Hashemite University
H · U · M
Medical School Committee

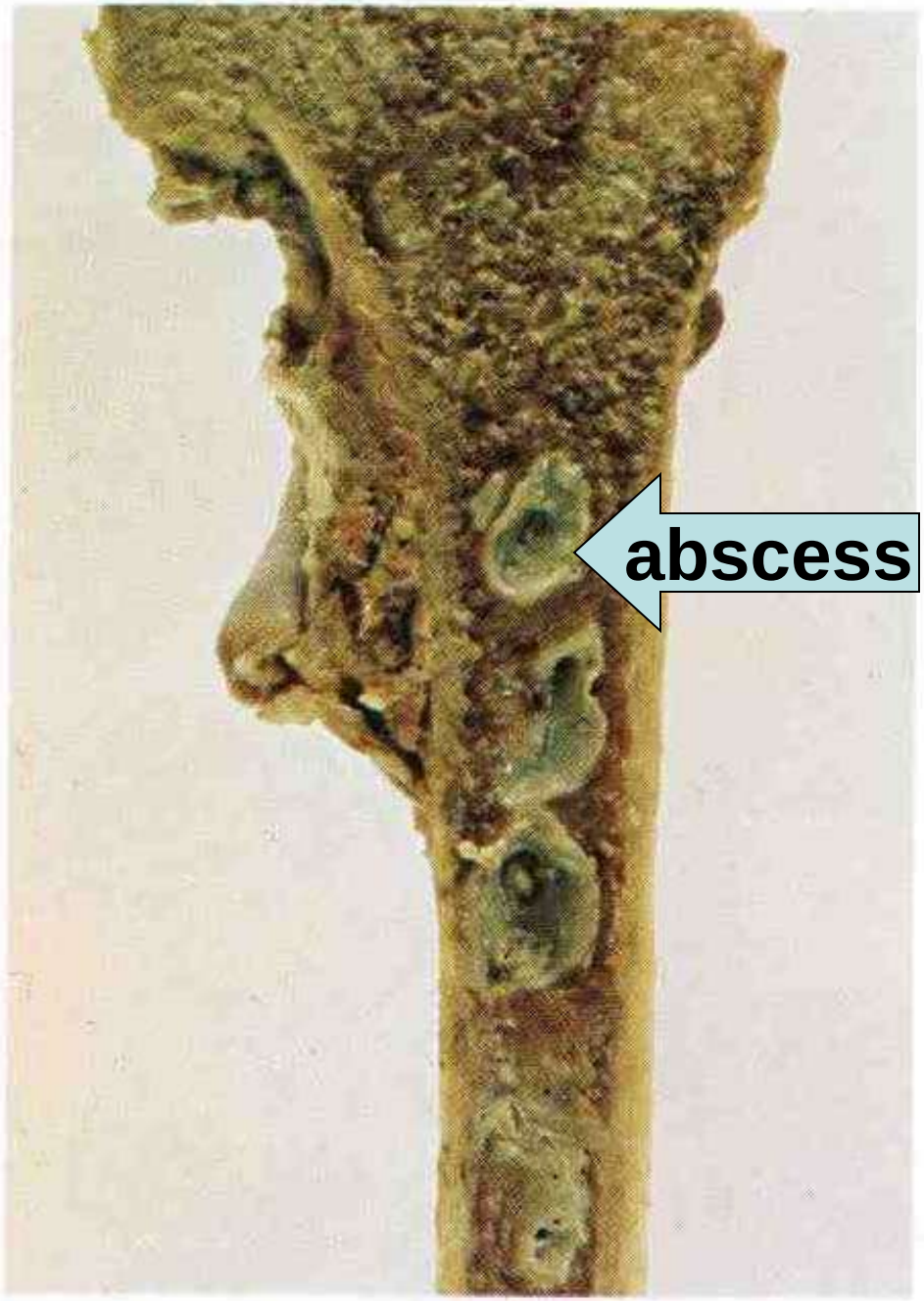
Lab

Scientific Team
الفريق العلمي

