Introduction to Dermatology

المحاضره اغلبها
صور :
ما في خوف صديق
☺

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مصادر المحاضره :
نوت الدكتور
تيم بي 2 (عبدالعزيز الزهراني واحمد الحمدي وعبدالله المنيع)
بي 1 (عبدالله العقيل و غيث الميداني و اسماعيل رسلان)

Dermatology

Is the science that study and treat the diseases of the Skin, hair, nails, and mucous membranes (mouth and genitila).

Important functions of the skin

- Protection against external injury
- Fluid balance
- Temperature buffering
- Synthesis of Vit. D
- Immune system
- Cosmetic function

Why Dermatology?

Structure of the Skin

- **The skin consist of 3 layers :**
- **1- Epidermis**
  - Avascular layer: so it does not bleed (when you see a skin leasion with out blood it means it is from the epidermis
  - The blood supply to the epidermis comes from the papillary layer of dermis
  - **The epidermis Consist of 4 layers :**
    - a- Cornified layer
      - most superficial
      - Non-nucleated
      - Contains keratin
    - B- Granular layer
      - The zone where epidermal nuclie disintegrate
    - c- Spinous layer
      - Also called Prickle cell layer
      - Contains the bulk of the keratinocytes
    - d- Basal layer
      - the deepest
      - Contains Keratinocytes undergoing mitosis (the only place where mitosis occurs normally is the basal layer)

Structure of the Skin

- **Epidermis continued**
  - Physiologic variations: Non-weight baring skin has a thin cornified layer as opposed to skin on the sole of the foot which has 20-30 cell lines thick
  - MAIN CELLS SEEN IN THE EPIDERMIS:
    - Keratinocytes:
      - Main cell type (95% of cells)
      - The division of Keratinocytes happens only in the Basal layer (mitotic figures should not be seen above this layer
      - Within the spinous cell layer the keratinocytes are connected by desmodomes
    - Melanocytes
      - Found in the basal layer – pigment producing cell
      - The cluster of keratinocytes that reciveve pigment from one melanocyte is called "Epidermal Melanin Unit"
      - Darker skin race have more melanocytes
    - Langerhans cells
      - Immunologically competent cells that can work as antigen presenting cells found in the middle of the spinous layer
      - Derived from the bone marrow – they express MHC class 2 antigens
      - They cannot phagocytose efficiently
    - Merkel cell: found in touch sensitive sites like the hands or lips- help in sensation

- **2- Dermis :** rich in vessels , nerves , hair follicles , Collagen fibers Elastic fibers and Ground substances → which called the Skin appendages
- The dermis consist of 2 layers :
  - A- papillary layer (superficial) :Has finer collagen fibers than the deep layer
  - B- Reticular layer (deep)
- There are 3 main cell types:
  - Fibroblasts: produce collagen – mainly type 3
  - Macrophage
  - Mast cell: Important cell in type 1 immunological reaction
- The bulk of the dermis is composed of type 3 collagen (remember the epidermis it was the keratinocytes)
- Embedded in the dermis are: Vasculature – lymphatic – nerves – small quantities of smooth and striated muscles
- The skin appendages include:
  - The pilosabecous unit (Hair follicle, Sabecous gland, Arrector pili muscle, Apocrine sweat gland) - see later
  - The nail - see later
  - Eccrine sweat glands

cont.,

- **3-** Basement membrane
  - Between the epidermis and dermis there are (Dermo-epidermal junction) → which is very important in identifying some diseases
  - It is a complex multilayered structure
  - Contains laminin 5 which attach to the hemidesmodomes of the keratinocytes
    - Mutation of laminin 5 causes the disease epiderolysis bullosa
  - Heavily convoluted (not flat)

- **4- subcutaneous :** contain fat , vessels and some neural component

Epidermis

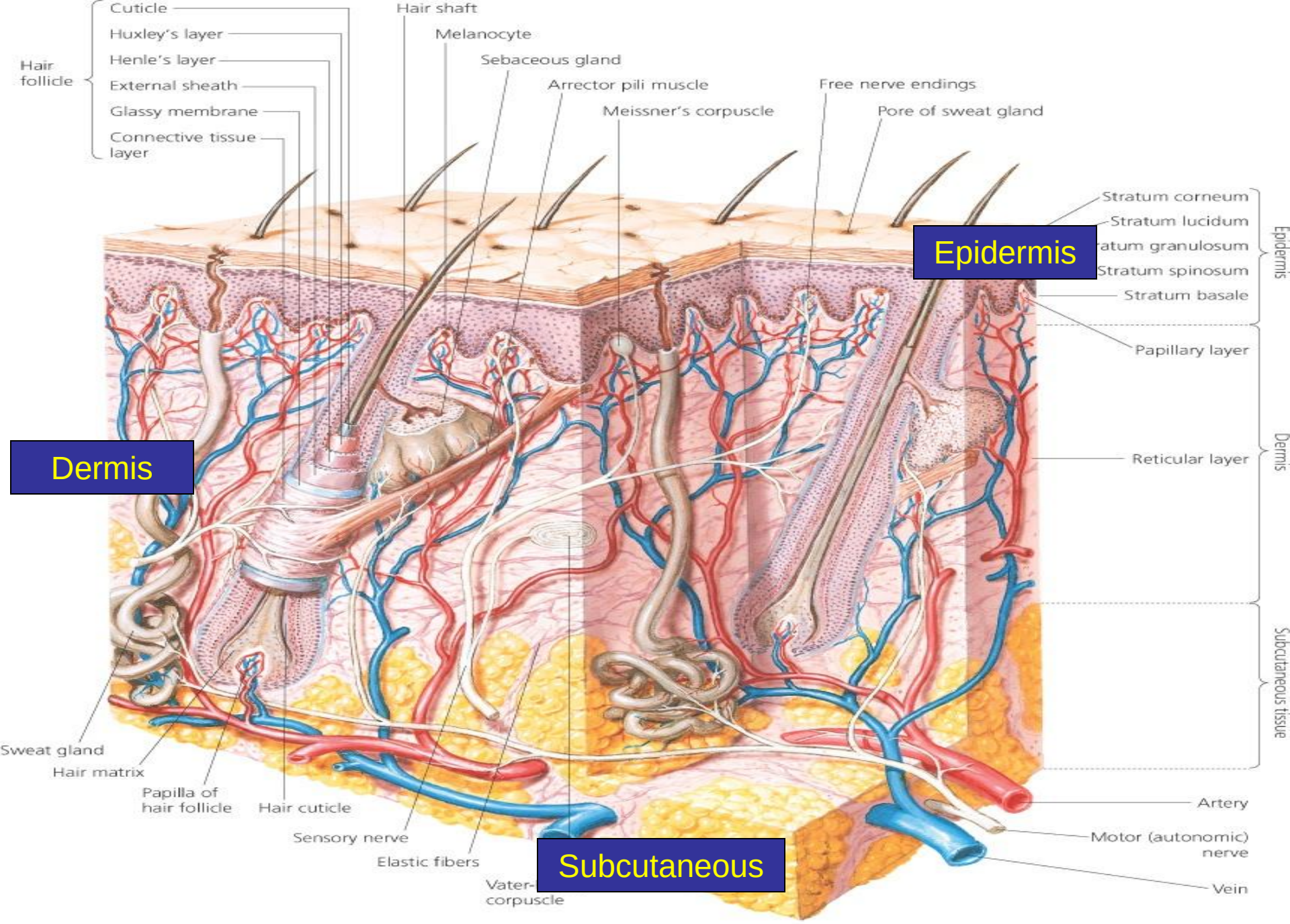
Dermis

Cornified layer

Granular layer

Spinous layer

Basal layer



Skin Anatomy

1 Epidermis
2 Basement membrane (dermoepidermal junction)
3 Dermis
4 Subcutaneous fat

❖ **Epidermis: Four layers (from outside – inside)**

1. Cornified layer
2. Granular layer
3. Spinous layer
4. Basal layer

❖ **Dermis contains:**

Collagen fibers
Elastic fibers
Ground substances
Blood vessels
Nerves.

Units or systems located in the skin

- **1- Pilio Sebaceous unit :**

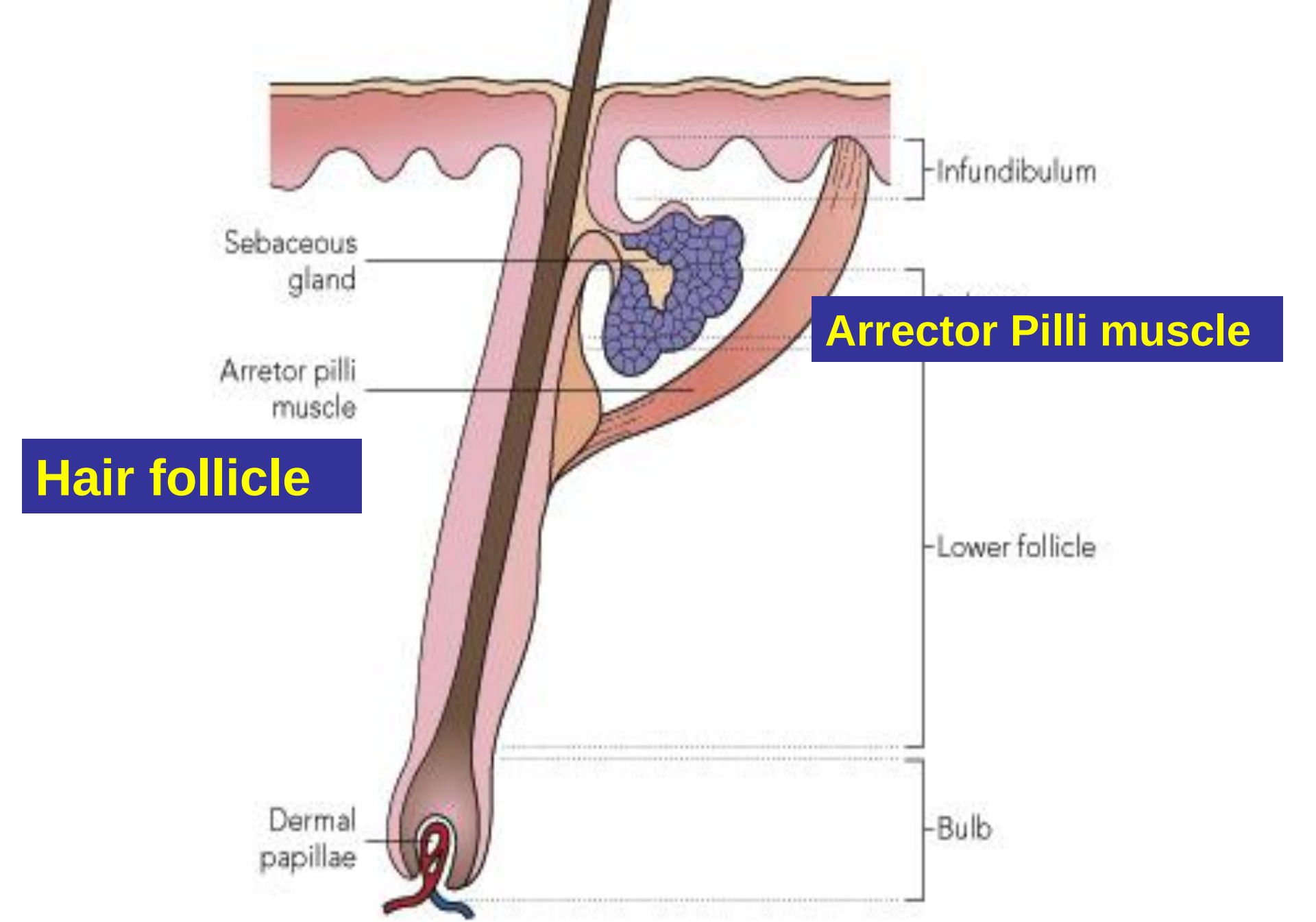
Consist of :

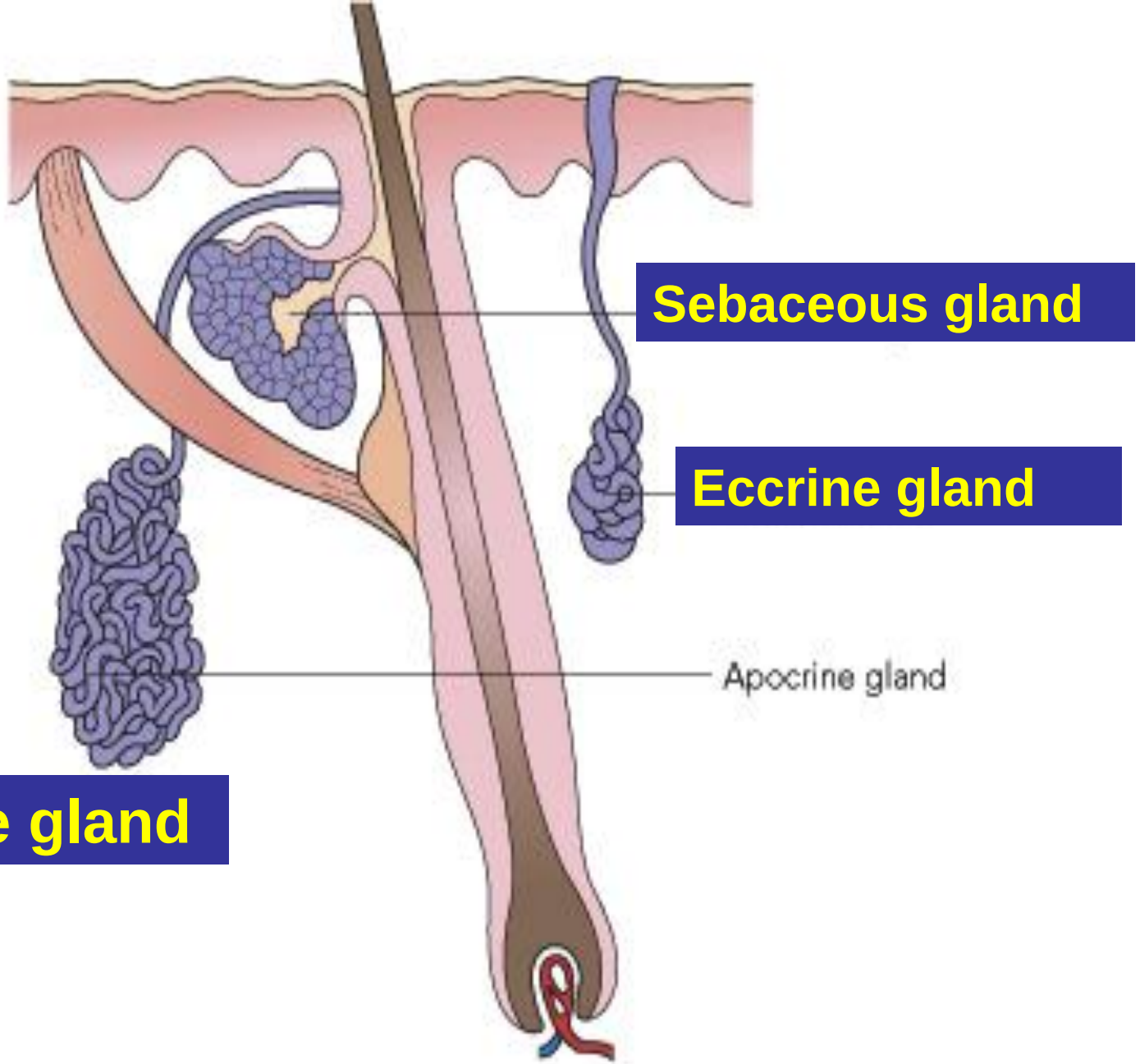
- **Hair follicle**
- **Sebaceous gland**
- **Arrector pili muscle**
- **Eccrine sweat gland** (open directly to the skin → main source of the sweat)
- **Apocrine sweat glands** (open to the bace of the hair follicle)

ACNE Is an example of a disease that affects the pilosabecous unit IMP!

