

Female Reproductive System & Urinary system

By

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Clinical Medicine & Pathology 316

Last Lecture

Lecture outline

- Review of structure & function.
- Most frequent & serious problems.
- Symptoms, signs & tests.
- Organ failure.

Review of structure & function

- **What are the main components of the female reproductive system?**

- **Vulva, uterus, fallopian tubes, and ovaries.**

- **Organs of female reproductive system:**

- Female reproductive system consists of internal and external parts.

INTERNAL PARTS:

Internal parts are the functional parts of female reproductive system. There are two main internal parts; the uterus and the ovaries.

- **UTERUS:** Uterus (also known as womb) is the major reproductive organ of females. It hosts the developing fetus, produces secretions of the female reproductive system and allow the passage of sperms to fallopian tubes where sperms fertilize with eggs.
- **OVARIES:** Ovaries are small paired organs located near the pelvic cavity of females. Ovaries produce the female egg cells.

Review of structure & function

- **EXTERNAL PARTS:**

External parts are accessory parts of female reproductive system. They help in the process of fertilization. They are;

- **VULVA**

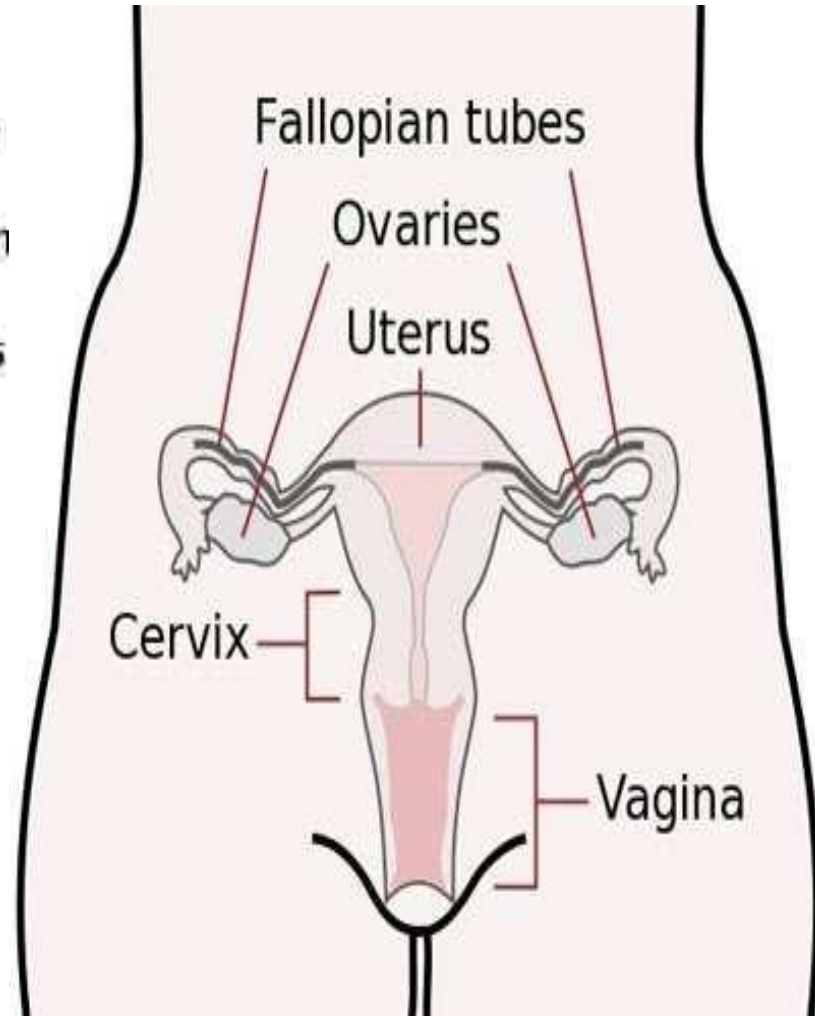
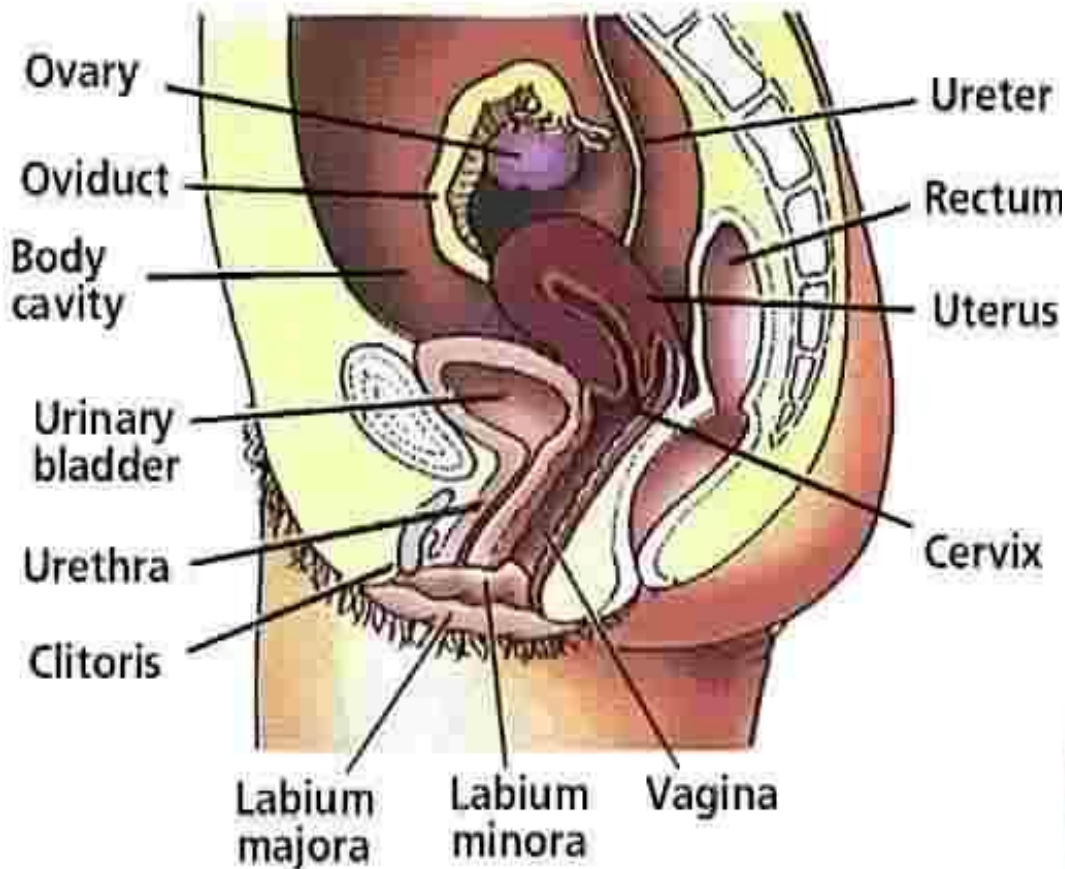
- **LABIA**

