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Research article

ECTOPIC PREGNANCY AFTER SEQUENTIAL EMBRYO TRANSFER: REVIEW OF 22 CASES

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ABSTRACT

Objective: To assess the prevalence of ectopic pregnancy among women who conceived with assisted reproductive technology and to see if there is increased risk after sequential embryo transfer. **Methods:** The ectopic pregnancy rate for ART pregnancies was calculated among women who conceived and had ectopic pregnancy after ICSI followed by Sequential embryo transfer from an ART centre. Variation in ectopic risk by patient and ART treatment factors was assessed including Sequential transfer, risk factor for ectopic pregnancy, tubal infertility and previous ectopic pregnancy. **Results:** Of 1960 women, who underwent ICSI, 1047(53.41%) had positive pregnancy, 22(2.1%) women had an ectopic pregnancy out of which 2(9%) had heterotrophic pregnancy. The mean age was 30.4±4.33. Tubal factor contributed to 31.81% cases and 27.27% had previous history of ectopic pregnancy. Sequential transfer was done in all the patients with more than one embryo transferred. There was no significant increase in the ectopic pregnancy when Sequential embryo transfer was done. **Conclusion:** Tubal factor infertility and history of previous ectopic pregnancy contributed to risk factor for ectopic pregnancy in our study. Sequential transfer did not increase the risk of ectopic pregnancy.

Keywords: Ectopic Pregnancy, Assisted Reproductive Technology, In Vitro Fertilisation, Intracytoplasmic Sperm Insemination.

INTRODUCTION

Ectopic pregnancy is an important cause of maternal morbidity and is one of the recognised complications of In Vitro Fertilisation In Vitro Fertilisation (IVF). Extra uterine Pregnancy is the implantation of the embryo anywhere except in the endometrial lining of the uterine cavity ^[1]. The aetiology of ectopic pregnancy is not well understood. However, multiple risk factors have been associated with ectopic pregnancy ^[2]. Other etiological risk factors are tubal/pelvic surgeries, endometriosis, exposure to diethylstilbestrol in utero, chromosomally abnormal embryo, use of progesterone-only pills, cigarette smoking, conception following induction of ovulation and in vitro fertilization and number of embryo transfer (assisted reproductive technology), history of previous abortion, previous ectopic pregnancy,

history of infertility, race, and age above 35 years. However, ectopic pregnancy (EP) can also occur without any obvious risk factors^[3,4].

In the results generated from the American society for reproductive Medicine in 2001, there were 560 ectopic pregnancies, representing 1.8% of all pregnancies following IVF ^[5]. The incidence of ectopic pregnancy after IVF ranges from 2.1% to 9.4% of all clinical pregnancies ^[6-10]. Multiple embryo transfer has always been associated with increased risk of EP with transfer of two or less embryos carrying lower risk than after three or more. ^[12] The current guidelines on the number of embryos to transfer, which are based on the maternal age, could therefore decrease the incidence of EP following IVF

especially in younger patients with a single embryo transfer^[13].

The purpose of our study was to see the incidence of ectopic pregnancy after sequential embryo transfer and effects of various factors (tubal, previous ectopic, number of embryos transferred) on it.

MATERIAL AND METHODS

Study design: Retrospective study

Study Duration: Study done over a period of 2 years 2013-2014 at 21st century infertility centre, Surat.

Ethics approval: Study was approved by the Ethics Review Board

Inclusion criteria: Patients who underwent infertility treatment in the form of ICSI (Intracytoplasmic Sperm Insemination) but had Ectopic Pregnancy were included in this study.

Methodology:

Total 1960 patients underwent Assisted Reproductive Technology (ART), (Intracytoplasmic Sperm Insemination) for varied infertility reasons. Information was retrieved from the ART centre's medical files.