The pilosabecous unit

- Hair follicle :
  - Made from both ectoderm and mesoderm
  - There are three types of hair:
    - Coarse terminal hair on the scalp
    - Androgen-dependant terminal hair on the chin, axilla and pubic area
    - Downy vellous hair on all body sites
- Sabecous glands:
  - Cluster around hair shafts and their secretions is formed by total destruction of the cells a mechanism called (holocrine secretions)
  - Found in large numbers on the face, chest and upper back
- Eccrine sweat glands:
  - All body sites – anatomically independent from other appendages
  - Narrow lumen
- Apocrine sweat glands:
  - Predominently found in the axilla
  - Very wide lumen
- Arrector pilli muscles



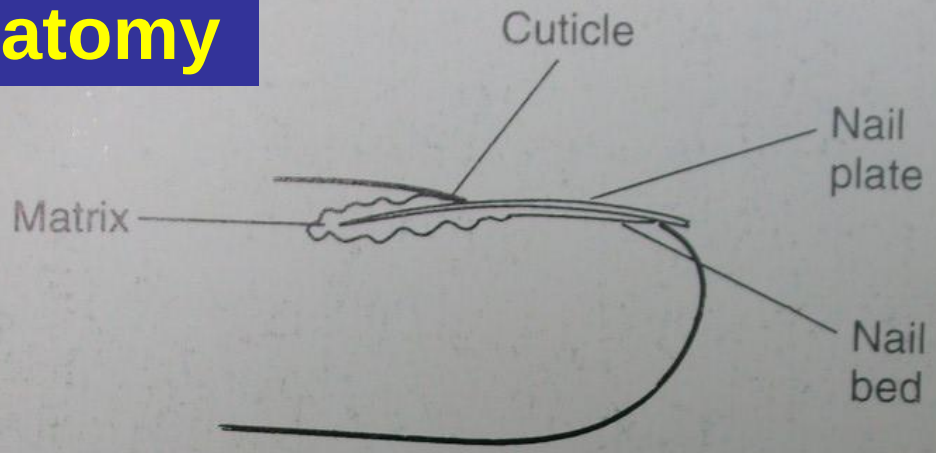


- **2- Nail unit :**

Consist of :

- **Nail Plate**
- **Nail bed**
- **Nail folds (Lateral – proximal)**
- **Cuticle** (between the proximal nail folds and the nail plate) → if this area get injured it could cause fungal infection entry

Nail Anatomy



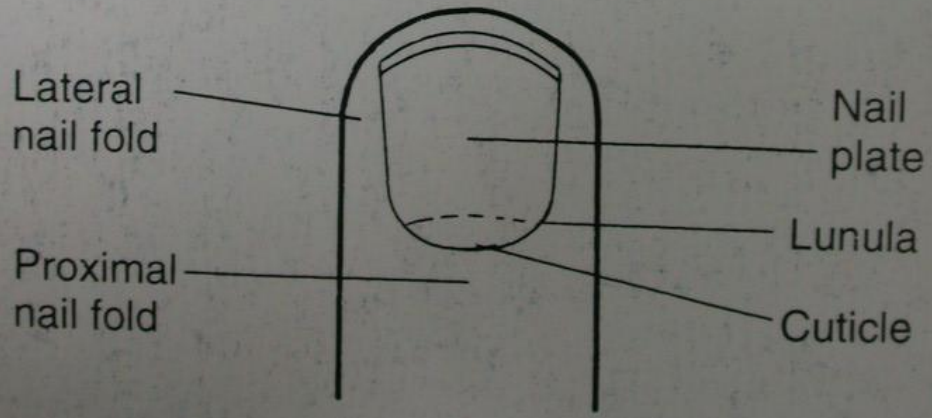


Fig. 2.22 Diagram of the nail and associated structures.

Examination

If a lesion found look for :

1. **Morphology**
2. **Configuration**
3. **Distribution**

الهيستوري موجودة بالكتاب من صفحة 41-43
لكن الدكتور ما تكلم عليها

lesions in dermatology :

1- Primary Lesions : lesions of the skin that arise (De novo) → they occure suddenly for the 1st time as 1st stage

2- Secondary lesions : skin lesions arise secondary to the primary lesions (as 2nd stage)

So the classification is done depending on the evolution of the lesion not due to the cause

Why do we classify ?

- Because the Primary lesions are the only lesions that can help in diagnosing the problem
- But the secondary lesions are helpless even with the usage of Biopsy

Primary Lesions

مهمه جدا :
من هنا ورايح
الاسئله

Macule
Papule

Plaque
Nodule

Wheal

Vesicle
Bulla

Pustule

سيكون تفصيل هذه الانواع على الصور القادمه

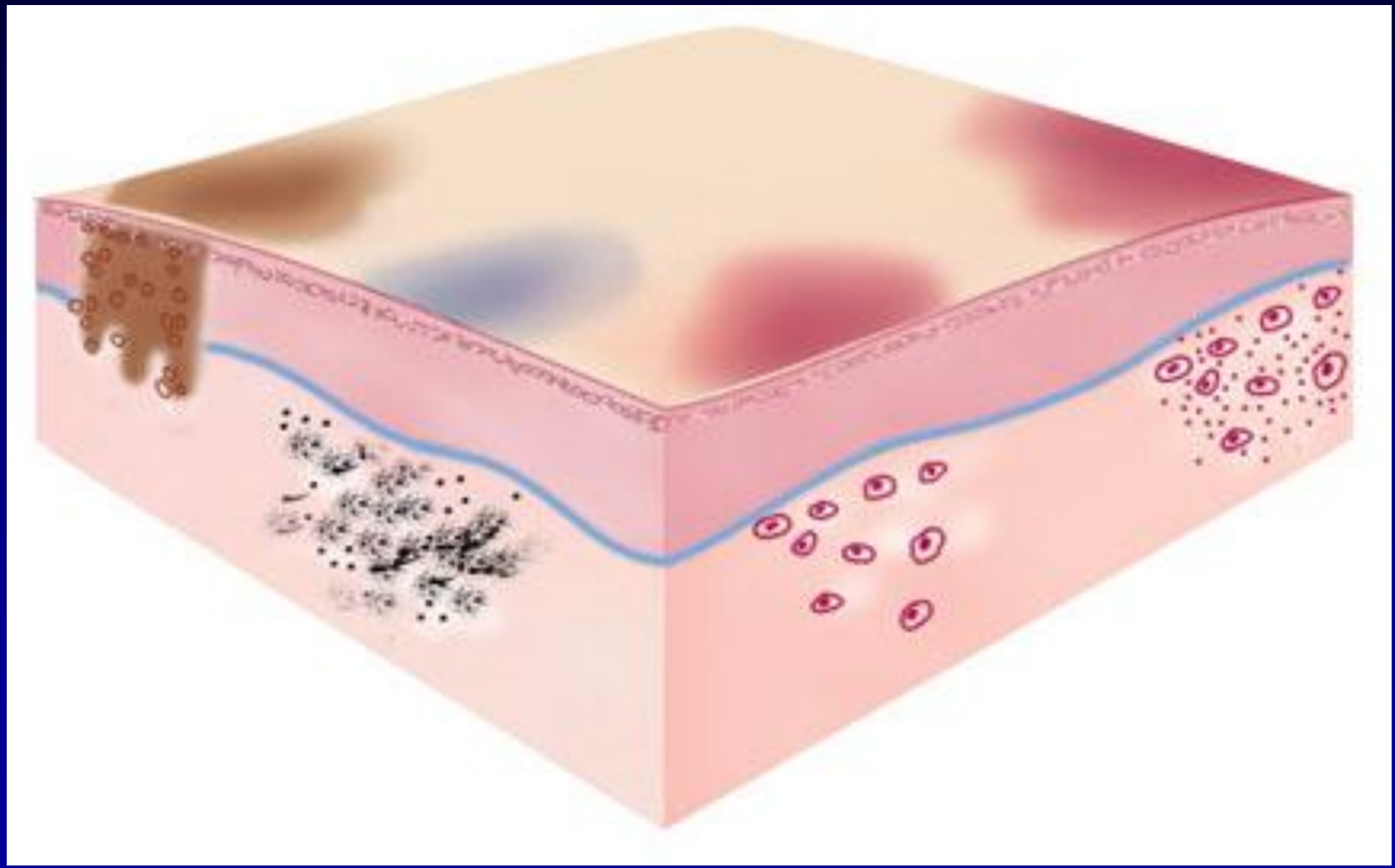
1- **Macule**

- Well circumscribed lesion with Change in color (any) only with no change in structure and no elevation or depression
- The size is less than 0.5 cm
- **Well circumscribed + change in color + no change in structure + <.5 CM**

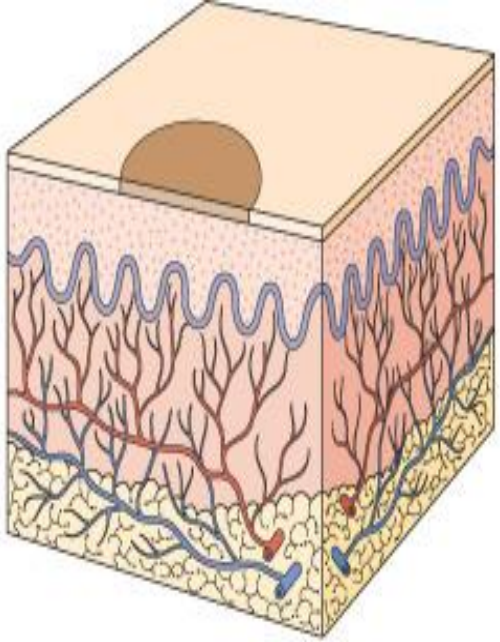
2- patch

- Its called a patch if the size is more than 0.5 cm

Macule and patch



Macule



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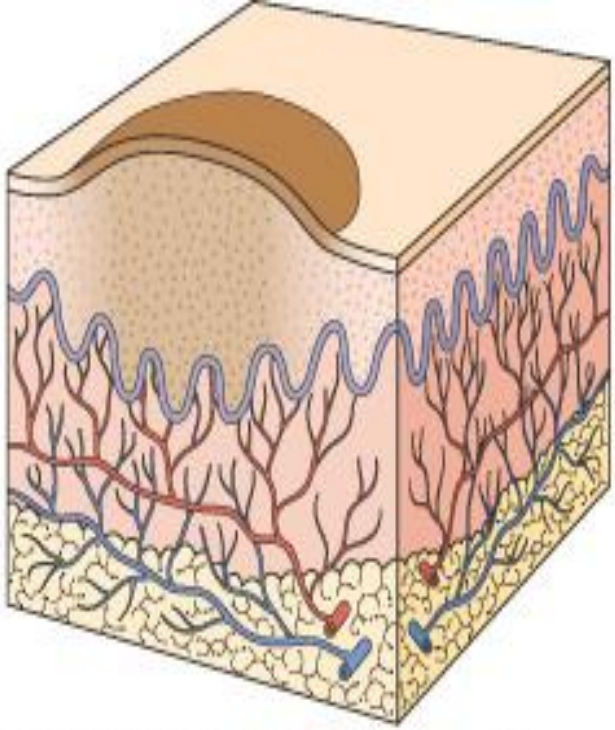
3- Papule

- A papule is a superficial, elevated, solid lesion, generally considered <0.5 cm in diameter.
- Most of it is elevated above, rather than deep within, the plane of the surrounding skin.
- A papule is palpable. It may be well- or ill-defined.
- **Well circumscribed + raised + <.5 CM**