- **CLITORIS**

- The main functions of the female reproductive system include:

1. The glandular mucosa lining the uterine cavity is the site for implantation of a fertilized ovum.
2. The body of the uterus is the muscular wall that stretches and hypertrophies during pregnancy.
3. The ovaries provide opportunity for pregnancy to occur.

Review of structure & function



Most frequent & serious problems

- **What do the most frequent health problems in the female reproductive system relate to?**
 1. Birth control.
 2. Sexual counseling.
 3. Prenatal care & childbirth.
 4. Menopausal symptoms.
 5. Infections.
 6. Cancer screening.

Most frequent & serious problems

- **Most serious problems of the female reproductive system include:**

1. Ectopic pregnancy:

- is a complication of pregnancy in which the embryo implants outside the uterine cavity.

2. Septic abortion:

- is a form of miscarriage that is associated with a serious uterine infection. The infection carries risk of spreading infection to other parts of the body.

3. Gonorrhoea:

- is a common sexually transmitted infection caused by the bacterium and has symptoms of vaginal discharge & pelvic pain.

Most frequent & serious problems

4. Herpes:

- is a viral disease caused by both Herpes simplex virus type 1 (HSV-1) and type 2 (HSV-2). Genital herpes, known simply as *herpes*, is the second most common form of herpes.

5. Ovarian cancer:

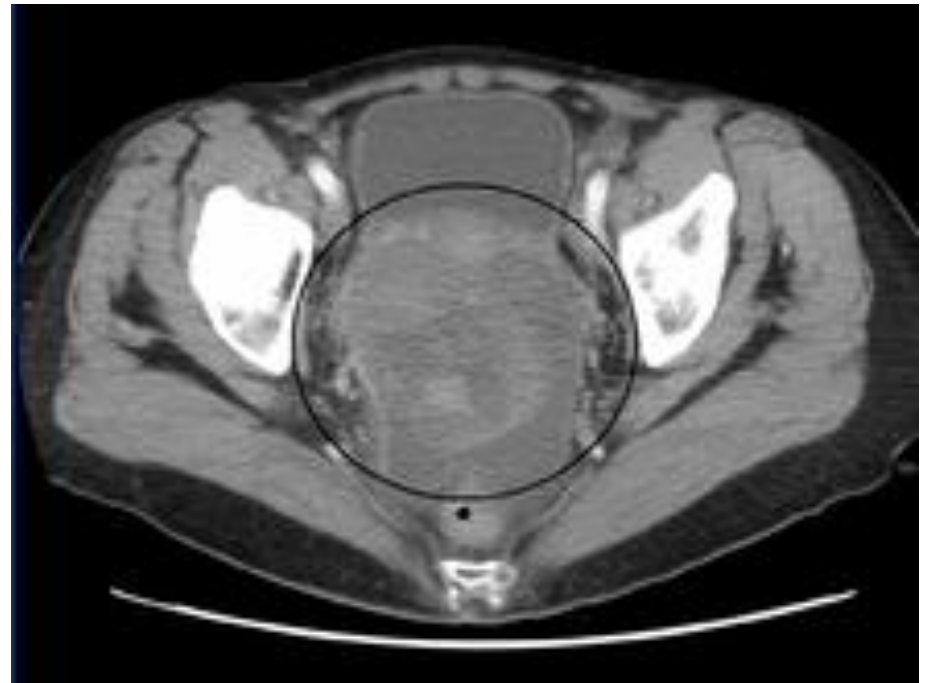
- is the second most common type of cancer in females after breast cancer. Symptoms are frequently very subtle early on and may include: bloating, pelvic pain, difficulty eating and frequent urination, and are easily confused with other illnesses. Most (more than 90%) ovarian cancers are classified as "epithelial" and are believed to arise from the surface (epithelium) of the ovary.

