

Short Communication**Pregnancy and Multiple Births rate after Transferring 2 or 3 Embryos***F. Mostajeran MD*, E. Haftbaradaran MD*****ABSTRACT**

Background: In vitro fertilization (IVF) is a progressing common reproduction method and if the number of transferred embryo increases, the pregnancy rate and multiple pregnancies will increase which may lead to higher medical costs and human suffering. We compared pregnancy and multiple pregnancies rate after two or three transferred embryo via IVF.

Methods: From April 2003 to June 2004, 301 referred infertile women to Isfahan infertility center underwent IVF with transferring two or three good quality embryos.

Results: From 298 patients, 2 and 3 embryos were transferred in 155 patients and in 143 patients, respectively. Pregnancy rate was 19.4% versus 24.5% in 2 and 3 embryos transferred patients, respectively.

Twin gestations were found in 5(3.2%) of 2 embryos transferred patients and in 11(7.7%) of 3 embryos transferred patients.

Discussion: Transferring two or three embryos with good quality increase the rate of twin gestations in young women, without significant improve in the chance of singleton conception.

Key words: In Vitro Fertilization, Multiple gestations, Embryo transfer

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Assisted reproductive technologies (ART) are widely used to treat infertilities of varying etiologies. These technologies essentially entail direct retrieval of oocytes from the ovaries, followed by in vitro fertilization (IVF). Early on, embryos resulting from IVF or intracytoplasmic sperm injection (ICSI) were transferred to the uterus in larger numbers owing to the high costs of treatment, drug side effects, and relatively low chance of achieving pregnancy. This resulted in increased rate of multiple pregnancies^{1,2}.

Based on existing reports, fertility interventions account for 80% of multiple pregnancies, half of which are seen within the context of ART, and half are due to drugs used to stimulate ovulation³.

In healthy couples, the chance of twin pregnancies is 1 in 85, and triplets and quadruplets are extremely rare³. Multiple pregnancies are associated with a greater perinatal mortality rate, and potentially dangerous complications both for the mother and the fetuses, hence they are generally considered as high-risk pregnancies^{4,5}. The use of improved culture media, better transfer techniques, and ICSI for growing viable embryos has increased the success rate of IVF. For avoiding multiple pregnancies, smaller numbers of embryos are now transferred back to the mother's uterus. Since conducted studies concerning the result of pregnancy after transferring 2 or 3 embryos lacked adequate sample, we studied pregnancy rate and multiple pregnancies following the transfer of 2 or 3 embryos in IVF.

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Subjects and Methods

This clinical trial involved 301 women whom referred to Isfahan fertility and infertility center from April 2003 to June 2004 were recognized as ART candidates. Infertility causes included tubal, ovarian, male-related, and unknown factors.

The subjects were randomly divided into two groups and were treated according to the standard protocol on induction ovulation. When there were at least two follicles more than 16 millimeters in diameter, the patients were injected with 10,000 units of HCG and oocytes were retrieved after 36 hours, IVF was conducted and the best embryos were selected.

Two or three embryos with good quality transferring were conducted in group 1 and 2, respectively. Beta HCG was measured after 14 days and the patients underwent ultrasonography for the presence of fetal heart beat and were followed up. Patients who did not follow the prescribed drug regimen and those who displayed ovarian hyper-stimulation were excluded. Three patients with ectopic pregnancy were also excluded. Chi-square test was used for analyzing the data and comparing the results.

Results

From 301 patients, 3 patients with ectopic pregnancy were excluded and 298 patients were studied in two groups with no significant mean age difference (30.5 ± 3.6 , 31 ± 3.8).

Two-embryo transfer was conducted in 155 patients resulting in 30 (19.4%) singleton and 5 (3.2%) twin pregnancies. Three-embryo transfer was conducted in 143 patients resulting in 35 (24.5%) singleton and 11 (7.7%) twin pregnancies. Chi square test did not show any significant difference between two groups in terms of pregnancy rate ($P=0.14$).

There was significant difference between two groups in rate of twin pregnancy ($P=0.043$). No triplets were seen in this study.

Discussion

Increased success rate of IVF and ICSI has been accompanied with an increase in the rate of multiple pregnancies. The challenge is to decide the number of embryos to transfer in order to maximize pregnancy rate, while minimizing the rate of multiple pregnancies and their associated risks. Many centers have reported an overall pregnancy rate of 30-40% in the first IVF cycle, even with the transfer of no more than two embryos.

The only strategy for reducing multiple pregnancies, especially when the patient is young and the embryo is of high quality is to transfer fewer embryos.

Of 298 patients treated with IVF, 155 and 143 underwent two-embryo and three-embryo transfer, resulting in pregnancy rates of 19.4% and 24.5%, respectively. There was no significant difference between pregnancy rates in the two groups. However, the rate of twin pregnancies was 16.7% and 31.4% in the groups undergoing two- and three-embryo transfer, respectively, showing a significant difference between the two groups.

In a study conducted by Dean in 2000 ⁶, two groups of patients underwent two and three embryo transfer with embryos of good and acceptable quality, and the resultant pregnancy rates were 28.1% and 29.4% respectively, with no significant difference between the two groups. The same study reported multiple pregnancy rates of 30.8% and 58.8% in the groups undergoing two and three embryo transfer respectively, with a significant difference between the two groups ⁶. The study conducted by Tasdemir in 1995 reported pregnancy rates of 40% and 42% for two and three embryo transferring respectively, when the embryos were of good quality ⁷. Pregnancy rates reported when embryos of lower quality were used were 11% and 22.9% for two- and three- embryo transfer, respectively. The study conducted by Gerris in 2000 recommended two-embryo transfer, providing the embryos of good quality, in order to avoid the risk of triple pregnancies ⁸.

This study has also recommended the transfer of one embryo of good quality in young patients in their first and second IVF cycles to reduce the chance of twin pregnancies. In another study, he reported pregnancy rates of 38.5% and 74% for one- and two-embryo transfer respectively, with a 30% chance of twin pregnancies for the latter.

A study by Neaboury has reported pregnancy rates of 44% and 40% for two groups of patients undergoing transfer of two embryos of acceptable quality, and one embryo of good quality, respectively ¹⁰. Twin pregnancies were seen in 26% of the former, and 2% of the latter. There was no significant difference between the two groups in respect of

pregnancy rate; however, the rate of twin pregnancies was strikingly different.

Given the insignificant difference of pregnancy rates achieved with the transfer of two and three embryos of acceptable quality, we recommend the transfer of no more than two embryos in young patients treated with IVF.

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