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Amenorrhea

(Absent Periods, Absent Menses, Absent Menstruation, Primary Amenorrhea, Secondary Amenorrhea, Dietary Amenorrhea, Emotional Amenorrhea, Ovarian Amenorrhea)

Summary

Amenorrhea is the absence of **menstruation** in females. Women normally do not menstruate before **puberty**, during **pregnancy** and/or **breastfeeding** or after **menopause**.

The abnormal absence of menstruation may be due to any number of changes in the organs, glands and **hormones** involved in the menstrual cycle. Possible medical causes of amenorrhea may include ovarian failure, problems in the central nervous system or the pituitary gland, hormonal imbalances, poor **nutrition**, **stress** or illness.

Depending on the underlying cause, amenorrhea may sometimes be accompanied by other symptoms. These symptoms may indicate that an underlying condition is present. For instance, when accompanied by acne, excessive hair growth (**hirsutism**) and rapid weight gain, amenorrhea may be caused by a hormonal imbalance associated with **polycystic ovarian syndrome** (PCOS). When accompanied by extreme weight loss, hair loss and other signs of malnutrition, it may indicate an eating disorder, such as **anorexia nervosa**.

Once it is determined that amenorrhea is not due to pregnancy, lactation or menopause, treatment varies depending on the underlying condition. Treatments include diet and nutrition modifications, stress reduction techniques, **birth control pills** or **hormone replacement therapy** and, in rare cases, surgery.

Unless caused by a medical condition, menstrual irregularities such as amenorrhea may be prevented by maintaining a healthy lifestyle that includes a balanced diet and moderate **exercise** with plenty of rest. In addition, women should see their **obstetrician–gynecologist** (ObGyn) once a year for regular check–ups and report any irregularities or changes in their menstrual cycle to their physician.

About amenorrhea

Amenorrhea is the medical term to describe the absence of **menstruation** in women of a childbearing age (from the onset of **puberty** to **menopause**). It generally excludes any absent menstruation caused by normal body functions, such as occurs during **pregnancy**, **breastfeeding** and the period prior to **menopause** (**perimenopause**).

Amenorrhea is classified into two categories:

- *Primary amenorrhea*. When a woman has not had her first menstrual period (**menarche**) by age 16. It is also referred to as “delayed menarche.”

- *Secondary amenorrhea*. When a woman who has previously menstruated fails to menstruate for at least three months.

These terms are used only to describe the timing of amenorrhea and do not indicate cause.

Regular menstrual cycle begins when the brain's hypothalamus and pituitary gland release certain messenger **hormones**, such as gonadotropin (called **GnRH** for gonadotropin–releasing hormone). In response, the **ovaries** secrete **estrogen** and **progesterone** at different times to regulate the menstrual cycle.

Estrogen stimulates and promotes the growth of the **endometrium**. Progesterone, which forms after **ovulation** and is secreted from tissue known as the corpus luteum, transforms the rapidly growing endometrium into secretory endometrium. This will serve as the precursor for the future development of the **placenta** if pregnancy does occur. If pregnancy does not occur, this secretory endometrium breaks down and sheds during the ensuing menstrual period.

Amenorrhea can occur if problems occur with GnRH, which ultimately controls the hormones responsible for ovulation and the menstrual cycle (e.g., **FSH**, **LH**). A number of factors can cause the hypothalamus to decrease or stop releasing GnRH resulting in inadequate production of estrogen or in failure of ovulation and progesterone production.

An overproduction of male hormones (**androgens**) can also lead to amenorrhea. Too many androgens (as opposed to the normal balance between androgen and estrogen levels) results in a decrease in the pituitary hormones that lead to ovulation and menstruation.

In addition, the functions of the **thyroid gland** can also affect a woman’s reproductive system, particularly if the thyroid is overactive or underactive. Thyroid disorders can affect the hypothalamus and disrupt the menstrual cycle causing a woman to have absent periods. Plus, thyroid disorders can have an effect on the production of the hormone **prolactin**, which can also result in a cessation in menstrual periods.