Most frequent & serious problems



Ectopic pregnancy

Ovarian cancer



Symptoms, signs & tests

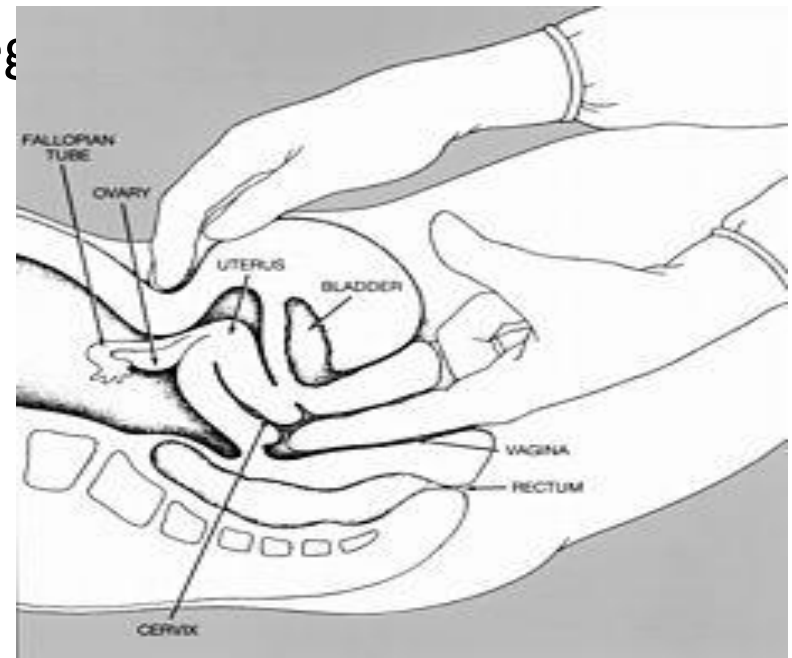
- **What are the major health problems symptoms of the female reproductive system?**
 - Bleeding, pain, vaginal discharge and endocrine effects.
 - **How serious could bleeding become?**
 - Very serious. How?
 - Menopause bleeding **MUST** be distinguish from abnormal uterine bleeding. Bleeding may be abnormal in amount, timing, or character.
 - Bleeding is one of the principal symptoms of cancer and could be caused by hormonal changes.
 - Several names have been used to describe patterns of bleeding; menorrhagia, vaginal spotting, dysmenorrhea, and dysfunctional uterine bleeding.
 - Another major sign in health problems of the female reproductive system is cramping pain.

Symptoms, signs & tests

- What are the common tests?

1. Pelvic examination:

- It involves direct inspection of the vulva, examination of the vagina and cervix through a speculum, and bimanual palpation of the uterus, fallopian tubes and ovaries.
- Pelvic examination is specifically used when there is a suspicion of a lesion including preg



Symptoms, signs & tests

2. Pap smear:

- is a screening test used to detect pre-cancerous and cancerous processes in the endocervical canal of the female reproductive system.
- A speculum is used to open the vaginal canal and allow the collection of cells from the outer opening of the cervix of the uterus and the endocervix. The cells are examined under a microscope to look for abnormalities. The test aims to detect potentially pre-cancerous changes.

3. Ultrasound (US) & other non-invasive tests:

- Diseases of the fallopian tubes and ovaries may be evaluated by US and other non-invasive tests. These procedures are particularly useful in diagnosis of ectopic pregnancy and pelvic inflammatory disease.

Organ failure

- **Organ failure of the female reproductive system does not always mean destruction of the organ. How?**
 - The main function of the female reproductive system is to reproduce. Therefore, fertility and infertility can cause organ failure yet the actual system is still intact. **Meaning?**
 - The majority of women desire temporary or permanent infertility at some time during the childbearing years. This in fact prevents the system from producing its main function and therefore known as organ failure.

Organ failure

- Temporary infertility can be produced by several means including:
 1. Mechanical blockage of the cervix (diaphragm).
 2. Spermicidal chemicals.
 3. Mechanical prevention of implantation.
 4. Hormonal prevention of ovulation (oral contraceptives).
- Permanent infertility can be accomplished by clamping or resecting a portion of the fallopian tubes.
- All means of temporary infertility can cause permanent infertility and therefore a specialized physician must be consulted prior to any action.

