UTERUS

Womb

The uterus is the largest and major organ of the female reproductive tract that is the site of fetal growth and is hormonally responsive.

❤️ Organ  ♂️ Female

About Uterus

Function

Reproductive function

The reproductive function of the uterus is to accept a fertilized ovum which passes through the utero-tubal junction from the fallopian tube. It implants into the endometrium, and derives nourishment from blood vessels which develop exclusively for this purpose.

The fertilized ovum becomes an embryo, attaches to a wall of the uterus, creates a placenta, and develops into a fetus (gestates) until childbirth. Due to anatomical barriers such as the pelvis, the uterus is pushed partially into the abdomen due to its expansion during pregnancy. Even during pregnancy the mass of a human uterus amounts to only about a kilogram (2.2 pounds).

Blood flow

The uterus is essential in sexual response by directing blood flow to the pelvis and to the external genitalia, including the ovaries, vagina, labia, and clitoris.

Menstrual cycle

The series of changes in which the uterine lining is shed, rebuilds, and prepares for implantation. The timing of the menstrual cycle starts with the first day of menses, referred to as day one of a woman’s period. Cycle length is determined by counting the days between the onset of bleeding in two subsequent cycles. Because the average length of a woman’s menstrual cycle is 28 days, this is the time period used to identify the timing of events in the cycle. However, the length of the menstrual cycle varies among women, and even in the same woman from one cycle to the next, typically from 21 to 32 days.

Just as the hormones produced by the granulosa and theca cells of the ovary “drive” the follicular and luteal phases of the ovarian cycle, they also control the three distinct phases of the menstrual cycle. These are the menses phase, the proliferative phase, and the secretory phase.

Development

Bilateral Müllerian ducts form during early fetal life. In females, these ducts give rise to the Fallopian tubes and the uterus. In humans the lower segments of the two ducts fuse to form a single uterus, however, in cases of uterine malformations this development may be disturbed. The different uterine forms in various mammals are due to various degrees of fusion of the two Müllerian ducts.
Anatomical structure

The uterus is located inside the pelvis immediately dorsal (and usually somewhat rostral) to the urinary bladder and ventral to the rectum (Pic. 1). The human uterus is pear-shaped and about three inches (7.6 cm) long. A nonpregnant adult uterus weighs about 60 grams. The uterus can be divided anatomically into four segments:

- the fundus
- corpus
- cervix
- internal os

The uterus consists of a body and a cervix (Pic. 2). The cervix protrudes into the vagina. The uterus is held in position within the pelvis by condensations of endopelvic fascia, which are called ligaments. These ligaments include the:

- pubocervical
- transverse
- cervical ligaments
- cardinal ligaments
- uterosacral ligaments

It is covered by a sheet-like fold of peritoneum, the broad ligament.

Histological structure

Endometrium

The endometrium (Pic. 3) consists of a single layer of columnar epithelium plus the stroma on which it rests. The stroma is a layer of connective tissue that varies in thickness according to hormonal influences. Simple tubular uterine glands reach from the endometrial surface through to the base of the stroma, which also carries a rich blood supply of spiral arteries. In a woman of reproductive age, two layers of endometrium can be distinguished. These two layers occur only in endometrium lining the cavity of the uterus, not in the lining of the uterine (Fallopian) tubes.

The functional layer is adjacent to the uterine cavity. This layer is built up after the end of menstruation during the first part of the previous menstrual cycle. Proliferation is induced by estrogen (follicular phase of menstrual cycle), and later changes in this layer are engendered by progesterone from the corpus luteum (luteal phase). It is adapted to provide an optimum environment for the implantation and growth of the embryo. This layer is completely shed during menstruation.

The basal layer, adjacent to the myometrium and below the functional layer, is not shed at any time during the menstrual cycle, and from it the functional layer develops.

In the absence of progesterone, the arteries supplying blood to the functional layer constrict, so that cells in that layer become ischaemic and die, leading to menstruation.

Myometrium

The myometrium (Pic. 4), is located between the endometrium (the inner layer of the uterine wall), and the serosa or perimetrium (the outer uterine layer).

Myometrium has 3 layers:

- outer made of longitudinal smooth muscles
- middle from crisscrossing muscle fibres act as living ligature during involution of uterus and prevent blood loss
- inner circular fibres

The inner one-third of the myometrium (termed the junctional or sub-endometrial layer) appears to be derived from the Müllerian duct, while the outer, more predominant layer myometrium appears to originate from non-Müllerian tissue, and is the major contractile tissue during parturition and abortion. Also, the junctional layer appears to function like a circular muscle layer, capable of peristaltic and anti-peristaltic activity, equivalent to the muscular layer of the intestines.

