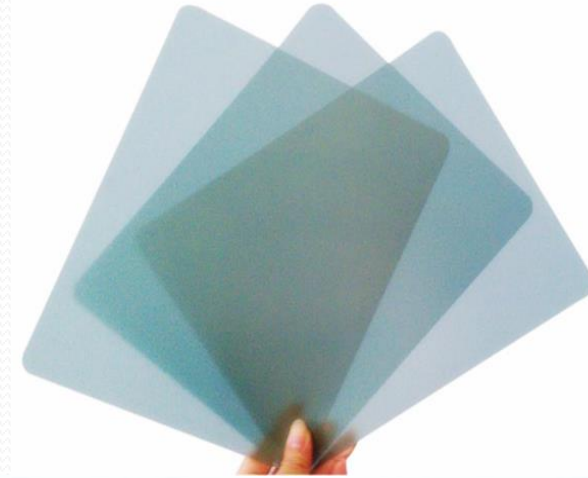
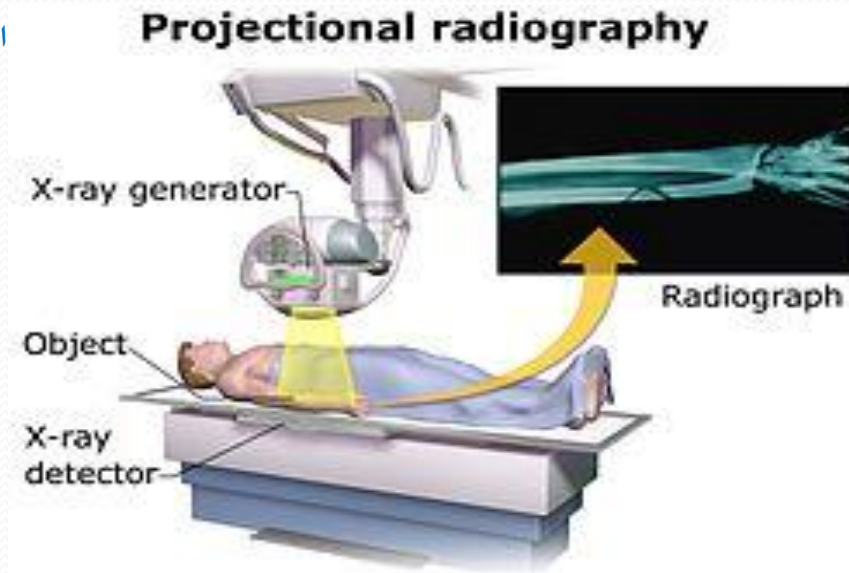


التصوير الطبي Medical Imaging

LECTURE FOUR

Plain Radiograph/X-ray

التصوير الشعاعي العادي / الأشعة السينية



Dr. Forat Hamzah

Definition of plain radiograph/X-ray

Properties of plain radiograph/X-ray

Component of plain radiograph/X-ray system

How the plain radiograph/x-ray is formed on the silver halide film ?

Plain Radiograph/X-ray

Definition of plain radiograph/X-ray

تعريف التصوير الشعاعي العادي / الأشعة السينية

- It is medical imaging of the different parts human body
- Using X-rays
- It is represent the simplest medical images created using X-radiation
- The medical image is produced by passing the X-ray through a human body , according to the density and composition of the bone or tissues

Plain Radiograph/X-ray

Properties of plain radiograph/X-ray

- (i) Simplest medical images created using X-radiation
- (ii) Provides fast
- (iii) High-resolution images
- (iv) Low-cost
- (v) Does not require special preparation for the patient
- (vi) Plain X-ray systems can provide medical imaging of different parts of the human body, such as the chest, arms, legs, spine, bones, and joints.

Plain Radiograph/X-ray

Some medical image using plain radiograph/X-ray

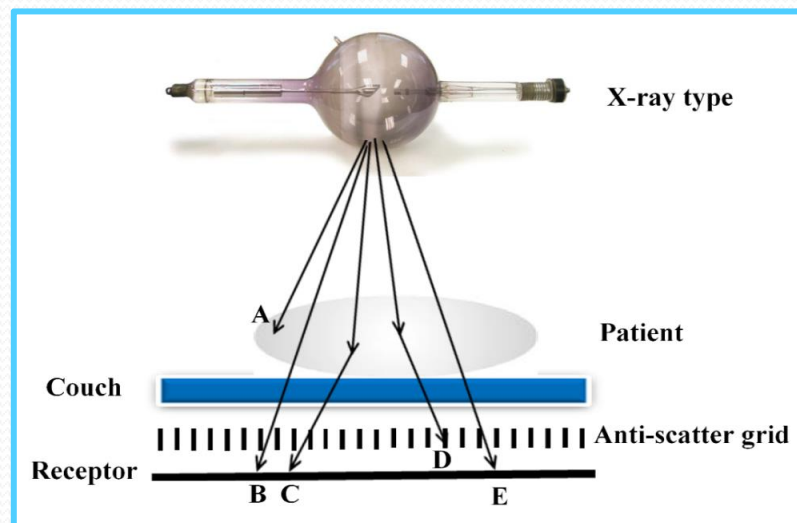


Plain Radiograph/X-ray

Component of plain radiograph/X-ray system

مكونات جهاز التصوير الشعاعي العادي / الأشعة السينية

- (i) X-ray tube أنبوب الأشعة السينية
- (ii) X-ray detector (receptor) كاشف الأشعة السينية (مستقبلات)
- (iii) Anti-scatter grid شبكة مضاد التشتت
- (iv) Couch أريكة
- (v) Bucky table طاولة بوكي
- (vi) Silver halide film فيلم هاليد الفضة
- (vii) Control unit وحدة التحكم



أنبوب الأشعة السينية

i) **X-ray tube** is an electrical device used for generation of X-ray, which constant from glass tube, cathode, and anode.

كاشف الأشعة السينية (مستقبلات)

ii) **X-ray detector (receptor)** are devices used to measure the flow amount and distribution of X-rays.

شبكة مضاد التشتت

iii) **Anti-scatter grid** is a device placed between the patient and the receptor, which will transmit the radiation but reject the scatter radiation

iv) **Couch** : it represent the bed used to sleep the patient

v) **Bucky table** : it represent the x-ray cassette place of silver halide film

vi) **Silver halide film**: it represent the film that shows the medical image consisting of silver bromide (AgBr). This film when exposed to light, produces a silver ion (Ag⁺) and an electron, and it convert to dark color

vii) **Control unit**: X-ray systems have a control on plain radiograph/X-ray system.

Plain Radiograph/X-ray

How the plain radiograph/x-ray is formed on the silver halide film ?

- The photons of X-ray emitted by the X-ray tube enter the patient's body.

The patient is placed between an X-ray tube and silver halide film.

- X-rays that pass through the body are absorbed or transmitted directly to bone or tissue.

- More exposure of silver halide film to X-ray leads to more dark

- **Bone** represents the **highest to absorb** X-ray photons. So, the silver halide film will be more white

- Soft tissues represent the lowest to absorb X-rays photons. So, the silver halide film will be more dark