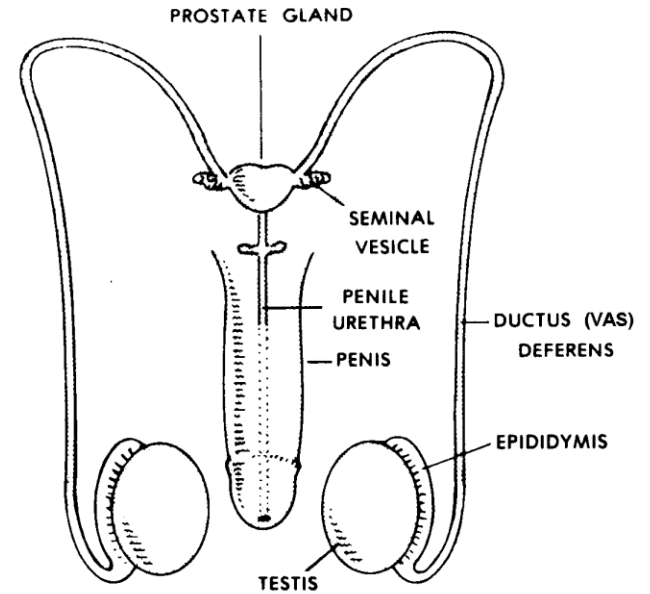
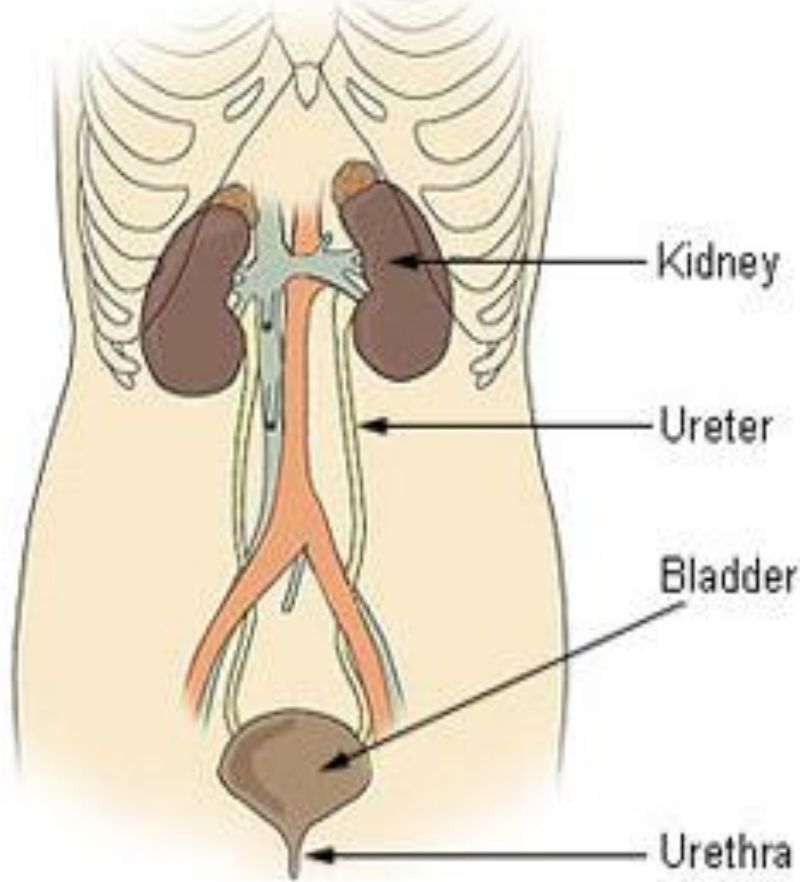
Urinary system

Review of structure & function

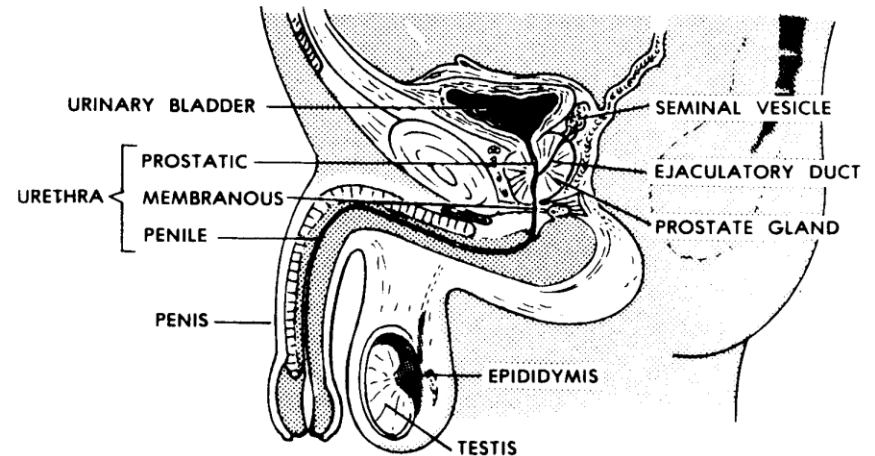
- **What are the main components of the urinary system?**
- **Kidneys, ureters, bladder, urethra, testes and prostate.**
- **Kidneys:**
- The kidneys are bilateral organs that receive blood from the renal arteries and are drained by the renal veins.
- Urine formed by the kidneys leave through the ureter.
- The main functions of the kidneys include:
 1. Regulate the concentration of salt, water and hydrogen ions in the body.
 2. Excrete waste products such as urea or foreign substances.
 - This is made possible by receiving 20% of blood circulation every minute.

