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## **CONDITIONS & TREATMENTS: AGE AND FERTILITY**

### **Female Aging**

Female aging is associated with declining fertility. The decline in fertility is correlated with a decline in the number of oocytes (eggs). The maximum number of oocytes is approximately 5-7 million before birth and; decreases to 400,000 at puberty and to 1000 at menopause.

A major contributor to the age-related decline in delivery rates is the enhanced rate of miscarriages. Clinically recognized abortion occurs in 15% of women younger than 30 years, but increases to 53% in women over 40. Many of the miscarriages are due to chromosomal abnormalities in the eggs, such as Down syndrome. As women age, the risk of having a child with a chromosomal abnormality, such as Down syndrome, also increases. Chromosomal abnormalities in newborns occur in approximately 1/400 women at age 30, 1/200 women at age 35, 1/66 women at age 40 and 1/20 women at age 45.

Experience has demonstrated a decrease in pregnancy rates with IVF when the oocytes are obtained from women of advanced age. Yet when donor oocytes are transferred to older recipients, the pregnancy rates are similar to younger women. The high rate of pregnancy in the older women receiving donated oocytes suggests that the age-related decline is related to the age of the oocyte. Other factors may also affect fertility, such as uterine fibroids, endometriosis, and endometrial polyps which may progress with age.

### **Evaluation of Ovarian Aging**

In the years immediately preceding menopause, there is a period of shorter menstrual cycles and increased serum FSH. The increasing serum FSH reflects declining hormone production by the ovary. An elevated cycle day 3 serum FSH level is suggestive of poor pregnancy potential and an increased risk of miscarriage. The level of FSH varies with the laboratory and values for each particular laboratory should be correlated with pregnancy rates. Although the cycle day 3 serum FSH level also varies from cycle to cycle, the predictive value of pregnancy correlates with the highest serum FSH value.

The clomiphene challenge test is another assessment of ovarian reserve. Clomiphene citrate is administered in a dose of 100 mg/day on days 5-9 of the cycle. Serum follicle-stimulating hormone and E<sub>2</sub> levels are performed on cycle days 3 and 10. Both an elevated cycle day 3 serum FSH level and maternal age are independent predictors of successful pregnancy.

Ultrasound may also be used to evaluate ovarian aging. Both the size of the ovaries and the number of antral follicles (egg sacs) decline with age. The number of antral follicles decreases by 60% between the ages of 22 and 42 in normal women.