Age of the patients was noted. All the associated risk factor for ectopic pregnancy was noted this included previous history of ectopic pregnancy, tubal factor previous operative history of myomectomy or endometriosis, and pelvic infection. In our study patients had Sequential Embryo Transfer on day2/3 and day5/6. Our study was compared to a similar study Montreal QC 2011⁽⁸⁾ but they did not Sequential Transfer done.

Statistical analysis: Done by using descriptive and inferential statistics using Chi square test. The software used in the analysis was Graph Pad Prism 5.0 and $p < 0.05$ is considered as level of significance.

RESULTS

Table 1:

Cases	Our Study	Monteral QC Study ^[8]	P-value
Age	30.4±4.3	34.2±1	0.056
Incidence	2.1%	4.9%	0.44
Tubal factor	31.8%	33.3%	1.00
Previous ectopic	27.27%	16.6%	0.12
Previous myomectomy	9%	5.6%	0.59
Previous endometriosis operated	22.72%	22.2%	1.00
Pelvic infection	9%	5.6%	0.59

In our study, all the patients had sequential transfer on day 2/3 and day 5/6. Out of total 1047 positive patients, 1013 had 2+1 transfer rate (i.e 2 embryos on day2/3 and 1 on day5/6) and 34 had 2+2, these were the patients who previous more than 2 IVF failures or with had advanced maternal age. In our study 20 patients had 2+1 embryo transfer and only 2 had 2+2. The incidence of ART ectopic pregnancy was 2.1%. Mean age was 30.391±4.33.

Various factors for infertility and its association with ectopic pregnancy rate were seen. There was increased incidence of ectopic pregnancy in patients having tubal factor as one of the cause for infertility and ectopic pregnancy. It was also noted that 27.27% of the patients had previous history of ectopic pregnancy. Heterotrophic pregnancy was seen among 2 patients of 22 cases. There was no statistical difference between two groups. It was seen that sequential Transfer of more than one embryo did not increase the ectopic pregnancy rate.

DISCUSSION

Despite the fact that IVF allows direct implantation of embryos with the complete bypass of the fallopian tubes, extra uterine pregnancies are more common following IVF than natural conceptions and have been a well recognised complication since the first occurrence reported in 1976^[12].

The incidence of ectopic pregnancy in our centre was 2.1% this was less as compared to a study in Montreal^[8] which had an rate of 4.9% still it was not statistically significant. The incidence was similar to a natural ectopic pregnancy rate of 2.1% in Nigeria^[14]. The mean age of patients with ectopic was 30.31±4.33 this was correlating with Montreal study^[8] which had an mean age of 34.2±1.

The incidence of ART ectopic varies from 1.8% to 11% among those with tubal factor infertility^[6]. The rate of ectopic pregnancy was seen more with tubal factor infertility which was around 31.81% and this was not statistically significant as compared with Montreal group. This was shown by Strandell et.al & Mohammed malak et al, that tubal factor one of the risk factor for infertility^[7,8]. These authors reported an incidence of 4% of ectopic pregnancy, which was higher compared to our study.

History of previous ectopic pregnancy was also increase the risk for ectopic pregnancy^[9]. Our study showed 27.27% of patients with ectopic pregnancy

had a previous history of ectopic pregnancy this was higher as compared to 16.6%^[8] but had no statistical significance.

Previous history of surgeries for endometriosis^[15] and myomectomy also increase the risk for ectopic pregnancy. Our study also had patients with previous history of endometriosis and myomectomy but the number of patient in the study group was small.

All the patients with ectopic pregnancy had sequential transfer with more than one embryo transferred. There was no significant difference with number of embryos transferred and the ectopic pregnancy rate. This matched with Zhonghua Fu Chan Ke Za Zhi^[12]. Whereas compared to Chai^[16]. Our study did not correlate as they found increase in rate of ectopic pregnancy with increase in number of embryos transferred which was not increased in our study.

CONCLUSION

Tubal factor contributes to one of the risk factor for ectopic pregnancy. Sequential transfer of more than one embryo did not increase the risk of ectopic pregnancy in our study.

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