Review of structure & function

Components of the Urinary System



A. SCHEME OF ANTERIOR VIEW



B. MIDSAGITTAL SECTION

Review of structure & function

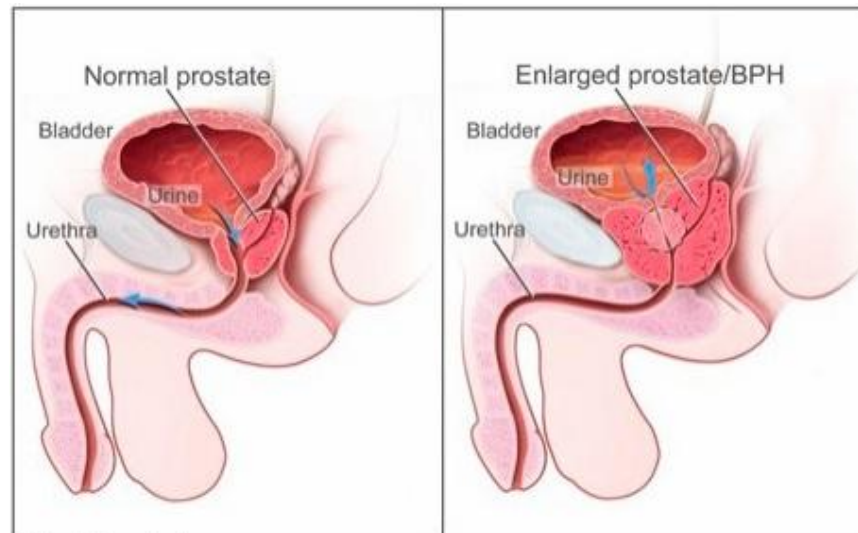
- The very important function of waste management by the kidneys go through tubules and capillaries, which are responsible for either secretion or resorption. Where the first is passage of substances from the capillaries to tubules and the latter passage of substances from the tubules to the capillaries.
- **The ureters:**
 - What is sole function of the ureters?
 - Transmitting urine from the kidneys to the bladder.
- **The bladder:**
 - Collect urine and pass it down the urethra through the urethrovesicular outlet.

Review of structure & function

- **The testes:**
 - They are mainly responsible for sperm production and storage.
- **The prostate:**
 - The prostatic secretions comprise the major portion of seminal fluid and have a high antibacterial activity.

Most frequent & serious problems

- **What is the very most common problem affecting the urinary system?**
- **Bacterial infections.** Others?
- Bladder infection (cystitis) mainly in females, prostatitis mainly in younger male, prostatic enlargement mainly in older men, renal calculi (stones), renal failure, adenocarcinoma of the prostate, and carcinoma of the bladder among others.



Symptoms, signs & tests

- **The major function of the urinary system is waste management & urine production, therefore, a common symptom for most urinary tract problems would involve?**
- **URINE...** what are the common symptoms?
 1. Frequency of urination.
 2. Painful urination (dysuria).
 3. Increased night time urination (nocturia).
- Other symptoms of urinary system problems include:
 - Low back pain (prostatitis), intense flank pain (nephritis), blood in urine or hematuria (renal problem), protein in urine or proteinuria (renal problem), sharp flank pain (calculi or stone), decreased outcome of urine or oliguria (acute necrosis of the renal system), and complete absence of urine or anuria (chronic necrosis of the renal system).

Symptoms, signs & tests

- **Examinations for problems of the urinary system differ depending on the symptoms and signs.**

Examples?

1. Physical examination:

- Inspection of the penis for signs of exudation (blood discharge) or ulceration from venereal infections.
- Palpation of the abdomen for tumors of the kidney or bladder.
- Palpation of the testes for tumor.
- Rectal examination for prostate enlargement.

Symptoms, signs & tests

2. Urinalysis:

- The most important laboratory test performed since it can detect many common urinary tract disorders especially infections.
- Urinalysis includes tests for: pH (acidity), presence of protein, sugar, blood, bacteria, and others.

3. Urine culture:

- This test is performed when there are symptoms of urinary tract infection or increased amounts of white blood cells in urine.

Symptoms, signs & tests

4. Renal biopsies:

- Performed to check for renal function by inserting a thin needle through the skin of the flank and extracting a core renal tissue.

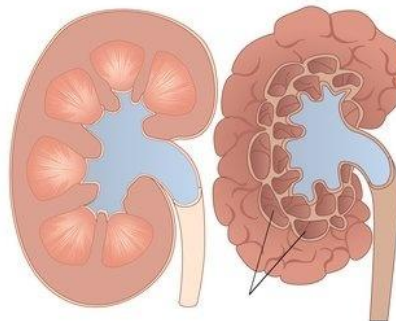
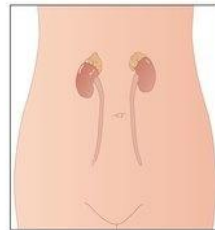
5. Other examinations:

- Cytogram:
 - A radiopaque dye is introduced into the bladder by catheter and x-rays are taken to elucidate bladder morphology and function.
- Intravenous urogram (IVU):
 - Testing the gross structural changes of the kidneys & ureters by intravenous contrast injection.

Specific diseases

1. Genetic/developmental disease:

- **Polycystic kidneys:**
 - Thin-walled cysts of various size cause massive bilateral renal enlargement.
 - The disease is not discovered until adulthood when hypertension or chronic renal failure occur.



