

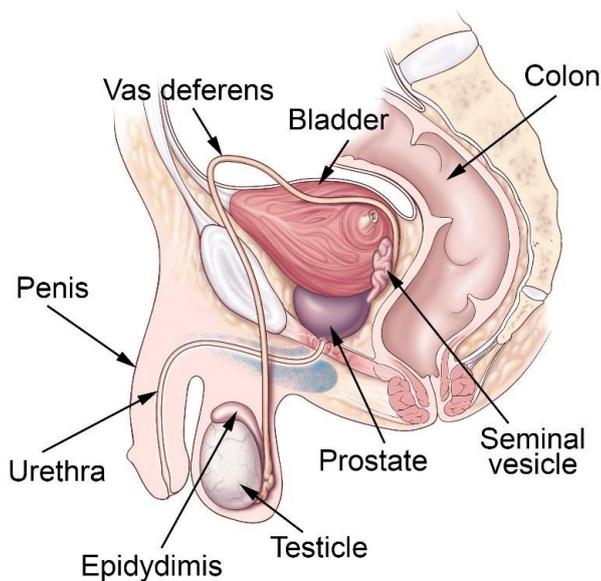
SEXUAL REPRODUCTION IN HUMANS

Reproduction in Human Beings

- The reproductive organs in human beings i.e. Testis in males and ovary in females become functional only on **Puberty**. During this period of adolescence, the rate of general body growth begins to slow down and reproductive tissues begin to mature.
- Puberty**: It is the age at which sex hormones or gametes begin to be produced and boy or girl becomes sexually mature. At puberty, physical changes occur in the body.
 - Changes common to Boys and Girls** :-
 - ◇ Appearance of hair in armpits, genital areas, legs, arms and face
 - ◇ Appearance of pimples due to occurrence of oily skin
 - Changes difference in Boys and Girls**:
 - ◇ Girls – Start of menstruation, darkening of nipple skin and enlargement of breasts
 - ◇ Boys- appearance of facial hair, change of voice, enlargement and occasional erection of Penis

Male Reproductive System

- The male reproductive system consists of portions which **produce the germ-cells** and **other portions that deliver the germ-cells to the site of fertilisation**.
- The **male reproductive system** consists of the following organs:
 - Testes** (singular testis) are the oval shaped primary reproductive organ in man. A pair of testis lies in a small sac-like muscular structure outside the abdominal cavity called scrotum. The function of testis is to produce sperm and male sex hormone testosterone. In addition to regulating the formation of sperms, testosterone brings about changes in appearance seen in boys at the time of puberty. The scrotum provides the optimal temperature for formation of sperms.



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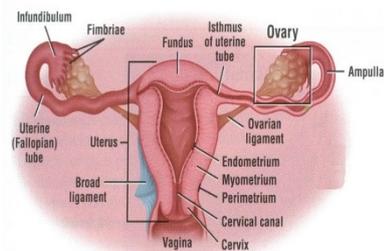
- Epididymis** is a coiled tube-like structure firmly attached to the testis and serves as the storehouse of sperms. Inside the epididymis, sperms become mature and develop motility.

- Vas Deferens** – The sperms are carried by a long tube called vas deferens or sperm duct into an organ called seminal vesicles, where the sperms get nourishment and are stored.
- Urethra** – It is common duct for passage of both urine and spermatid fluid. Urethra carries the sperms to an organ called Penis and opens to the outside through a male genital pore.
- Penis** – It forms the external male genital organ. It is a copulatory organ with thick muscular walls.
- Accessory Glands** – Seminal vesicles are a pair of thin-walled muscular elongated sac which secrete fluid which makes transport of sperms easier and this fluid also provides nutrition.
- Prostate Glands** – they produce fluid which are released in the urethra along with secretion of seminal vesicle. The secretion of accessory glands together with sperms is called semen.
- Sperms** are tiny bodies that consists of mainly genetic material and a long tail which help them to move towards the female germ cell.

- Female Reproductive system** – The female germ cells or eggs are made in ovaries and are responsible for the production of hormones. The female reproductive system consists of –

- Ovaries** – They are a pair of small and oval shaped organs, located in the abdominal cavity near the kidney. Ovaries are female reproductive organs which perform the dual function of production of female gamete or ovum and the secretion of female sex hormones, estrogen and progesterone.