In other cases, the hypothalamus, pituitary and ovaries all may be functioning normally, yet amenorrhea may occur as a result of adhesions or scars in the endometrial cavity. These scars prevent the normal buildup and shedding of the uterine lining, which can result in very light or absent menstruation.

Structural disorders can also play a role in amenorrhea. Chromosomal abnormalities may arise during fetal development that lead a baby girl to be born without a major part of her reproductive system, such as the **uterus**, **cervix** or **vagina**. Or, a membrane or wall present in the vagina may block the outflow of blood from the uterus and cervix. In these cases, women will undergo puberty but will not experience menstruation.

Regular menstrual cycles are a sign of good health. They mean that a woman's reproductive system is working properly. Women who miss their periods (unrelated to pregnancy) may want to talk with a physician to make sure an underlying condition is not present.

In addition, women who get fewer than six or eight periods a year (*oligomenorrhea*) may also want to talk with a physician. Oligomenorrhea may be common for girls in early puberty, but after this period it may indicate a hormonal imbalance such as **polycystic ovarian syndrome**.

Amenorrhea and oligomenorrhea have been associated with long–term health consequences. For instance, the loss of menstrual regularity has been associated with increased risk of uterine cancer (because the lining of the uterus is not shed monthly), reduced bone density and increased fracture rates, as well as concern regarding future **fertility**.

Other symptoms related to amenorrhea

Amenorrhea may be accompanied by various other symptoms depending on its underlying cause. Which other symptoms are present can help physicians to diagnose conditions causing the absence of **menstruation**. Related symptoms may include:

- Extreme loss of weight due to an eating disorder (e.g., **anorexia nervosa**, bulimia) or serious illness (e.g., cancer)
- Acne, excess body hair (**hirsutism**) or excessive weight gain, among other symptoms associated with **polycystic ovarian syndrome** (PCOS)
- Secretions of the breast not related to **pregnancy** or **nursing** (**galactorrhea**) due to high levels of the hormone **prolactin** in the blood (**hyperprolactinemia**)
- Arthritis, loss of sexual desire and shortness of breath (*dyspnea*) caused by excessive amounts of iron in the body resulting from *hemochromatosis*
- Underactive **thyroid gland** (**hypothyroidism**)
- Low blood pressure, lack of breast milk production and loss of pubic hair caused by a rare condition involving the pituitary gland can occur in women after severe blood loss during **childbirth** (*Sheehan syndrome*)
- Weight gain around the midsection and upper back, exaggerated facial roundness, high blood pressure and muscle weakness occurring when the body produces and/or is exposed to high levels of the hormone *cortisol* for a prolonged period of time (*Cushing syndrome*)

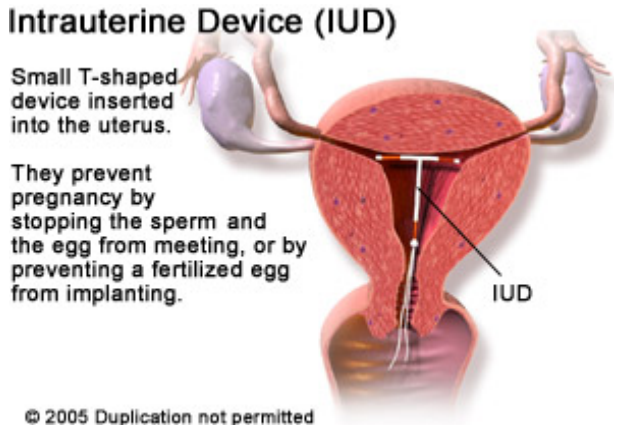
Potential causes of amenorrhea

The term amenorrhea is most often used by physicians to describe the absence of **menstruation**. The absence of menstruation is most often caused by normal body functions such as:

- **Pregnancy**. This is the most common cause of amenorrhea in women of reproductive age. When a woman's egg is implanted in the lining of the **uterus**, the lining remains to nourish the **fetus** and is not shed by menstruation.
- **Breastfeeding**. Women who lactate often experience amenorrhea for up to six months.
- During **perimenopause** and/or after **menopause**. Some women may experience early menopause (before age 40). The lack of normal ovulatory function associated with

menopause – defined as the cessation of menses for 12 months which then becomes permanent – decreases the amount of **estrogen** in a woman's body, which results in menstruation stopping.

