By the Name of ALLAH the Most Gracious the Most Mercifull

Skin and Subcutaneous Tissue

13th March, 2017

Part I

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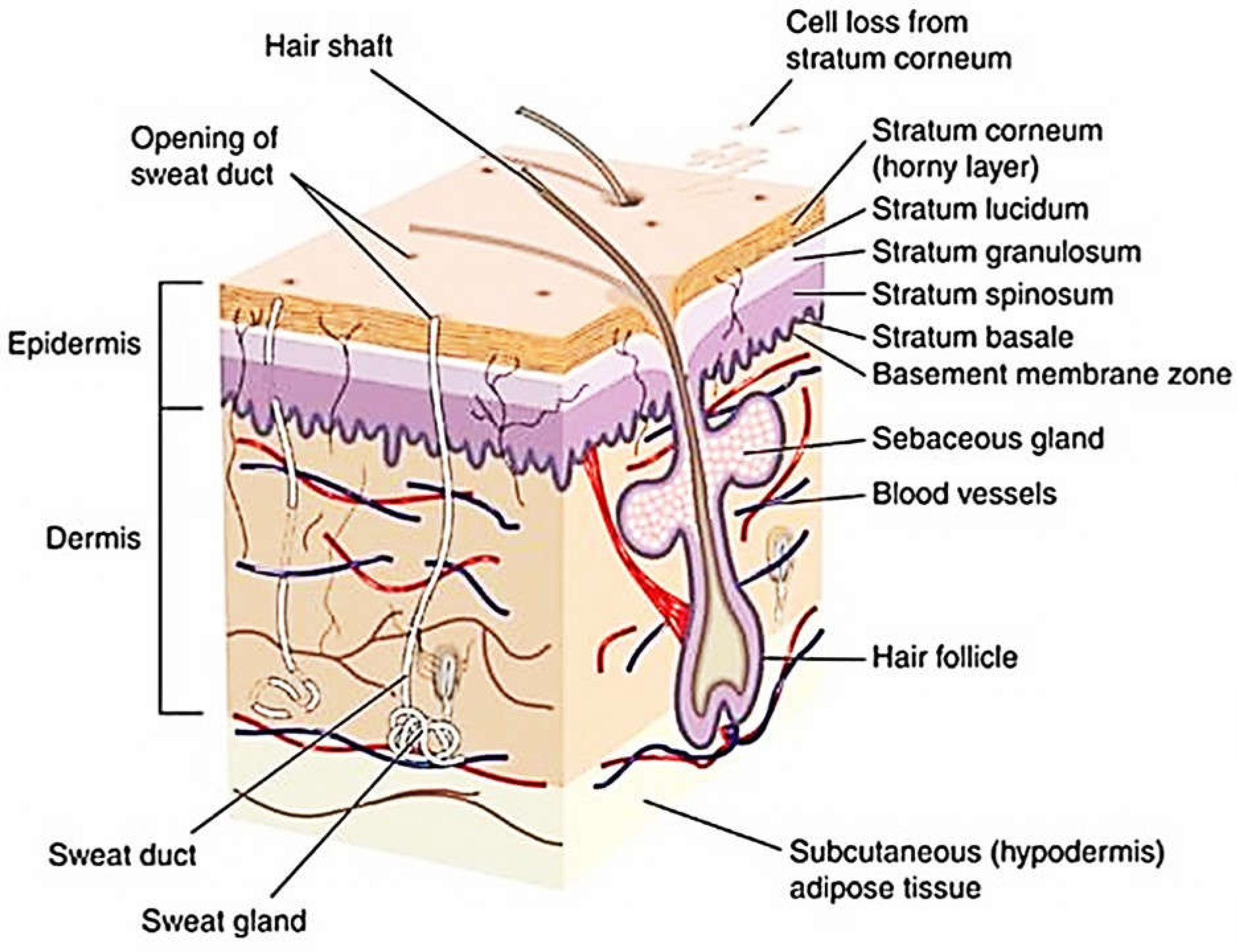
To be read in

Bailey & Love's Short Practice of Surgery 26th Edition.

Ch 42 (577 - 602)


Hair shaft
Cell loss from stratum corneum
Opening of sweat duct
Stratum corneum (horny layer)
Stratum lucidum
Stratum granulosum
Stratum spinosum
Stratum basale
Basement membrane zone
Epidermis
Dermis
Sebaceous gland
Blood vessels
Hair follicle
Sweat duct
Sweat gland
Subcutaneous (hypodermis) adipose tissue

- Ulcer , Sinus, Fistula & Cyst.
- Skin infections.
- Skin Tumours
- Cutaneous Manifstation of Generalized Diseases.
- Wounds.

Ulcer , Sinus, Fistula & Cyst

Cyst

-**A cyst is a closed sac, having a distinct membrane and division compared to the nearby tissue.**

- **Congenital / Acquired.**

-**True / Pseudocyst.**

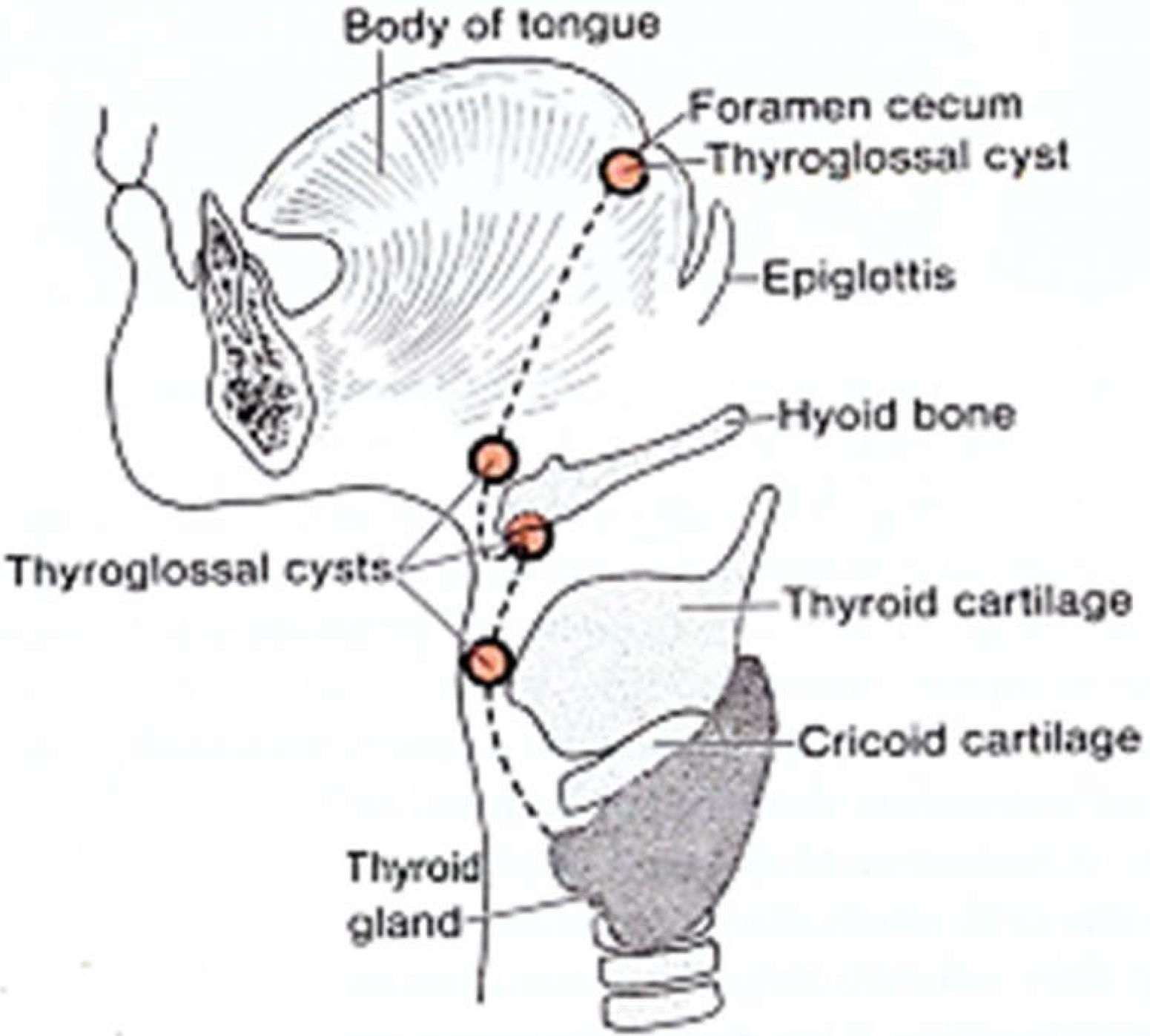
Congenital

Dermoid cyst. (Embryological fusion sites).

Thyroglosal Cyst

Fig. 1 A dermoid is an overgrowth of normal, non-cancerous tissue in an abnormal location.

Thyroglossal Cyst


Body of tongue
Foramen cecum
Thyroglossal cyst
Epiglottis
Hyoid bone
Thyroglossal cysts
Thyroid cartilage
Cricoid cartilage
Thyroid gland

- Arises from foramen cecum.
- Along the entire line of thyroid gland descent.
- Complication: Infection,fistula and carcinoma.
- May be presented as supra-hyoidal or infra-hyoidal cyst.
- Tx: Surgical excision.

Aqcuired

-Retention cyst (**Sebaceous cyst**).

-They arise from the glands that secrete oily matter that lubricates hair and skin (sebaceous glands).

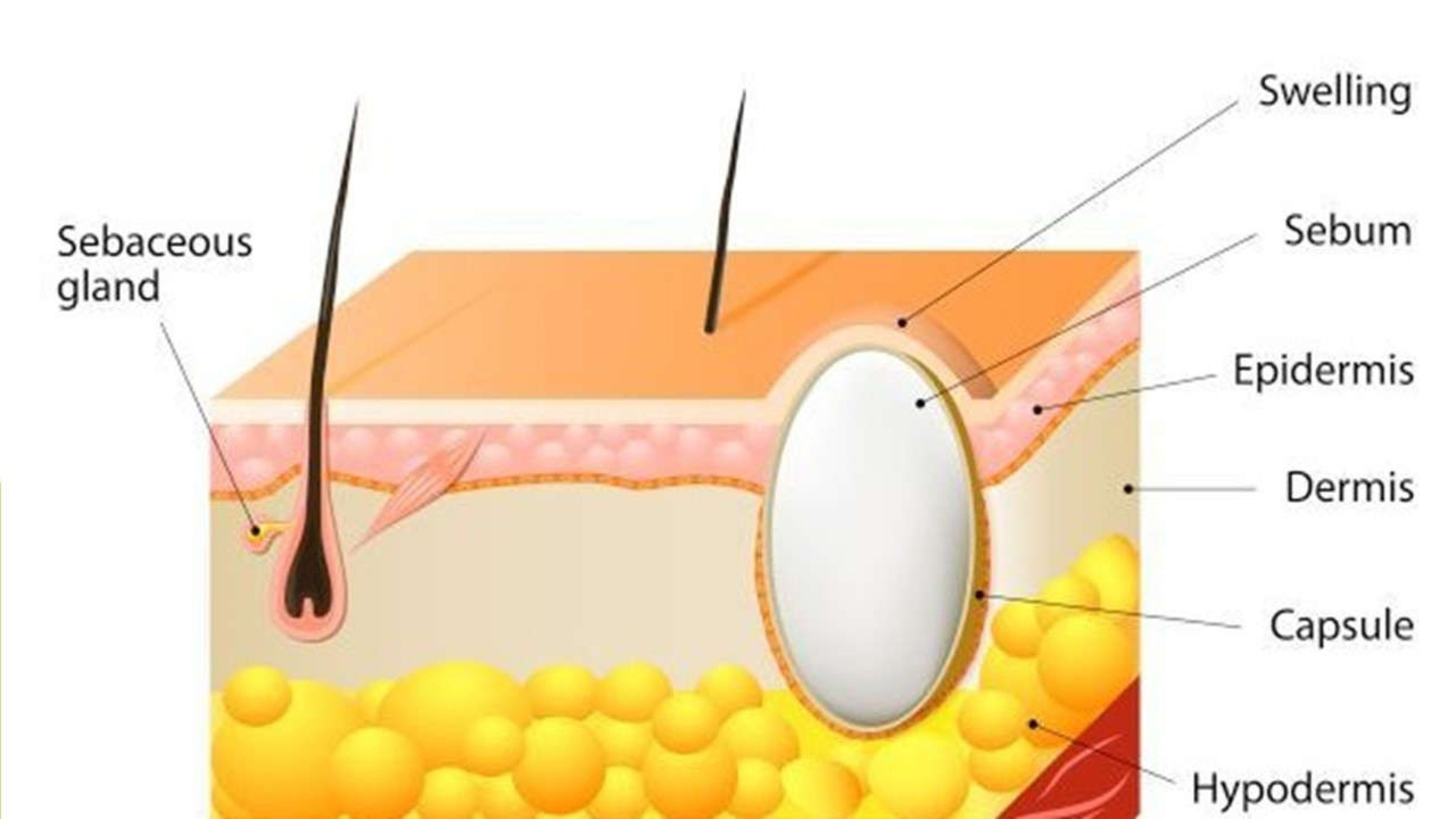
- Punctum with discharge.

- Fix to the skin, tense.

- Infection.

-Tx : Surgical excision.

-DDx : Lipoma (fluctuation).


Swelling
Sebum
Sebaceous gland
Epidermis
Dermis
Capsule
Hypodermis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ULCER

A pathological disruption of an epithelial continuity

Classification

Edge, Sites, Cause.

Edge

Sloping — Venous ulcer

Punched out — Neuropathic

Undetermined — Decubitus

Rolling — Basal cell ca.

Everted — Squamous ca.

Sloping Ulcer

- **Venous ulcer.**
- **Healing ulcer.**

The ulcer is shallow & the epithelium is growing in from the edge in an attempt to heal

1- Sloping

Healing ulcer

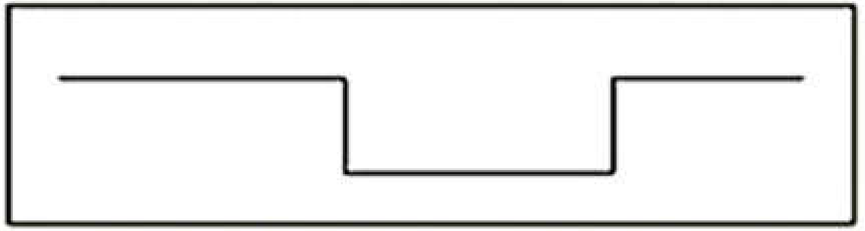
- Surrounding skin not inflamed
- Floor covered with granulation tissue
- Edges show bluish outline of the growing epithelium
- Slight serous discharge

Venous Ulcers :
Shallow in appearance and situated around the ‘gaiter region’ of the leg, oedematous, there may be ankle flare and hyper pigmentation (brown staining) and the leg may be ‘hardened‘.

Punched Out Ulcer

- Square cut and thin base, which may be covered with a ‘wash-leather’ slough.
- Trophic , ischemic, 3rd syphilis , leprosy.

