Ovulation

Ovulation is a phase of the female menstrual cycle that involves the release of an egg (ovum) from one of the ovaries. New life begins if the ovum meets with a sperm during its journey down the fallopian tube. Ovulation depends on a complex interplay of glands and their hormones, and generally occurs about two weeks before the onset of the menstrual period. Typical ovulation symptoms and signs include changes in cervical mucus and a small rise in basal temperature. For most women, ovulation occurs about once every month until menopause, apart from episodes of pregnancy and breastfeeding. However, some women experience irregular ovulation or no ovulation at all.

Signs of ovulation

The female body shows several signs of ovulation. You may experience some or all of these signs, including:

- **Regular menstrual cycles** - menstrual periods that arrive every 24-35 days are more likely to be ovulatory than periods that occur more or less often.
- **Mucus changes** - about two weeks before menstruation, an ovulating woman may notice slick and slippery mucus.
- **Abdominal pain** - some women experience pain during ovulation. The pain may be general or localised to one side of the abdomen.
- **Premenstrual symptoms** - ovulation may accompany premenstrual symptoms such as breast enlargement and tenderness, abdominal bloating and moodiness.
- **Temperature rise** - women who use a natural family planning method of contraception will notice a small rise in their basal temperature after ovulation has occurred. The temperature rise is about half a degree Celsius. This temperature rise does not predict ovulation - it suggests that ovulation has already taken place.

Structures involved in ovulation

Ovulation depends on the activity of various structures and their hormones, including:

- **Hypothalamus** - located within the brain. The hypothalamus uses hormones to communicate with the pituitary.
- **Pituitary** - known as the 'master gland' of the hormone (endocrine) system. It is located within the brain, at the base of the skull, and is connected to the hypothalamus by a thin stalk. It uses chemicals to prompt the ovaries to produce their hormones.
- **Ovaries** - the two almond-shaped glands located within a woman's pelvis that contain the ova. The ovaries make the two female sex hormones oestrogen and progesterone.

Menstrual cycle explained

Ovulation is part of the menstrual cycle. This cycle is caused by the complex and interrelated activity of various hormones. The cycle includes:

- **Menstruation** - the shedding of the uterine lining.
- **Follicular phase** - the hypothalamus triggers the pituitary gland to release follicle stimulating hormone (FSH), which prompts the ovaries to produce up to 20 follicles. Each follicle contains an immature ovum. Usually, only one follicle survives to maturity. Assuming the menstrual cycle is around 28 days long, a single ovum matures at about day 10. This event also prompts the thickening of the uterine lining (endometrium) in preparation for a fertilised ovum.

- **Ovulation** - the maturing follicle prompts the release of higher amounts of oestrogen. The hypothalamus responds by secreting a chemical known as gonadotrophin-releasing hormone (GnRH), which makes the pituitary produce luteinising hormone (LH) and FSH. High levels of LH trigger ovulation within about two days. The mature follicle releases the ovum into the peritoneal cavity; it is then drawn into the open end of the fallopian tube. Small hair-like structures within the fallopian tube wave or 'massage' the ovum towards the uterus. Unless the ovum encounters a sperm within 24 hours, it will die.
- **Luteal phase** - the follicle becomes the corpus luteum, a structure that makes the hormone progesterone. Unless a fertilised ovum implants into the uterine lining, the corpus luteum dies. Without its contribution of progesterone, the uterus can't maintain the thickened uterine lining, and menstruation occurs.

Ovulation predictor kits

There are many different kinds of ovulation predictor kits on the market. Most work by measuring the level of luteinising hormone (LH) in the woman's urine. LH levels rise about 24 to 36 hours before ovulation takes place. You need to estimate your approximate time of ovulation if you're to use these kits effectively. All kits come with detailed instructions and a number of testers, but one way to calculate your estimated time of ovulation includes:

- Work out the length of your average menstrual cycle. Day one is the first day of the menstrual period and the last day is the day before the next period begins. Let's say the menstrual cycle is 28 days long.
- Subtract 17 days. In our example, 28 days minus 17 days equals day 11.
- Use the ovulation predictor kit on day 11. Continue testing daily until the test comes back positive. A positive result means you are going to ovulate within the next 24 to 36 hours.
- Having sex around the time of ovulation means that the sperm and ovum have a good chance of meeting in the fallopian tube.

Medical tests

Medical tests can check whether or not ovulation took place. These tests can include:

- **Blood test** - to check for the presence of progesterone. A level greater than 20nmol/L indicates that ovulation took place. This test must be taken about three to 10 days before the first day of the next expected period.
- **Pregnancy ultrasound** - the presence of a fetus is the only 100 per cent proof that ovulation took place. Medical tests such as ovulation predictor kits and blood tests can only ascertain that ovulation probably - not definitely - occurred.

Problems with ovulation

Common causes of ovulatory problems include:

- **Hypothalamus** - events that can alter the functioning of the hypothalamus include polycystic ovary syndrome, overexercising, poor nutrition and chronic stress.
- **Pituitary** - events that can prevent the pituitary gland from producing enough hormones include benign pituitary tumours or direct injury to the pituitary itself.
- **Ovary** - events that can prevent the ovaries from releasing ova include early menopause (also known as ovarian failure), or damage to or removal of the ovaries.

Increase your chances of ovulation

Ways to increase your chances of ovulation include:

- Women who are seriously obese or underweight may have problems with ovulation. Try to keep your weight around the average for your height and build.
- Excessive exercise can prevent ovulation. Ease back on your physical activity levels - this may require expert help if your desire to exercise is actually a form of bulimia.
- Repeated crash dieting, fasting, skipping meals and other disordered eating habits can hamper your body's ability to regularly ovulate. Make sure to eat properly and regularly. Once again, you may need expert help if these habits are associated with an eating disorder such as anorexia or bulimia nervosa.

- Chronic emotional stress can play havoc with your menstrual cycle. Try to reduce the amount of stress in your life, and learn ways to better cope with stress. For example, relaxation training may be helpful.

Reproductive technology - ovulation induction

Some women who aren't ovulating regularly can be helped by reproductive technologies including tablets and injections to trigger higher production of ovulatory hormones. The dosage needs to be carefully monitored, because ovulation induction can trigger the maturation of a number of ova, which could lead to multiple pregnancies.

Where to get help

- Your doctor
- Chemist
- Family Planning Victoria Tel. (03) 9257 0100

Things to remember

- Ovulation depends on a complex interplay of glands and their hormones, and generally occurs about two weeks before the onset of the menstrual period.
- Most ovulation predictor kits work by measuring the level of luteinising hormone (LH) in the woman's urine - a rise in LH levels indicates that ovulation is imminent.
- Some women who aren't ovulating regularly can be helped by reproductive technologies, including tablets and injections to trigger higher production of ovulatory hormones.

This page has been produced in consultation with, and approved by:

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