Perimetrium
The perimetrium (or serous coat of uterus) is the outer serosa layer of the uterus (Pic. 5), equivalent to peritoneum. It is embryonically derived from visceral peritoneum. Perimetrium consists of superficial mesothelium, and a thin layer of loose connective tissue beneath it. Posterior surface of the uterus is completely covered by the perimetrium, but anterior surface only partially.

Related diseases

Endometriosis

Find more about related issues

Diagnoses

Adenomyosis
Medical condition characterized by the presence of ectopic endometrial tissue within the myometrium.
Learn more at: www.fertilitypedia.org/therapy/diag/adenomyosis

Anorexia Nervosa
An eating disorder characterized by the maintenance of a body weight below average, fear of gaining weight, and a distorted body image.
Learn more at: www.fertilitypedia.org/therapy/diag/anorexia-nervosa

Asherman’s syndrome
A medical condition, where the walls of the uterus stick to one another due to bands of scar tissue.
Learn more at: www.fertilitypedia.org/therapy/diag/asherman-s-syndrome

Bicornuate uterus
Inborn morphological deviation of the uterus - one of the Müllerian duct anomalies where the uterine cavity is divided in the upper part.
Learn more at: www.fertilitypedia.org/therapy/diag/bicornuate-uterus

Endometrial cancer
Cancer that arises from the endometrium, the lining of the uterus.
Learn more at: www.fertilitypedia.org/therapy/diag/endometrial-cancer

Endometrial hyperplasia
Thickening of the lining of the uterus.
Learn more at: www.fertilitypedia.org/therapy/diag/endometrial-hyperplasia

Endometrial polyp
The finger like overgrowths attached to the inner wall of the uterus that extend into the uterine cavity which are made of endometrial tissue
Learn more at: www.fertilitypedia.org/therapy/diag/endometrial-polyp

Endometriosis
A state in which pieces of the tissue alike to the lining of the uterus (endometrium) grow in other parts of the body.
Learn more at: www.fertilitypedia.org/therapy/diag/endometriosis

Hematosalpinx
Hematosalpinx is a medical condition involving bleeding into the fallopian tube.
Learn more at: www.fertilitypedia.org/therapy/diag/hematosalpinx

Hydrosalpinx
A hydrosalpinx is an abnormal pouch containing liquid in a fallopian tube.
Learn more at: www.fertilitypedia.org/therapy/diag/hydrosalpinx
Hypogonadism
A medical term which describes a diminished functional activity of the gonads – the testes and ovaries.
Learn more at: www.fertilitypedia.org/therapy/diag/hypogonadism

Hysterectomy
A surgery performed to remove a woman’s uterus.
Learn more at: www.fertilitypedia.org/therapy/diag/hysterectomy

Menopause
The time in most women’s lives when menstrual periods stop permanently, and the woman is no longer able to have children.
Learn more at: www.fertilitypedia.org/therapy/diag/menopause

Menstrual cycle disorders
An abnormal condition in a woman’s menstrual cycle.
Learn more at: www.fertilitypedia.org/therapy/diag/menstrual-cycle-disorders

Oligomenorrhea
Light or infrequent menstrual flow at intervals of 39 days to 6 months or 5–7 cycles in a year.
Learn more at: www.fertilitypedia.org/therapy/diag/oligomenorrhea

Pelvic adhesions
A form of abdominal adhesions in the pelvis.
Learn more at: www.fertilitypedia.org/therapy/diag/pelvic-adhesions

Pelvic Inflammatory Disease
Infection of the upper part of the female reproductive system and a common complication of some sexually transmitted diseases.
Learn more at: www.fertilitypedia.org/therapy/diag/pelvic-inflamatory-disease-do-rf

Pyosalpinx
A distally blocked Fallopian tube filled with pus.
Learn more at: www.fertilitypedia.org/therapy/diag/pyosalpinx-do-rf

Sertoli cell-only syndrome
The absence of any developmental stage of sperm cell in the testes.
Learn more at: www.fertilitypedia.org/therapy/diag/sertoli-cell-only-syndrome

Thyroid disorders
A medical condition impairing the function of the thyroid.
Learn more at: www.fertilitypedia.org/therapy/diag/thyroid-disorders

Tubal ligation
A permanent form of female sterilization, in which the fallopian tubes are severed and sealed or "pinched shut", in order to prevent fertilization.
Learn more at: www.fertilitypedia.org/therapy/diag/tubal-ligation

Uterine fibroids
The most common benign smooth muscle tumors of the uterus encountered in women of reproductive age.
Learn more at: www.fertilitypedia.org/therapy/diag/uterine-fibroids