Specific diseases

- **Dysplastic (mulicystic) kidney:**
 - Malformation of embryonic development of nephrons with formation of cartilage and cysts that could be either unilateral or bilateral and usually associated with obstruction of the urinary tract.



Specific diseases

2. Inflammatory/degenerative diseases:

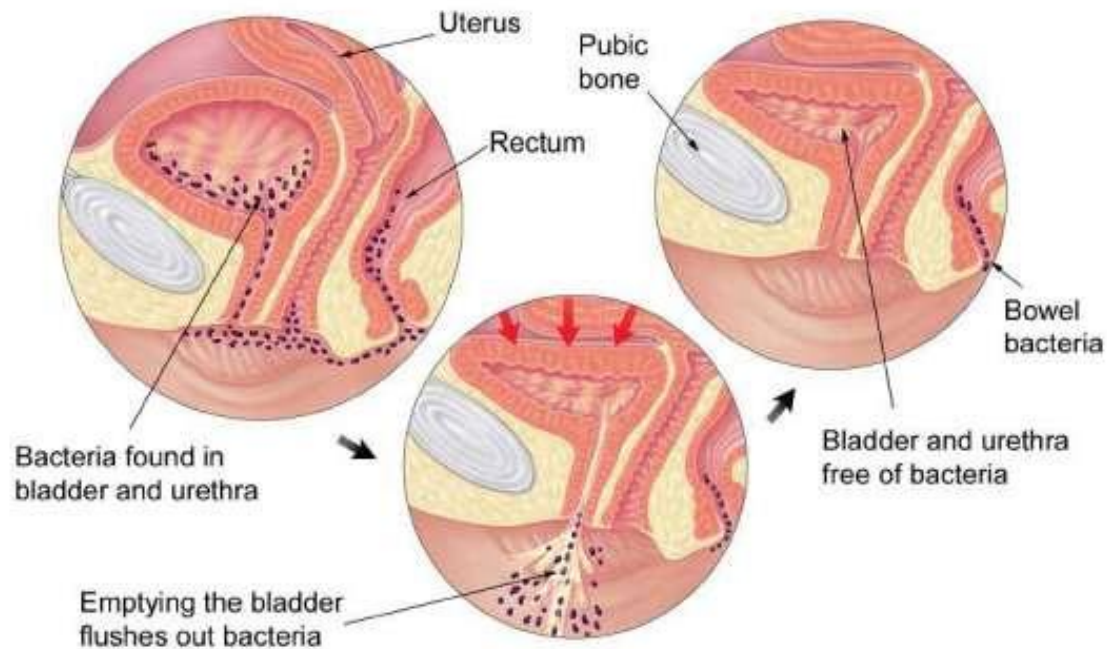
- **Pyelonephritis:**

- The most important inflammatory disease of the kidney caused by acute or chronic infection involving the renal tubules caused by different types of bacteria.
- The bacteria causing the disease may enter the kidneys through the bloodstream.
- The kidney in later stages of the disease will show scars and urine have blood and pus.



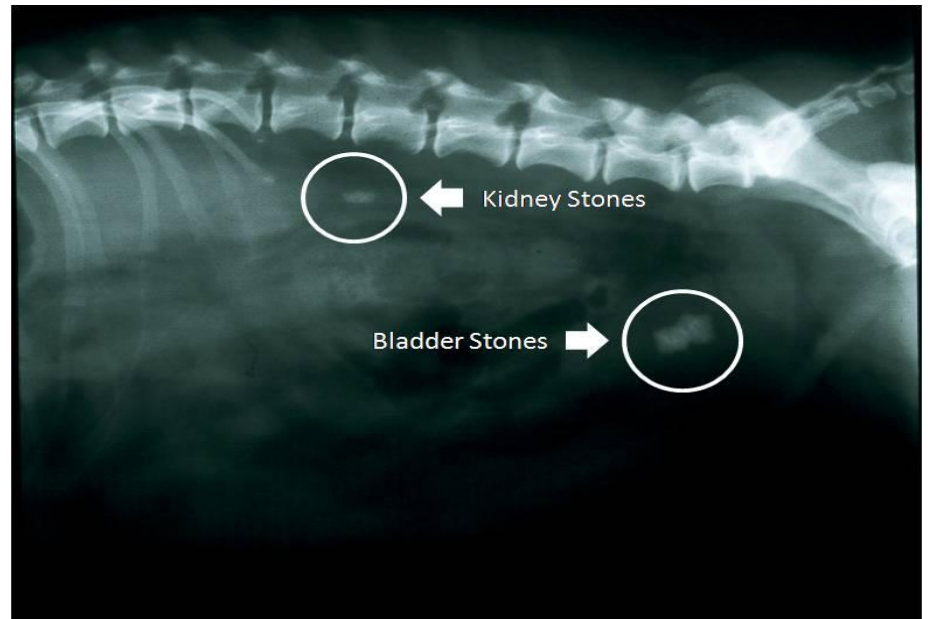
Specific diseases

- **Cystitis:**
 - Infection of the bladder and is usually caused by the same bacteria that cause pyelonephritis.
 - The symptoms for cystitis include: dysuria (painful urination), frequent urination, and repeated or continuous urge to urinate.



