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## Original Article

# Complications in pregnancies after in vitro fertilization and embryo transfer

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## ABSTRACT

**Background:** Many infertile couples need treatment in different forms including Assisted Reproductive Techniques. In Vitro Fertilization and Embryo Transfer is the most advanced method of infertility treatment. Management of these pregnancies is difficult as the couples and treating doctors have undue concern and apprehension and worry about outcome of such pregnancies. This study was undertaken to find out the complications and mode of delivery and if there is a need to manage them at tertiary care centers.

**Methods:** 130 cases were included in the study after pregnancy was confirmed in this prospective study. These cases were followed throughout pregnancy and labour. Pregnancy, labour, and neonatal complications were noted.

**Results:** Incidence of primary infertility was more common. Mean age of patient was more. All the cases were provided standard routine antenatal care. Multiple pregnancies and preterm labour were more frequent in the study group. A large number of cases delivered vaginally.

**Conclusion:** A large number of pregnancies terminated in vaginal delivery, thereby indicating that these pregnancies though high risk can have vaginal delivery. They can be managed at any hospital once clinical pregnancy is confirmed.

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## Introduction

Most of the couples desire to have children and large number of them are able to fulfill their dreams spontaneously within 1–2 years of marriage. Those who are not able to conceive need treatment in different forms including Assisted Reproductive

Techniques (ART). In Vitro Fertilization and Embryo Transfer (IVF–ET) is the most advanced method of infertility treatment. Since the advent of IVF, over a million babies have been born.<sup>1</sup> The treatment of infertile couples has evolved remarkably, especially over the last 20–30 years.<sup>2</sup> Management of pregnancies after IVF–ET is difficult as the couples and treating doctors have undue concern, apprehension, and worry about outcome

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of such pregnancies. Patients are elderly and there may be other co-morbid conditions; hence, pregnancy after IVF-ET is considered as high risk.

ART in most cases leads to successful delivery of healthy singleton pregnancies. However, there are complications of pregnancy that may develop more frequently in those conceived using IVF-ET. Biochemical pregnancy loss rates following ART vary from as low as 11% to as high as 35%.<sup>3</sup> The risk of ectopic pregnancy including heterotopic is increased at least 2-fold in patients who conceive after IVF-ET.<sup>4</sup> The incidence of late pregnancy loss (after 12 weeks gestation) after ART is typically between 2 and 4% which is higher than that of spontaneously conceived pregnancies (around 1%).<sup>5</sup> There is higher propensity of multiple pregnancies. The risk of multiple pregnancy is increased substantially in IVF-ET cycles. In 2005, 35.0% of all births in the US resulting from IVF-ET were multiples, a rate 10 times higher than 3% in general population.<sup>6</sup>

Women with IVF-conceived singletons are at increased risk of pre-eclampsia, gestational diabetes, placenta praevia, and perinatal mortality. ART singleton pregnancies also have higher relative risks of having induction of labor and Cesarean section (CS), both emergency and elective.<sup>7</sup> Various studies have reported that the children born to women who conceived with ART were premature and of low birth weight.<sup>8</sup> The observations cannot be attributed solely to the higher incidence of multiple pregnancies associated with ART. Many studies of children born after IVF have found a prevalence of congenital malformations similar to that in normal population (2-3%)<sup>9</sup> but one Australian study observed a 2-fold increased risk of major birth defects among children conceived via conventional IVF or ICSI, compared to that in a matched population of children who were naturally conceived.<sup>10</sup> ART babies also have increased neonatal morbidity.<sup>11</sup> The babies born by assisted reproductive technologies showed a 15 times higher risk of NICU admissions. They were mostly for supportive care for initiation of feeding, a few developed complications like neonatal jaundice, neonatal sepsis and respiratory difficulties. A review of long-term developmental outcomes in children conceived by ART has been reassuring, demonstrating that the great majority of children are developing normally.<sup>12</sup>

At present, there are no established guidelines; hence, there is need to look into these complications and ascertain if IVF-ET pregnancies can be managed at hospitals other than tertiary care centers. This prospective study was conducted at one of ART centers of a tertiary care hospital; the aim was to document and analyze complications in IVF-ET pregnancies.

## Materials and methods

It was proposed to study IVF-ET pregnancies for the period of 2 years. The study population comprised of the patients registered and followed up at ART center of a tertiary care hospital. All patients who underwent IVF-ET were evaluated by a detailed history, clinical examination, and relevant investigations. 130 cases were enrolled for the study, the objective being to follow up all the cases with positive  $\beta$ hCG test on day 18 of IVF-ET. Transvaginal sonography (TVS) was

performed on day 21 to find out if it was a clinical or biochemical pregnancy. After the case was enrolled for the study, the patient was followed up closely throughout pregnancy, labor, and delivery including the condition of newborn baby. Normal standard antenatal care was provided, except the hormonal support initially.

Results were recorded in the form of outcome of pregnancy like abortion (early and late), ectopic pregnancy, multiple pregnancy, antepartum hemorrhage, congenital malformation, intrauterine growth restriction (IUGR), induction of labor, type of delivery – term or preterm, vaginal delivery or CS, and condition of newborn baby including NICU admission.

## Results and discussion

Since this was only an observational study, there were no controls; the results were to be compared with the reports in literature. Age profile (Table 1) of the patients varied from 23 to 41 years; there were 56 patients whose age varied from 30 to 40 years. Infertility cases are usually older and this is one of the reasons for increased complications in pregnancy. There were 55 cases of secondary infertility whereas 75 cases were of primary infertility. The relevant past history (Table 2) indicated that tuberculosis was the commonest positive finding, almost 30%. The study by Sharma et al. too revealed that genital tuberculosis was common in their series of infertility cases.<sup>13</sup> Other two common positive histories were PCOD and hypothyroidism. Biochemical pregnancy is the one where  $\beta$ hCG is positive which indicates pregnancy but subsequently no pregnancy is demonstrable on TVS probably due to very early pregnancy loss. There were 4 cases of biochemical pregnancy in this series (3.7%). Very early pregnancy losses

**Table 1 – Age profile.**

Age	Number	Percentage
20-30	72	55.4
30-40	56	43.1
>40	2	1.5
Total	130	100

**Table 2 – Relevant past history.**

History	Number	Percentage
History of ATT	39	30
PCOD	08	6.1
Appendectomy	02	0.15
Hypothyroidism	10	0.76
Ectopic	04	3.0
Endometriosis	04	3.0
Tuboplasty	06	4.5
Galactorrhoea	01	0.07
DVT	01	0.07
Hypertension	08	0.6.1
BOH/RPL	11	8.4
Down syndrome	01	0.07

Many patients had more than one positive history.

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