PATHOLOGY

Musculo-Skeletal

DONE BY : Volunteer



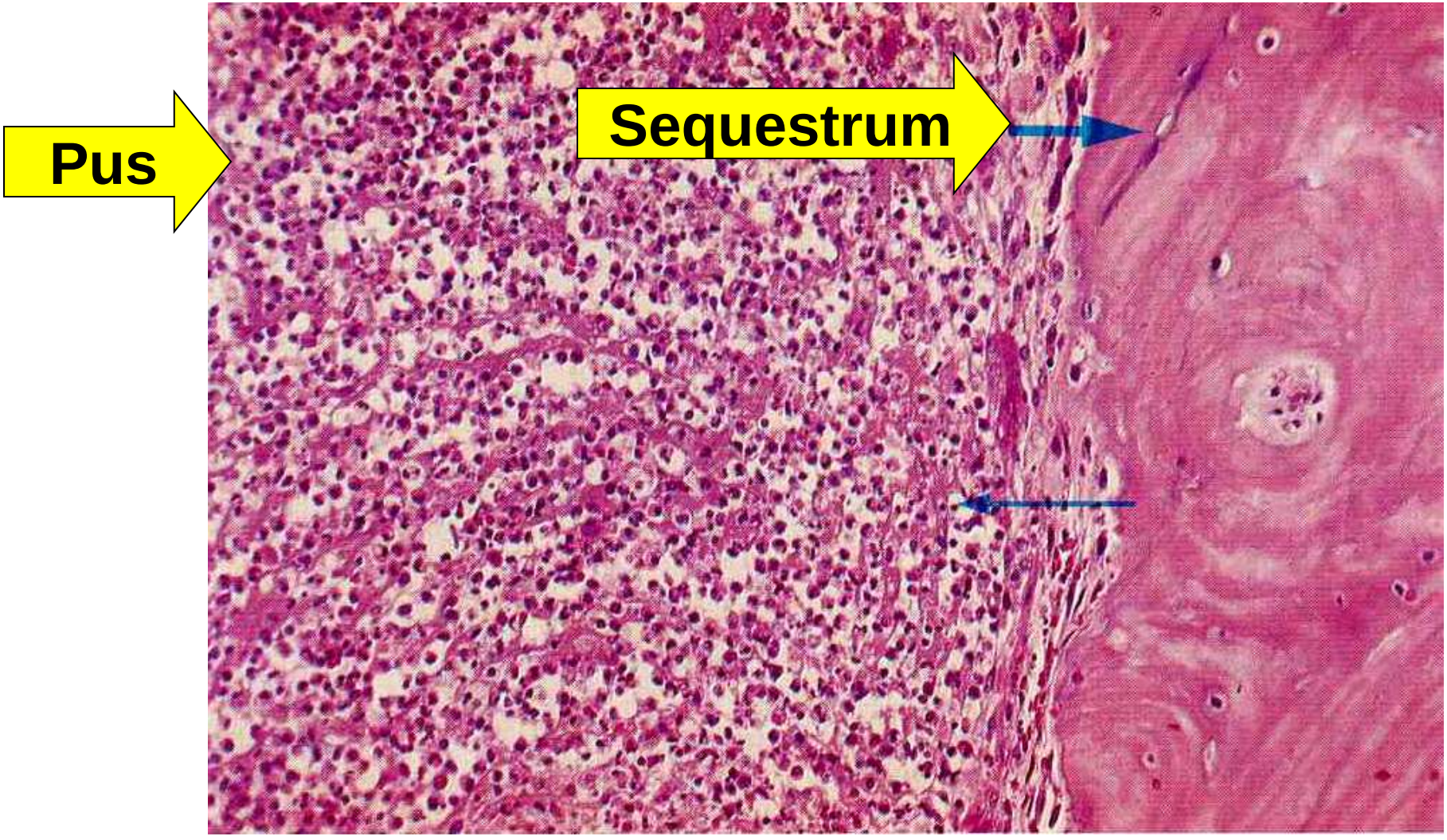
13.6 Acute pyogenic osteomyelitis: femur