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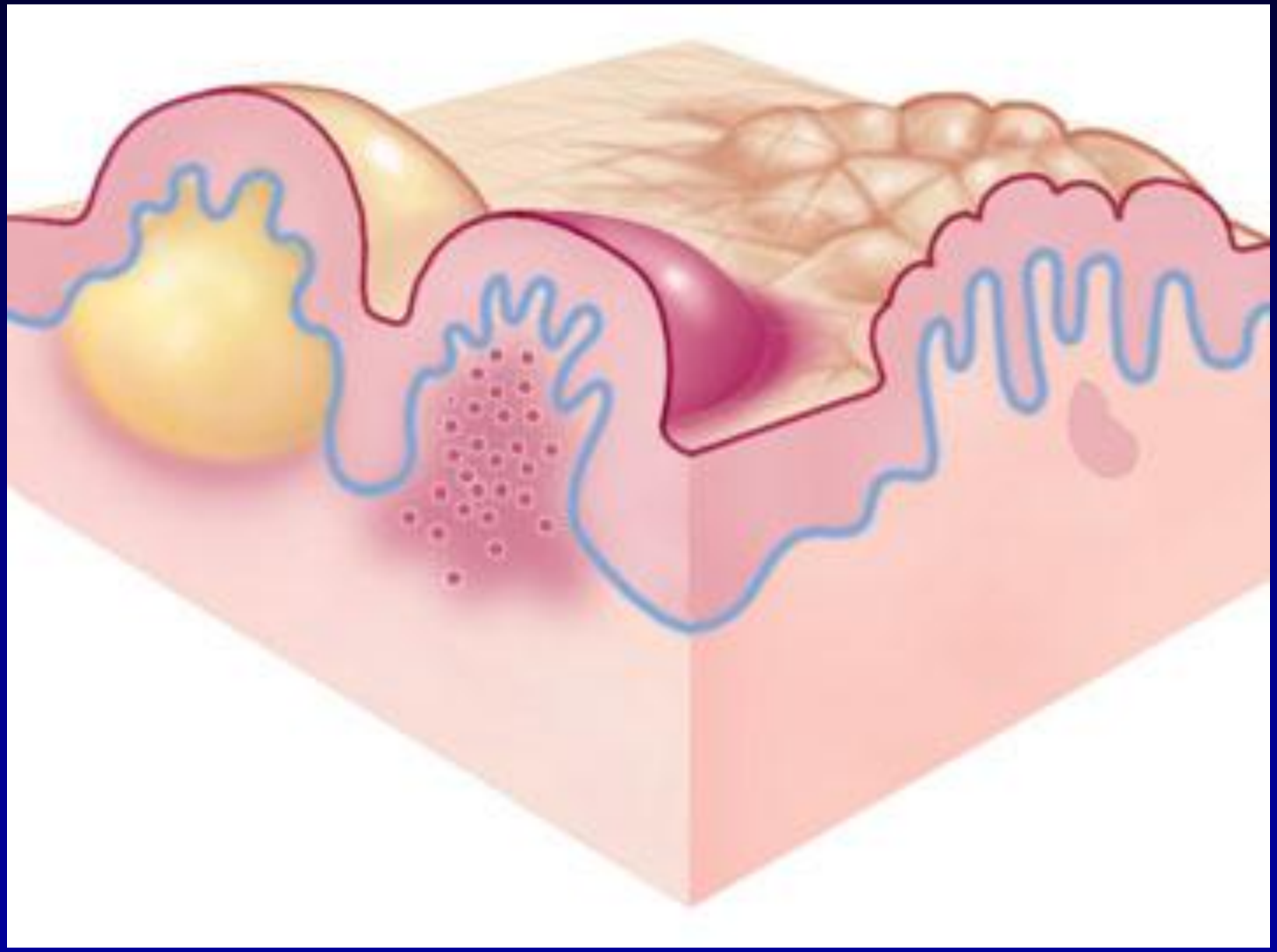
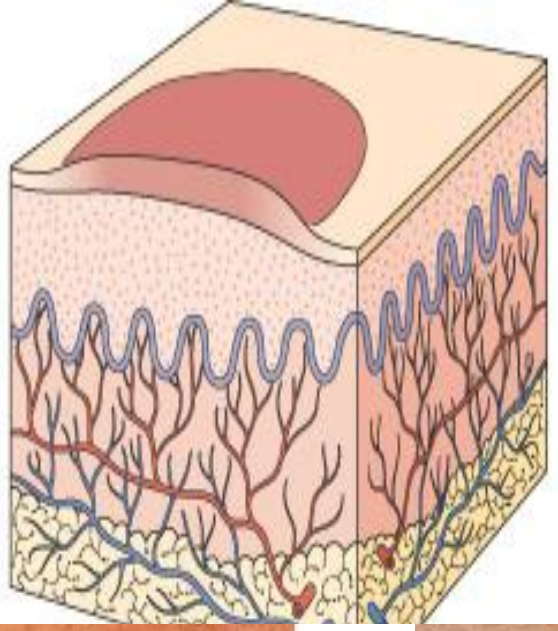
Papule



Papule

4- Plaque

- A plaque is a plateau-like elevation **above** مهمه جدا **لا تشمل كل طبقات الجلد وليس لها عمق :** the skin surface that occupies a relatively large surface area in comparison with its height above the skin.
- Has no depth into the skin
- It is usually well defined.
- Frequently it is formed by a **confluence of papules**. مهمه
- So it is elevation in the skin and its size >0.5 cm
- Elevation more than .5 cm



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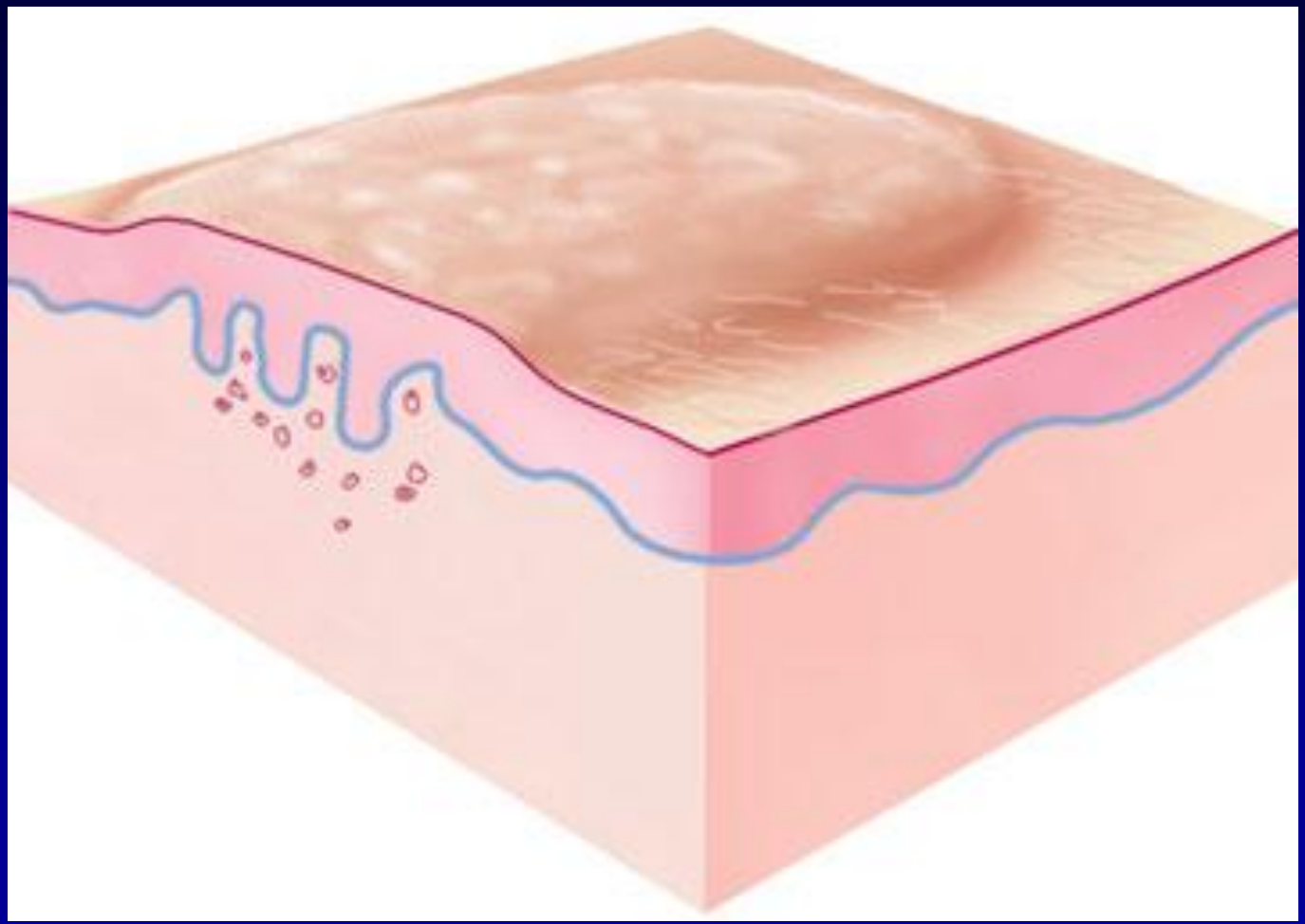
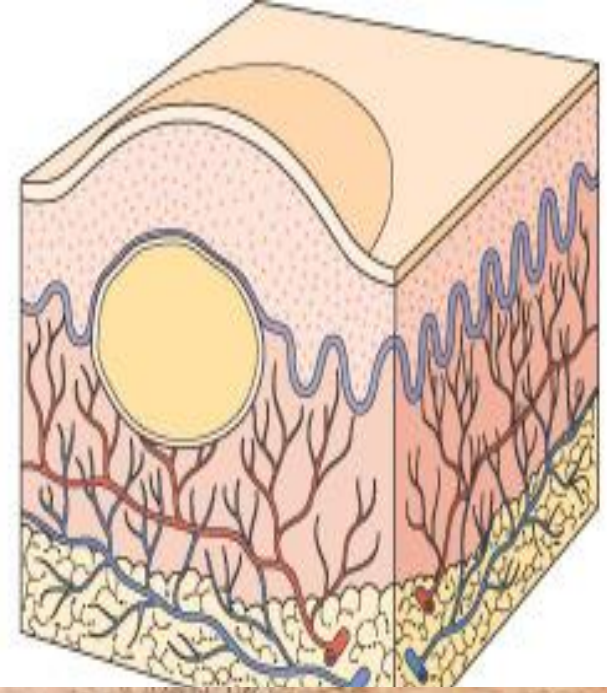
Plaque



Plaque

5- Nodule

- A nodule is a palpable, solid, round or ellipsoidal lesion that is larger than a papule >0.5 cm and
- may involve the epidermis , dermis , or subcutaneous tissue.
- NB : The **depth** of involvement and the size differentiate a nodule from a papule. مهمه جدا جدا
- Nodule usually hard, may be soft sometimes and its height = width.
- Single more common than multiple
- Felt more than seen



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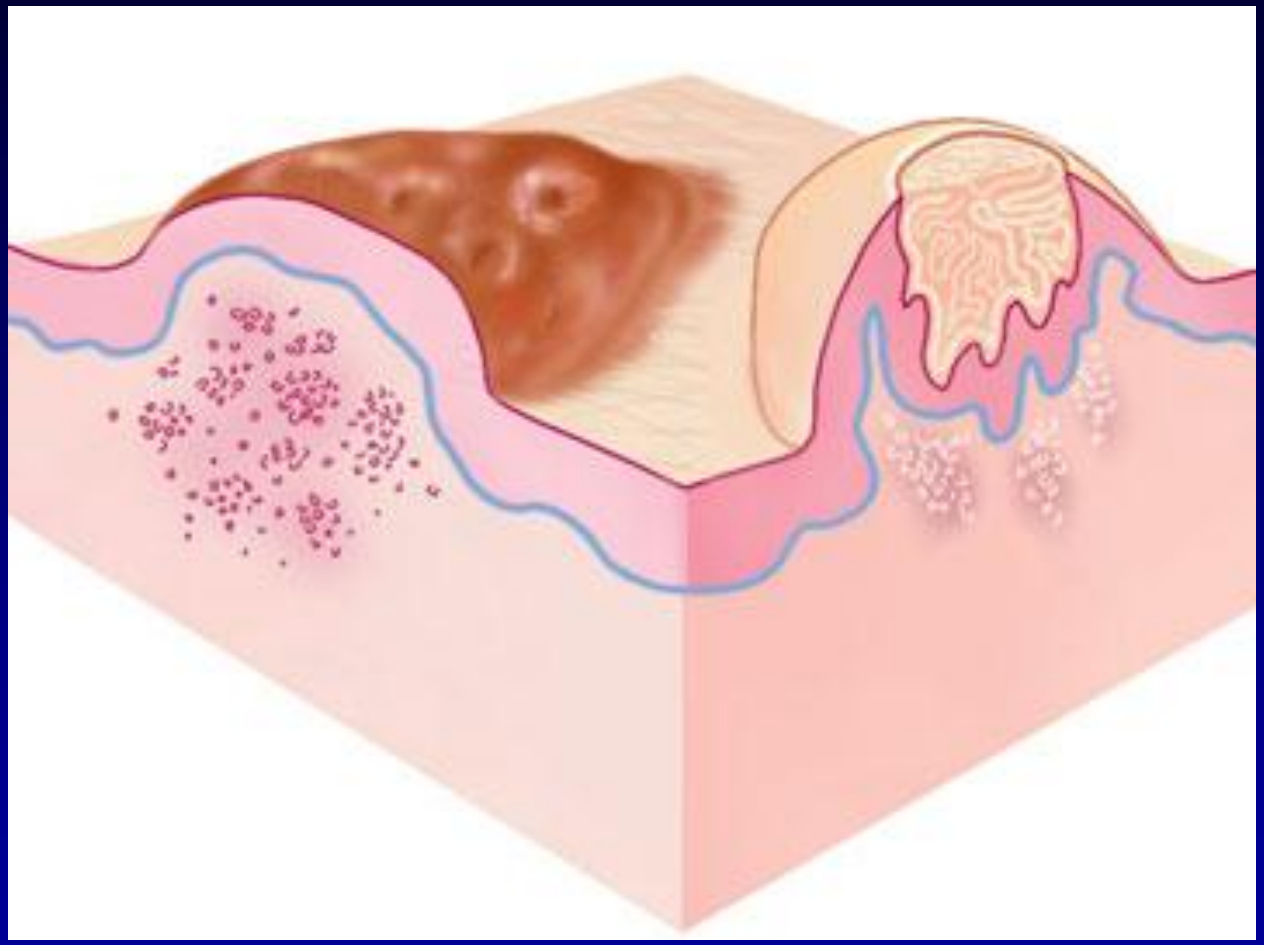
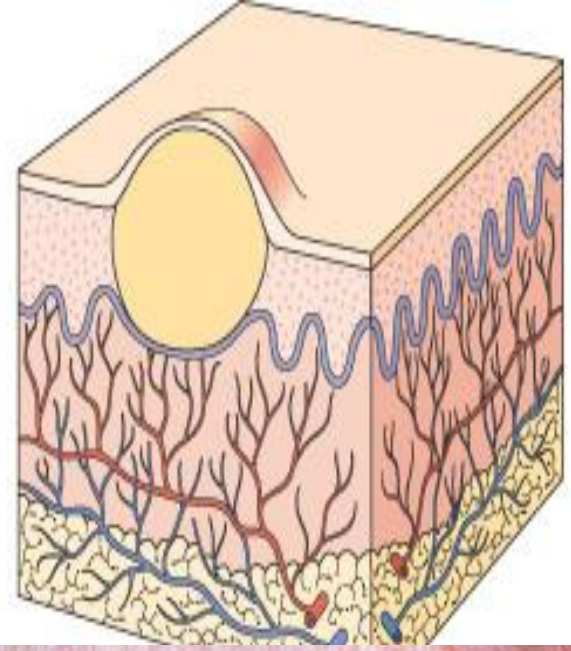
Nodule



Nodule

6- Vesicle-Bulla

- A vesicle (<0.5cm) or a bulla (>0.5 cm) is a circumscribed, elevated, superficial cavity **containing fluid**
- Often the roof of a vesicle/bulla is so thin that it is transparent, and the serum or blood in the cavity can be seen.