Uterine malformations
A type of female genital malformation resulting from an abnormal development of the Müllerian duct(s) during embryogenesis.
Learn more at: www.fertilitypedia.org/therapy/diag/uterine-malformations
Uterus duplex
Congenital uterine malformation where both Müllerian ducts develop but fail to fuse, thus the woman has "double uterus".
Learn more at: www.fertilitypedia.org/therapy.diag/uterus-duplex

Uterus septus
A form of a congenital malformation where the uterine cavity is partitioned by a longitudinal septum. It is one of Müllerian duct anomalies.
Learn more at: www.fertilitypedia.org/therapy.diag/uterus-septus

Uterus subseptus
A form of a congenital malformation where the uterus is partially divided by a longitudinal septum. It is one of Müllerian duct anomalies.
Learn more at: www.fertilitypedia.org/therapy.diag/uterus-subseptus

🔥 Suborgans

Cervix
The narrow inferior portion of the uterus that projects into the vagina.
Learn more at: www.fertilitypedia.org/edu/organs/cervix

Myometrium
The middle layer of the uterine wall, consisting of uterine smooth muscle cells.
Learn more at: www.fertilitypedia.org/edu/organs/myometrium

Vagina
Sex organ that is a part of the female genital tract having two primary functions: sexual intercourse and childbirth.
Learn more at: www.fertilitypedia.org/edu/organs/vagina

🌞 Reproductive cells

Embryo
A multicellular diploid eukaryote in an early stage of embryogenesis, or development.
Learn more at: www.fertilitypedia.org/edu/reproductive-cells/embryo

Endometrial cell
Cells composing an inner layer of the uterine lining.
Learn more at: www.fertilitypedia.org/edu/reproductive-cells/endometrial-cell

🔥 Symptoms

Avoidance of sex
A medical condition whose main symptom is low sexual desire.
Learn more at: www.fertilitypedia.org/edu/symptoms/avoidance-of-sex

Heavy or prolonged bleeding in menstrual period
Abnormally heavy or prolonged bleeding in menstrual periods.
Learn more at: www.fertilitypedia.org/edu/symptoms/heavy-or-prolonged-bleeding-in-menstrual-period-1

Hypomenorrhea
Short or scanty periods with extremely light menstrual blood flow.
Learn more at: www.fertilitypedia.org/edu/symptoms/hypomenorrhea

Infertility
The failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse.
Learn more at: www.fertilitypedia.org/edu/symptoms/infertility
Infrequent menstruation
The medical term for infrequent, often light menstrual periods (intervals exceeding 35 days).
Learn more at: www.fertilitypedia.org/edu/symptoms/infrequent-menstruation-1

Irregular bleeding between the menstrual periods
Bleeding that occurs irregulary between the menstrual period.
Learn more at: www.fertilitypedia.org/edu/symptoms/irregular-bleeding-between-the-menstrual-periods-1

Irregular menstruation
Irregular menstruation is a menstrual disorder whose manifestations include irregular cycle lengths as well as metrorrhagia
Learn more at: www.fertilitypedia.org/edu/symptoms/irregular-menstruation

Lowered libido
The absence of sexual appetite.
Learn more at: www.fertilitypedia.org/edu/symptoms/lowered-libido

Menarche
The age at onset of first menstruation.
Learn more at: www.fertilitypedia.org/edu/symptoms/menarche

Painful sexual intercourse
The painful feelings during sexual intercourse.
Learn more at: www.fertilitypedia.org/edu/symptoms/painful-sexual-intercourse

Painful urination
A burning or stinging sensation during urination.
Learn more at: www.fertilitypedia.org/edu/symptoms/painful-urination-1

Polymenorrhea
The medical term for cycles with intervals of 21 days or fewer.
Learn more at: www.fertilitypedia.org/edu/symptoms/polymenorrhea

Premenstrual syndrome
A combination of physical and emotional disturbances that occur after a woman ovulates and ends with menstruation.
Learn more at: www.fertilitypedia.org/edu/symptoms/premenstrual-syndrome

Recurrent implantation failure
Failure of implantation in at least three consecutive IVF attempts.
Learn more at: www.fertilitypedia.org/edu/symptoms/recurrent-implantation-failure-1

Recurrent miscarriage
A disease distinct from infertility, defined by two or more failed pregnancies.
Learn more at: www.fertilitypedia.org/edu/symptoms/recurrent-miscarriage

Retrograde menstruation
Retrograde flow of menstrual fluid through fallopian tubes into the pelvic cavity.
Learn more at: www.fertilitypedia.org/edu/symptoms/retrograde-menstruation
The major organs of the female reproductive system are located inside the pelvic cavity.

Posterior half of uterus and upper part of vagina.

High magnification micrograph of endometrium with (mitotically) inactive glands and decidualization due to exogenous progesterone.

Digital camera shot though a microscope; human myometrium.

Perimetrium labeled at bottom right.