2- Punched-out

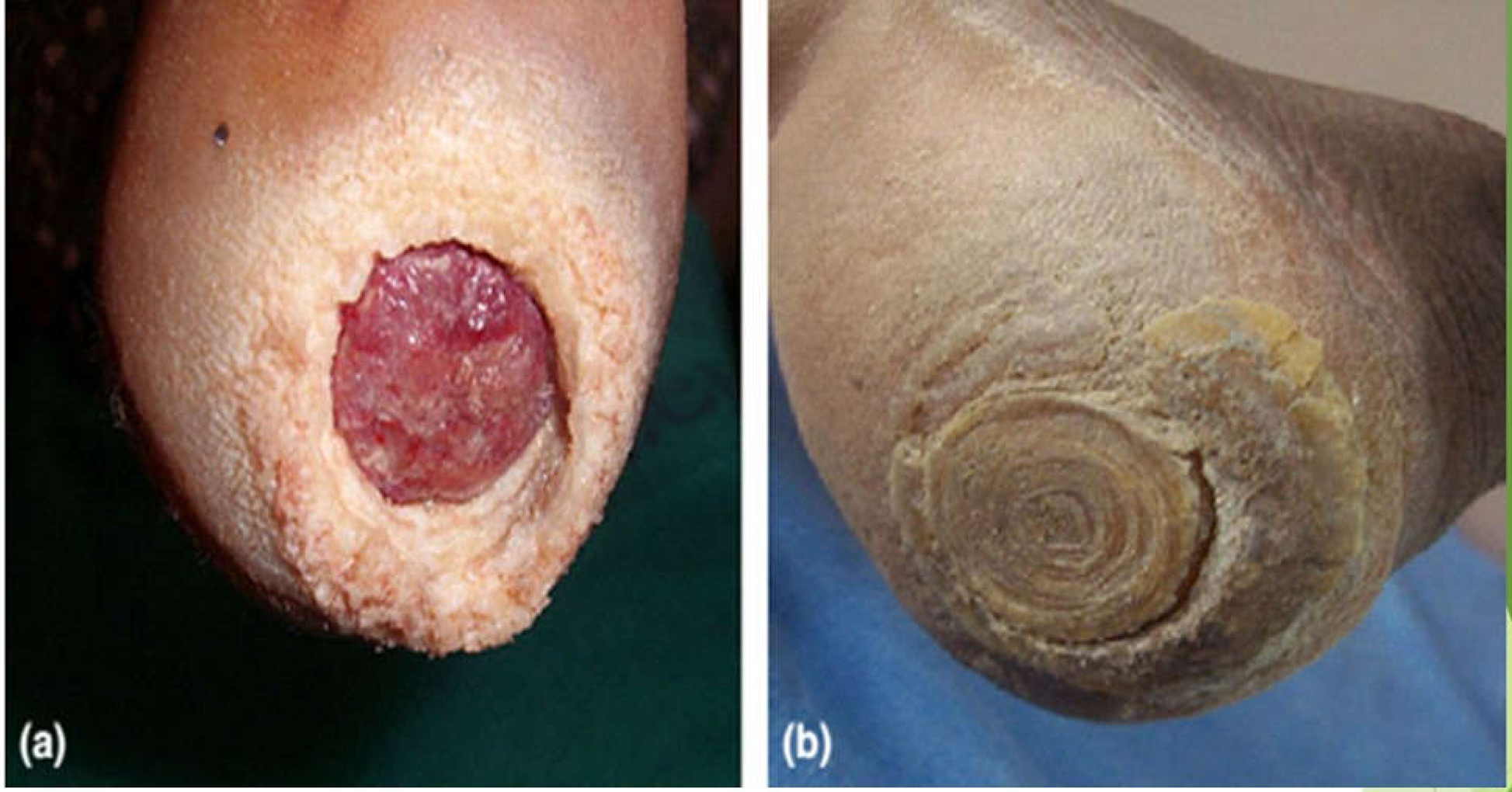


or ***square cut***: It results from rapid death & loss of the whole thickness of the skin with minimal attempt of healing

Gamma of 3ry syphilis

Leprosy

Neuropathic ulcer in the sole of foot



Clinical images of a trophic skin ulcer of leprosy on the plantar aspect of the foot

Arterial Ulcers present as being: ‘punched out’ in appearance, poorly perfused, the legs and feet are cool to touch and there may be gangrene to the toes, the leg is often shiny, hairless and the skin may be tight

Wagner's Grading System for Diabetic Foot Infections

G0 - Intact Skin.

G1 - Superficial ulcer of skin or subcutaneous tissue.

G2 - Ulcers extend into tendon, bone, or capsule.

G3 - Deep ulcer with osteomyelitis, or abscess.

G4 – Discrete Gangrene (toes ,forefoot, midfoot or hindfoot).

G5 – Whole foot gangrene.

Grade 0

- Preulcer stage
- Skin is intact
- Redness of skin
- Calluses
- Bony deformities

It Can be prevented

It should be reassesd Annually

DFU

Grade 1

Superficial (shallow)
Ulceration

Should be reassesed
every 3 monthly

Grade 2

- Deep ulceration
- Visible
  Tendon,
  or bone in wound

Aggressive treatment is must

Grade 3

- Deep Abscesses
- Osteo Myelitis(Infection of Bone)

Chances of loosing leg

Grade 4

Localized gangrene of toes / forefoot

Needs Amputation (Cutting) of Toe or part of foot

Grade 5

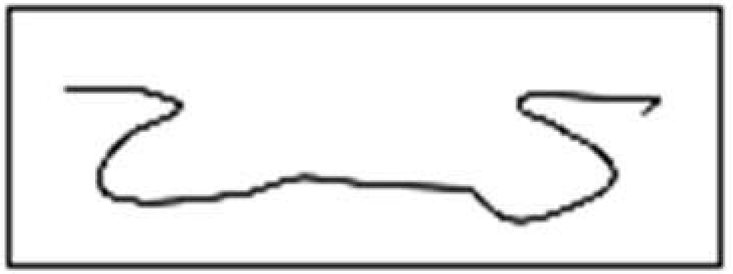
Gangrene of entire foot or leg

Needs Amputatation (Cutting) of foot or leg

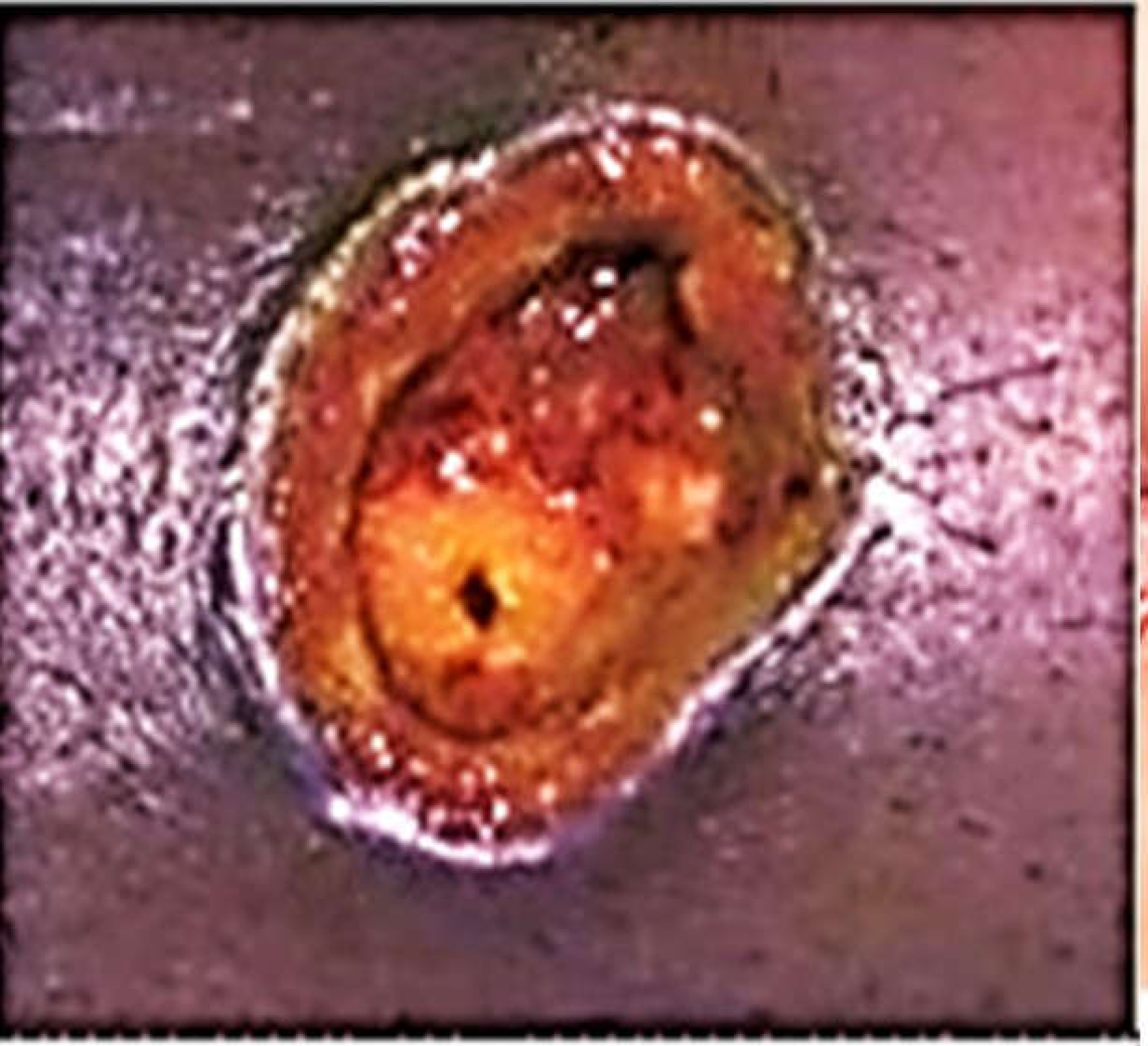
Undermined Ulcer

- **Decubitus / Pressure Sore / Bed Sore**
- **T.B.**

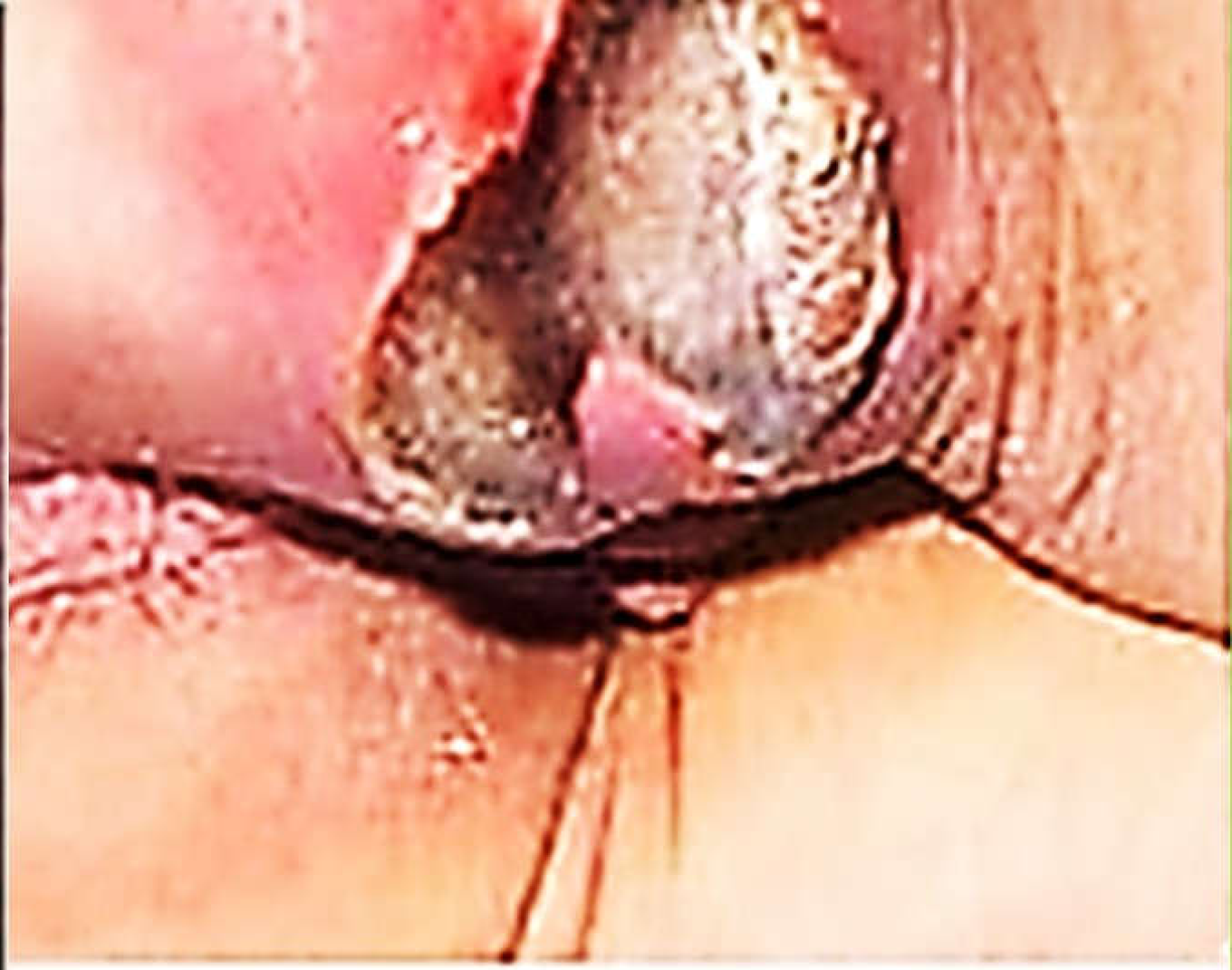
3- Undermined edge



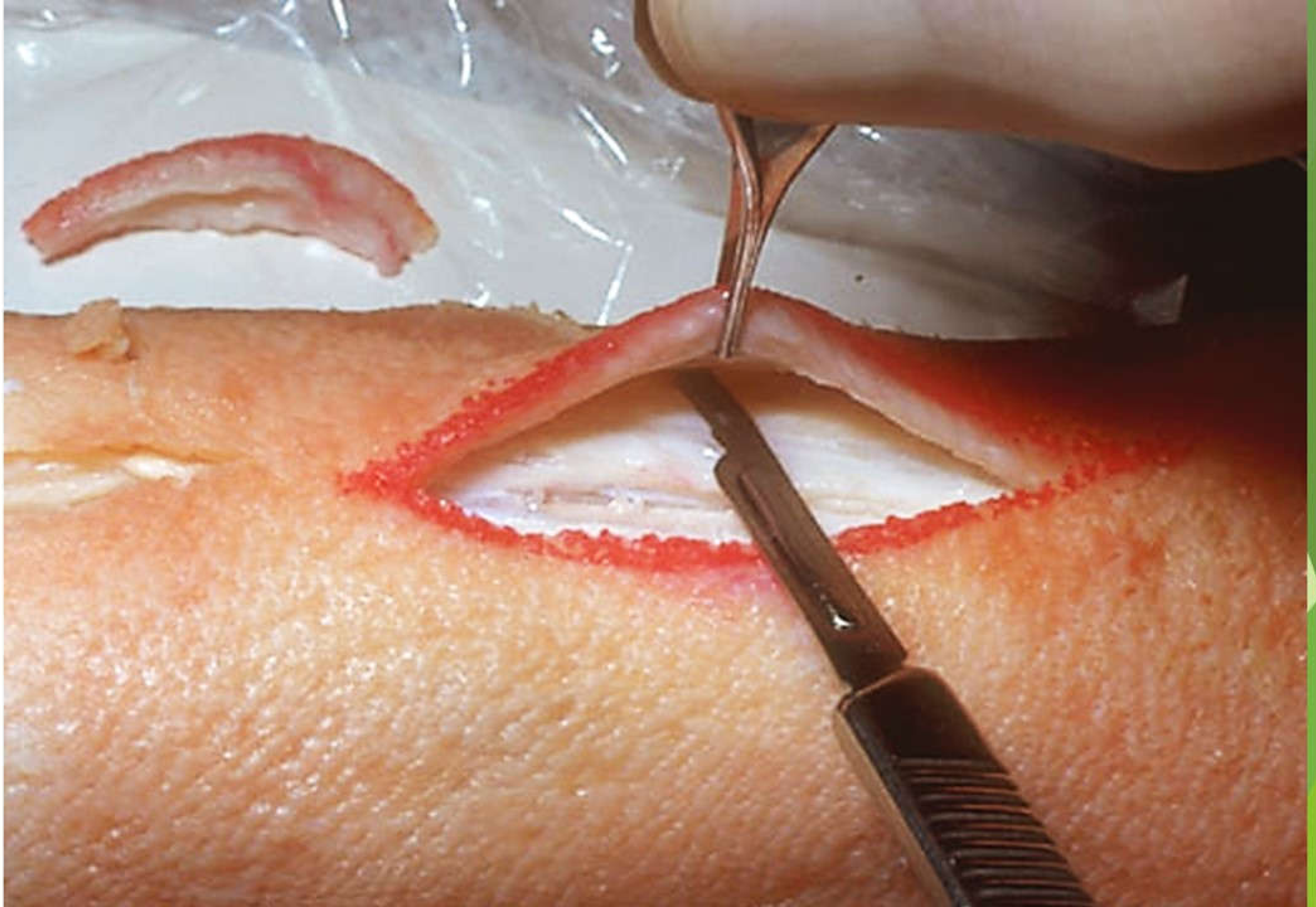
When infection is affecting the **subcutaneous tissue more than the skin**, the edge becomes undermined