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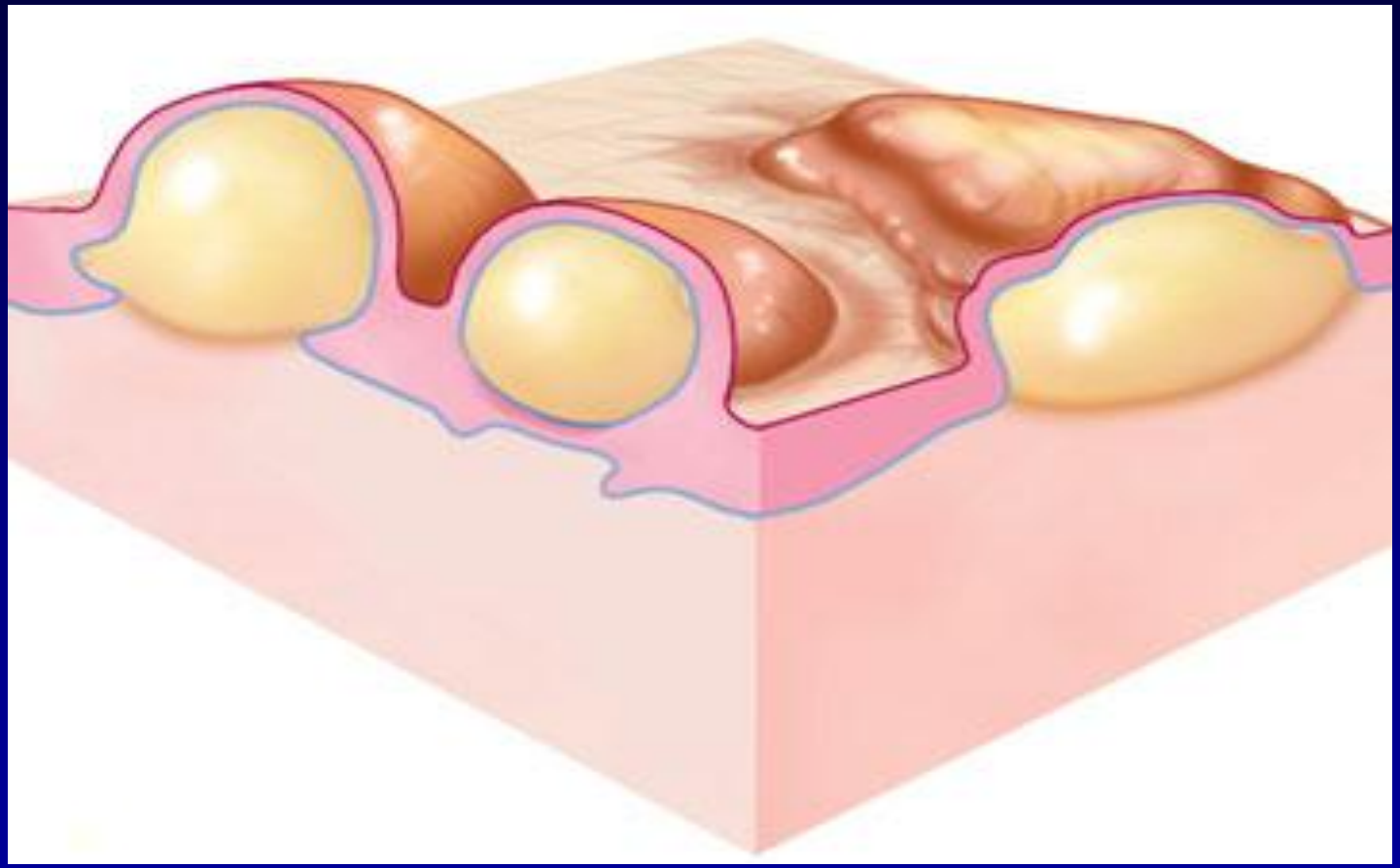
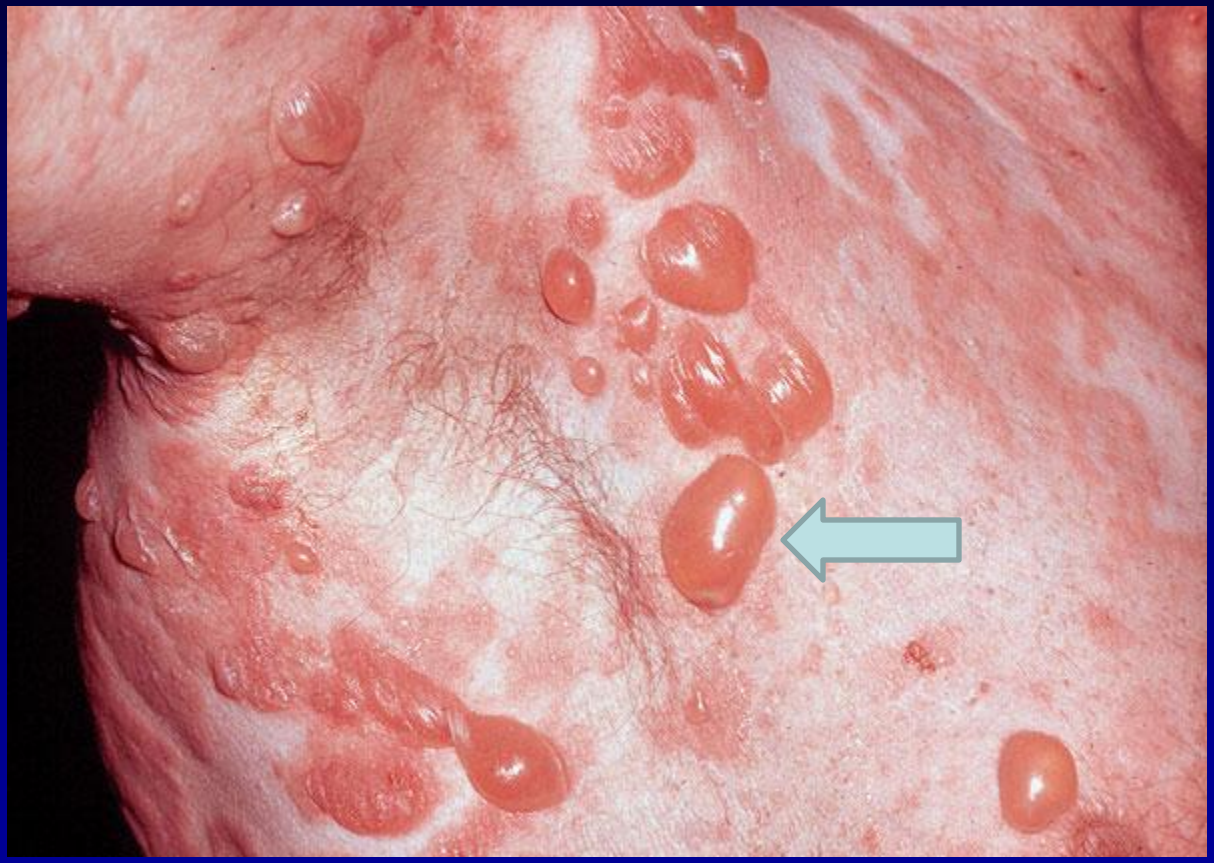
Vesicle



Vesicle

Bulla

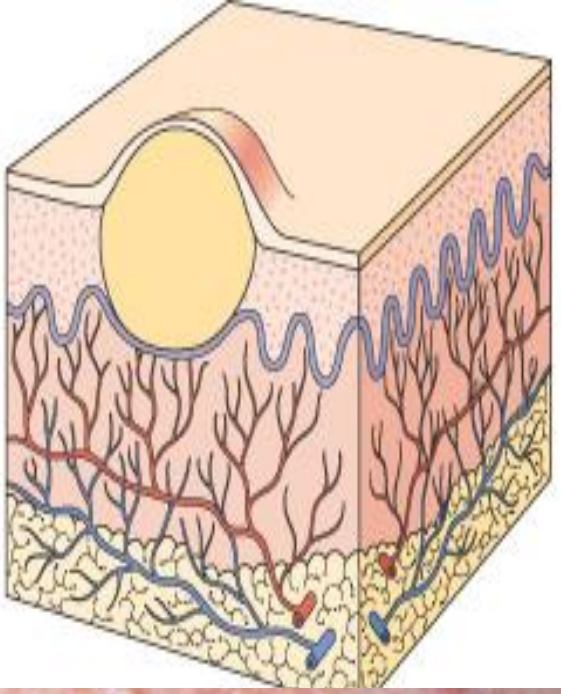


7- Pustule

•A pustule is a circumscribed, superficial cavity of the skin that **contains a purulent exudate** **الفرق اللي يفرقها عن النوع السابق**, which may be white, yellow, greenish-yellow, or hemorrhagic.

•Pustules thus differ from vesicles in that they are not clear but have a turbid content.

•Pustules may vary in size and shape.
•If it is more than .5 CM sometimes it is called “lakes of pus”

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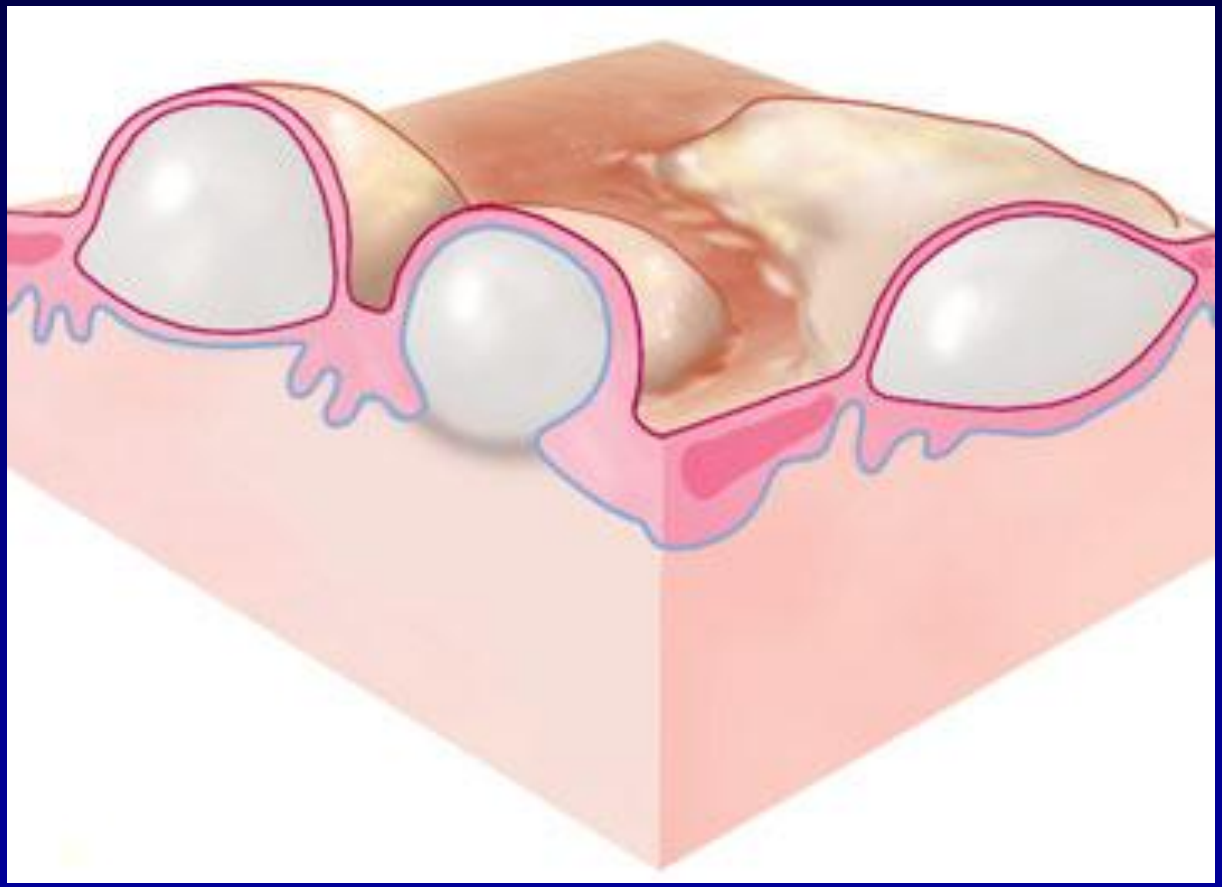
Pustule