Sometimes women who take **birth control pills** may not have periods at first. It may take up to three months before a cycle will become evident. With some low–dose birth control pills, women will experience a day or two of light **spotting** instead of a regular period. This is normal because the low dose of hormone in the pill results in the development of only a very small amount of lining in the uterus. Menstruation usually resumes after about three months. Also, when oral contraceptives are stopped, it may take up to six months for a regular menstrual cycle to occur. Contraceptives administered by injections or those that are implanted may also cause the temporary cessation of menstrual periods.



In addition, **progesterone**–containing **intrauterine devices** (IUDs) may cause amenorrhea in some women. However, all women who experience prolonged amenorrhea while on birth control should contact their physician to rule out pregnancy. Other causes of amenorrhea include the following:

- Excessive **exercise**. Women who regularly participate in sports that require rigorous training (e.g., ballet, gymnastics) may fail to menstruate. Other factors combined with the excessive physical activity may also contribute to the loss of periods in athletes, including low body fat, stress and high–energy expenditure. Excessive exercise requires vigorous training several hours per day, combined with inadequate intake of calories, vitamins and minerals to cause amenorrhea.

- Low body weight OR **obesity**. Excessively low OR high body weight interferes with many of the body's hormonal functions and may interrupt ovulation. For example, malnourished women or those with eating disorders (e.g., **anorexia**, bulimia) or excessive body fat (obesity) often stop having periods due to abnormal hormonal changes.

- **Stress**. Mental stress can temporarily disrupt the functioning of the hypothalamus gland, which may result in the cessation of ovulation and menstruation. However, regular menstrual periods usually resume after a reduction of stress.

- **Polycystic ovarian syndrome** (PCOS). Altered hormone levels, such as occurs when PCOS is present, may interfere or prevent ovulation, resulting in amenorrhea. With PCOS, women may have high levels of male hormones (**androgens**) present that interfere with ovulation and the menstrual cycle. Women with PCOS may menstruate infrequently (oligomenorrhea) or not at all.

- **Chronic** illness. Diseases that affect the immune system such as **diabetes**, **HIV** or cancer may interfere with a woman's menstrual cycle. *Epilepsy* (a chronic disorder of brain function that causes seizures) may also result in amenorrhea.

- Medications. Some medications may cause a woman's menstrual period to cease. For

example, antidepressants, antipsychotics, some chemotherapy drugs and oral corticosteroids can cause amenorrhea.

- **Cigarette**, drug and/or alcohol abuse. The constant use of illegal drugs, such as cocaine or marijuana, has central effects that may disrupt a woman's menstrual cycle. Illegal drugs may result in low **follicle stimulating hormone** (FSH) and **luteinizing hormone** (LH) levels and slowed **GnRH** release which interferes with ovulation. Excessive cigarette smoking (due to its anti–estrogenic effects) has also been associated with lack of menstruation. In addition, malnutrition and cirrhosis (a potentially life–threatening condition that affects liver function) associated with alcoholism may cause loss of menstrual regularity.

- **Turner syndrome** (TS). A rare chromosomal abnormality that affects females and causes a premature depletion of the eggs and follicles involved in **ovulation** and **menstruation**. Women with TS do not have proper ovarian development and may experience delayed **menarche** or no menarche at all.

- Lack of reproductive organs. In some cases, problems arise during fetal development which may lead a baby girl to be born without some vital part of her reproductive system, such as the **uterus**, **cervix** or **vagina**. In such cases, women with reproductive systems that did not develop normally will not have menstrual cycles.

- Structural abnormalities of the vagina. Sometimes there may be irregularities in the structure of a woman's vagina that are present at birth but may go unnoticed until **puberty**. For example, a membrane or wall that blocks the outflow of blood from the uterus or cervix may be present.

- Tumors in the hypothalamus or pituitary gland may also interfere with secretion of **hormones** and result in amenorrhea.