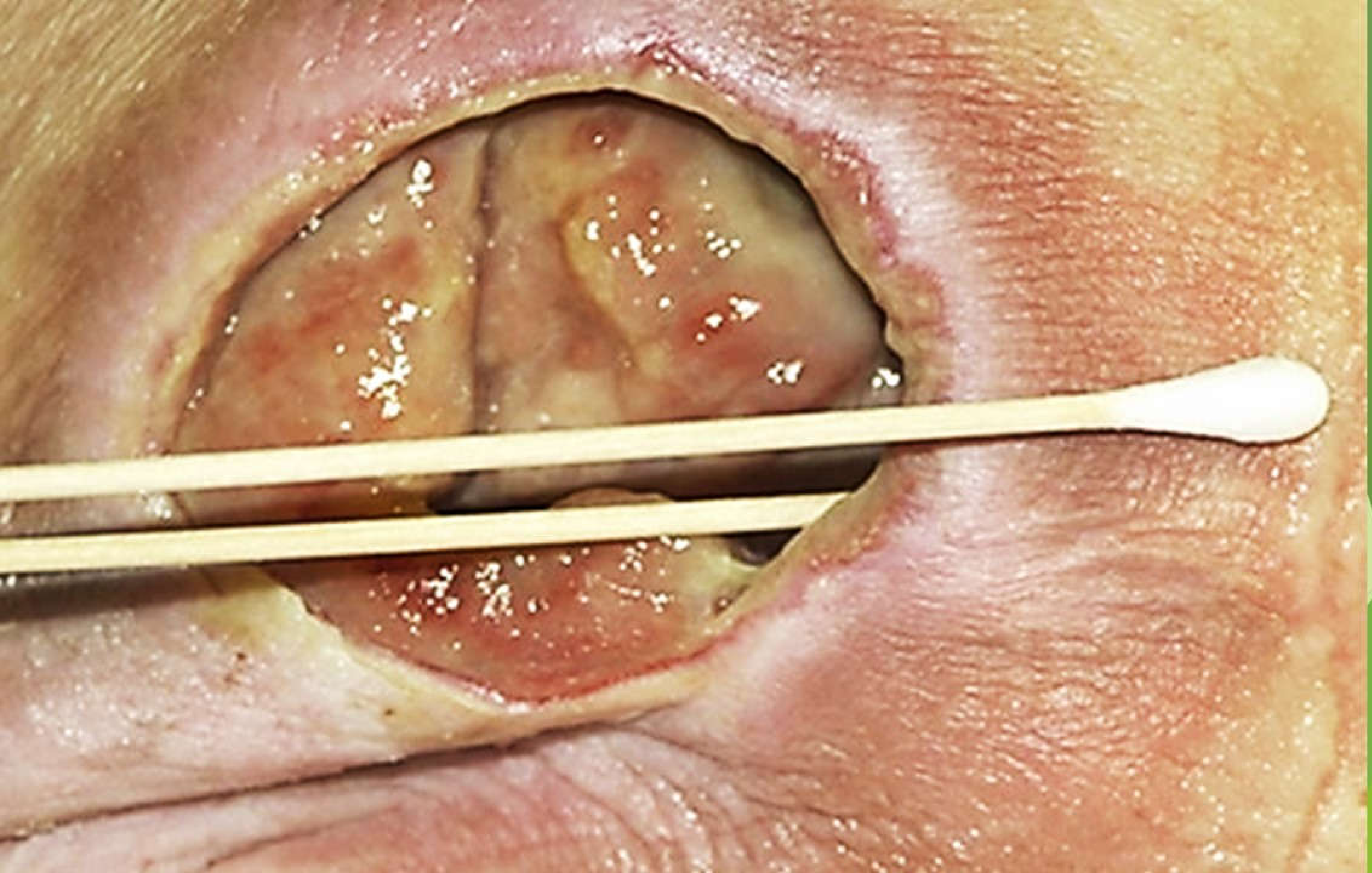


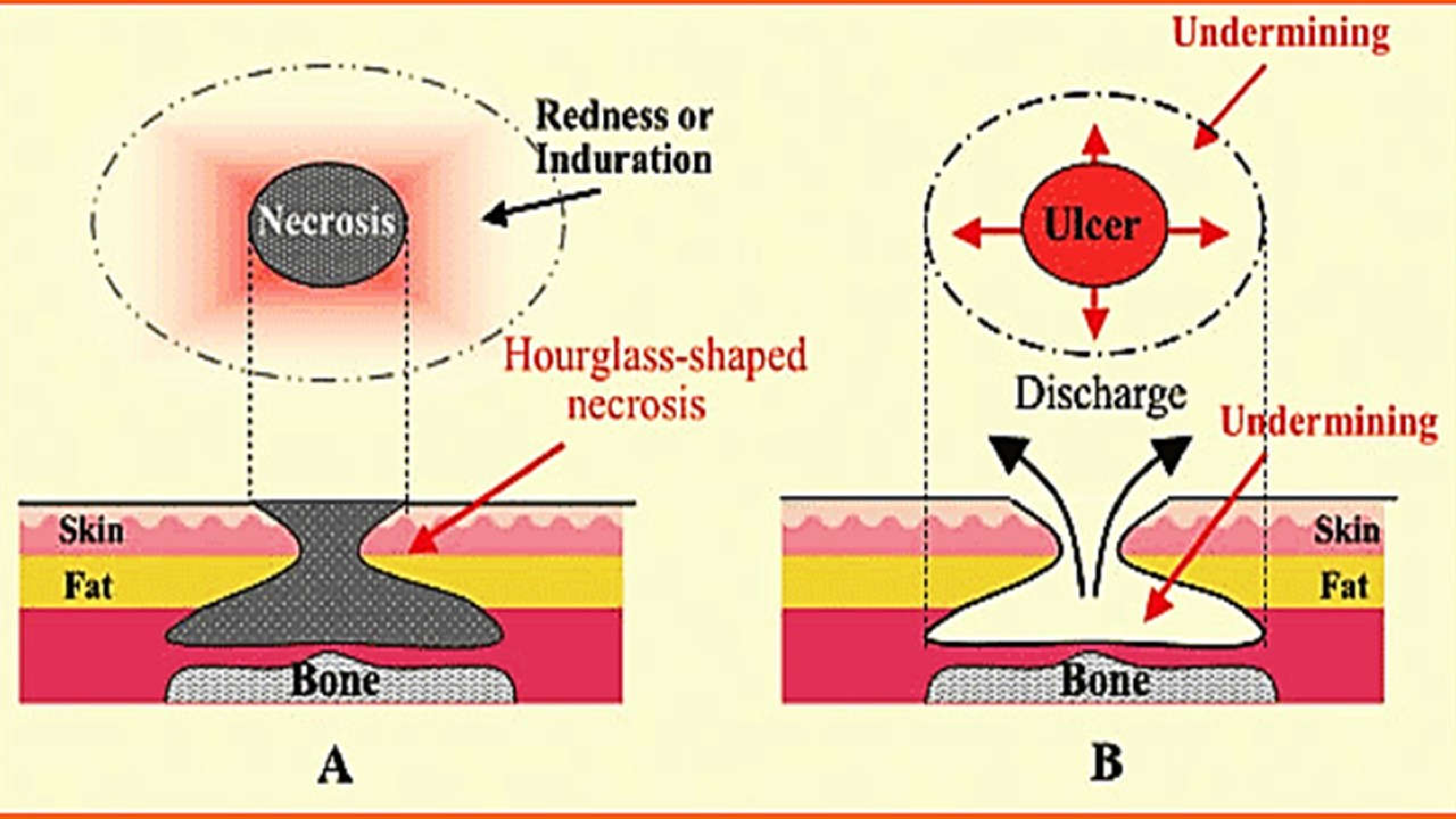
Tuberculous ulcer



Pressure Sore






Redness or
Induration
Necrosis
Hourglass-shaped
necrosis
Skin
Fat
Bone
A
Undermining
Ulcer
Discharge
Undermining
Skin
Fat
Bone
B

Classification of Bed Sore

Grade 1 Non blanching erythema.

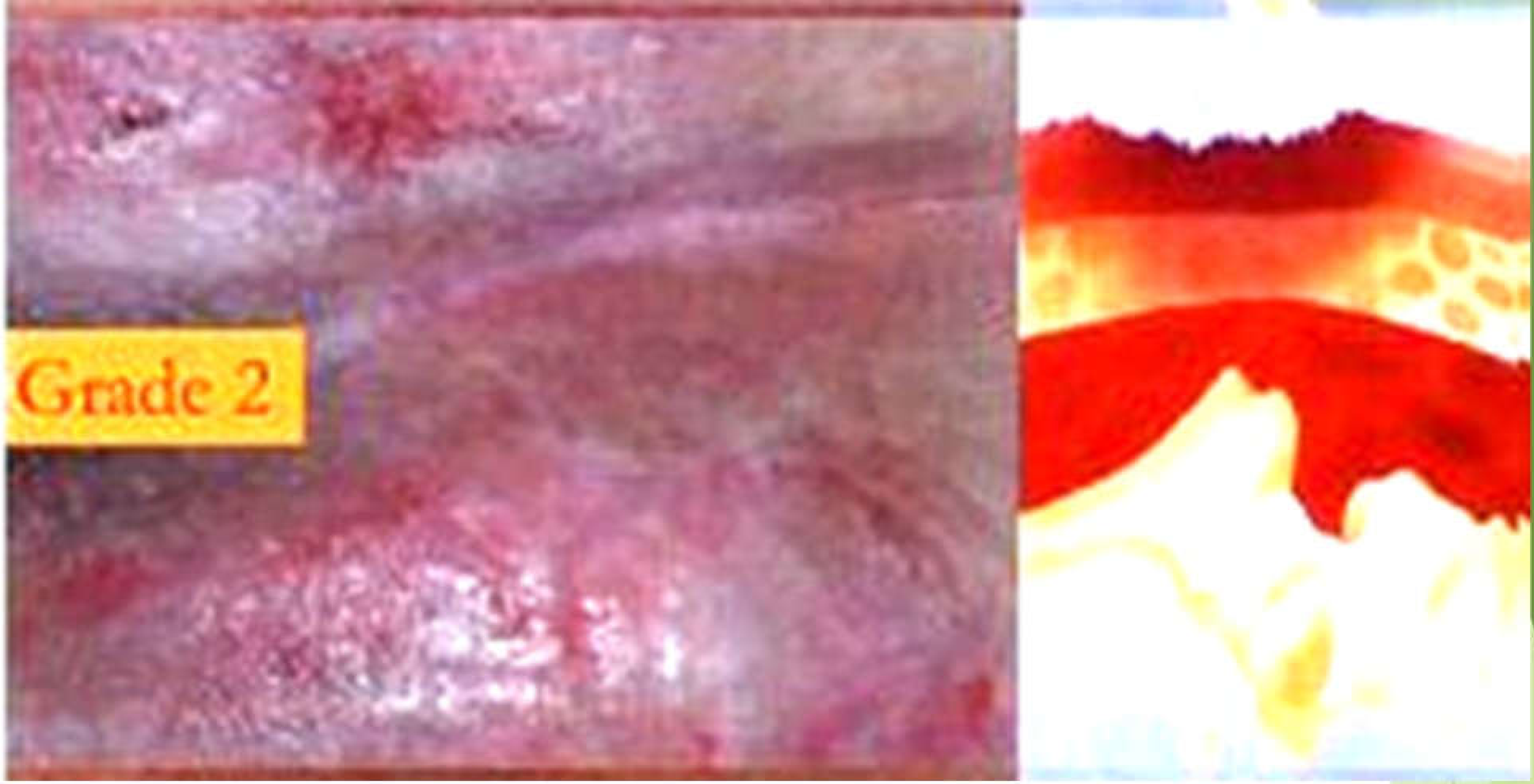
Grade 2 Partial thickness skin loss involving epidermis, dermis or both.

Grade 3 Full thickness skin loss involving damage to sub-cutaneous tissue that may extend to but not through the underlying fascia.

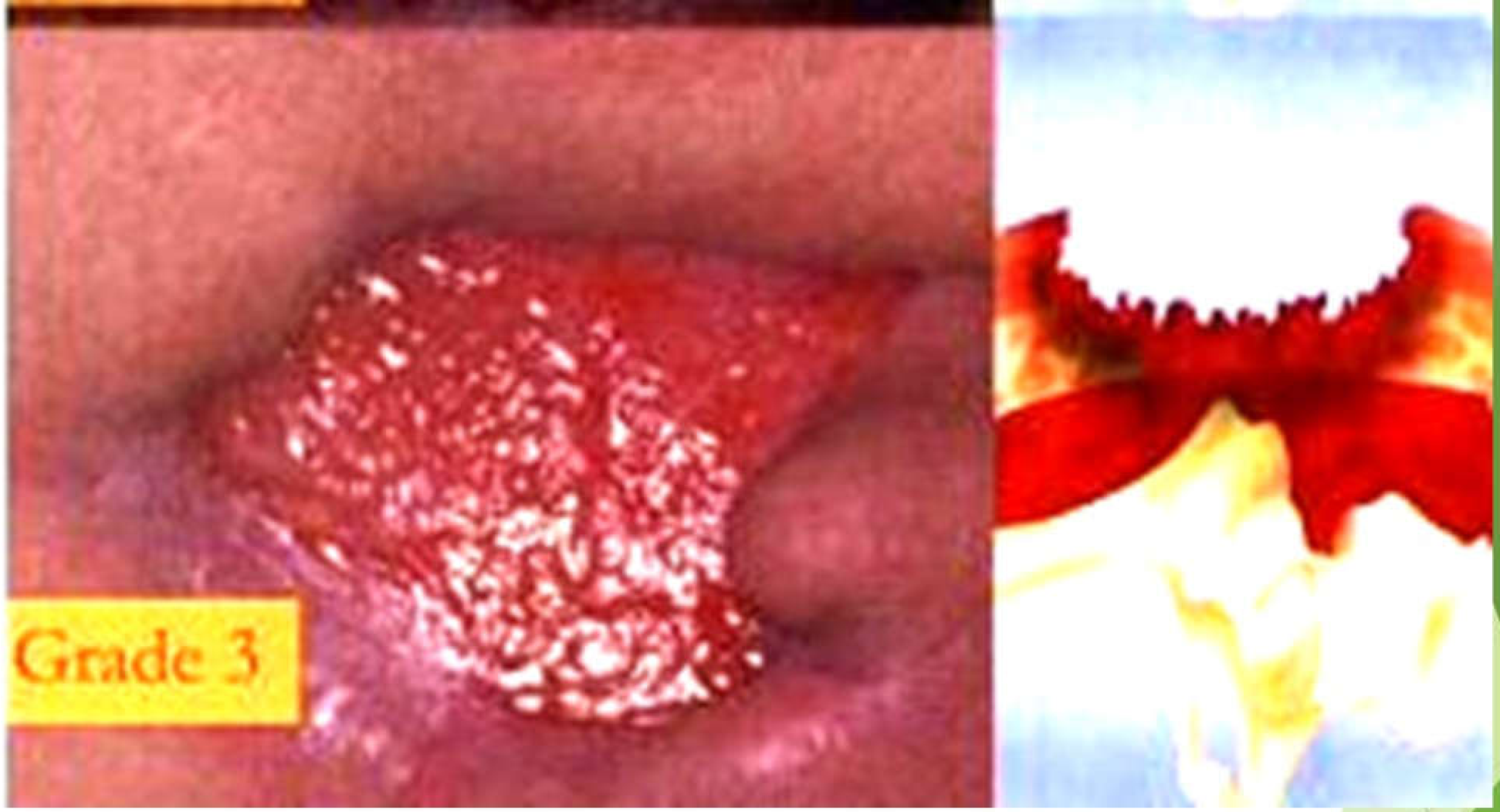
Grade 4 Full thickness skin loss involving muscle, bone or supporting structures.

Grade One

Non blanching erythema

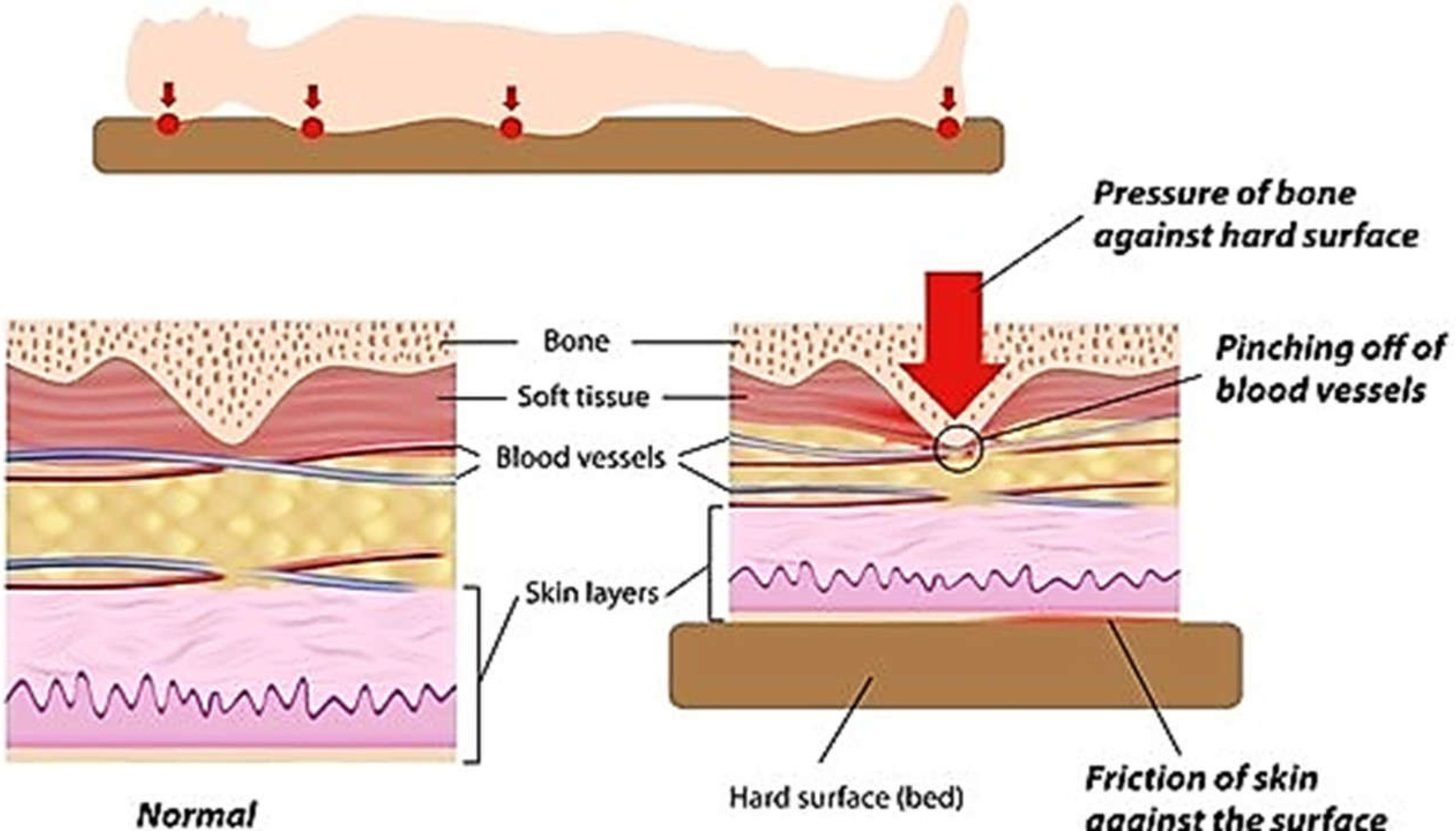


Grade Two Partial thickness skin loss involving epidermis, dermis or both



Grade Three Full thickness skin loss involving damage to sub-cutaneous tissue that may extend to but not through the underlying fascia