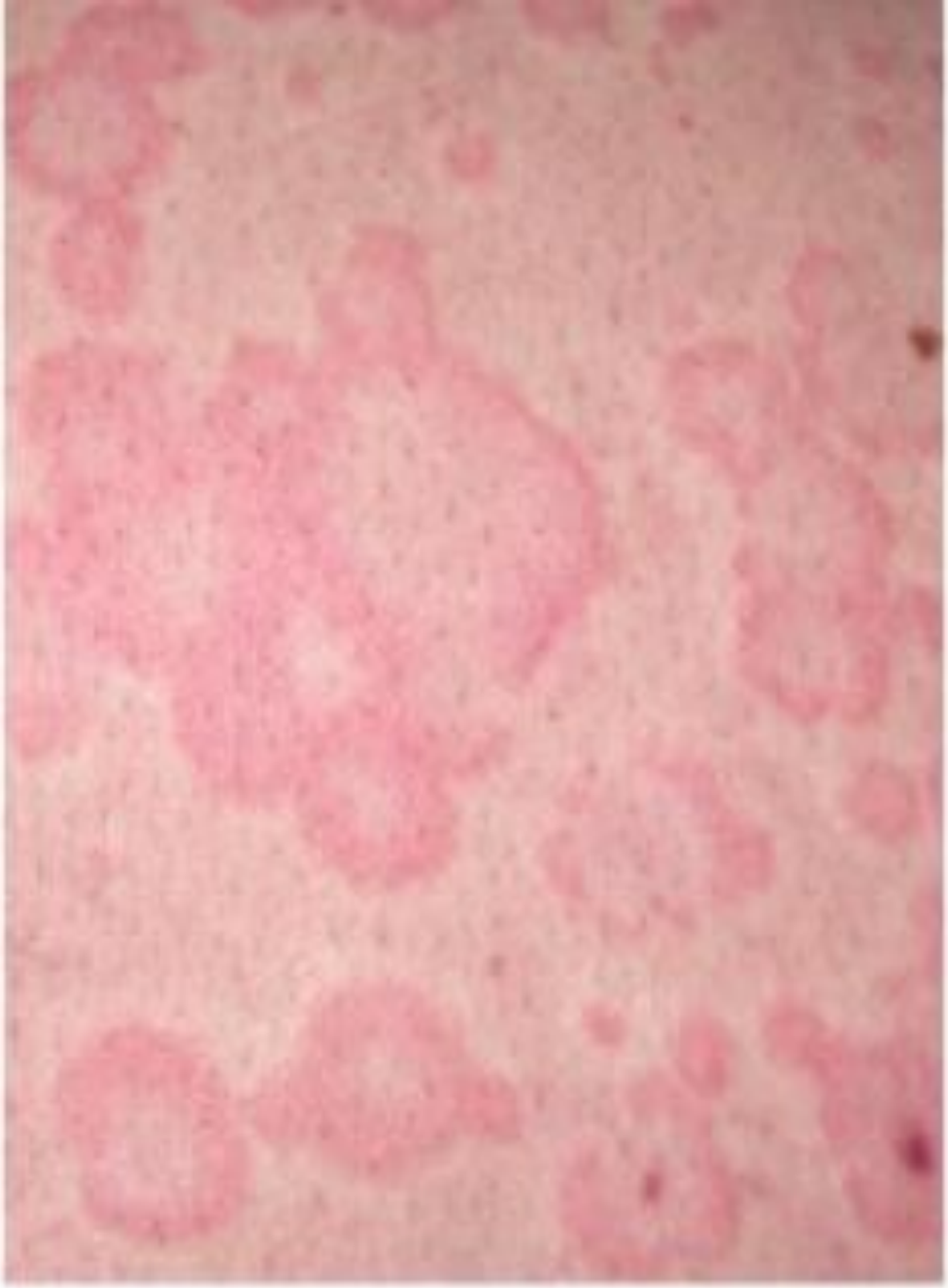


Pustule

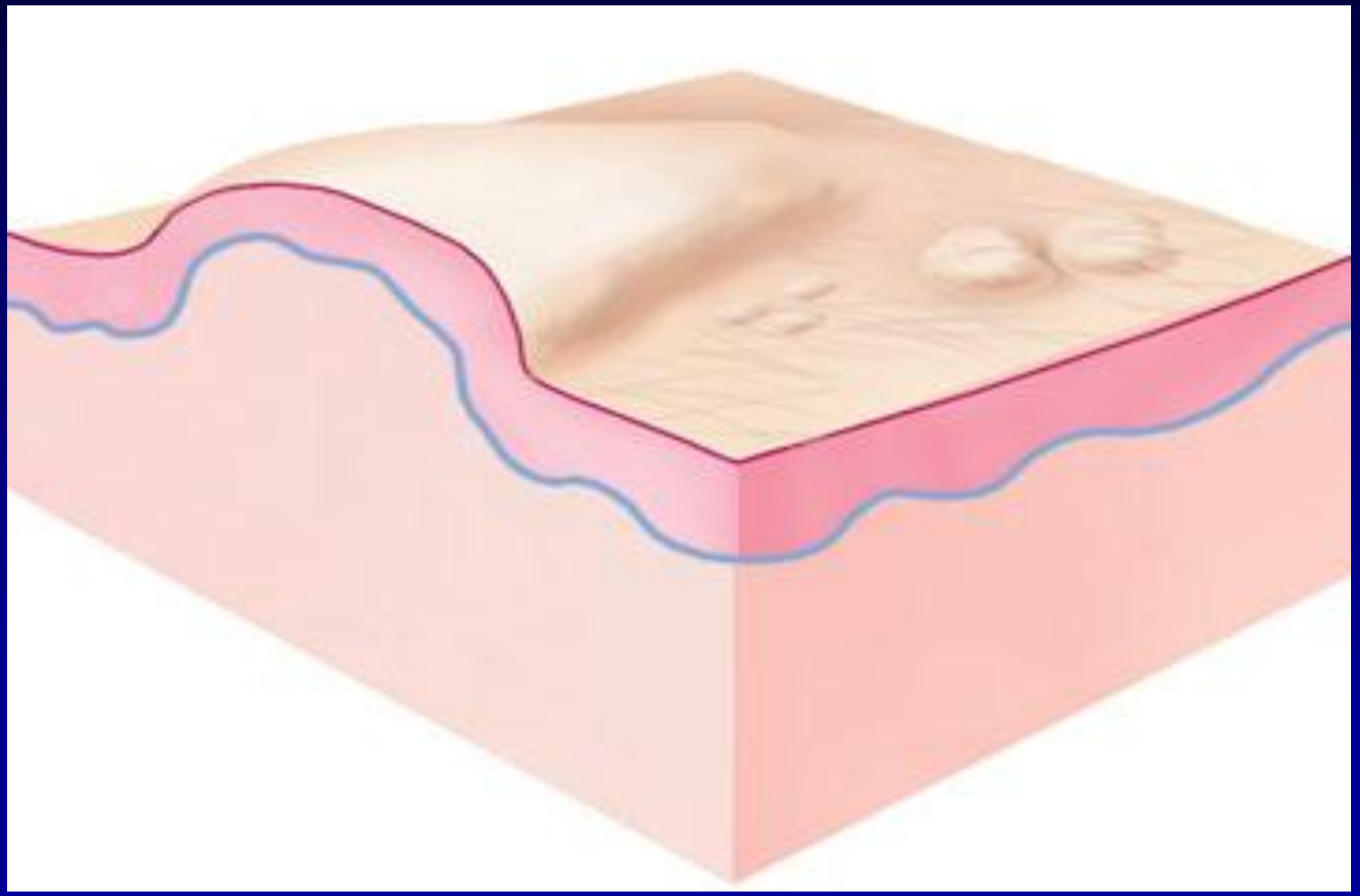
8- Wheal

- A wheal is a rounded or flat-topped, pale red papule or plaque that is characteristically evanescent, disappearing within 24–48 h.
- It is due to edema in the papillary body of the dermis.
- Wheals may be round, gyrate, or irregular
- They have a clear center and a pink or red rim

The Wheal show Central Clearing مثل الحلق



Wheal



Wheal

9- Purpra and Petchia

- Change in color (usually red)
- Does not blanch with pressuren ما يروح اللون اذا ظغطت عليها
- It called :
  - Purpura : if larger than .5 cm
  - Petchiai : if less than .5 cm (almost always less than 3 millimeters)

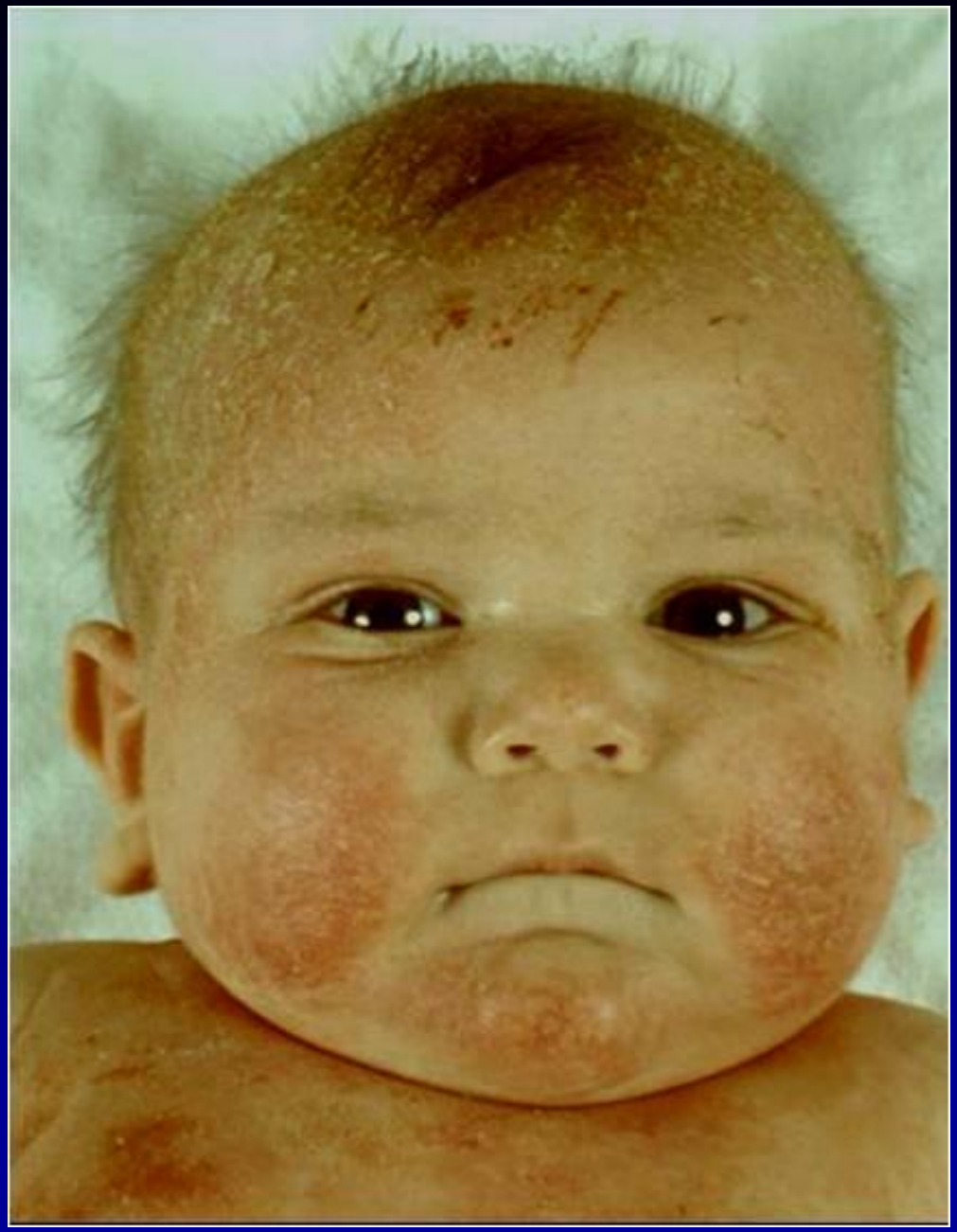

D@nderm

Secondary lesions

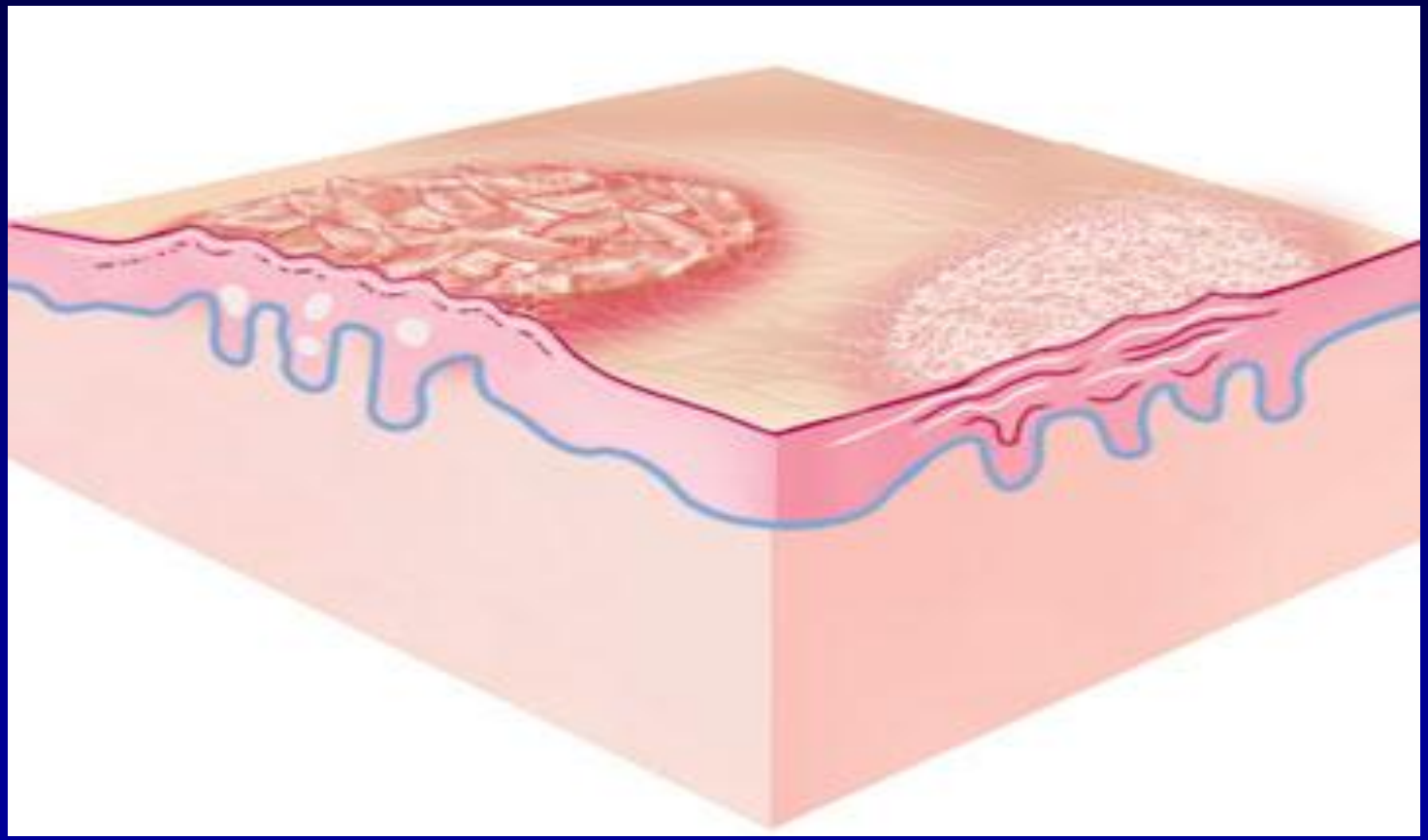
- Crust
- Scale
- Ulceration
- Excoriation
- Scar
- Fissure
- Lichenification

1- Scales

- Scales are flakes of **stratum corneum** (the outermost layer of the epidermis)
قشور الطبقة الخارجية من الجلد



Scales



Scales

2- crust

- Crust is the dried fluid lesions (dried exudate)
- If the fluid was blood it called : Hemorrhagic crust

Crust

- Crusts develop when serum, blood, or purulent exudate dries on the skin surface.
- Crusts may be thin, delicate, and friable *or thick and adherent .*
- *Crusts are yellow* when formed from dried serum; green or yellow-green when formed from purulent exudate; or brown, dark red, or black when formed from blood.