Specific diseases

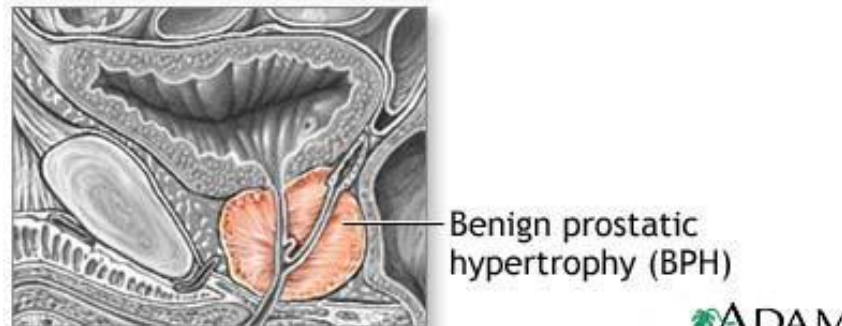
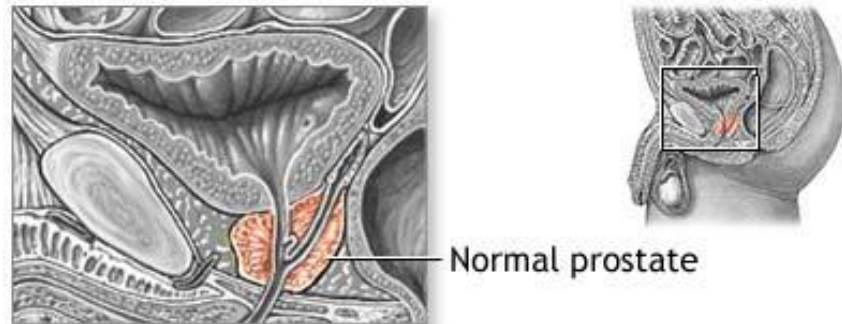
- **Kidney stones (Calculi):**
 - It is defined as crystallization of minerals in the urine to form hard, stone-like masses. They are composed of calcium and various substances excreted by the kidneys that are visible on x-rays.
 - Stones that are composed of urates or cystine are not visible on x-rays.



Specific diseases

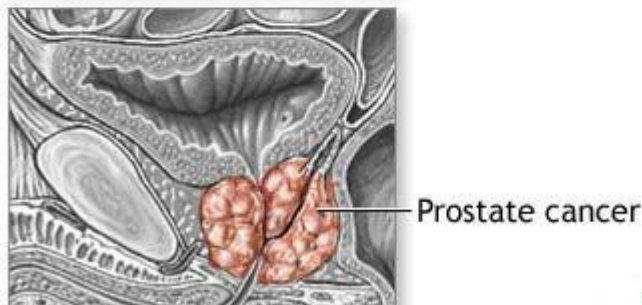
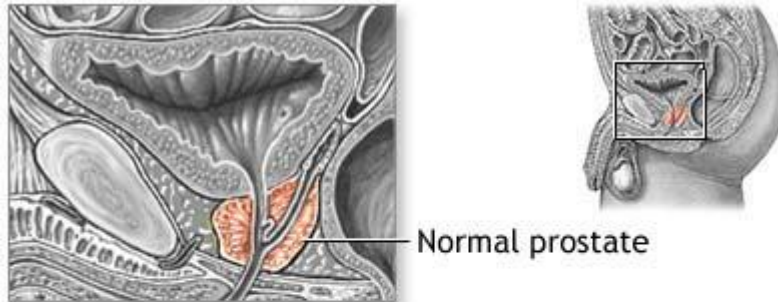
3. Hyperplastic/neoplastic diseases:

- **Hyperplasia of the prostate:**
 - It is enlargement of the prostate caused by hyperplasia of the glandular parenchyma and its fibromuscular stroma area due to relative hormonal imbalance in the elderly.
 - The most common symptom is difficulty in initiating and stopping urination.



Specific diseases

- **Adenocarcinoma of the prostate:**
 - Cancer of the prostate that is presented as hard, irregular nodule in the gland usually in the posterior lobe.
 - Its presence can often be found by palpation of the prostate from the rectum.
 - Low back pain, weight loss, x-ray appearance of pelvic bone lesions, and elevated serum acid suggest metastatic dissemination.