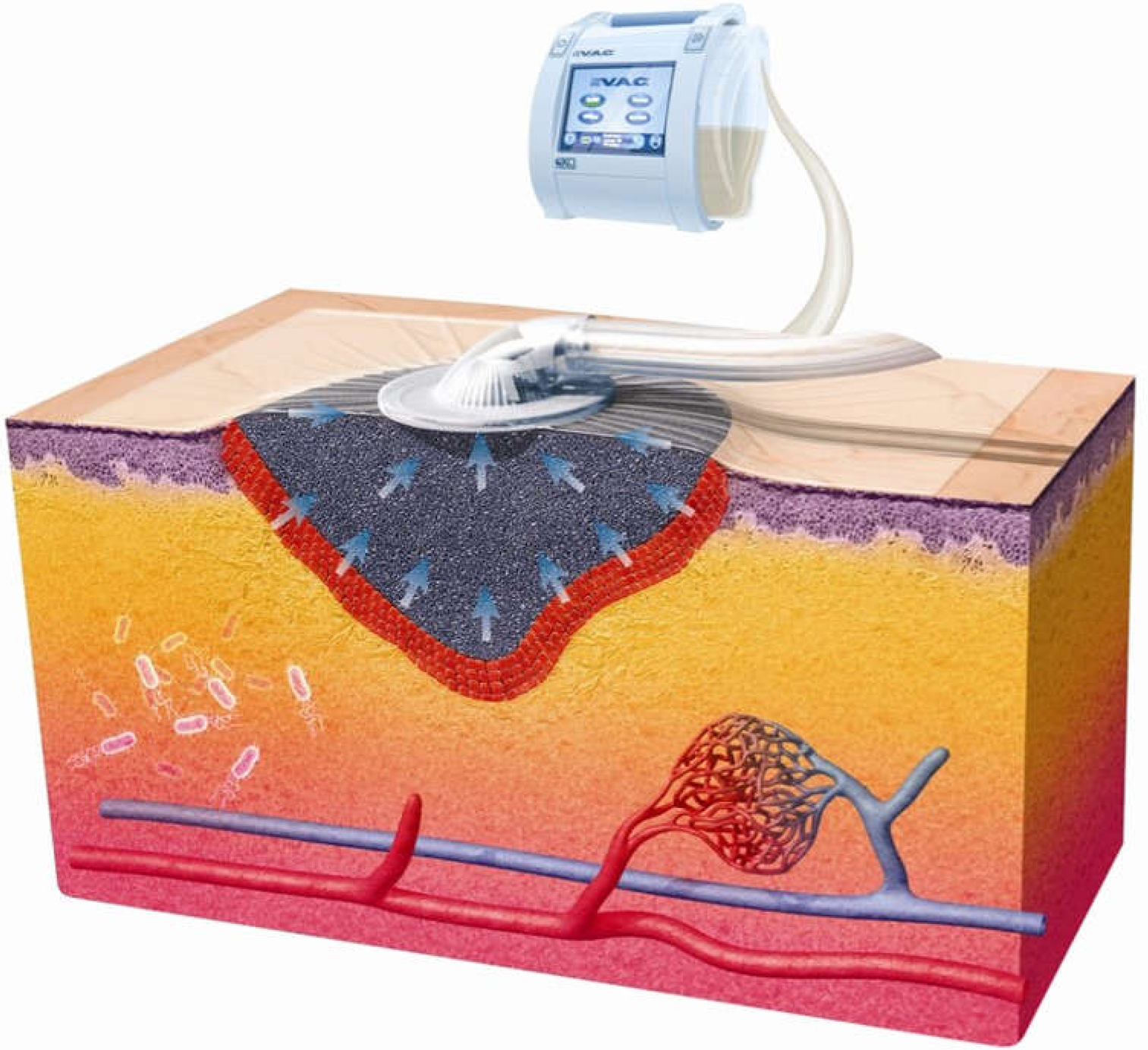
Grade Four Full thickness skin loss involving muscle, bone or supporting structures


Pressure of bone against hard surface
Bone
Soft tissue
Blood vessels
Skin layers
Pinching off of blood vessels
Hard surface (bed)
Friction of skin against the surface
Normal

Treatment of Bed Sore

- Swab for culture and sensitivity.
- Surgical debridement.
- Antibiotics (Broad spectrum).
- Continuous rolling the patient to each side every 2 hrs .
- (وَنُقَلِّبُهُمْ ذَاتَ الْيَمِينِ وَذَاتَ الشِّمَالِ) [الكهف: ١٨] **(and We turned them on their right and on their left sides).**
- Daily changing dressing and keeping the ulcer moist.
- Pneumatic Bed Sore Prevention.
- Topical tissue growth factor.
- Vacuum Assisted Closure (V.A.C.) (**Negative Pressure Wound Therapy**)Baily & Love 26th edition (P 29, 406, 584).
- Hyperbaric Oxygen Therapy.
- Rotational Flap.
- Treatment underlying cause.

Hyperbaric Oxygen Therapy For Bed Sores

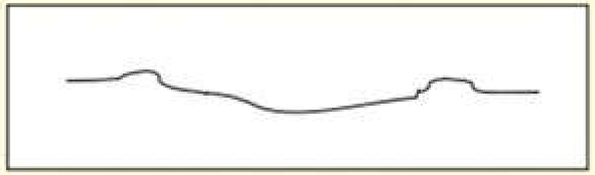


ROLLED EDGE ULCER

-Slow groth of tissue in the edge of the ulcer. The edge looks like heaped up mound around an ancient roman earthwork.

- B.C.C.(Rodent ulcer), diagnostic.

4- Rolled



Develops when there is **slow growth** of tissue in the edge of the ulcer

Basal cell carcinoma (rodent ulcer):

Pale pink edge with clumps & clusters of cells visible through the paper thin superficial covering of squamous cells

This patient's lesion is known as a rodent ulcer,named for its resemblance to a rat bite. The rodent ulcer is a nodular BCC.The rat bite morphology is a consequence of early central ulceration of nodular BCC.

An everted edge ulcer

-Rapid tissue growth in the edge, spilling out of the ulcer , overlapping normal skin.

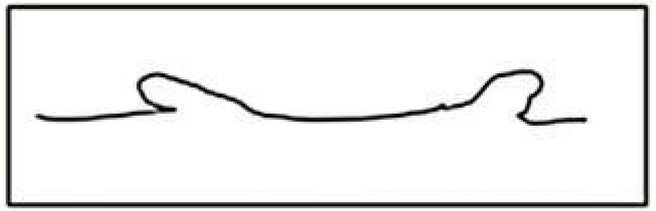
- The heaped-up, everted edge and irregular thickened base.

- S.C.C.

- CA. any site.(bowel, bladder and respiratory organs).

-Malignant transformation of chronic venous ulcer.(Marjulin's ulcer).

5- Everted edge



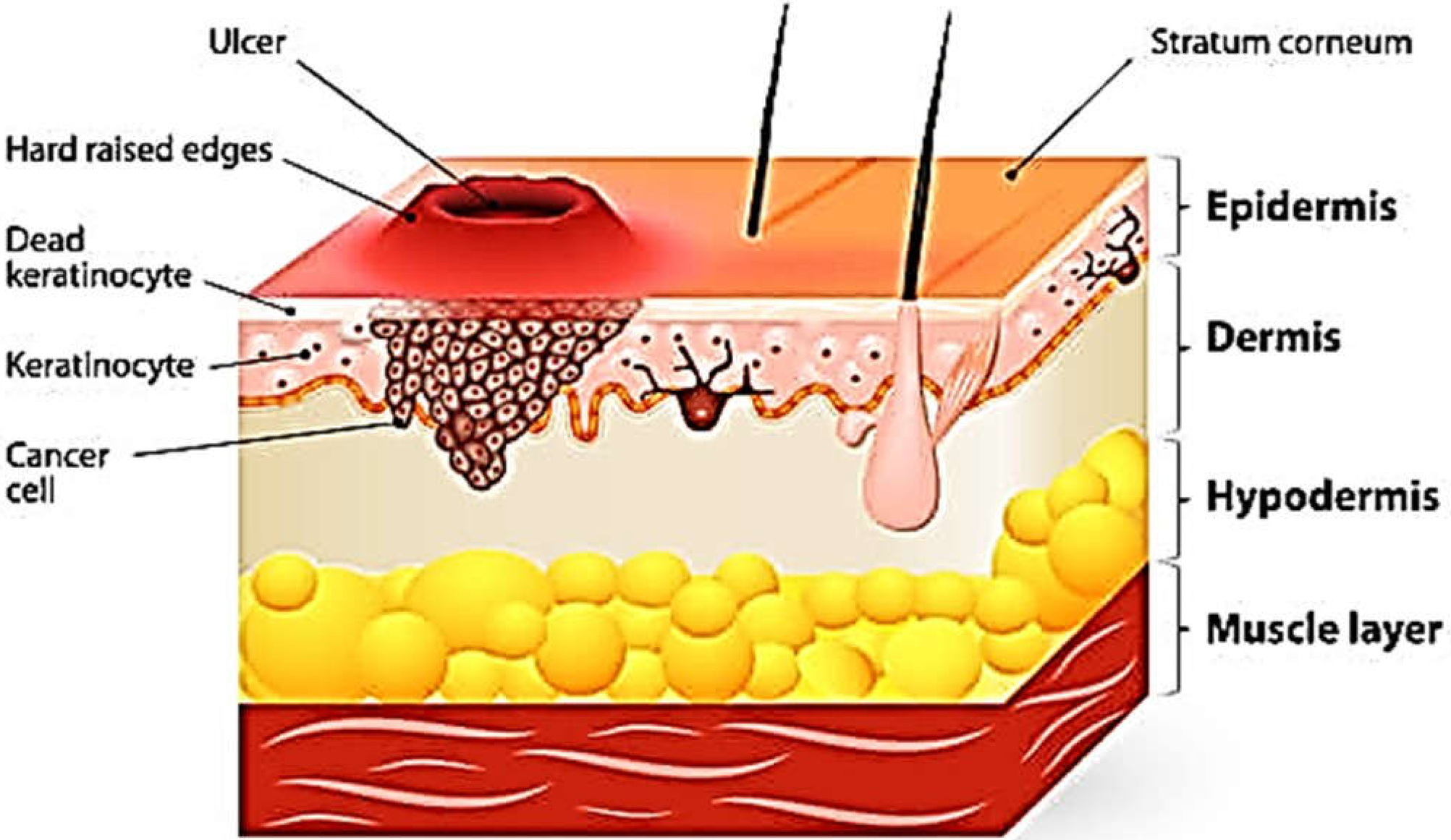
Develops when the tissue in the edge of the ulcer is **growing quickly and spilling out** of the ulcer to overlap the normal skin.

Malignant transformation in a chronic venous ulcer

"Marjulin" ulcer

Malignant ulcer colon carcinoma

Squamous-cell carcinoma



An ulcer with everted edge from the scar of the previously excised SCC.

Post-burn scar of 18 years duration turning into malignancy (squamous cell carcinoma) - Marjolin's ulcer

Sinus

- It is a blind ended tract connecting to an epithelial surface, it is usually associated with a cavity.

Congenital

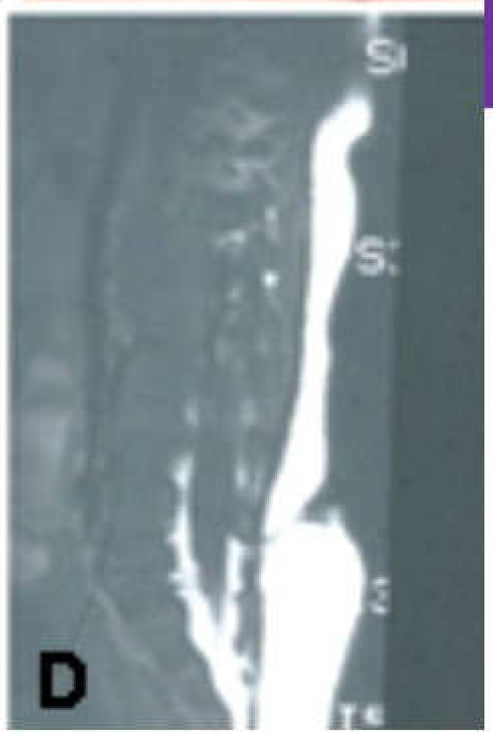
Congenital dermal sinus over the dorsal spine.

Congenital lip sinus.

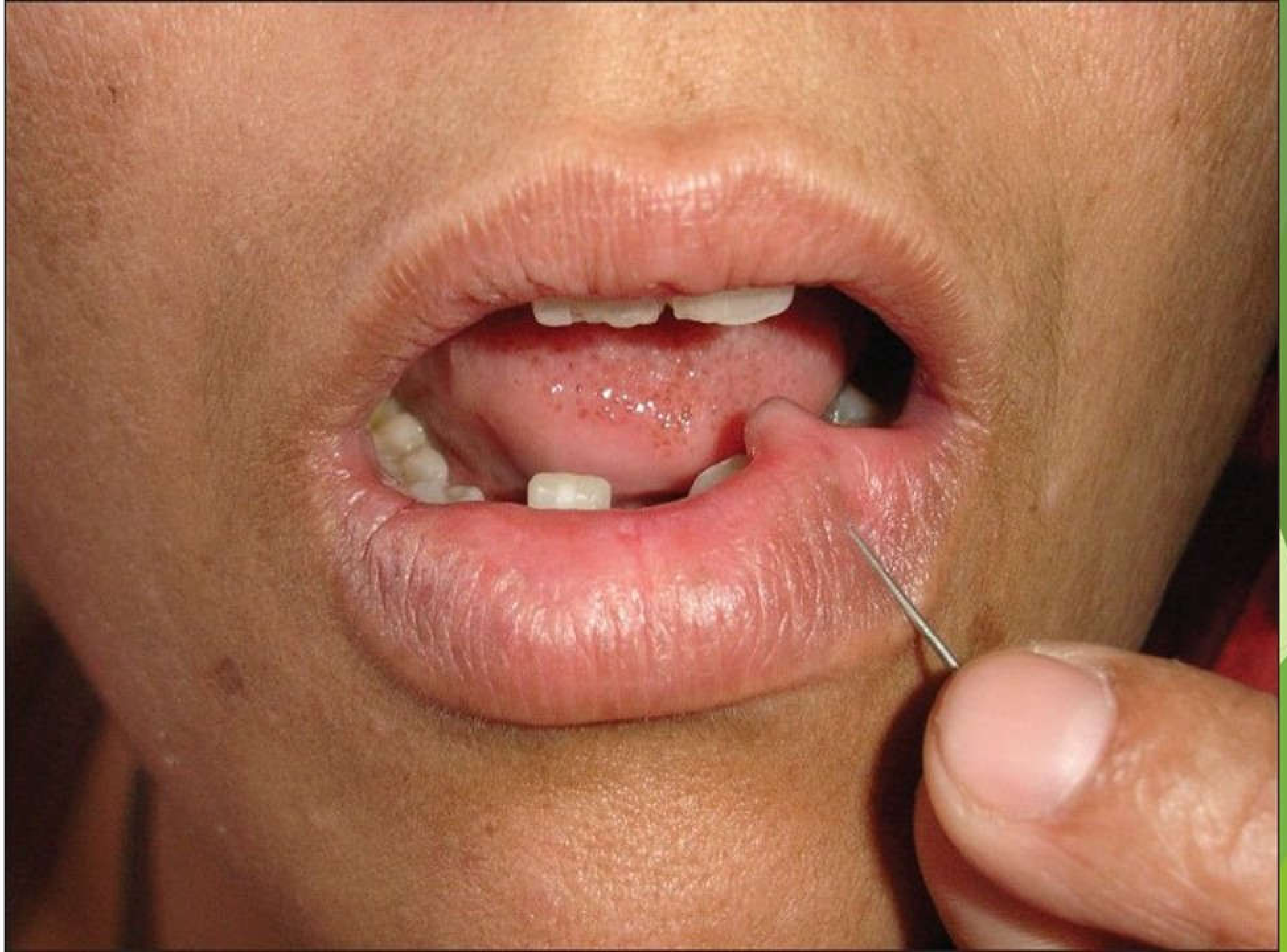
Congenital preauricular sinus.

Acquired

Pilonidal Sinus.