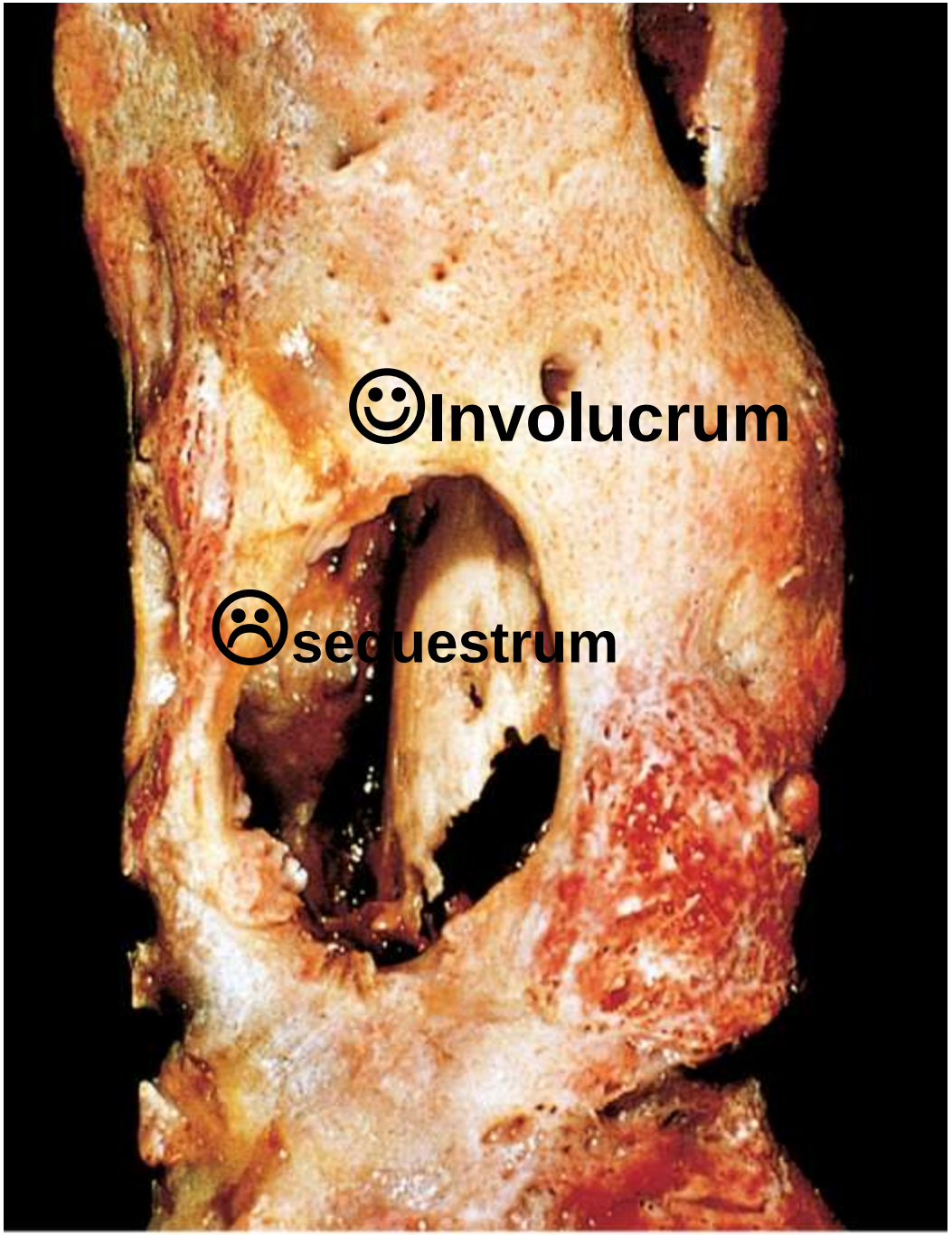
F 13-6: **Acute pyogenic osteomyelitis: femur.** Section of upper femur showing:

☹ 4 thick-walled **abscesses** within the medullary cavity of the bone metaphysis, containing greenish-yellow pus.

★The causative organism was ***staphylococcus aureus*** which was spread by the blood from another focus, e.g., skin.

◙ 3.4: **Osteomyelitis: Bone X150. Pus** {neutrophils + fibrin + macrophages + Bacteria (thin arrow)} filling the medullary cavity and is **eroding** the dense trabeculae of cortical bone, causing eventually bone necrosis (sequestrum) formation.