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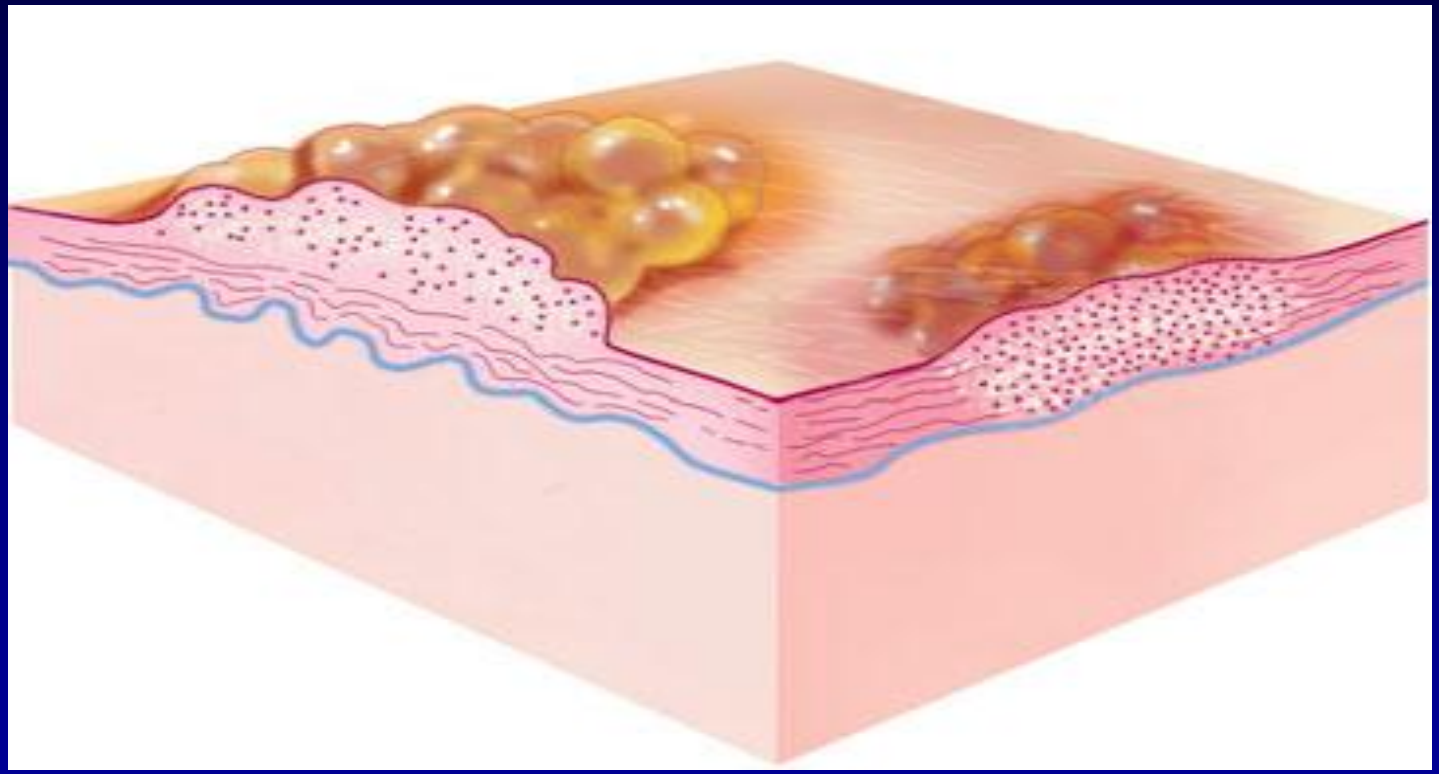
Crust

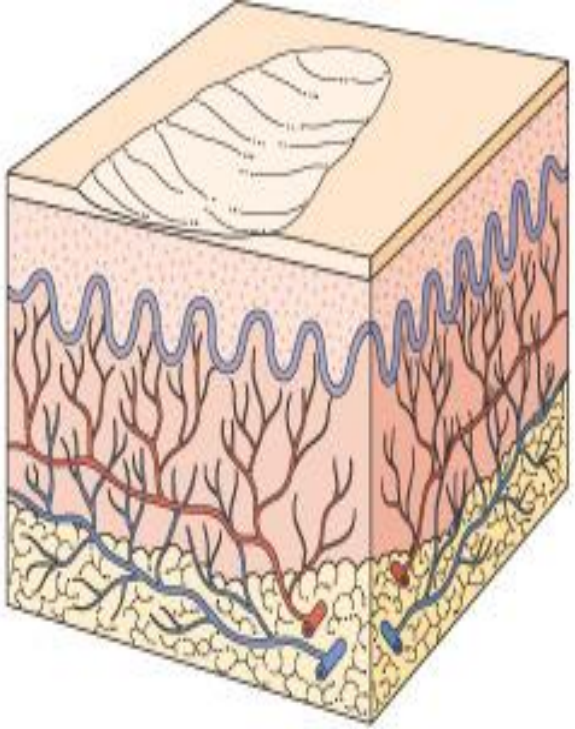


Crust

3- Erosion

•An erosion is a defect only of the epidermis, not involving the dermis **(So no blood)**
•in contrast to an ulcer, which always heals with scar formation, an erosion heals without a scar.
•An erosion is sharply defined and is red and oozes.

Erosion : depression + loss of the skin



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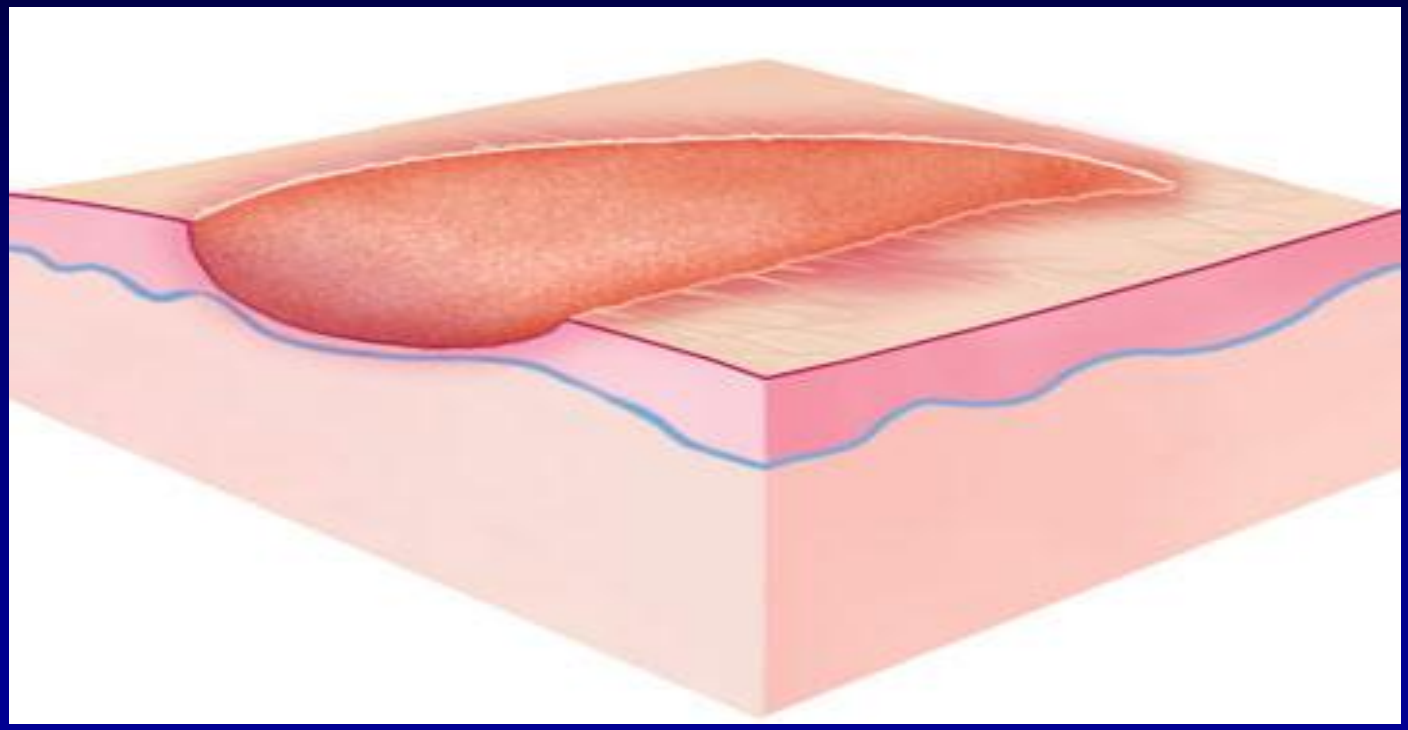
Erosion

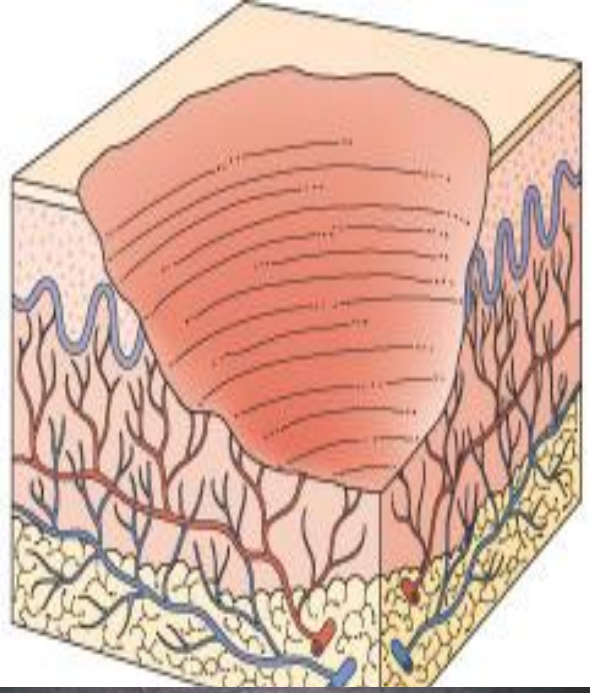


Erosion

4- Ulceration

- An ulcer is a skin defect that extends into the dermis or deeper into the subcutis(Subcutaneous fat)
- Always occurs within pathologically altered tissue.
- An ulcer is therefore always a secondary phenomenon.
- In an ulcer this is general loss of substance unlike the fissure

In ulceration there are wide area lost
هذا الفرق عن الـ
Fissure
اللي بيشرح لاحقا



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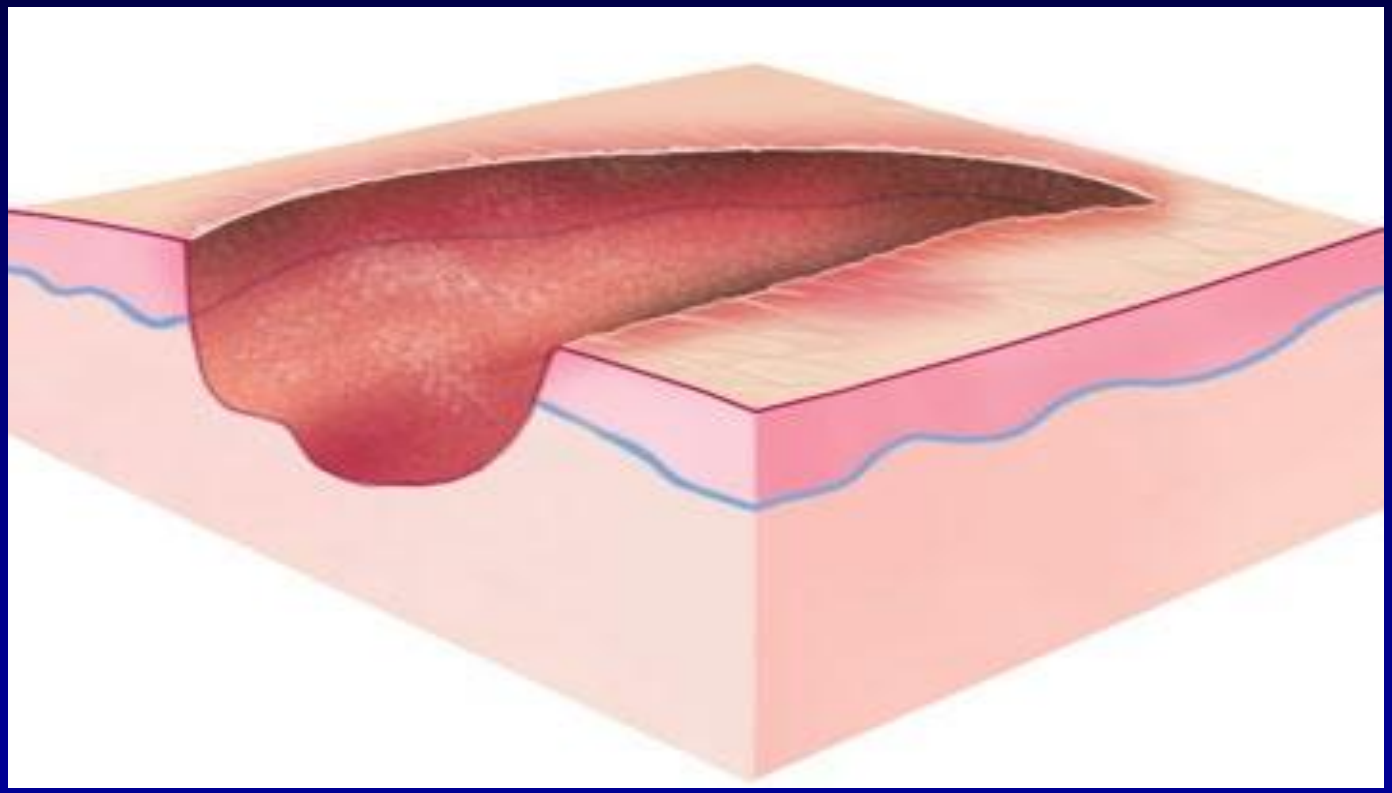
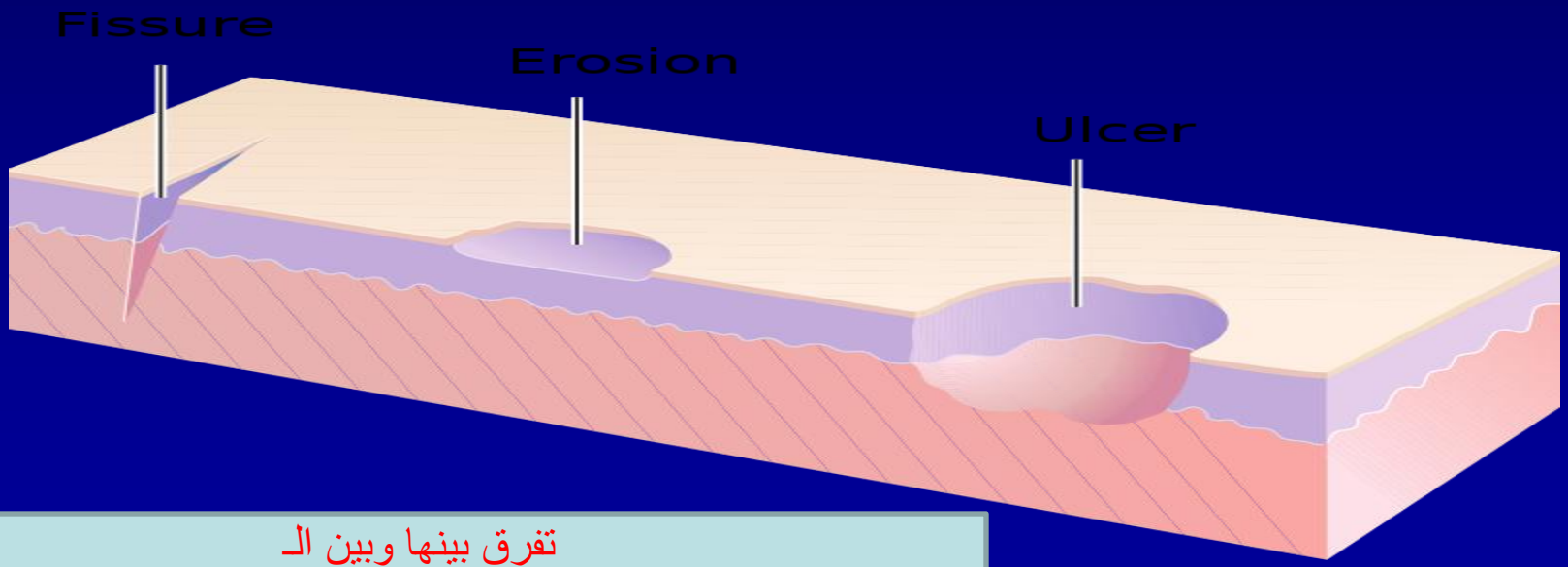
Ulcer



