



IMPACT OF GENERAL ANESTHESIA DURING EMBRYO TRANSFER ON PREGNANCY OUTCOMES

Gynaecology

Banerjee Kaberi MD, DNB, MRCOG, Medical Director, Advance Fertility and Gynaecology Centre, New Delhi.

Singla Bhavana* MD, Senior Consultant, Advance Fertility and Gynaecology Centre, New Delhi.
*Corresponding Author

ABSTRACT

Objective: To assess the impact of general anesthesia during embryo transfer on pregnancy outcomes.

Design: Retrospective analysis

Materials And Methods: 102 infertile females in the age group of 23 to 35 years were evaluated in a period of 6 months. Controlled ovarian stimulation (COH) was done in all subjects with the antagonist protocol. Transvaginal guided oocyte aspiration was done. In 51 females, embryo transfer (ET) was done without GA and in other 51 females; it was done under GA in view of anxiety, non-cooperation and previous history of difficult ET.

Results: There was no difference between the two groups regarding demographic variables, number of embryos transferred and embryo quality. The pregnancy rate was 60.7% in the GA group that was similar to 68.6% in the non GA group (P value 0.3).

Conclusions: The use of general anesthesia for embryo transfer does not negatively impact the pregnancy rates. The embryo transfer is the most crucial step of in vitro fertilization. In anxious, non-cooperative and difficult ET patients, the general anesthesia relaxes the patient and makes the embryo transfer procedure easy. This study document that anesthesia during embryo transfer does not have deleterious effects on pregnancy outcomes.

KEYWORDS

Embryo transfer, general anesthesia, pregnancy rates

INTRODUCTION:

Embryo transfer (ET) is the final and most crucial step in in vitro fertilization (1). In spite of developing technologies, IVF is not the solution of infertility and implantation failure remains the major problem in unsuccessful cases. Pregnancy rate depends on many factors like egg quality, sperm quality, embryo quality, endometrial thickness and also on embryo transfer technique (2). To optimize the embryo transfer, various precautions and steps are needed and patient should be fully relaxed and cooperative. Most of the embryo transfers are easy and atraumatic. In some cases of embryo transfer, female is not able to relax herself for procedure in view of anxiety or difficult entry through cervical canal to uterine cavity. So embryo transfer techniques can cause trauma that can induce uterine contractions or may cause bleeding. In these cases, embryo transfer should be planned under general anesthesia for proper and accurate placement of embryos (3).

In present study, we have assessed the impact of general anesthesia during embryo transfer on pregnancy outcomes.

MATERIALS AND METHODS:

The retrospective study was conducted at xxxxxx on patients with primary infertility between the age group of 23 to 35 years. Between July 2018 and December 2018, 102 patients underwent ovarian stimulation using the GnRH antagonist protocol.

Protocol

Ovarian stimulation was started on day 2 with gonadotropins, recombinant human FSH (xxxxx) or highly purified menotrophin HMG (xxxxx) in the dose of 225 to 450 IU, depending on patient profile (age, BMI, AMH, AFC) till day 6 of period followed by transvaginal follicular monitoring and dose was adjusted according to ovarian response. When follicles reached 13 to 14 mm, daily subcutaneous injection of GnRH antagonist, 0.25 mg Cetorelix (xxxxxx) was added. When follicles reached 18 mm, 10,000 IU HCG (xxxxxx) was given to trigger the ovulation.

Transvaginal oocyte aspiration was performed under general anaesthesia before 36 h, under ultrasound guidance, using Cooks OPU needle and Cooks gamete buffer media. Embryos were further cultured in Cooks fertilization & cleavage media.

Fresh embryo transfer was done on Day 3 (three embryo transferred) under transabdominal USG guidance (with full bladder). In 51 females (group 1), embryo transfer (ET) was done without general anaesthesia (GA) and in other 51 females (group 2); it was done under GA using propofol in view of anxiety, non-cooperation and previous history of difficult ET.

After gentle insertion of speculum and suction of cervical mucus, soft outer sheath was inserted till the level of internal os. It was followed by insertion of the soft Cooks Guardia Access echotip ET catheter containing embryos in 10 mcl media and 5 mcl air bubble on both sides of the media and then embryos were placed in mid uterine cavity.

Luteal support was added in the form of vaginal and injectable progesterone. Beta hcg was done after 14 days of the embryo transfer.

RESULTS:

A total of 102 females complaining of primary infertility were retrospectively included in the study. The age of the female partners was 23 to 35 years. There was no difference between the two groups regarding demographic variables (table 1), number of embryos transferred, embryo quality and semen parameters.

Table 1. Demographic Profile

Parameters	Non GA group	GA group
Number of Patients	51	51
Age (years)	31.6	31.8
Duration of infertility	4.3	5.0
BMI (kg/m ³)	20.8	21
Antral follicle count (AFC)	8.4	8.1
AMH (ng/ml)	2.6	2.5

The pregnancy rate was calculated using chi square statistical analysis. The pregnancy was positive in 35 females (68.6%) in non GA group. In GA group, the pregnancy was positive in 31 females (60.7%) that was comparable to GA group (P value 0.3). The clinical pregnancy rate was also similar in both groups (56.8% in GA group and 60.7% in non GA group) (Table 2). As GA was given for 10 to 15 minutes, the post operative recovery was uneventful with no side effects.

Table 2. IVF Outcome

Parameters	Non GA group	GA group
Pregnancy rate (PR)	35/51 (68.6%)	31/51 (60.7%)
Clinical pregnancy rate (CPR)	31/51 (60.7%)	29/51 (56.8%)

DISCUSSION:

Embryo transfer is the important and final step in IVF. Embryo transfer technique may directly affect the pregnancy rate (4,5).

The key factors in optimizing the embryo transfer technique are avoidance of uterine contractions; proper evaluation of uterine cavity, removal of cervical mucus and finally ensuring that catheter has passed internal os to deliver the embryos in uterine cavity (2,6,7). In some cases because of difficult cannulation through cervical canal caused by

previous surgery or congenital malformation or in anxious, non-cooperative patients, it is difficult to insert the outer catheter to perform the embryo transfer. In these cases, the embryo transfer can be performed under general anesthesia without affecting the pregnancy rates negatively.

In our study, in difficult embryo transfer cases due to technical issues or psychological stress where outer catheter cannot be inserted easily, general anesthesia was given to perform the successful embryo transfer and there was no negative impact on pregnancy rates. Propofol is a sedative-hypnotic anesthetic agent used popularly because of its rapid onset, short duration of action, and minimal side effects which helps in cervical dilatation, prevents uterine contractions and also relaxes the patient which makes the embryo transfer easy (4).

As per ASRM recommendations, there was no clear benefit of general anesthesia to improve the IVF pregnancy rates (3,5). Abou-Setta AM et al also evaluated the use of propofol general anesthesia during difficult embryo transfer on 198 subjects and concluded that general anesthesia does not seem to improve the implantation and pregnancy rates (8).

Fayed SF suggested that difficult ET is associated with significantly reduced biochemical, clinical and ongoing clinical pregnancy rates (9). Efforts should be made to avoid difficult ET and IVF specialist should be alert to factors associated with difficult embryo transfer and should use stepwise approach to maintain the success rate of IVF (9,10,11).

So, the use of general anesthesia for embryo transfer makes it easy in anxious, non-cooperative patients and in difficult cannulation through cervical canal and does not negatively impact the pregnancy rates with any deleterious effects on IVF pregnancy outcomes.

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