Dermal sinus tracts are remnants of incomplete neural tube closure. Embryologically, they result from a failure of the surface ectoderm and dermal elements to separate from the neuroectoderm. This process likely occurs between the 3rd and 8th weeks of gestation.



Pilonidal Sinus

To be read in

Bailey & Love's Short Practice of Surgery 26th Edition.

Ch 73 (1244 - 1245)

- A pilonidal sinus is a small hole, or a tunnel in the skin, connecting with a cavity containing tuff of hair.

The word "pilonidal" is derived from the Latin words *pilus* (meaning hair) and *nidus* (meaning nest).

The most common sites :

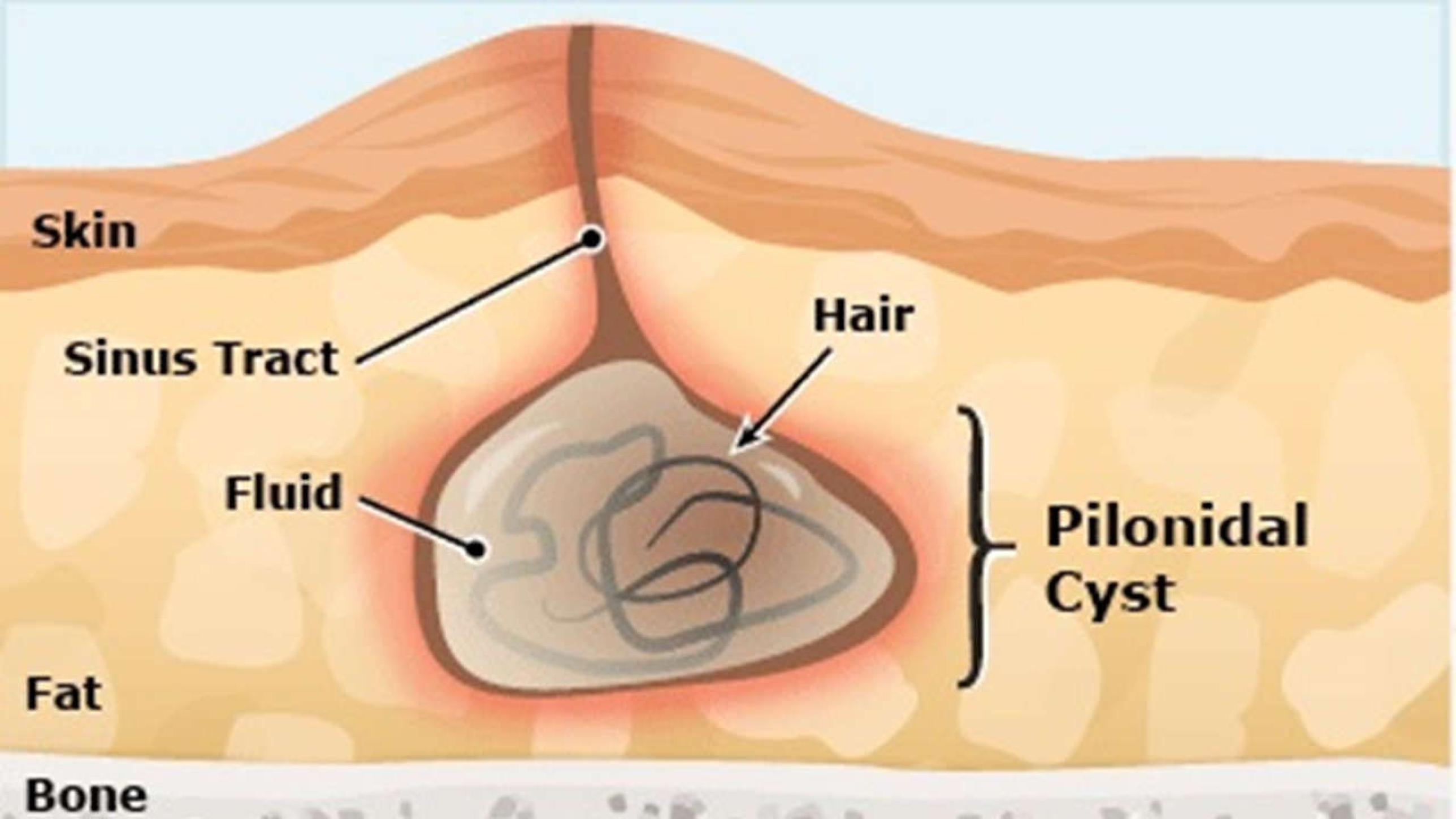
- Natal Cleft.
- Finger Webs (Barber's finger, Interdigital Pilonidal Sinus).
- Umbilicus.

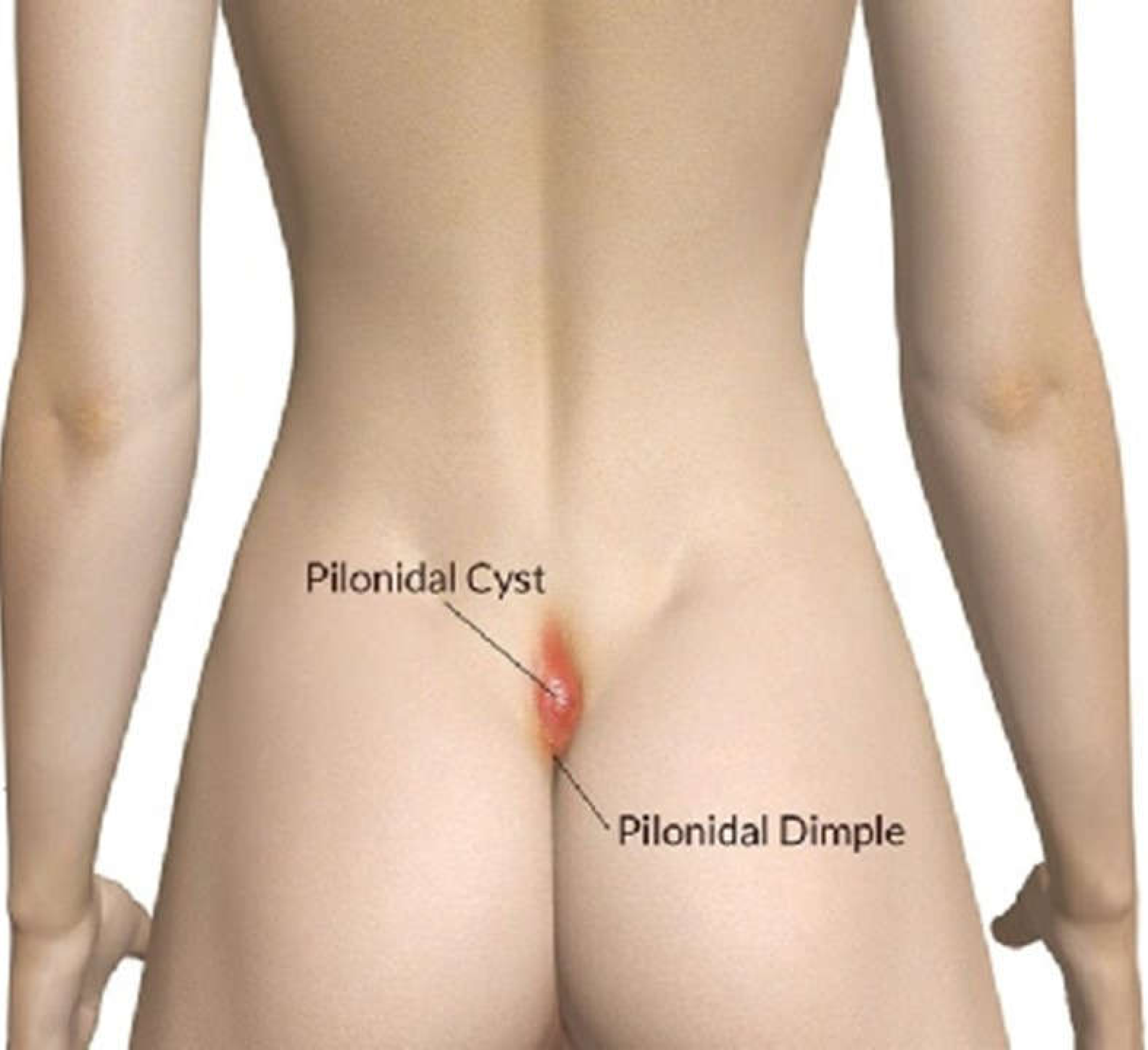
Certain factors increase the risk of developing the condition and include:

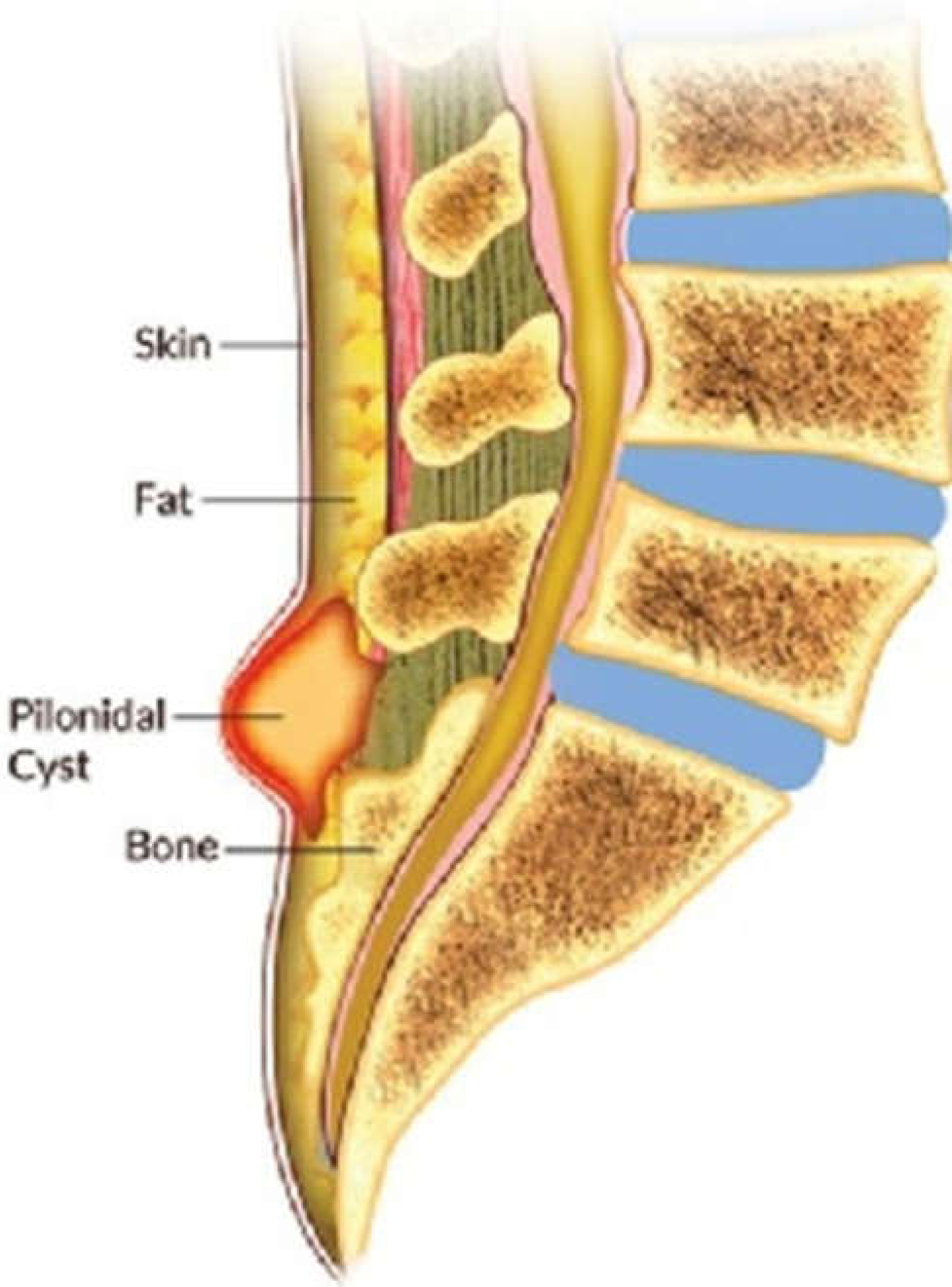
- A job involving a lot of sitting (a sedentary occupation)
- Being overweight (obesity)
- A previous persistent irritation or injury to the affected area
- Having a hairy, deep natal cleft
- A family history of the condition

