



Original Article

Perinatal Outcome After Multifetal Reduction:
A Study of 12 Cases

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Abstract

Objective: To study the perinatal outcome after fetal reduction in multiple gestations. **Materials and Methods:** This is a retrospective study of 12 patients who underwent fetal reduction for multiple gestations. The ultrasound-guided procedure was done transabdominally. **Results:** Of the 12 patients who underwent fetal reduction, one had spontaneous abortion following the procedure while the other 11 delivered live babies. **Conclusion:** Multiple gestations have an adverse neonatal outcome. By reducing the high-order pregnancies to twin gestations, the associated complications can be reduced. Ultrasound-guided fetal reduction is safe and effective method for reduction of multifetal gestations to twins or singleton, and improving the pregnancy outcome.

Keywords: multifetal gestation, multifetal pregnancy reduction, prematurity, in-vitro fertilization.

Introduction

In recent years, due to the use of ovulation-inducing drugs and assisted reproductive techniques the incidence of high-order pregnancies has increased dramatically¹. But multiple pregnancies have their own complications such as abortion, preterm labor, premature rupture of

membranes (PROM), pregnancy induced hypertension (PIH), which affect the neonatal outcome to a large extent^{2,3}. It has been seen that the length of gestation and infant birth weight of multifetal pregnancies are inversely proportional to the number of intrauterine fetuses.

Hence fetal reduction techniques have emerged as a very effective medical approach to increase the pregnancy duration to term and improve the neonatal outcome.

Multifetal pregnancy reduction can be performed transabdominally, transcervically, or transvaginally. The transabdominal route is the easiest to perform and can be done under local anesthesia. In most cases the fetuses are reduced to twin gestation in order to increase the chances of delivering one live fetus.

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Aims and Objectives

The investigation aimed (1) to study the perinatal outcome in the study group, (2) to study the success rate of the procedure, and (3) to study the incidence of abortion following the procedure.

Material and Methods

This is a retrospective study of 12 patients over a period of 2 years from May 2006 to March 2008. All patients in the study group underwent ovarian stimulation for assisted reproductive techniques, resulting in pregnancy. Of the 12 patients 10 conceived with intracytoplasmic sperm injection (ICSI) and the remaining 2 with oocyte donation (OD) (Table 1). The period of gestation selected for the multifetal reduction procedure was between 10 and 13 weeks of pregnancy. The reason for choosing this time of gestation was that, any spontaneous fetal losses could have already occurred and the remaining were sizable enough to be evaluated with the sonography.

The couples were explained about the procedure and its potential risks. A written informed consent was taken for the same. The ultrasound-guided procedure was done transabdominally under local anesthesia as compared to transvaginal route which requires general anesthesia.

Procedure

The patient was asked to empty the bladder and lie supine. Parts were painted with povidone iodine solution. Ultrasonic probe of 3.5 MHz was used for the fetal reduction procedure. The puncture site was infiltrated with local anesthetic. With the transducer in place, 20 gauge disposable spinal needle was introduced into the thorax of one of the most accessible and more fundal fetuses. Potassium chloride (1-2 mL, 2meq/ml) was injected and the corresponding fetal heart was monitored for asystole for one to three minutes. Post procedure the patient was given intravenous antibiotics for 48 hours followed by oral antibiotics for 5 days. The patients were observed closely for any evidence of vaginal bleeding, abdominal pain, leaking of liquor, or uterine contractions. There was no reported elective reduction for sex selection.