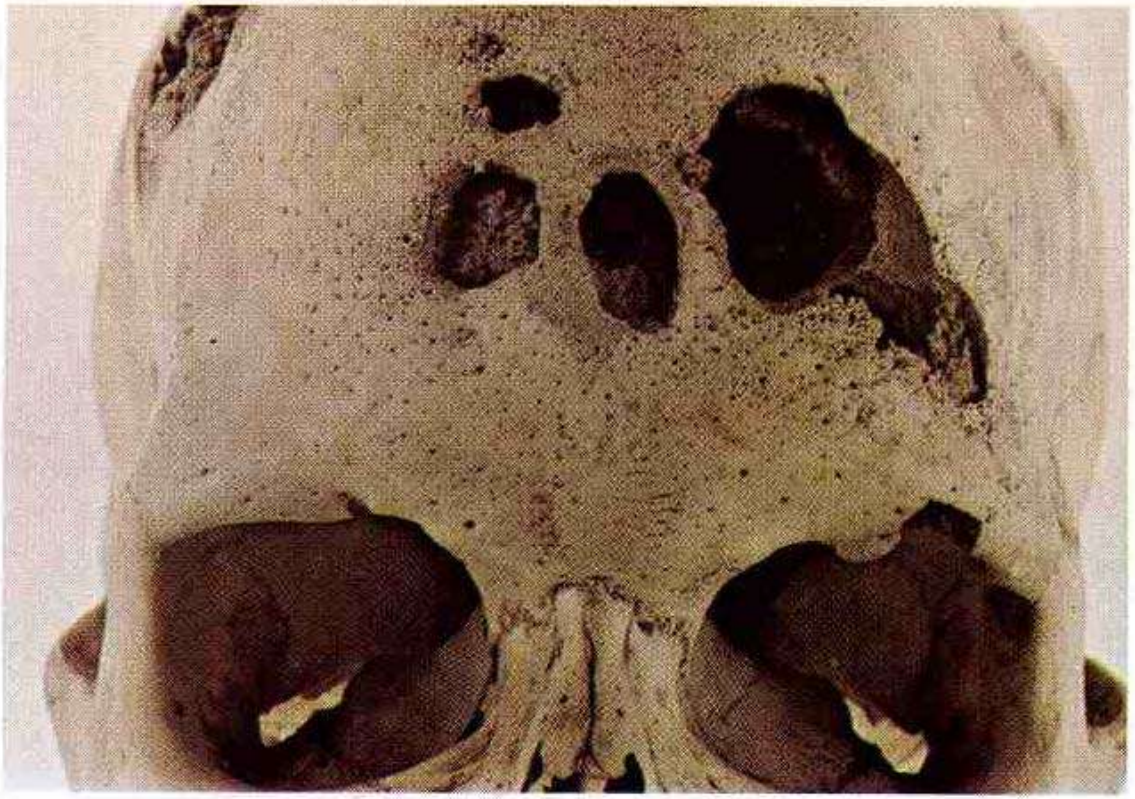




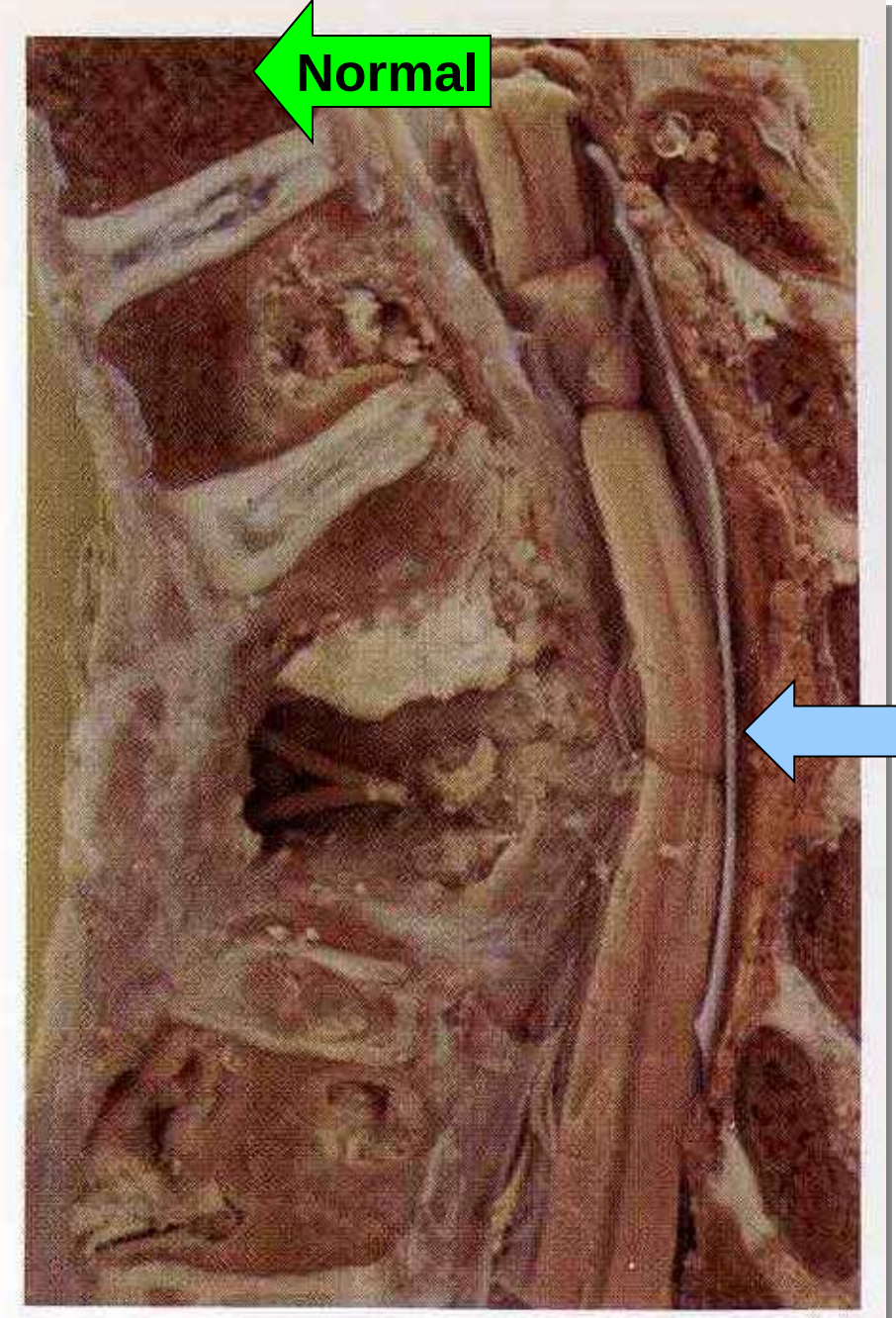
F21-7: Resected femur from a person with **chronic osteomyelitis (OM)**. The necrotic bone ☹ **(sequestrum),** visible in the center of a draining sinus tract, is surrounded by a rim, or shell, of new living bone called ☺ **(involucrum).**

F13-12: **Syphilitic gummas: Skull. (Historical?)**

☹ **Gumma**, a lesion of the 3rd (tertiary) stage of syphilis, is an area of extensive necrosis that can affect any part of the body. Dried skull showing multiple large **ragged cavities** in both frontal & in the right parietal bones. Early diagnosis & adequate treatment of syphilis can prevent such serious complication.