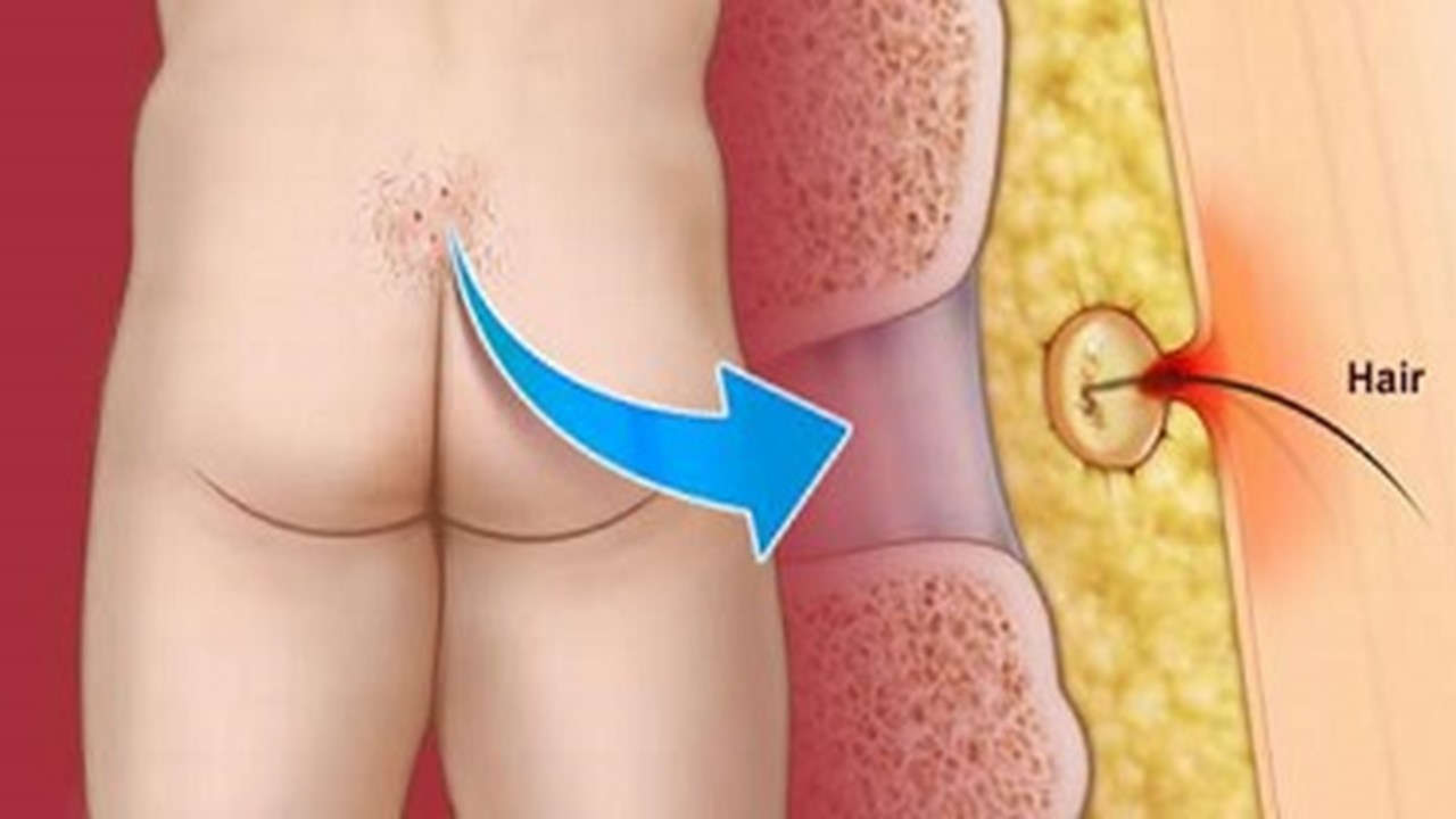
SYMPTOMS AND SIGNS

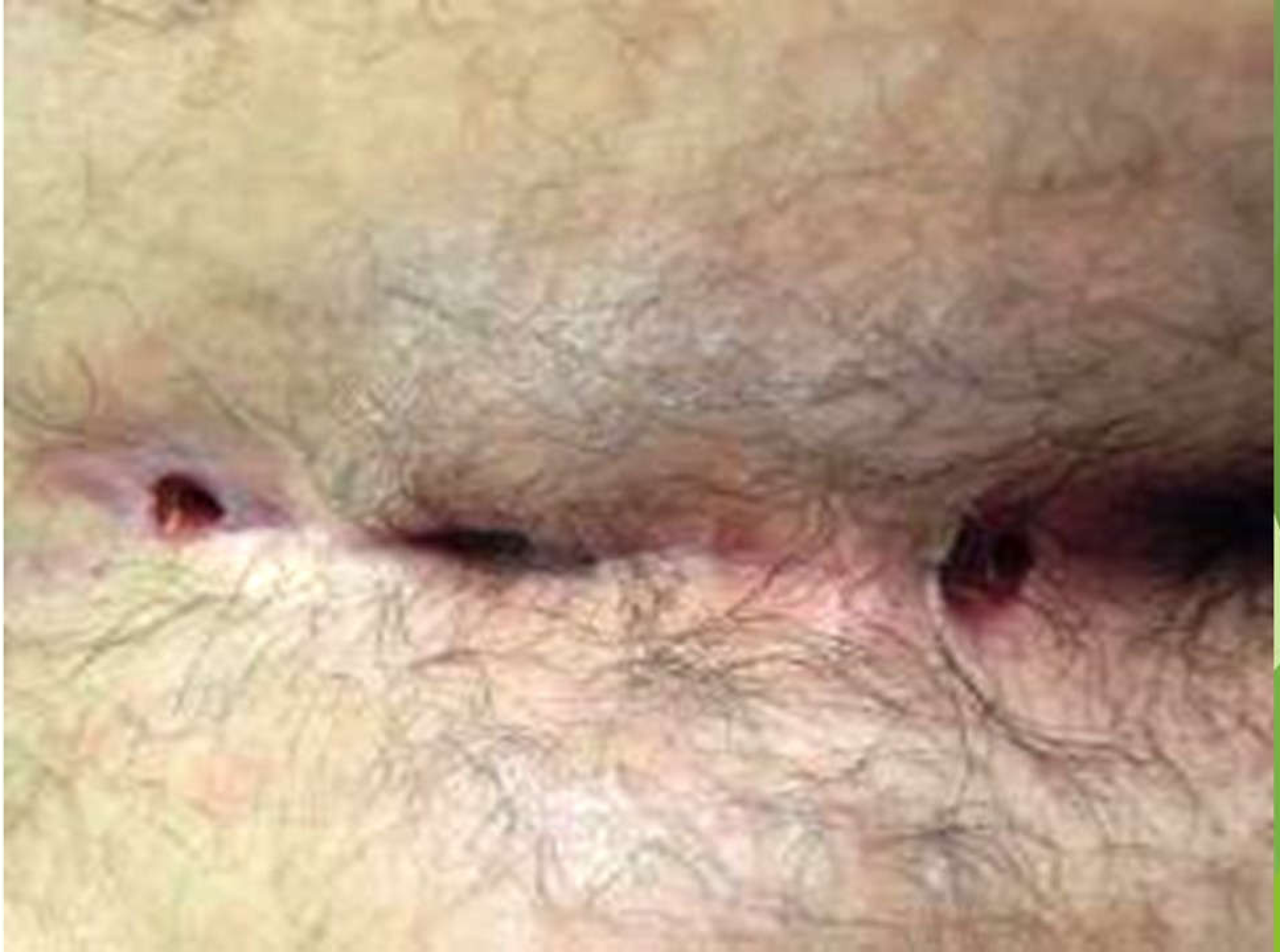
- A pilonidal sinus will cause no symptoms until it becomes infected, although you may notice its presence as a small pit, or depression, in the surface of your skin.
- *Swelling* : Once the sinus becomes infected, the pit will begin to swell and you may experience symptoms that include:
- *Pain,*
- Redness of the skin,
- *Pus and/or Blood* draining from the sinus (the pus usually smells unpleasant),

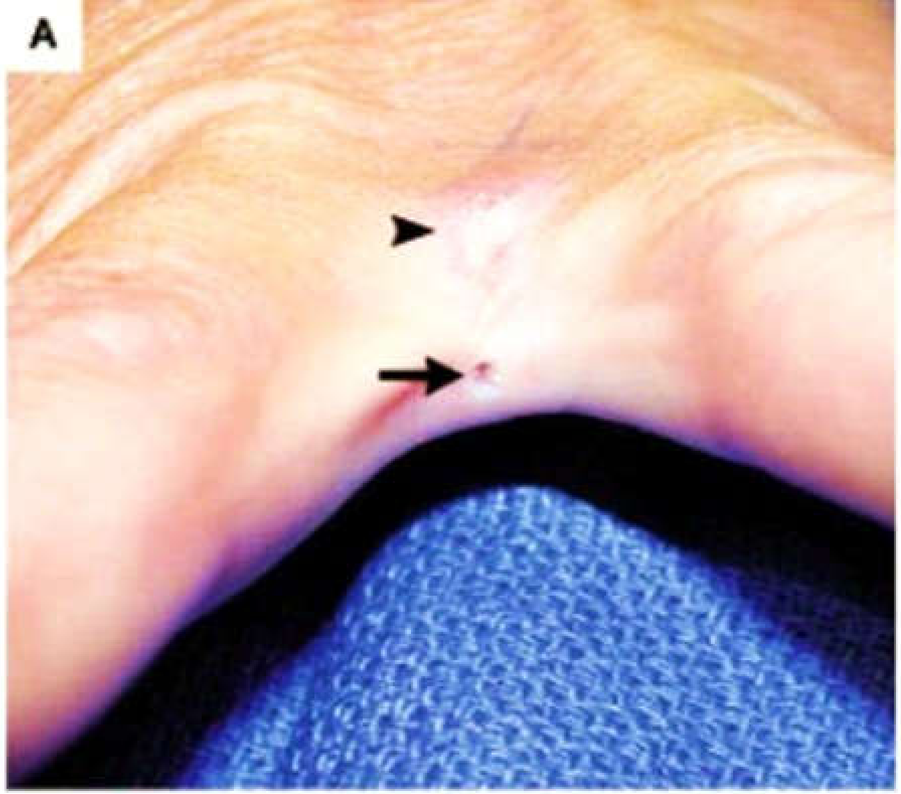

Skin
Sinus Tract
Hair
Fluid
Pilonidal Cyst
Fat
Bone


Pilonidal Cyst
Pilonidal Dimple


Skin
Fat
Pilonidal Cyst
Bone


Hair




A


B


C

Treatment (PNS of Umblicus and web of the fingure)

- Conservative treatment.
- Surgical Excision .

Treatment (PNS of Antenatal cleft)

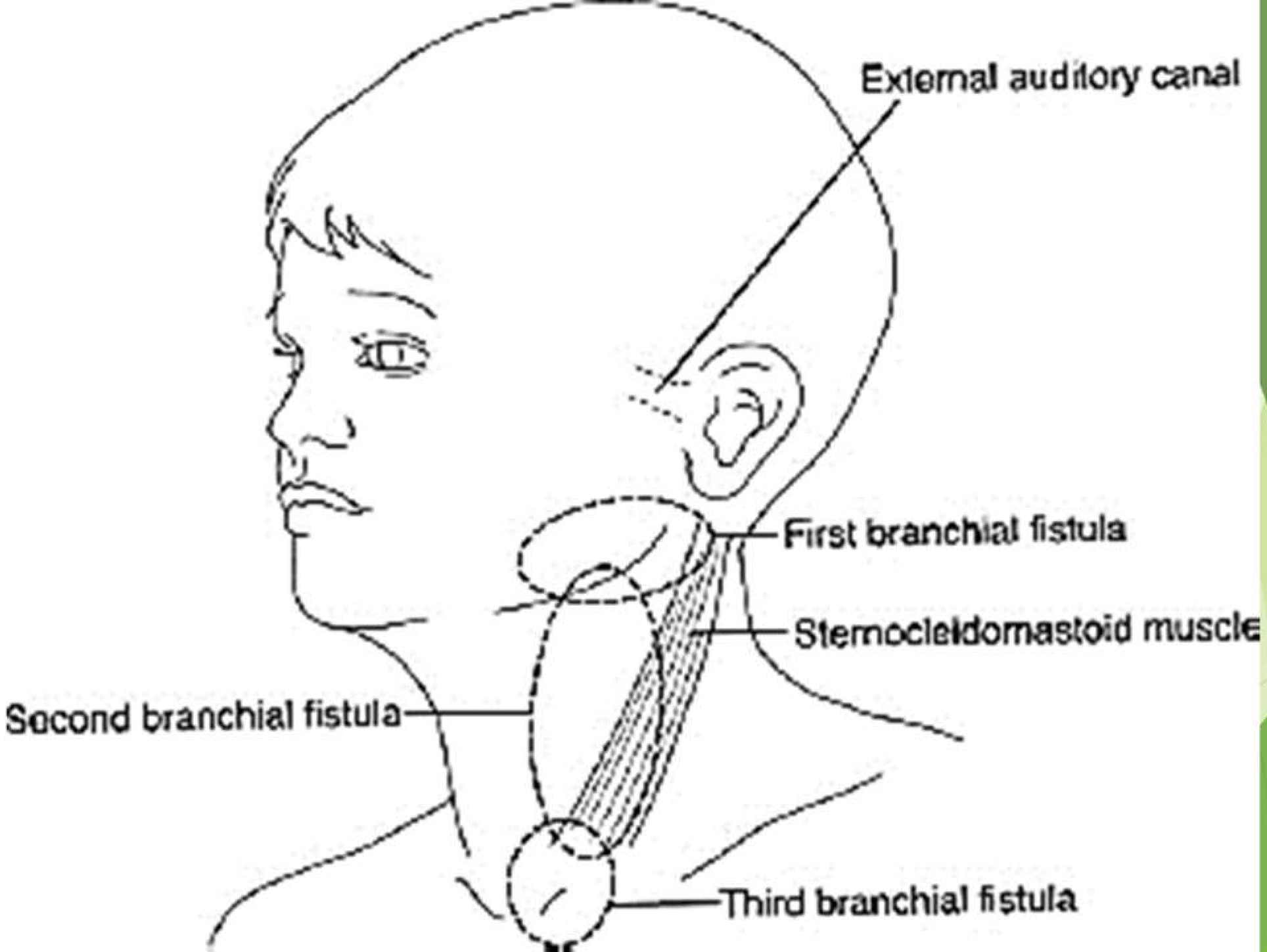
- Conservative treatment.
- Treatment of an acute exacerbation (abscess)
- Surgical treatment of chronic pilonidal disease :
  - Karydakis procedure
  - Bascom's procedure
- *Recurrent pilonidal sinus*. (Bascom's procedure).

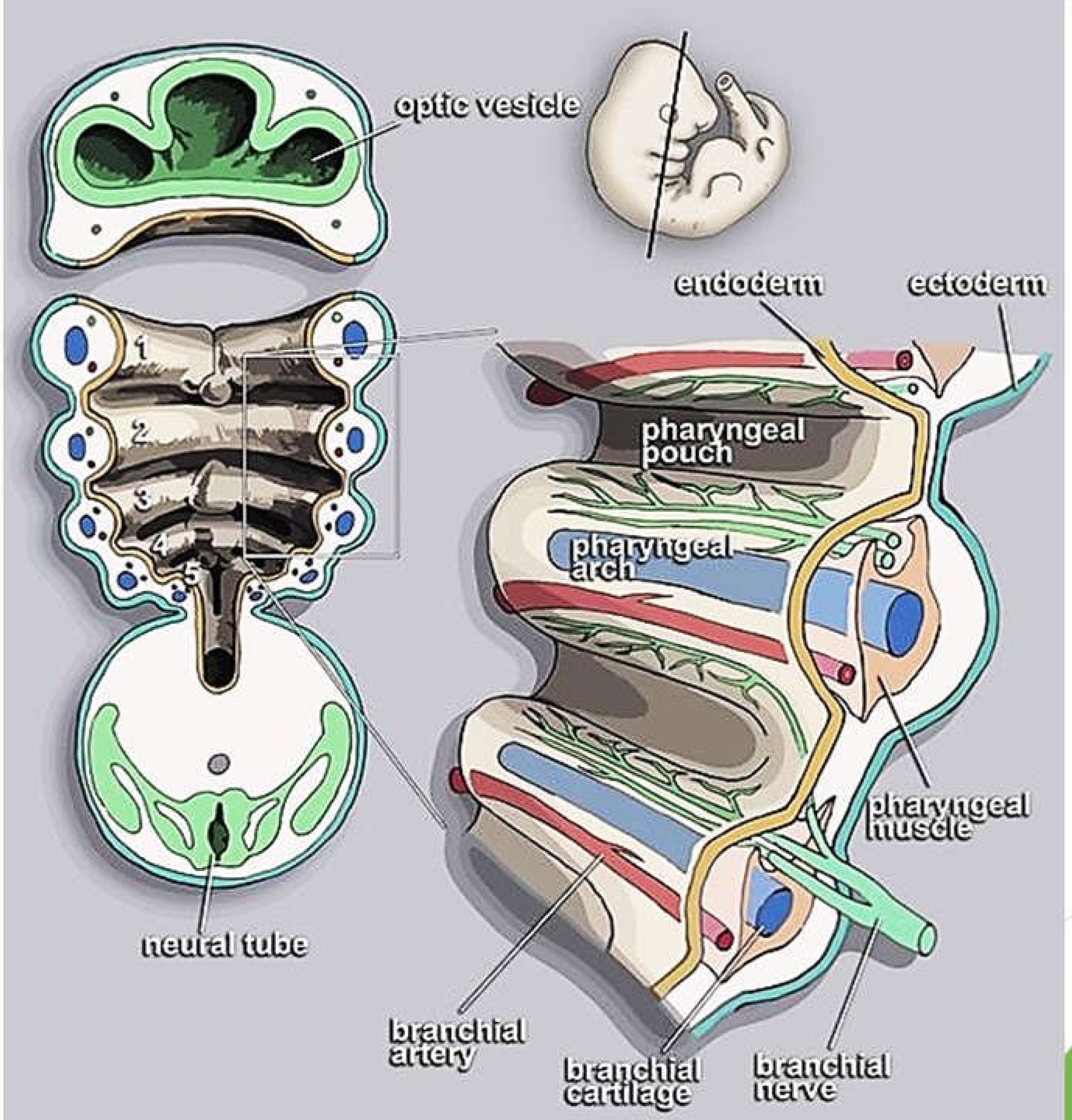
Fistula

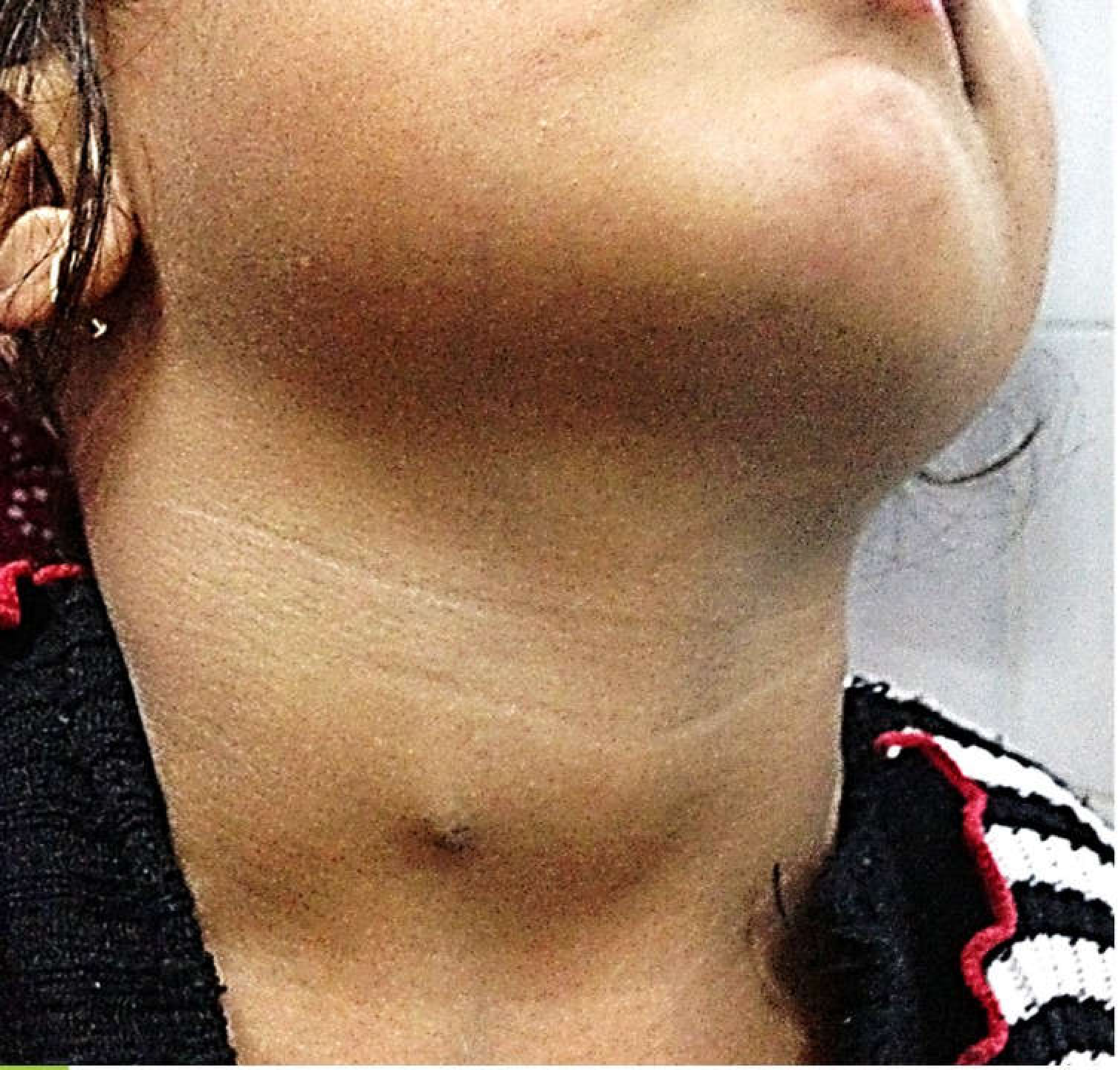
- **An abnormal communication between two different epithelial surfaces.**
- **Congenital / Acquired.**