Table 1
Details of 12 cases

Sr. no.	Age in years	Method of assisted reproduction	No. of embryos transferred	Grading of the embryos	Gest. age at reduction (weeks)	No. of fetuses	
						Before	After
1	32	ICSI	3	I, I, I	11.4	3	2
2	28	ICSI	3	I, I, I	12.0	3	2
3	40	OD	3	I, I, I	12.2	3	2
4	35	ICSI	3	I, I, II	10.0	3	2
5	37	ICSI	3	I, I, II	10.3	3	2
6	33	ICSI	3	I, I, I	11.0	3	2
7	42	OD	3	I, I, I	12.0	3	2
8	38	ICSI	3	I, I, II	10.0	3	2
9	36	ICSI	3	I, I, II	10.4	3	2
10	35	ICSI	3	I, I, II	12.1	3	2
11	39	ICSI	3	I, I, II	12.0	3	2
12	34	ICSI	3	I, I, I	11.5	3	2

Table 2
Perinatal outcome of all 12 patients in the same serial order as in Table 1

Sr. no.	ANC period	Pregnancy outcome	Birth weight (g)	NICU stay (days)
1	Uneventful	El LSCS at term	2,100 1,980	05
2	Uneventful	El LSCS at term	2,210 2,010	07
3	PT	PT labor at 35 weeks	1,880 1,910	20
4	Uneventful	El LSCS at term	2,250 2,110	04
5	PROM	Em LSCS at 33 weeks	1,730 1,640	18
6	Uneventful	PT vag del at 34 weeks	1,750 1,550	22
7	PIH	LSCS at 35 weeks	2,010 1,870	10
8	Uneventful	El LSCS at term	2,330 2,100	02
9		SA at 12 weeks		
10	PROM	LSCS at 32 weeks	1,550 1,310	35
11	PIH	LSCS at 36 weeks	1,910 1,830	10
12	Uneventful	LSCS at term	2,100 2,310	03

PT: preterm, El: elective, SA: spontaneous abortion, EN: emergency

Results

Outcome variables evaluated included pregnancy loss, antenatal period, weeks of gestation at delivery, birth weight of the baby, and the neonatal outcome. The incidence of preterm labor, PROM, PIH was also calculated.

All 12 triplet pregnancies were reduced to twins. There were three patients who complained of spotting per vaginum post procedure. One patient had a spontaneous abortion one week following the reduction procedure. Hence the abortion rate following the reduction procedure was 8.3% (1/12).

Five patients (45%) carried the pregnancy to term and were delivered by elective caesarean section. Two patients had a preterm labor (without other complicating factors such as PROM or PIH), one at 35 and other at 34 weeks of gestation. The rate of preterm delivery was 18.8%. The pregnancy had to be prematurely terminated in patients with PROM (n=2, 18%) and those who developed PIH (n=2, 18%). Hence, the overall rate for preterm deliveries was 54.5%. All delivered preterm twins were admitted in Neonatal Intensive Care Unit (NICU) for variable period of time based on their prematurity. The mean gestational age of delivery was 35.4 weeks. Hence the success rate of the fetal reduction procedure was 91.6%.

Discussion

The incidence of multiple gestation has dramatically increased due to ovulation induction, superovulation, and assisted reproductive techniques⁴. This can be attributed to the formation of multiple follicles or multiple embryo transfers. There have been various studies stating that multiple pregnancies are associated with various obstetrical complications such as miscarriage, preterm delivery, PROM, PIH, intrauterine growth restriction, etc., thus compromising the neonatal outcome⁵.

Multiple embryo transfer, still practiced by many fertility specialists, is thought to be necessary for increasing the chances of pregnancy⁶. Patients with multiple pregnancies are then subjected to fetal reduction in the late first trimester.

Aberg et al.⁷ did the first selective fetal termination for an abnormal twin in 1978. The procedure is done between 10 and 12 weeks of gestation which gives time for the spontaneous fetal reduction to occur⁸. The procedure of fetal reduction has its own drawbacks in the form of pregnancy loss, malformation, or death of the other fetuses. In the present study, the post procedure pregnancy loss was 8.3%. This is comparable to a study by Iberico et al.⁴ in which pregnancy loss was 6.7%.

Mean gestational ages of delivery for twins, triplets, and quadruplets were 35, 33, and 30 weeks, respectively⁹.

Stone J et al.¹⁰ studied 1,000 cases of multifetal reduction and found that there was a significant trend toward decreasing pregnancy loss rates with decreasing starting number of fetuses. It was also studied that the mean gestational age at delivery and the birth weights were greater when pregnancy reduction was done to a single fetus than twins¹⁰.