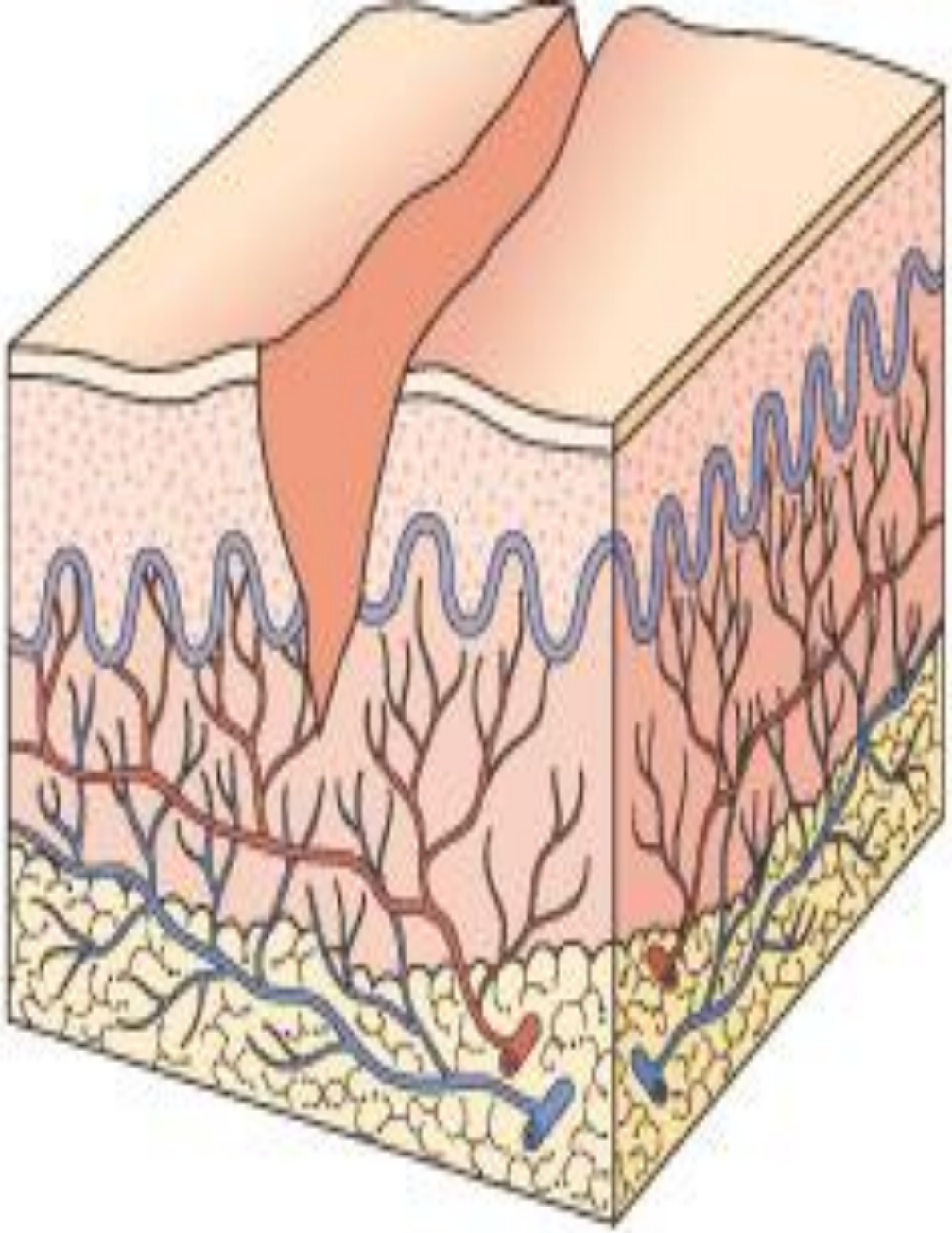
Ulcer

5- Fissure

•A **skin fissure** is a cutaneous condition in which there is a linear-like cleavage of skin, sometimes defined as extending into the dermis.[1] It is smaller than a skin laceration.



تفرق بينها وبين الـ
Ulcer
انه هنا تقدر تقرب الجزئين السليمن من بعض بعكس النوع السابق



6- Scar

•A scar is the fibrous tissue replacement of the tissue defect by previous ulcer or a wound.

•Scars can be hypertrophic and hard or atrophic and soft with a thinning or loss of all tissue compartments of the skin.

If the scar regular but has big size it called : Hypertrophic scar

If the scar irregular and grow beyond the original injury limit it called : kelloid


keloid
Hypertrophic scar

The Pic show :
Deep Acni Scars

7- Lichenification

Lichenification: Thick, leathery skin, usually the result of constant scratching and rubbing.
With prolonged rubbing or scratching, the outer layer of the skin (the epidermis) becomes hypertrophied

Lichenification : is exacerbation of skin lines

Occur in chronic eczema

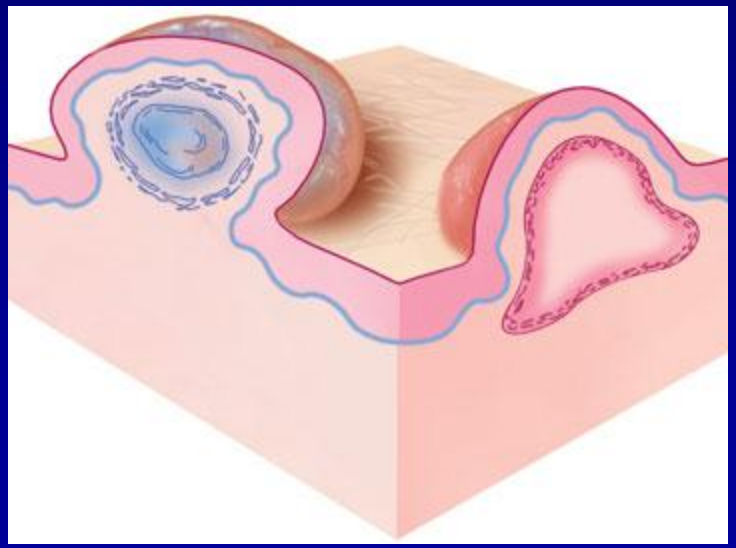

Lichenification


Lichenification

ما شرحها الدكتور ولكن مذكوره بالتيم

8- Cyst

A cyst is a cavity containing liquid or solid or semisolid materials and may be superficial or deep. It is lined by an epithelium and often has a fibrous capsule; depending on its contents it may be skin colored, yellow, red ,or blue.



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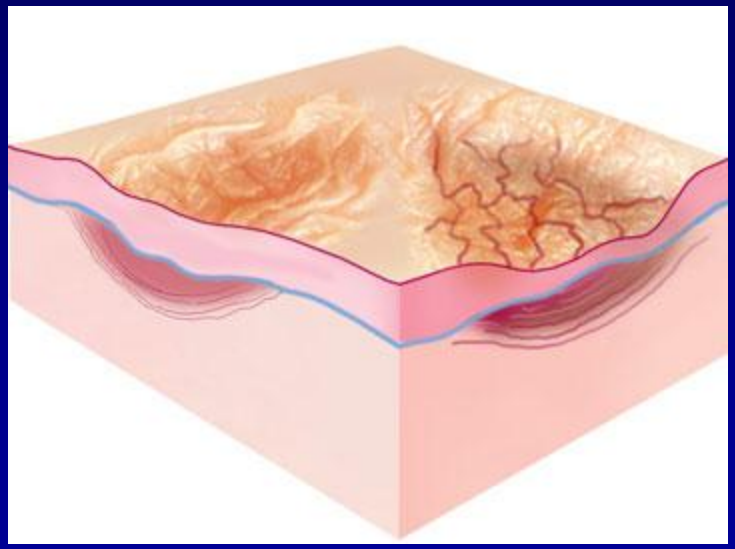
9- Atrophy

Atrophy This refers to a diminution of
some or all layers of the skin.



ما شرحها الدكتور ولكن مذكوره بالتيم

10 - Excoriation

A focal loss of the top layer of the skin, the epidermis, caused by scratching.
An excoriation is usually linear.

dermatology.about.com/

Lesion Description

Color and Shape

Distribution

Configuration

When you describe a lesion you should describe the :

1- color (the exact color → and the degree of the color)
2- shape (describe the exact shape
3- the distribution : the distribution is important because certain disease show specific distribution
4- configuration

أهم شئ في الكورس

Discription

Number of lesion → **Texture** → **Border** → **Color** → **Surface** → **Name of lesion** → **Location**

Multiple well-defined regular erythematous scaly patch occupying (location of lesion)

Examples :
1- color : in this case it called
Beef erythema لانه احمر غامق

1- color : in this case it called
Light erythema لانه احمر فاتح

1- color : ايضا في هذه الحاله لا يسمى
احمر وانما تذكر الدرجه

Ex of the distribution

Ex of the distirbution

Ex of the distirbution

Ex of the distirbution

Some specific signs in Dermatology

❖**Dermatographism**: When you stroke the normal skin → edema and erythema (you can write on skin!) .Seen in physical urticaria

❖**Kobener Phenomenon**: Induction of new skin lesions on previously normal appearing skin by truma e.g. in psoriasis, wart, lichen planus يعني انت مثلا عندك مرض سورايسس, تجرح جلدك الطبيعي ويطلع مكان الجرح مرض السورايسس

Dermatographism

INVESTIGATIVE TOOLS

Additional skin examination:

~Wood's Lamp:

Produces long wave ultraviolet light(UVA). e.g.

