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Ovarian reserve: a critical determinant of female fertility

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Ovarian reserve: a critical determinant of female fertility

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Ovarian reserve, defined by the quantity and quality of remaining oocytes within the ovaries, plays a pivotal role in female fertility. This article explores the concept of ovarian reserve, its impact on achieving pregnancy, and various factors influencing its decline, plus methods of assessment and potential management strategies.

The ovaries house immature oocytes (eggs) within follicles. From birth, a finite number of primordial follicles exist, and as a woman reaches puberty, a select few follicles mature each month, culminating in ovulation. This process continues until menopause, when the ovaries cease releasing eggs, and menstruation ceases.

Ovarian reserve, therefore, reflects the remaining pool of follicles and their capacity to produce viable eggs capable of fertilisation. A higher reserve translates to a greater potential for achieving pregnancy, while a diminished reserve can present challenges for natural conception and assisted reproductive technologies (ART) like in vitro fertilisation (IVF).

A woman's fertility demonstrably declines with age, directly linked to her ovarian reserve. As she ages, the number of follicles diminishes, and the remaining oocytes may exhibit decreased chromosomal competency, impacting the likelihood of a healthy pregnancy. Notably, diminished ovarian reserve can also occur in younger women due to various factors, leading to difficulties conceiving naturally and potentially lower success rates with fertility treatments.

Ovarian reserve assessment

Several tests can be employed to estimate a woman's ovarian reserve. These include:

- **Basal Follicle-Stimulating Hormone (FSH) Level:** This blood test measures the level of FSH, a hormone responsible for stimulating egg development. An elevated level on day three of the menstrual cycle may suggest a diminished reserve
- **Anti-Mullerian Hormone (AMH)**



Key messages

- Ovarian reserve decreases with age
- There are various assessment options
- Personalised management is important.

Level: This blood test measures AMH, a hormone produced by small follicles in the ovaries. A low AMH level can indicate a lower ovarian reserve

- **Antral Follicle Count (AFC):** This transvaginal ultrasound scan visualises and counts the small follicles present in the ovaries. A lower AFC can indicate a reduced ovarian reserve.

It is crucial to note that these tests provide an indirect assessment and are not definitive indicators of fertility potential. A woman with a lower ovarian reserve may still conceive naturally and, conversely, someone with a seemingly 'normal' reserve may face fertility challenges due to other factors.

Factors affecting ovarian reserve

Several factors can influence a woman's ovarian reserve, including:

- **Age:** The most significant factor, with a natural decline in reserve occurring with increasing age
- **Genetics:** Some women are predisposed to a lower reserve due to their genetic makeup
- **Medical conditions:** Certain


medical conditions and surgeries, such as endometriosis, PCOS, ovarian surgery and chemotherapy, can impact ovarian reserve

- **Lifestyle factors:** Smoking and substance abuse may potentially contribute to a decline in ovarian reserve.

So what are the management options given there is no established method to increase the number of eggs?

If a woman has concerns about her ovarian reserve then the discussion can include:

- **Early family planning:** If a woman desires children and has concerns about her ovarian reserve, earlier childbearing may be recommended
- **Fertility preservation:** Techniques like oocyte cryopreservation (egg freezing) or embryo cryopreservation can allow women to preserve their reproductive potential for future use, particularly if they plan to delay childbearing
- **Fertility treatments:** Depending on the individual situation, ART procedures like IVF can be considered to overcome challenges related to diminished ovarian reserve.

Ovarian reserve is a critical factor in female fertility, and understanding its implications is crucial for women planning their reproductive future. 

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