CONGENITAL FISTULA

- **Vitello-intestinal duct fistula**
- **Urachal fistula.**
- **Brancheal Fistula.**


External auditory canal
First branchial fistula
Sternocleidomastoid muscle
Second branchial fistula
Third branchial fistula


optic vesicle
endoderm
ectoderm
1
2
3
4
5
pharyngeal pouch
pharyngeal arch
pharyngeal muscle
neural tube
branchial artery
branchial cartilage
branchial nerve



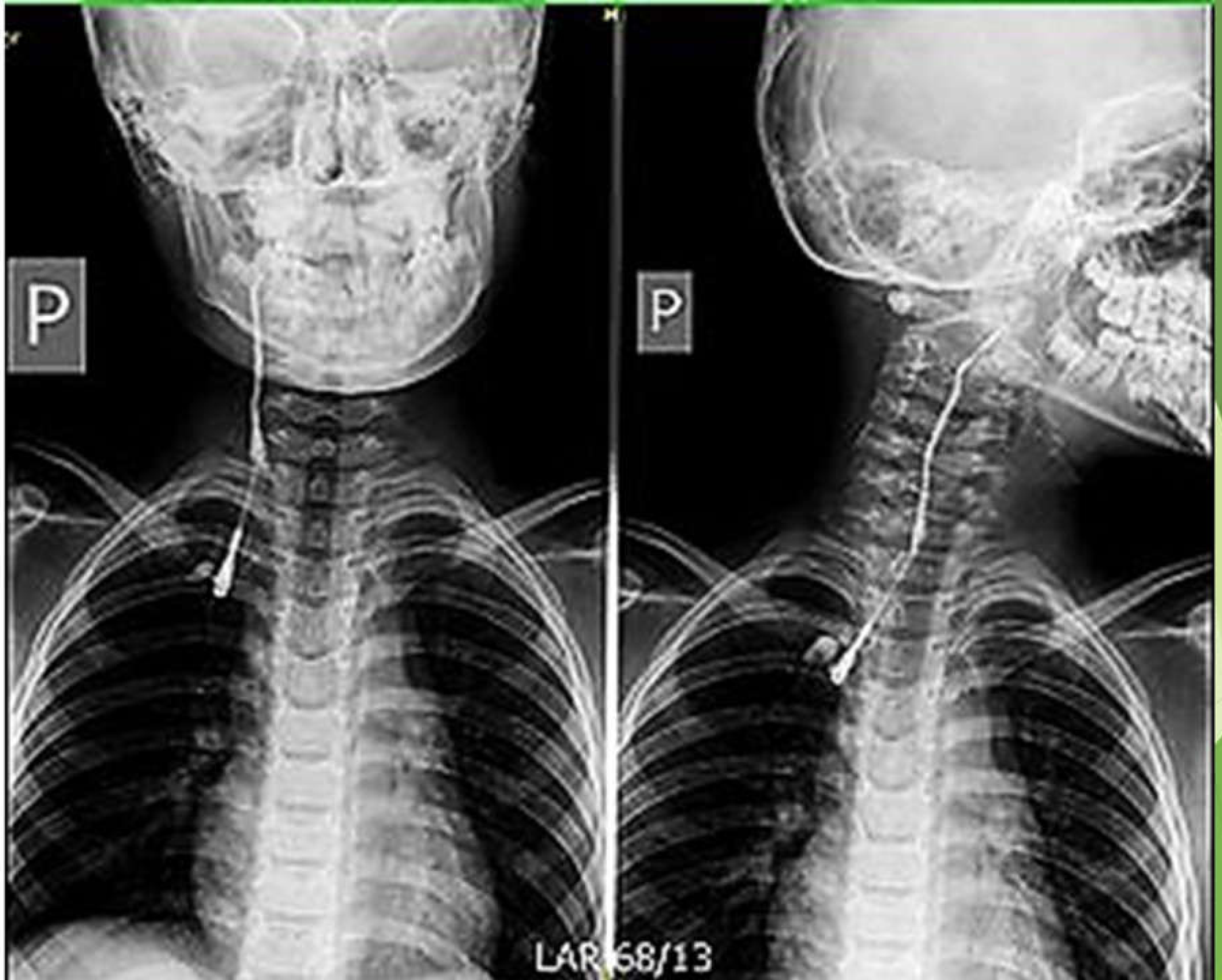
Presentation

A 5 year old girl with persistent discharge on the anterior neck.

There is an external cutaneous orifice on the anterior aspect of the neck just below the thyroid cartilage, anterior to medial border of the lower third of the right sternocleidomastoid muscle.

There is no discharge from the orifice at the time of examination.

There is no change in position of the external orifice on protrusion of tongue or swallowing.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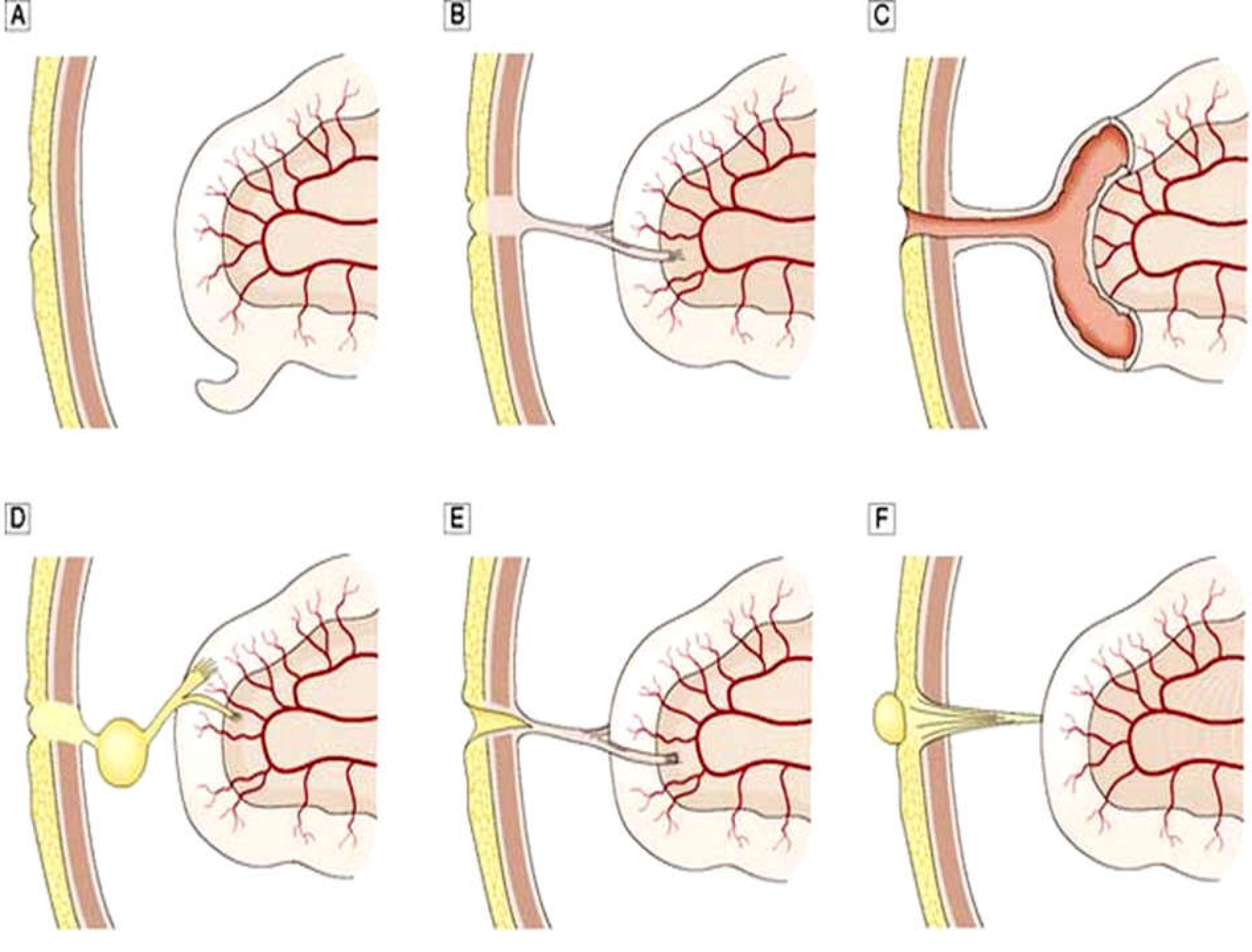
A
B
C
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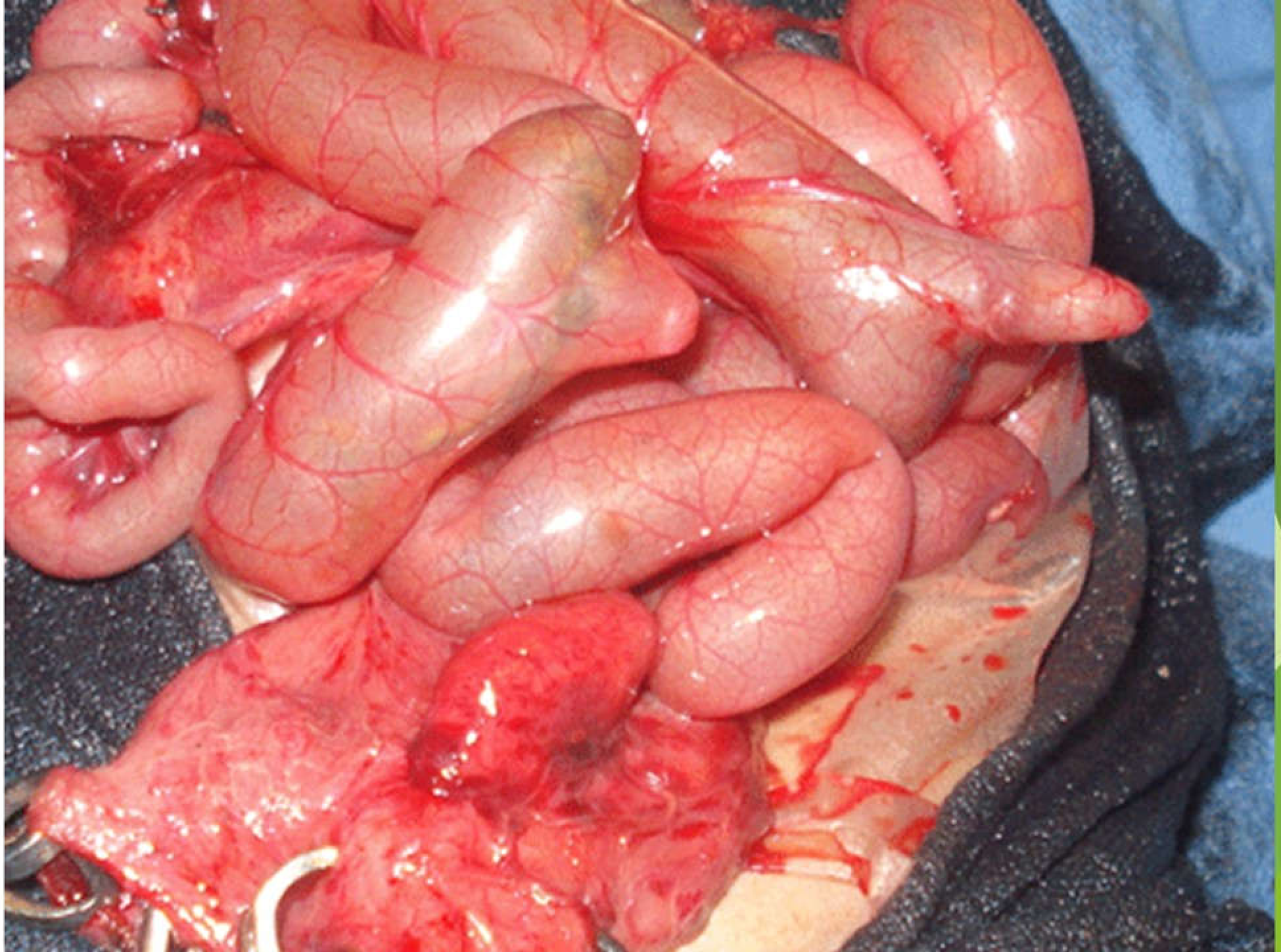
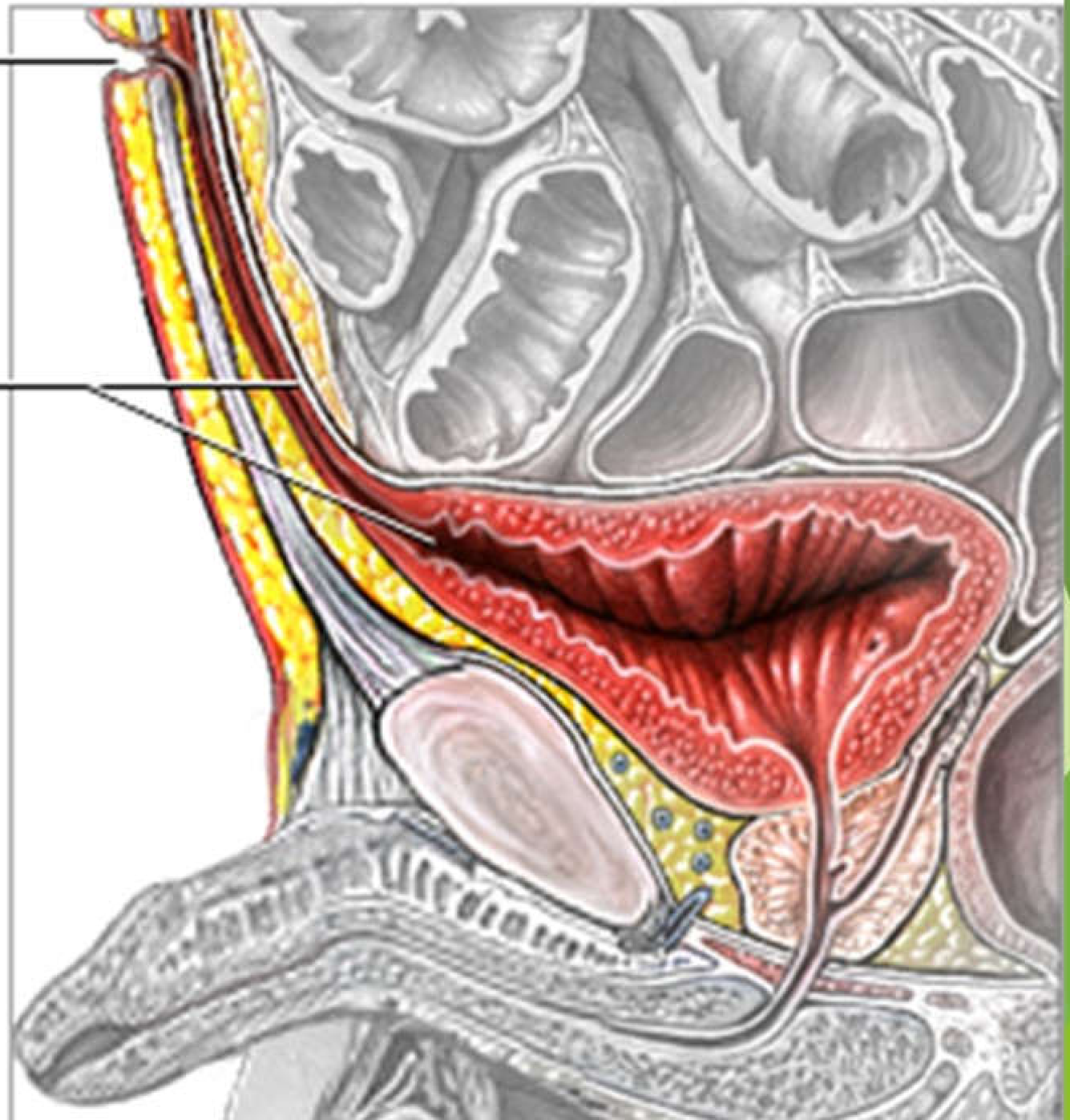
E
F



Umbilicus

Opening in urachus leading to bladder (patent urachus)