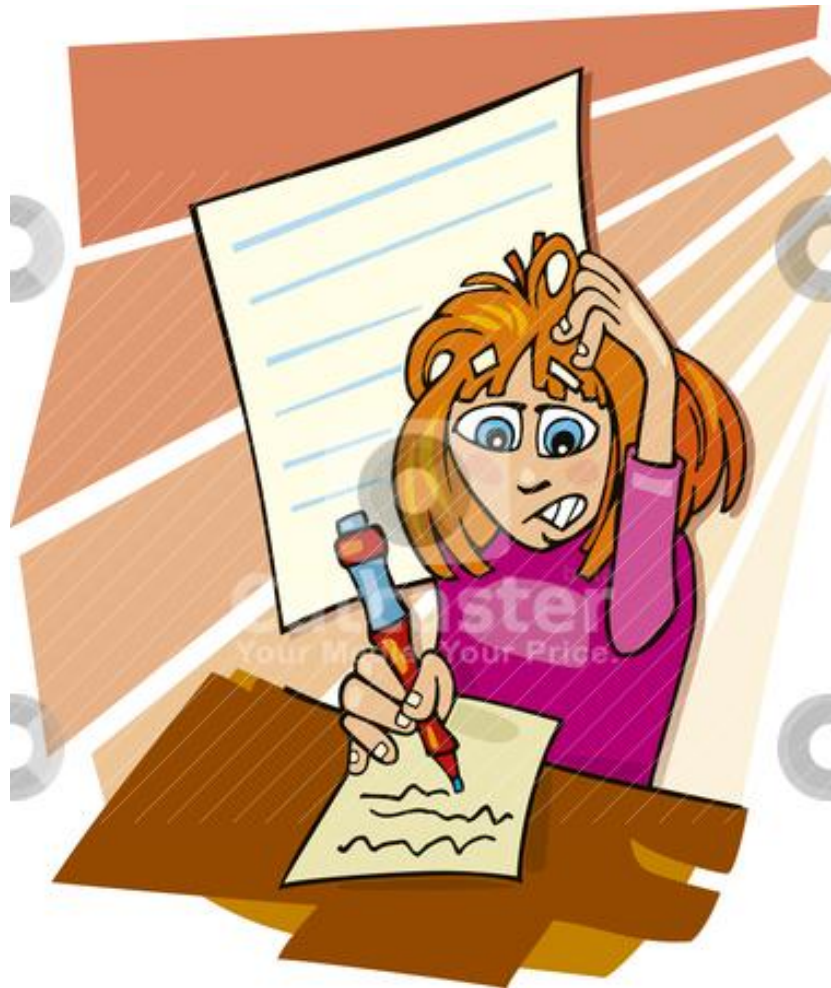


Organ failure

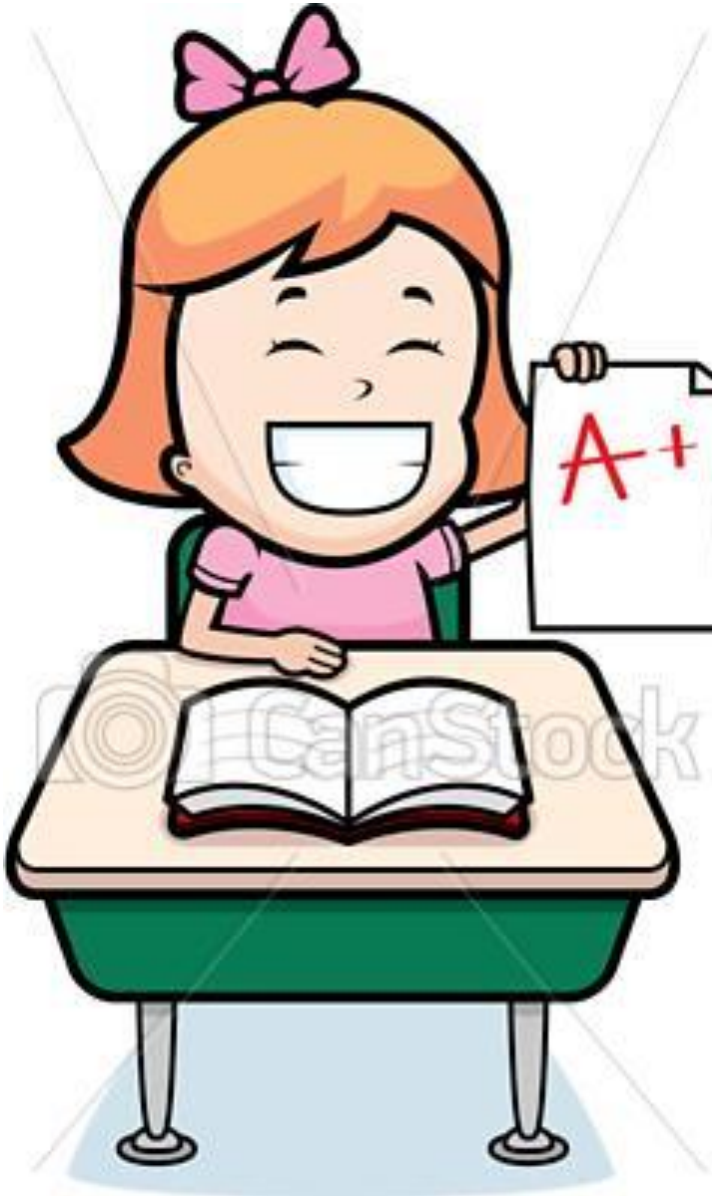
- **Acute renal failure and chronic renal failure are considered life-threatening and may lead to a complete damage of the urinary system.**
- **In acute renal failure the patient may be dialyzed if there is reasonable hope that the kidney function may return to a near normal state.**
- **In chronic renal failure, dialysis may be done yet in the majority of the cases kidney transplant is needed.**

☺ A friendly reminder ☺

- ***THE FINAL EXAM IS ON SUNDAY DEC-8-13 IN THE READING ROOM FROM 2-4 PM.***



Done for the semester...



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