Antsaklis et al.¹¹ concluded from their study that in triplet pregnancy, fetal reduction to twins significantly reduced the risk of severe preterm delivery and extreme prematurity.

In order to reduce the incidence of multiple gestations following in vitro fertilization, many fertility centers are looking forward to single embryo transfer. A study conducted in the Centre of Reproductive Medicine at the university of Ghent, Belgium, practicing single embryo transfer, has found that the incidence of twins

was reduced to 10% and that of triplets to almost none at all¹².

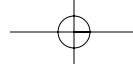
Hence the centers practicing single embryo transfer have claimed to have satisfactory delivery as well as neonatal outcome¹³.

Conclusion

Fetal reduction in late first trimester seems to be a viable option for patients with multiple gestations. Although the complications associated cannot be entirely avoided, their incidence and intensity can be reduced. With the advancement in the area of assisted reproduction, single embryo transfer should be encouraged so as to reduce the incidence of twins and triplets to none. To conclude, when other strategies fail and high-order pregnancies result, multifetal pregnancy reduction offers a salvage option for reducing the risk for remaining fetuses.

References

1. Ozturk O, Bhattacharya S, Templeton A. Avoiding multiple pregnancies in ART- Evaluation and implementation of new strategies. *Hum Reprod.* 2001; 16 (7): 1319-21.
2. Sekher KD, Sekhar NK, Shinde P, et al. Multiple pregnancies and fetal reduction after Assisted reproductive techniques. *J Obst and Gynecol of Ind.* 2002; 52 (3); 58-61.
3. Lt Col Rath SK, Surg. Capt. Kumar S, H. Col. Sharma RK, et al. Multifetal pregnancy reduction. *Med J Arm Forces Ind.* 2004; 60: 67-8.
4. The practice committee of the American society for reproductive medicine. Multiple pregnancy associated with infertility therapy. *Fertil Steril.* 2006 Nov; 86 (4): 106-9. doi: 10.1016/j.fertstert.2006.08.073.
5. Iberico G, Navarro J, Blasco L, Simon C, Pellicer A, Remohi J. Embryo reduction of multifetal pregnancies following ART. *Hum Reprod.* 2000; 15 (10); 2228-33.
6. Guido Pennings. Avoiding multiple pregnancy in ART: multiple pregnancies: a test case for the moral quality of medically assisted reproduction. *Hum Reprod.* 2000; 15 (12): 2466-9.
7. Yaron Y, Johnson KD, Bryant PK, Kramer L, Johnson MP, Evans MI. Selective termination and elective reduction in twin pregnancies. *Hum Reprod.* 1998; 13 (8): 2301-4.
8. Bruno B, Lucia T. First trimester fetal reduction: its role in management of twin and higher order multiple pregnancies. *Hum Reprod Update.* 1995; 1 (4): 397-408.



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9. Stone J, Berkowitz RL. Multiple pregnancy reduction and selective termination. *Semin Perinatol.* 1995; 19 (5): 363-74.
10. Stone J, Ferrara L, Kamrath J. Contemporary outcomes with latest 1000 cases of multifetal pregnancy reduction. *Am J Obst Gynecol.* 2008 Oct; 199 (4): 406.e1-4.
11. Antsaklis A, Souka AP, Daskalakis G. Embryo reduction versus expectant management in triplet pregnancies. *J Maternal Fetal Neonatal Med.* 2004 Oct; 16 (4): 219-22.
12. Steinkempf MP, Whitten SJ, Hammond KE. Effect of spontaneous pregnancy reduction on obstetric outcome. *J Reprod Med.* 2005 Aug; 50 (8): 603-6.
13. Gerris J. The near elimination of triplets in IVF. *Reprod Biomed Online.* 2007; 15 (3): 40-4.
14. Karlstorm PO, Bergh C. Reducing the number of embryos transferred- impact on delivery and multiple birth rate. *Hum Reprod.* 2007 Aug; 22 (8): 2202-7.