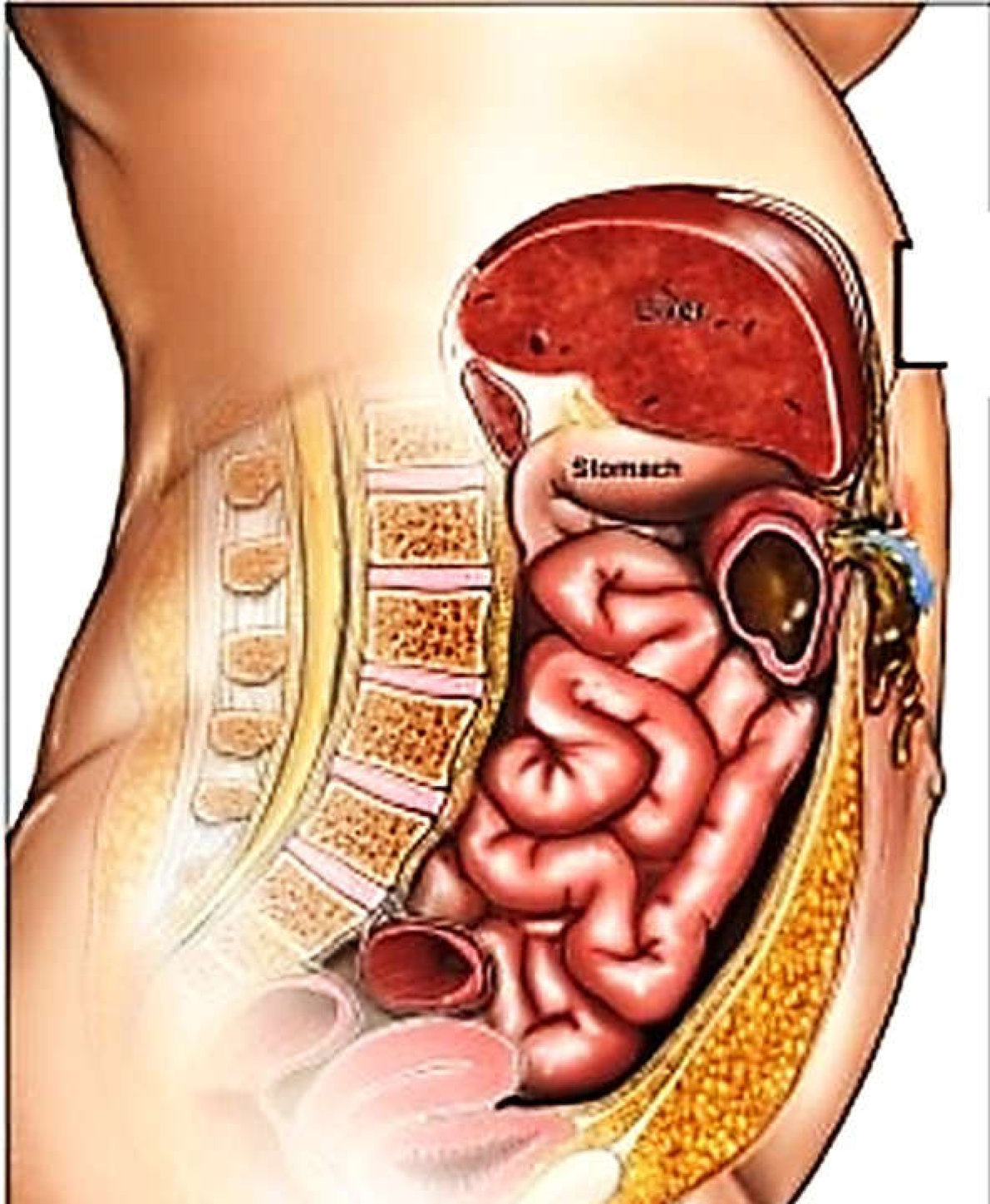


Acquired Fistula

- **Enterocutaneous Fistula.**
- **Fistula in Ano.**
- **Thyroglosal Fistula**
- **Mammary Fistula (Breast).**

Acquired Fistula

- **Enterocutaneous Fistula.**



- abnormal communication between two epithelialized surfaces
- classification
  - Congenital / Acquired
  - External / internal
  - primary (type-I)
    - 15-25%
    - underlying disease of gut wall
    - require resection
  - secondary (type-II)
    - 75-85%
    - after injury
    - potential to close spontaneously

- Anastomotic failure
- Peritonitis
- Hepatic , renal insufficiency
- Previous surgery
- Immunocompromised
- Unrecognized enteric injury
- Repaired serotomy
- Extensive adhesiolysis
- Trauma surgery
- Mesh repair – ventral hernias
- Surgery for cancer
- Laparostomy

Classification

Site (anatomy)

- Small bowel (65%)
- Colon (30%)
- Stomach/oesophagus (rare)

Output (physiology)

- Low (<200 mL/24 hr)
- Moderate (200 – 500 mL/24 hr)
- High (>500 mL/24 hr)
  - usually small bowel;
  - 50% mortality;
  - less chance of spontaneous closure.

Complexity

- Simple
- Complex – long, multiple, associated abscess, other organ involvement (e.g. bladder, vagina

Classification

Two categories

- Low-output fistula: < 500 mL/day
- High-output fistula: > 500 mL/day

Three categories

- Low-output fistula: < 200 mL/day
- Moderate-output fistula: 200-500 mL/day
- High-output fistula: > 500 mL/day

The mnemonic FRIENDS can be used to memorize characteristics which impede the closure of ECF.

- **F** Foreign body
- **R** Radiation
- **I** Infection or Inflammatory bowel disease
- **E** Epithelialization
- **N** Neoplasm
- **D** Distal obstruction
- **S** Short tract (<2 cm)

Table I Classification of fistulas

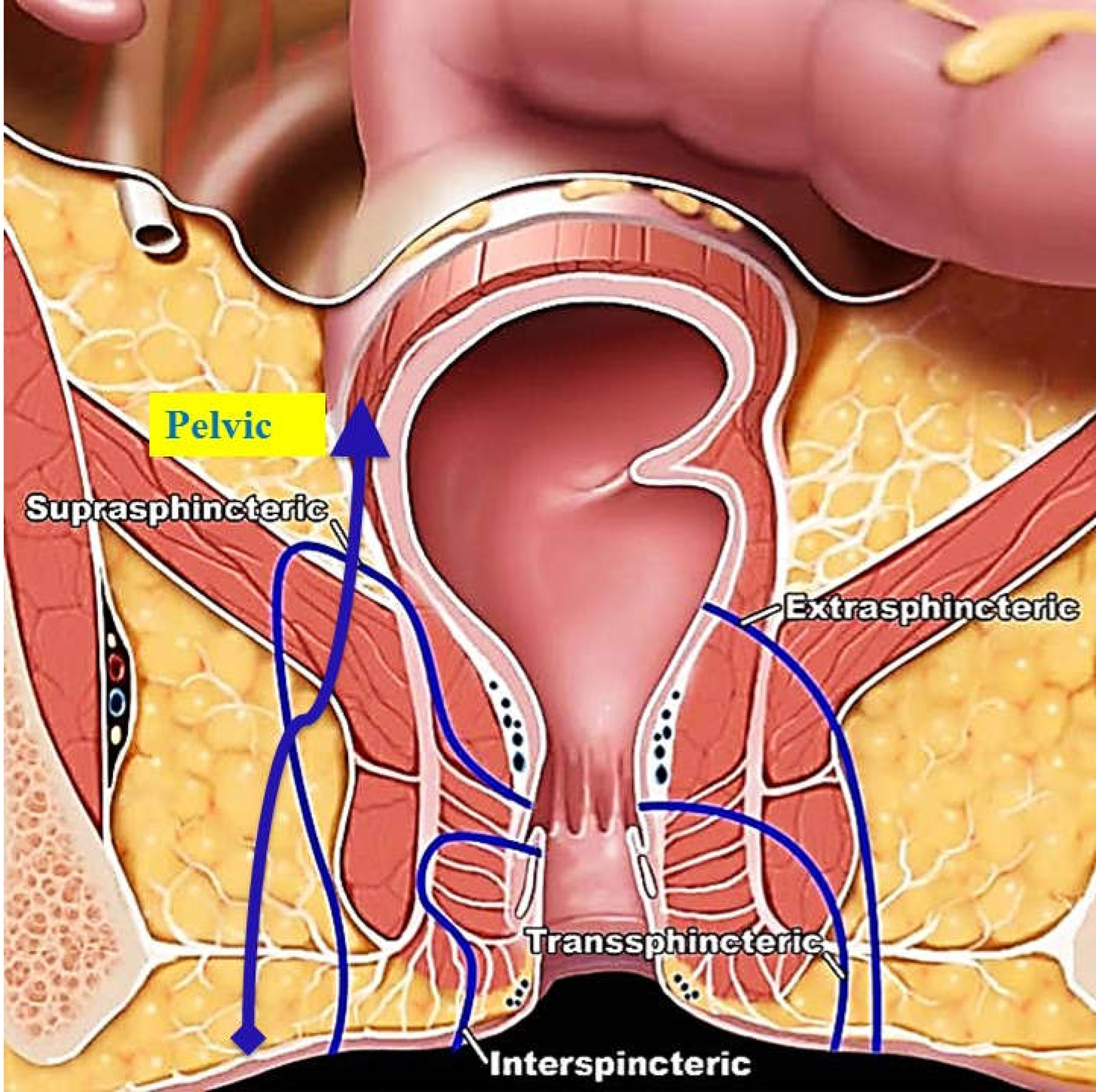
Category	Type of fistula	Uses of information
Anatomy	Internal vs. external	May suggest cause of fistula
	Anatomic course	Assists in planning operative closure
		May predict spontaneous closure
Physiology	Output (ml per day)	Predicts mortality
	Low (< 200)	Predicts metabolic derangements
	Moderate (200–500)	
	High (> 500)	
Etiology	By underlying disease process	Predicts closure rate
		Predicts mortality

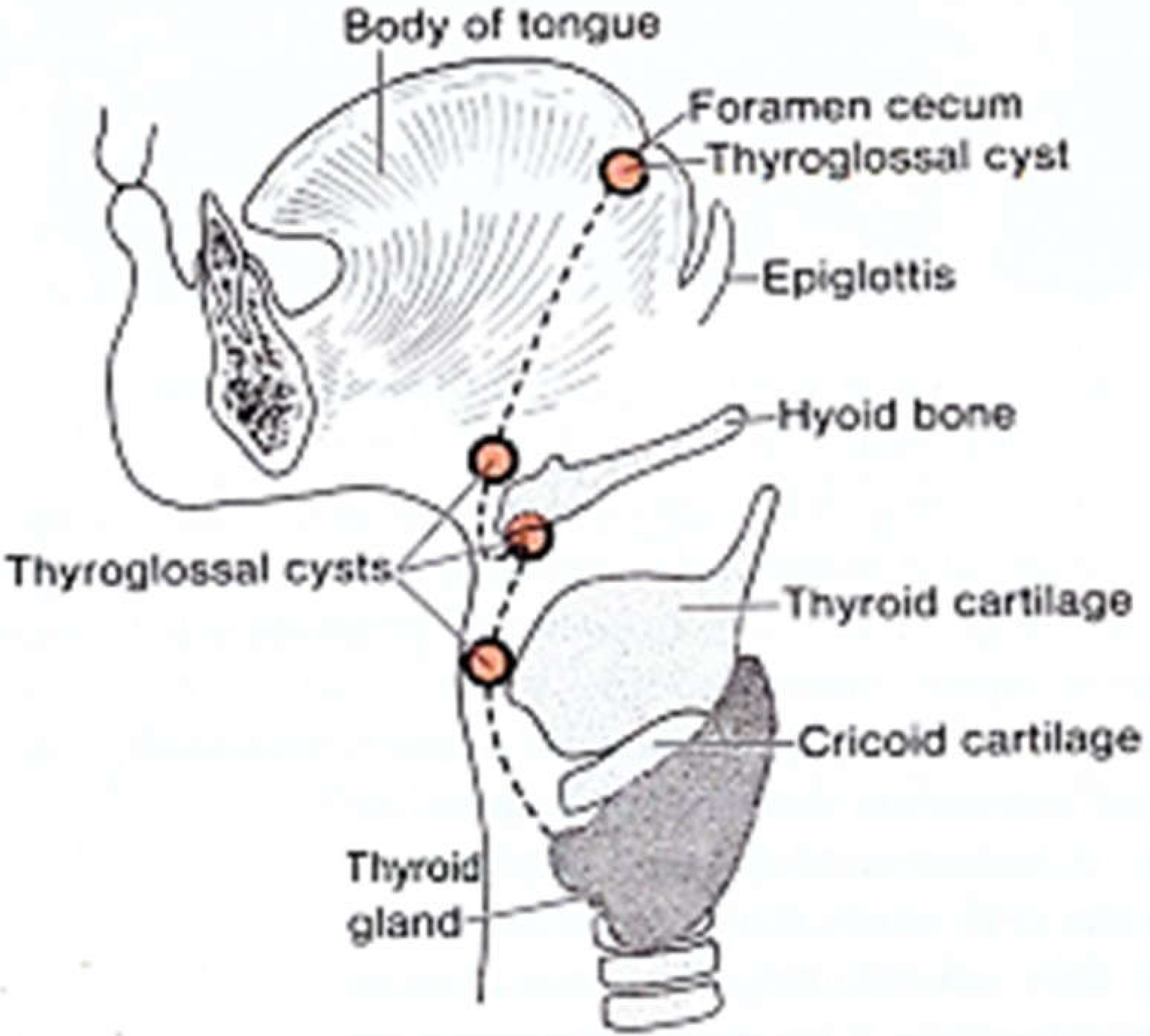
Phase	Time Course	Primary goals
1. Recognition and stabilization	24–48 hours	Correct fluid and electrolyte imbalances
		Drainage of intra-abdominal abscesses
		Control of sepsis
		Control of fistula drainage
		Ensure adequate skin care
		Aggressive nutritional support
2. Investigation	after 7–10 days	Determine anatomy and fistula characteristics
3. Decision	up to 4–6 weeks	Determine likelihood of spontaneous closure
		Plan course of therapy
4. Definitive therapy	after 4–6 weeks or if closure is unlikely	Closure of fistula
		Reestablish gastrointestinal continuity
		Secure closure of abdomen
5. Healing	5–10 days after closure onward	Ensure adequate nutritional support
		Transition to oral intake

Fistula in Ano

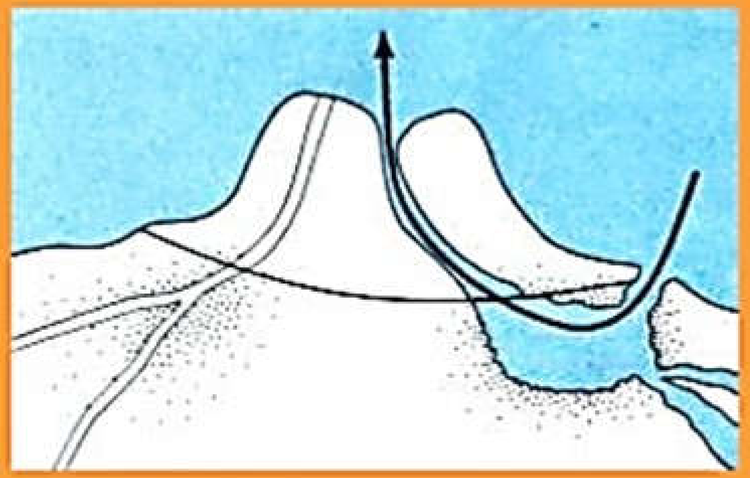
- Discharge.
- Underlying disease (Abcess, Crohn's disease, Malignancy.
- Fistulogram.
- M.R.I.
- Tx : - Surgery :
  - Fistuloctomy.
  - Fistulotomy + curette

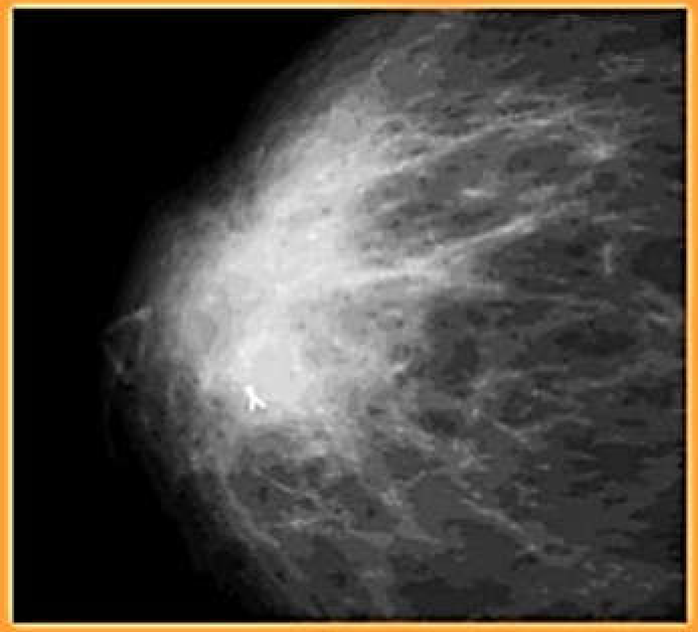
  - Radiofrequency ablation.
  - Laser therapy.




Body of tongue
Foramen cecum
Thyroglossal cyst
Epiglottis
Hyoid bone
Thyroglossal cysts
Thyroid cartilage
Cricoid cartilage
Thyroid gland

MAMMARY DUCT FISTULA





RETROAREOLA ABSCESS: ILL-DEFINED, NONCALCIFIED MASSES HIGH-DENSITY, ILL-DEFINED HETEROGENEOUS MASS WITH AN IRREGULAR MARGIN.

تم بحمد الله

"ضع قليلاً من **العاطفة** على **عقلك** حتى يلين
وضع قليلاً من **العقل** على **قلبك** حتى يستقيم."