetus after MFPR	Initial No. of gestational sacs				Total
	2	3	4	5~6	
Singleton	21	15	6	4	46
Fetal loss (%)	1 (4.8)	0	1 (16.7)	1 (25.0)	3 (6.5)
Survival* (%)	20 (95.2)	15 (100)	5 (83.3)	3 (75.0)	43 (93.5)
	97.2% ^a		80.0% ^b		
Twins	4 [§]	134	47	25	210
Fetal loss (%)	1 (25.0)	12 (9.0)	8 (17.0)	7 (28.0)	28 (13.3)
Survival* (%)	3 (75.0)	122 (91.0) ^c	39 (83.0) ^d	18 (72.0) ^e	182 (86.7)
Total	25	149	53	29	256

* > 28 wks delivery, § monochorionicity
a vs. b : p=0.2, c vs. d vs. e : p=0.023

(Table 4), 20 (ART) 가

5~6 25% 가

, 2 4.8% ,

2~3 4~6

(p=0.2), 2~3 Dickey² 가

97.2% 4 80.0% , 가 가

가 3 91% , 1980

가 4 , 5~6 83%, 72% (Multifetal Pregnancy Reduction)

가 . 1990 (learning curve)

(p=0.023). 가 2 ,

2 4 가 .

,Antsa-
 klis ⁷
 , Stone ¹⁰
 1,000
 33% , 1993 ^{13,14} De Catte ¹⁵
 9.5%, 8% 가 가
 92~94 34.5%,
 95~97 10.5%, 98~2000 7.4% 가
 4~33%
¹¹ , Evans ⁶ 24
 9.6%, 25~28
 3.7% , Stone ¹⁰ 24 가 4
 5.4%
 12
 가 1.95%
 24 가 8.2%
 가
 (Transvaginal or
 transcervical) (transab-
 dominal) , Tabsh ¹⁶ 가
 KCL , Coffler ¹² (subclinical inflammation)
 cytokine
 5.3%
 Dickey ² ⁷ (embryotoxic
 가 30 material)
 37% , 30 49% ¹⁷ 가
 , 7 8
 30 10%, 30 Depp ¹⁸ 가 가
 16% 7
 placental crowding
 8 , KCl 가 , placenta crowding 12

33%, 30~39 37%, 40 14% .¹⁹ , 7 , 30 61% ,² 35 가 , , 가

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