



Female Age, Fertility and Infertility

Female age is one very important factor that contributes to the ability to achieve a pregnancy. Many studies show that fertility declines as women get older. This has become apparent in our society as more career-focused women are delaying childbirth and are turning to assisted reproductive technologies in an attempt to beat their reproductive biological clocks. The basis of the correlation between age and infertility involves several factors. From a biological standpoint, the real issue is egg quantity and quality, which ultimately translates into the ability of an embryo (fertilized egg) to implant in the uterus and initiate a pregnancy.

Egg (or oocyte) quantity

The ovary has been eloquently likened to an hourglass, with the female germ cells (eggs) considered analogous to the grains of sand that trickle through the narrow opening between the upper and lower chamber to account for the passage of time. Women are born with all of their eggs in an immature state in the ovary. With each reproductive cycle the initial endowment provided at birth is depleted. Once the complete oocyte reserve has been exhausted, ovarian senescence occurs and women experience menopause. However, the size of egg reserve at birth, and the rate of depletion of these eggs vary from woman to woman with dramatic consequences on the individual's fertile lifespan. For example, sterility and premature menopause are known to occur in young

women following chemotherapy or radiation treatment for cancer. A more subtle effect is seen in women who smoke. Female smokers take longer to conceive naturally, and have poorer pregnancy rates using IVF, are 2.5 times more likely to have diminished oocyte reserves, and reach menopause 2-4 years earlier than their nonsmoking counterparts. Fertility specialist, like those at ONE Fertility can perform a number of tests such as Day 3 FSH or Antral Follicle Counts to predict the remaining egg supply or ovarian reserve as part of a couple's infertility investigation. These tests are helpful especially for determining how much fertility medication to prescribe in any given cycle. However, they predict the quantity of the eggs remaining rather than the quality of those eggs.

Egg quality

Even staving off premature egg loss will not solve the parallel problem of chromosomal damage in ageing eggs. It is well established that the considerable increase in aneuploidy (unbalanced chromosome number) among embryos from older women contributes to reduced fertility by increasing both implantation failure and pregnancy loss. After the age of 35 a woman's fertility steadily declines. Almost 80% of the eggs from women aged 40-45, undergoing IVF show signs of chromosome deficiencies that likely account for the higher rates of miscarriage and birth defects seen in these women. Oocyte quality is further implicated by the fact that women who use the eggs of younger ovum donors have conception rates expected for the age of the donor and not that of the recipient.

Summary

For many women of reproductive age, controlling fertility is the main concern and in contrast being able to conceive when desired is considered easy. However, putting off child bearing to an older age when fertility is less easily obtained has brought home the reality, and placed high expectations on what can be achieved with assisted reproductive technologies. An admirable goal of all medical caregivers should be increased awareness to the general public of the link between fertility and aging. Many fertility doctors agree that women over the age of 37 that are infertile should seek aggressive fertility treatments and proceed to in vitro fertilization (IVF) relatively quickly, before their fertility potential is lost.