Female Reproductive System - Diagram



Pathology Dept, KSU

#reproduction block

- Fallopian tube or Oviduct** – It is a pair of long convoluted tubes that carry ova or eggs from the ovary to the uterus. The fallopian tube has a funnel-shaped opening near the ovary. These tubes from both the sides open into an elastic bag-like structure, the uterus.
- Uterus or Womb** – The two oviducts unite into an elastic bag-like structure known as the **uterus**. **The uterus opens into the vagina through the cervix**. It is a hollow, pear-shaped organ within which the embryo develops.
- Vagina** – It is a tubular structure also called “birth canal”. It receives sperms from male and also serves as the passage through the fully developed foetus is born. The uterus opens into the vagina through the cervix.

SEXUAL REPRODUCTION IN HUMANS

6. Sexual Reproduction in Human Beings

- (i) **The sperms enter through the vaginal passage during sexual intercourse.**
- (ii) Sperms travel through cervix into the uterus and reach the oviduct where they may encounter the egg.
- (iii) Only one sperm fertilises the ovum/egg to form a zygote. This is known as fertilization.
- (iv) Fertilization occurs only during the ovulatory period. The fertilised egg, the zygote, gets **implanted in the lining of the uterus**, and starts dividing. The lining of the uterus **thickens every month** and is richly supplied with blood to nourish the growing embryo.
- (v) The embryo gets nutrition from the mother's blood with the help of a special tissue called **placenta**, where the exchange of nutrients, oxygen and waste products take place. This is a disc which is embedded in the uterine wall. It contains villi on the embryo's side of the tissue. This provides a large surface area for glucose and oxygen to pass from the mother to the embryo.
- (vi) The development of the child inside the mother's body takes approximately nine months. The child is born due rhythmic contractions of the muscles in the uterus.

7. Menstruation -

- (i) Ovary releases one egg every month, the uterus also prepares itself every month to receive a fertilised egg. The uterus stores food in the form of blood to nourish the embryo and its lining becomes thin and spongy.
- (ii) If the egg is not fertilised, it lives for about one day. As the food is no more required, the lining slowly breaks and comes out through the vagina as blood and mucous.
- (iii) This cycle takes place roughly every month and is known as **menstruation**. It usually lasts for about two to eight days.

8. Reproductive Health deals with those aspects of general health which helps a person to lead a normal and reproductive life.

- (i) **Sexually transmitted diseases** are those diseases which spread by sexual contact from an infected person to a healthy person. These include bacterial infections such as **gonorrhoea** and **syphilis**, and viral infections such as warts and **HIV-AIDS**. A **condom** for covering the penis during sex can prevent transmission these infections.
- (ii) **Gonorrhoea** – It is caused by bacterium *Neisseria gonorrhoea*. It is characterised by inflammation of urogenital tract and the patient feels burning sensation during urination. This bacteria infects the ureter in men and the cervix in women.
- (iii) **Syphilis** – It is caused by *Treponema pallidum* bacteria. It is characterised by lesions in the mucous membrane of urogenital tract and ulcers on genitalia.
- (iv) **AIDS (Acquired Immune Deficiency syndrome)**- It is caused by HIV virus which suppresses the body's immune mechanism and thereby making it susceptible to any disease. It can be transmitted by Sexual Contact, Blood

transfusion, infected needles used for injections, from mother to child during pregnancy.

9. Methods to avoid Pregnancy - There are various ways are :

- (i) **Mechanical Methods** - In this type of contraception, a physical barrier is placed to prevent the entry of sperms into the uterus. It includes **condoms used by males** and **diaphragm cap used by females**. Diaphragm cap is also fixed over the cervix but is not a permanent arrangement These devices can also act as effective guard against sexually transmitted diseases.
- (ii) **Contraceptive Devices** – These are also called **intrauterine device (IUD)**. Here a **loop or the copper-T** is inserted by a doctor **into the uterus** to prevent the implantation of the fertilized egg.
- (iii) **Chemical /Hormonal Methods** – It involves the intake oral pills which contain hormones which stop the ovaries from releasing ovum/egg into the fallopian tube. These are called **oral contraceptive pills** which changes the hormonal balance of the body so that egg is not released and therefore fertilisation cannot occur.
- (iv) **Surgical/Sterilisation method** - Sterilisation is a surgical procedure that involves cutting of the tubes that conduct the gametes. In **males, it is called vasectomy** in which each **vas deferens is cut/blocked**. In **females, it is called tubectomy** in which the oviducts are **cut/blocked**. They are as good as permanent methods of prevention of pregnancy.

10. Sex Ratio – It is the ratio of the number of females to the number of males in a population. The female-male sex ratio must be maintained for healthy society. Due to preference for males in society and female foeticides the number of females per 1000 males is decreasing rapidly. Therefore, prenatal sex determination has been prohibited by Law.