- **Thyroid** disorders. An underactive thyroid gland (*hypothyroidism*) or an overactive one (*hyperthyroidism*) commonly causes menstrual irregularities, such as amenorrhea. In addition, thyroid disorders can also cause an increase or decrease in the production of the hormone **prolactin**, which can affect the hypothalamus and disrupt a woman's menstrual cycle.

- **Asherman syndrome**. The buildup of scar tissue in the lining of the uterus, which can sometimes occur after certain uterine procedures, such as **dilation and curettage** (D & C), **Caesarean section** (C section) or treatment for **uterine fibroids**, may prevent the normal buildup and shedding of the lining of the uterus. This condition can result in very light or absent periods.

It is important to note that several hormonal disorders that result in the inability to regularly shed the endometrial lining of the uterus could put a woman at risk for developing uterine cancer. In addition, if left untreated for over 12 months it may also cause loss of bone density which can lead to **osteoporosis**.

Diagnosis and treatment of amenorrhea

The first step in determining the cause of amenorrhea is usually to rule out **pregnancy** and to check for any problems with a woman's reproductive organs. This usually involves a **pregnancy test** along with a **pelvic examination**.

If pregnancy is ruled out, a physician will collect a thorough **medical history** and **menstrual history**, as well as ask questions about any other symptoms present. **Blood tests** and/or **urine tests** may be performed to check if **hormone** levels are interfering with **menstruation**.

Depending on the signs and symptoms accompanying amenorrhea, further tests may be needed. For example, imaging tests such as an **ultrasound** can reveal tumors or structural abnormalities in a woman's reproductive organs, as well as measure and monitor the

endometrial lining. In addition, minimally invasive procedures, such as a **laparoscopy** or **hysteroscopy**, may sometimes be performed for a more thorough examination.

The treatment of amenorrhea depends on its cause. Treatments may include:

- Lifestyle changes. Changes to **diet**, **exercise** and **stress** management may help resolve some causes of amenorrhea or be an important part of the treatment plan for others.
- Medications. Used primarily to treat amenorrhea caused by hormone disorders. For example, **estrogen**, **progesterone** or other **hormone replacement therapy** may be administered to restore a woman's menstrual periods. Sometimes **birth control pills** are prescribed to help with irregular or absent periods.
- Surgery. Used to remove tumors or **cysts** in the **ovaries**, **uterus** or pituitary gland that is causing the lack of menstruation. Most tumors or cysts are noncancerous, but if cancer is present radiation therapy to control its growth along with cancer medications may be necessary.

Most cases of amenorrhea are caused by a treatable medical condition, and once treated, a woman usually resumes menstruation.

Prevention methods for amenorrhea

A healthy lifestyle includes a balanced **diet** and regular **exercise** and is the best way to prevent irregularities in the **menstrual cycle**. This may be done by:

- Making appropriate changes in diet and exercise activity to achieve a healthy weight. Women may wish to consult a **registered dietician** for assistance with dietary changes.
- Avoiding excessive **alcohol** consumption and cigarette **smoking**.
- Striving for a healthy balance in work, recreation and rest.
- Assessing areas of **stress** or conflict in life. If necessary, contacting a psychologist or psychiatrist for help with dealing with stress.

A woman should keep track of changes in her menstrual cycle and check with a physician if she has any concerns. Keeping a record when periods occur and how long they last in addition to the accompanying symptoms is a good way of doing this. In addition, yearly **gynecological examinations** for women are recommended.

Questions for your doctor about amenorrhea

Preparing questions in advance can help patients to have more meaningful discussions with their physicians regarding their conditions. Patients may wish to ask their doctor the following amenorrhea–related questions:

1. Is the sudden absence of menstruation something to be concerned about?
2. How many menstrual cycles do I have to miss before amenorrhea is diagnosed?
3. What constitutes a normal menstrual cycle?
4. What are the advantages, disadvantages and risks connected with the treatment option you are suggesting for restoring menstruation?
5. Will amenorrhea go away by itself?
6. Will amenorrhea put me at risk for a serious medical condition?