

Infertility - Current Scenario

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ABSTRACT

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Trends in infertility are difficult to determine or to interpret for several reasons. Infertility among working women is on rise. Women today are more goal oriented and independent. They don't want to get married early in life or have their baby soon. Moreover, long hours of work and stress often lead to infertility. Perhaps most important, many couples now choose to delay childbearing for a number of years after reaching reproductive maturity. It is now generally agreed that sperm counts below 20 million/ml are quite likely to be associated with reduced fertility and many of the studies showed an increased number of men whose counts fell below that threshold.

In a summary position paper, the Practice Committee of the American Society of Reproductive Medicine has said it considers ICSI safe and effective therapy for male factor infertility, but may carry an increased risk for the transmission of selected genetic abnormalities to offspring, either through the procedure itself or through the increased inherent risk of such abnormalities in parents undergoing the procedure.

Keywords: Infertility, Endometriosis, PCOS, ICSI, IVF, Assisted Reproduction.

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The American Society of Reproductive Medicine defines infertility as a condition that can be diagnosed when a couple fails to conceive within 12 months of unprotected intercourse. Infertility may result from male factors (estimates range from 20-50% of cases), female factors (about 30% of cases), and the rest are attributable to couple-dependent factors or are unexplained.

Trends in infertility are difficult to determine or to interpret for several reasons. Infertility among working women is on rise. Women today are more goal oriented and independent. They don't want to get married early in life or have their baby soon. Moreover, long hours of work and stress often lead to infertility. Perhaps most important, many couples now choose to delay childbearing for a number of years after reaching reproductive maturity. Fertility trends may be influenced by this choice, since fertility naturally declines with age, particularly after age 35. About one-third of women who defer pregnancy until the mid to late 30's, and at least half of women over age 40, will have an infertility problem. Some of the apparent increased rates of infertility may result from increased reporting of fertility problems because of newly available treatments. Assisted reproductive technologies, including pharmaceuticals that stimulate ovulation and in vitro fertilization, result in successful pregnancies and increase the likelihood that

a woman or couple will seek medical interventions. Access to medical care will also influence the likelihood that fertility problems will be identified and reported. As a result, trend analyses of infertility are subject to significant limitations and should be interpreted with caution.

Endometriosis which is an enigmatic disease is the cause of infertility in around 20 to 40 % of infertile couple. The treatment of women with endometriosis can be a challenge. Therapeutic strategies must be tailored to the individual symptoms, age, and desire for fertility. Medical therapy continues to be based on endocrine treatment, such as oral contraceptives, progestins, danazol, and GnRH agonists. Recent clinical research on GnRH analogues plus add-back therapy has produced favorable results. Currently, GnRH analogues given with add-back therapy seem to be the most effective long-term approach to the treatment of symptomatic endometriosis. In the future, other modalities, such as medicated vaginal rings, inhibitors of steroidogenic enzymes, and GnRH antagonists, will most likely be options. Laparoscopic microsurgery has revolutionized the treatment of endometriosis lesions. Hence, hormone treatment as a supplement to microsurgical approaches may become a dominant form of medical therapy in endometriosis. Ovarian hyperstimulation with IVF and other methods of assisted ferti-

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lisation are promising alternatives, but their definitive value is so far unproven in this disease. Conclusively, the significance of medical therapy in endometriosis is only partly resolved, and therefore, many therapeutic problems await prospective randomised trials and new innovations.

Polycystic ovary syndrome (PCOS), one of the most frequent endocrine diseases, affects approximately 5%–10% of women of childbearing age and constitutes the most common cause of female sterility regardless of the need or not for treatment, a change in lifestyle is essential for the treatment to work and ovulation to be restored. Obesity is the principal reason for modifying lifestyle since its reduction improves ovulation and the capacity for pregnancy and lowers the risk of miscarriage and later complications that may occur during pregnancy (gestational diabetes, pre-eclampsia, etc). The incidence of PCOS is alarmingly increasing. Thus, an improved lifestyle and above all weight loss must be emphasized. In cases of insulin resistance that do not improve with slimming, drugs such as metformin that help to regulate homeostasis and facilitate ovulation recovery can be used. Various therapeutic options like ovulation induction, Laparoscopic ovarian drilling and ART procedures definitely have a role.

It is now generally agreed that sperm counts below 20 million/ml are quite likely to be associated with reduced fertility and many of the studies showed an increased number of men whose counts fell below that threshold. Some data suggest that the incidence of birth defects of the male reproductive system like hypospadias, cryptorchidism and even testicular cancer is increasing in some parts of the world. Reduced sperm counts can be caused by genetic factors, infections (e.g. mumps), anatomic abnormalities, heat, or exposure to toxic chemicals during fetal development or adulthood. Toxic chemical exposure can directly damage developing sperm. Obesity and stress at home or work place produces a definite reduction in sperm count and motility as well as causes sexual dysfunction in males.

Common procedures for treating infertility in the past have included artificial insemination, in Vitro fertilization, embryo transfer and reproductive assistance and sperm extraction techniques. Additional options and choices for parents include newer technologies, several of which include forms of assisted reproduction, known as ART, including IVF (in Vitro fertilization) and PGD (pre-implantation genetic diagnosis), assisted zona hatching (AZH) and autologous endometrial

coculture (AEC) and intracytoplasmic sperm injection (ICSI).

Assisted hatching is a relatively new technique used during certain IVF procedures. It is performed in order to help an embryo hatch out of its protective layering and implant into the uterus. Assisted hatching techniques aren't suitable for every couple. Instead, the procedure is typically recommended for: women over the age of 37, women with elevated FSH on day 3 of their menstrual cycle, couples who have experienced failed IVF cycles and couples whose embryos have a particularly thick zona pellicuda. Assisted hatching is associated with a fairly high success rate, especially when performed by a skilled micromanipulator. In fact, pregnancy rates are as high as 49% in women who are between the ages of 35 and 39.

In autologous endometrial coculture (AEC) method, the patient's own endometrial cells will be thawed and prepared for their embryos. The day after oocyte retrieval when fertilization is confirmed, the fertilized eggs (embryos) will be placed on the patient's own endometrial cells. The embryos will then be monitored on a daily basis for growth and development and later transferred to endometrial cavity.

Intracytoplasmic sperm injection (ICSI) is an in vitro fertilization procedure in which a single sperm is injected directly into an egg.

Even with severe teratozoospermia, microscopy can still detect the few sperm cells that have a "normal" morphology, allowing for optimal success rate. There is some suggestion that birth defects are increased with the use of IVF in general and ICSI specifically, though results of different studies differ. In a summary position paper, the Practice Committee of the American Society of Reproductive Medicine has said it considers ICSI safe and effective therapy for male factor infertility, but may carry an increased risk for the transmission of selected genetic abnormalities to offspring, either through the procedure itself or through the increased inherent risk of such abnormalities in parents undergoing the procedure.^{1,2}

The number of infertile women may be as high as 7.7 million in 2025. Thanks to modern science, it is now possible to have one's biological child, which was virtually unimaginable a few decades ago. Technologies such as test tube baby, artificial insemination and In Vitro Fertilization (commonly known as IVF) enable these women to have their own baby and bring joy to their lives.

END NOTE

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