

THE ROLE OF FETOSCOPY & FETAL REDUCTION IN MULTIPLE PREGNANCIES FROM ART

Jie Qiao¹, Yangyu¹ Zhao, Guangwu Xiong¹, Ping Liu¹, Caihong Ma¹, Yuan Wei¹, Rui Yang¹

¹ Dept. Of Obstetrics And Gynecology, Peking University Third Hospital (China)

Application of assisted reproductive technology has enabled many infertile couples to have their own babies, but at the same time, have resulted in an increasing number of cases of multi-fetal pregnancy. The development of multi-fetal pregnancy reduction and selective termination has become an effective way of reducing complications of multi-fetal pregnancy. The development of fetoscopic reduction provide us with a new solution, especially to monochorionic multi-fetal pregnancy reduction.

Purpose: To examine the clinical results of the fetal reduction conducted by the Peking University Third Hospital Reproductive Medicine Center In China from June 1999 to July 2008, and to explore the related factors which influence the clinical results, in order that the research results can be brought to bear upon clinical practice, and to discuss the application and complications of fetoscopic techniques in fetus-reduction in monochorionic multiple pregnancies.

Materials and methods: 398 consecutive fetal reduction cases are analyzed in retrospect; the data is processed through SPSS 13.0 software; the short-term and long-term outcomes of fetal reduction through transvaginal or transabdominal B ultrasound are analyzed; the related factors of miscarriage rate after fetal reduction are analyzed by univariate, multivariate analysis; newborn weight and delivery week after fetal reduction are compared by t-test; miscarriage rate, preterm labor rate, and premature rupture of membrane (PROM) rate et al. under different circumstances were compared through Chi-square test. Comprehensive analysis of 4 monochorionic multiple pregnancy cases, including the choice of surgical methods and their adverse effects.

Results: 1. 98% of all fetal reductions were successful in the first attempt (390/398). 360 cases were followed up (90.5%); among them, before 28 weeks abortion occurred in 43 cases, before 24 weeks abortion occurred in 31 cases (8.7%). 14 cases (3.9%) had abortion within 1 month after fetal reduction (12 of which had early abortion before 12 weeks), 8 cases (2.2%) of abortion were infection-related. For the cases where abortion did not occur, the average delivery week is 36.97 weeks, in which 98 cases had pre-term labor (33.7%), 15 cases had pre-term labor before 32 weeks (5.2%).

2. In the case of remaining singleton, the preeclampsia and postpartum hemorrhage rate were significantly lower than in the case of twins. The remaining singleton also had a lower rate of GDM than the twins. For newborn weight and delivery week, the latter was lower than the former; for delivery week, the difference was significant.

3. In transvaginal early pregnancy fetal reductions, miscarriage rate was lower in embryo aspiration group than in fetal cardiac activity area injection group. In vitro fertilization didn't increase the miscarriage rate after MFPR.

4. There is an increase of the chances of abortion after fetal reduction, with the increase of age and the number of remaining embryos/fetus, post-operation infection, PCOS, threatened abortion (spotting) before fetal reduction, and the increase of the infertility years. Higher number of original embryos/fetus also results in higher chance of abortion. In the case of high-order pregnancy (especially original 4 fetus and more), the chance of abortion is significantly higher than in the case of twins or triplets.

5. 21 cases had mid-pregnancy fetal reduction (≥ 12 weeks), among which 7 cases had fetal anomaly. In these cases, the delivery week was much lower than early-pregnancy fetal reduction. Before-32-week preterm labor rate in mid-pregnancy reduction (selective termination) is significantly higher than in early-pregnancy reduction ($P < 0.05$). There is no significant difference of miscarriage rate, newborn weight, and premature rupture of membrane rate between the mid-pregnancy fetal reduction and the early-pregnancy fetal reduction. Compared with 20 cases of twin pregnancy with one fetal intrauterine died naturally in the obstetric department, the preterm labor rate was similar.

6. Of simultaneous cases, reduction from triplet to twin has higher abortion rate than IVF-ET twin pregnancy; IVF-ET twin pregnancy has higher preterm labor rate than reduction from twin to singleton: the rate of the reduced group was 14.8%, lower than the unreduced ones ($P < 0.05$); reduction from triplet to singleton has higher delivery week, lower preterm labor rate, and slightly lower miscarriage rate than reduction cases from triplet to twin.

7. 4 cases of monochorionic feticide under fetoscopy were conducted in 17th to 20th gestational weeks. Two cases were conducted in selective umbilical cord bipolar coagulation, and one in umbilical cord ligation, and one in laser placental blood vessel electro-coagulation. One remaining fetus of umbilical cord coagulation were dead one day later because of placental blood loss caused by umbilical hemorrhage, and the others got good result and mothers delivered in 36th gestational week.

Conclusion: 1. Fetal reduction guided by ultra-sound is a safe minimally invasive technique (MIT) and can be used in the cases of multi-fetal pregnancy (MFP). 2. In early pregnancy fetal reductions, miscarriage rate was lower in embryo aspiration group than in fetal cardiac activity area injection group. 3. In vitro fertilization didn't influence miscarriage rate after MFPR. 4. Post MFPR miscarriage risk factors are as follows: increase of age, starting numbers, finishing numbers and infertility years; PCOS; threatened abortion before operation; and post-operation infection (POI). 5. For those MFP detected in mid-pregnancy or those with one fetal anomaly, per abdomen selective termination (ST) is a safe and effective remedial treatment. 6. Remaining singleton has best pregnancy short-term and long-term outcomes. 7. Fetoscopy in selective fetus-reduction in monochorionic multiple pregnancies or placental blood vessels occlusion is an effective means of treatment.