Vitiligo → milky white

Tinea Versicolor → golden

Tinea Capitis (caused by microsporum) → yellow green

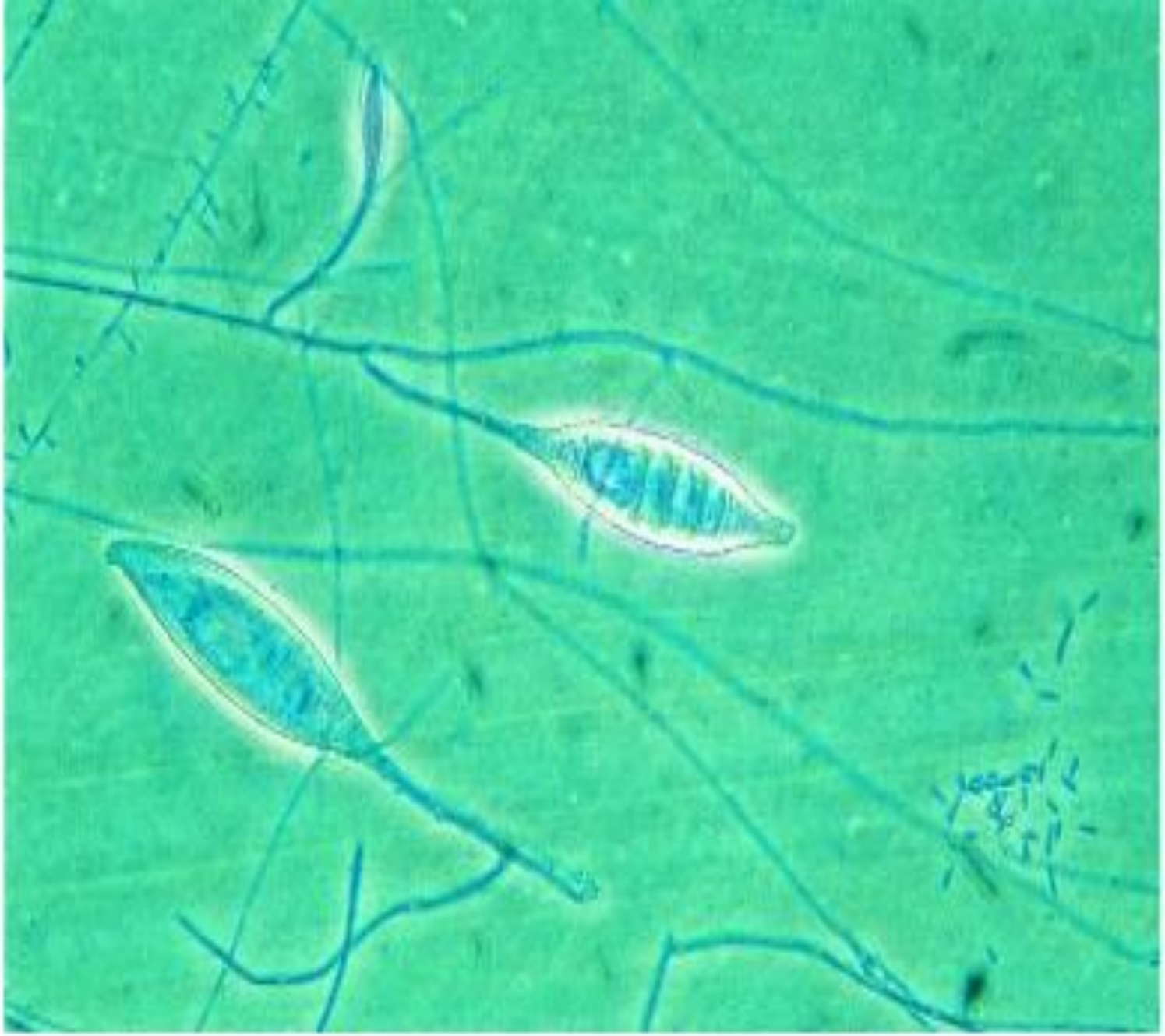
Erytherasma → coral red

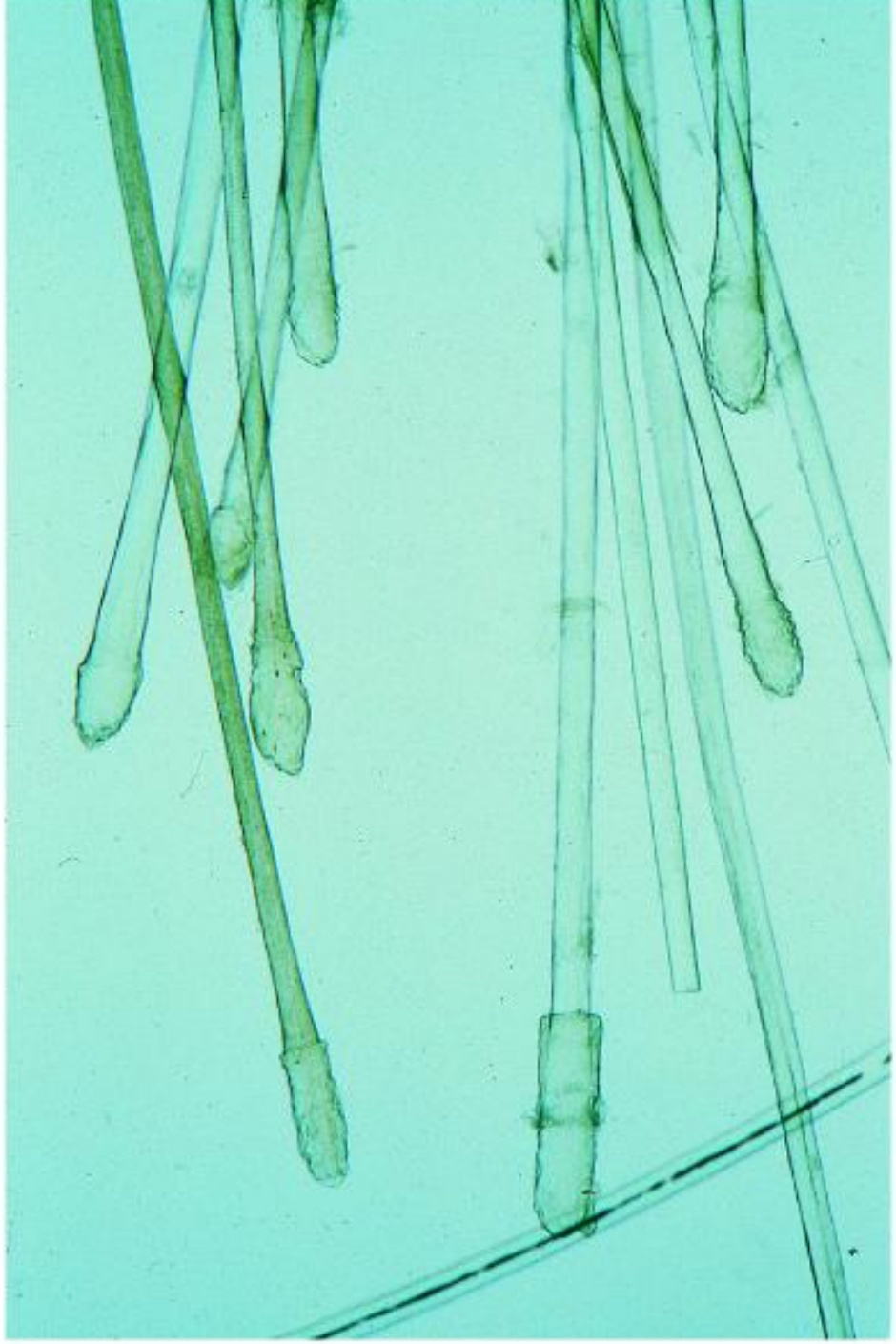
~Dermatoscopy: Helpful to differentiate benign from malignant pigmented lesions.

Investigations:

***KOH and fungal culture**

- Scrap skin scales → put over glass slide
- Add KOH 10% -- warm gently
- See under microscope
- You may see hyphae and/ or spores

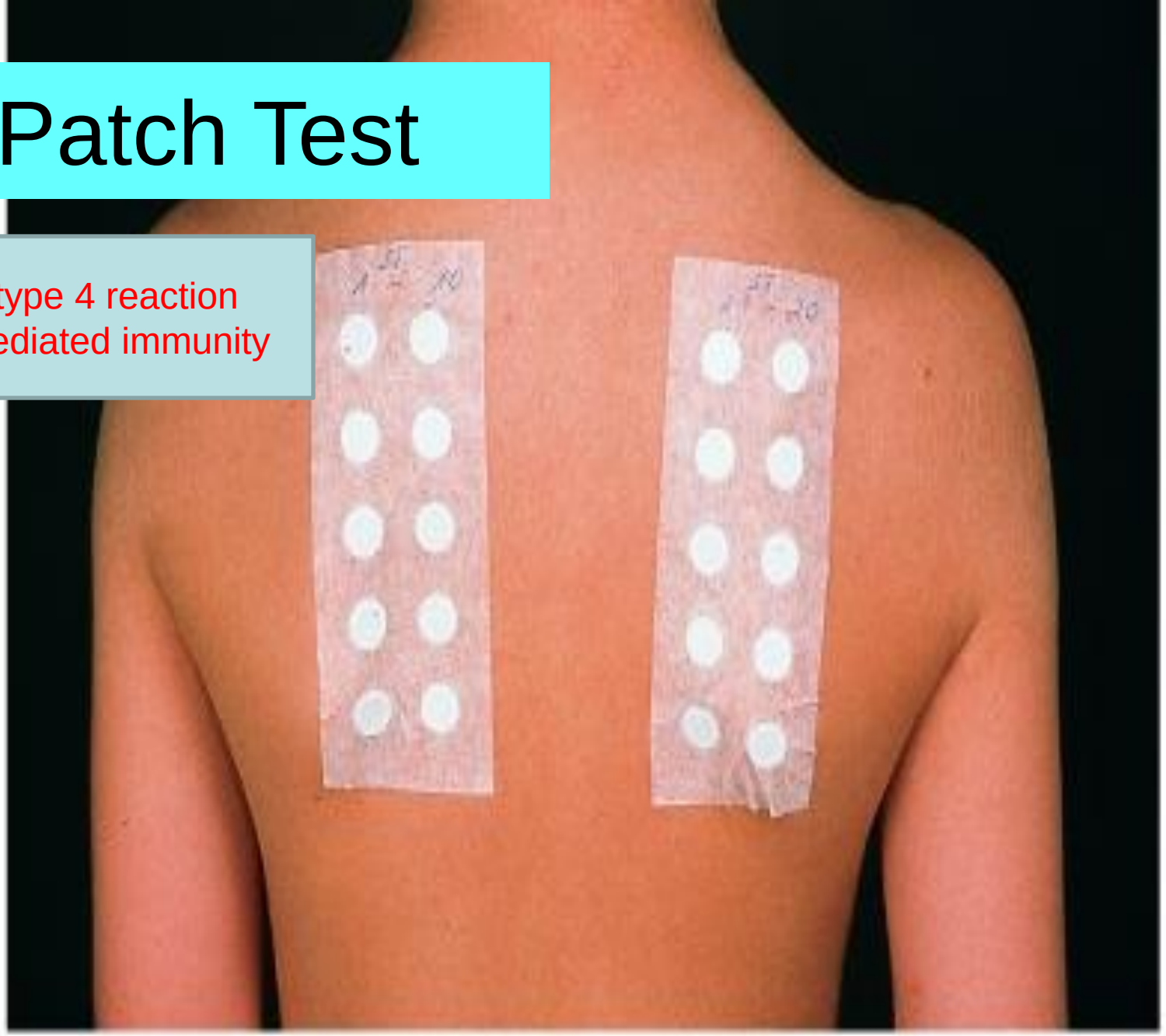




Skin Prick Test

Patch Test

Test type 4 reaction
Cell mediated immunity



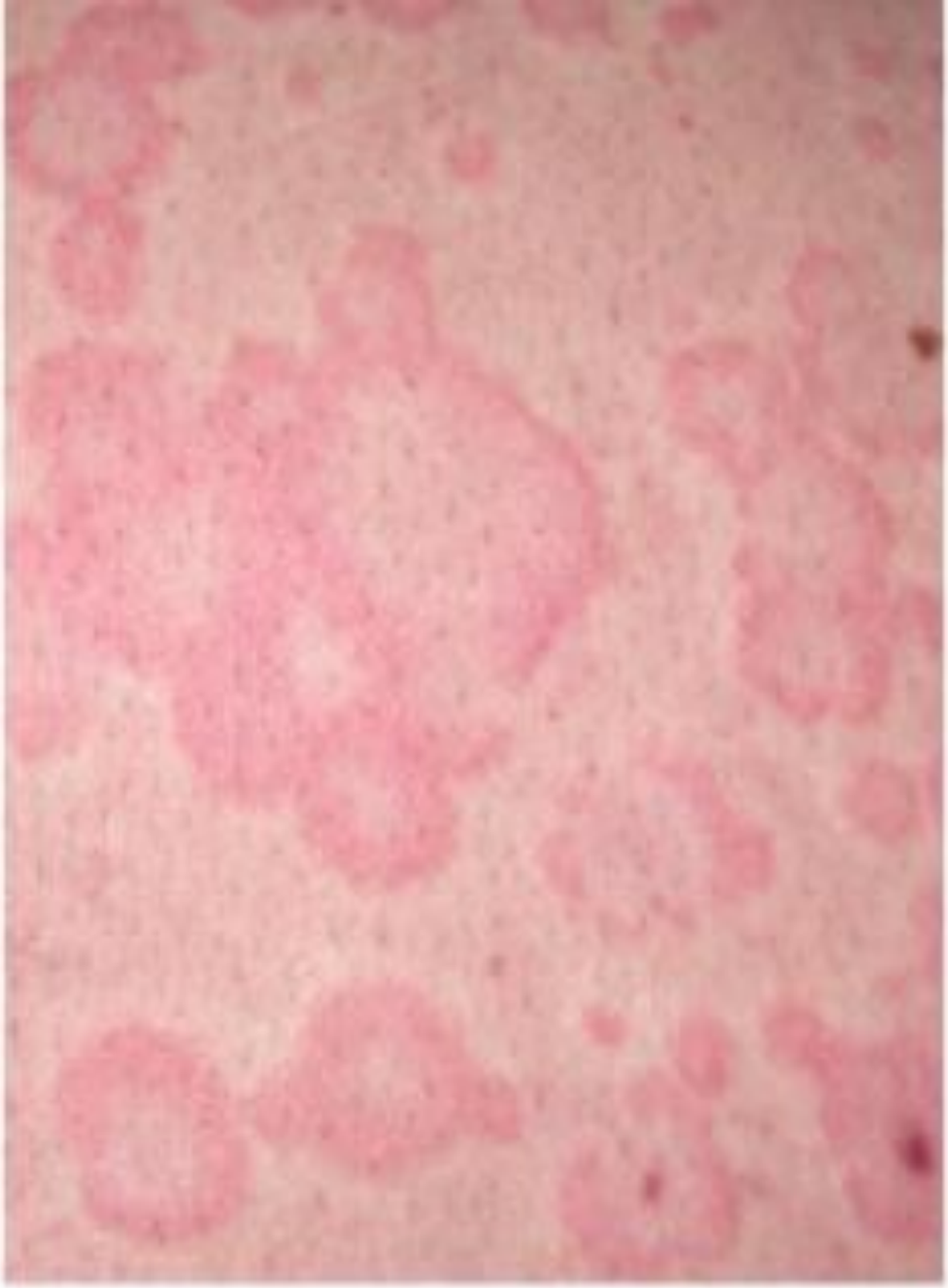
Investigations:

Skin biopsy

local anasthesia,

different types:

- Punch
- Shave
- Excisional
- Incisional



Treatment:

Can be :

Topical على مكان الجلد

Systemic يعالج المشكله الرئيسيه

اولا:
Topical Treatments

Various formulations:

- **Ointment → in eczema**
- **Cream → for acute eczema**
- **Gel → mucose membrane**
- **Solution → for hair and axilla**
- **Lotion → for hair and axilla**

Topical steroids

7 Categories:

according to strength مهمه جدا

Phototherapy

Ultraviolet light A or B

with or without psoralen

PUVA (Psoralen + UVA) لا يستخدم بالوقت الحالي

New modalities:

Narrow band UVB

UVA – 1

Excimer laser(308nm)

Dermatology subspecialties

- Pediatric dermatology
- Photomedicine
- Laser
- Hair Disorders and Transplantation
- Dermatologic surgery
- Allergy/Contact dermatitis
- Dermatopathology
- Immunodermatology
- Others