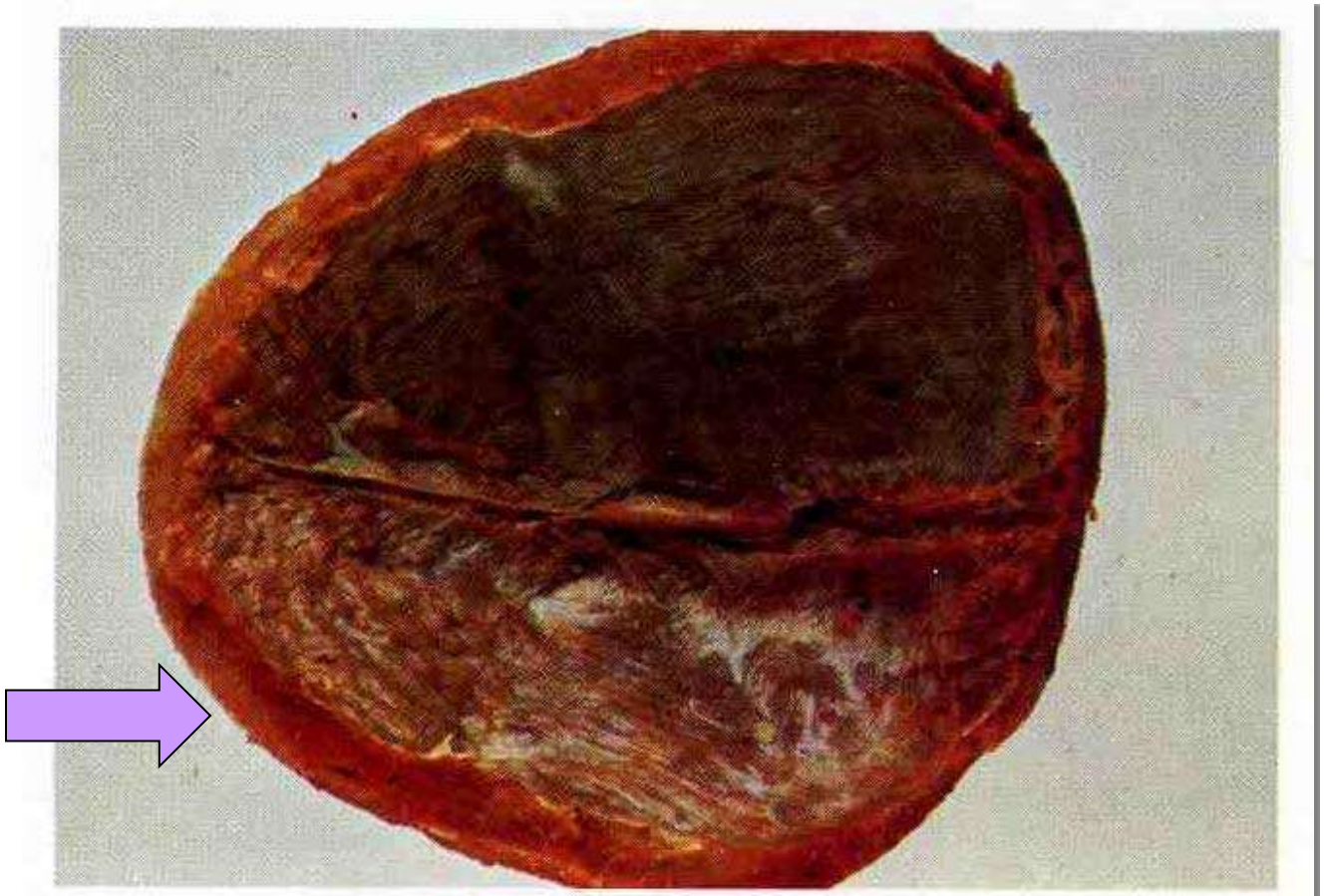
13.12 Syphilitic gummas: skull



13.15 Tuberculous osteomyelitis: vertebrae

F13-15: **TB osteomyelitis of the vertebrae (Pott's disease).** A median sagittal section of the thoracic spine, showing 4 adjacent vertebral bodies which have been largely destroyed by caseous abscesses which erode into the periosteum & IVD. ☹Collapse of the two central bodies has led to anterior spinal angulation (kyphosis) & moderate **compression of the spinal cord**. Vertebral caseous TB extension into soft tissue may lead to paravertebral **(Psaos) "cold abscess".**

F13-54: **Paget disease: Skull**. The calvarium is enlarged & the **bone of the skull are very vascular & greatly thickened**. The inner & outer tables cannot be distinguished. However, the bones in the early stages of the disease, are softer than normal (Can be cut by knife!) & are brittle & liable for fracture latter!



13.54 Paget's disease: skull

◙ 3.13: **Paget disease: Skull X150.** Note ►Irregular **“mosaic”** cement lines (thin A) {indicating previous **repeated patchy** disordered episodes of bone resorption & formation} running through very broad bony trabeculae (BT),► Highly **vascular marrow**. On the surface of the BT, there are ►Layers of **osteoblasts** (thick A) forming new bone & ► Very active bone **resorption by osteoclasts** (double A) with notching of the trabeculae.

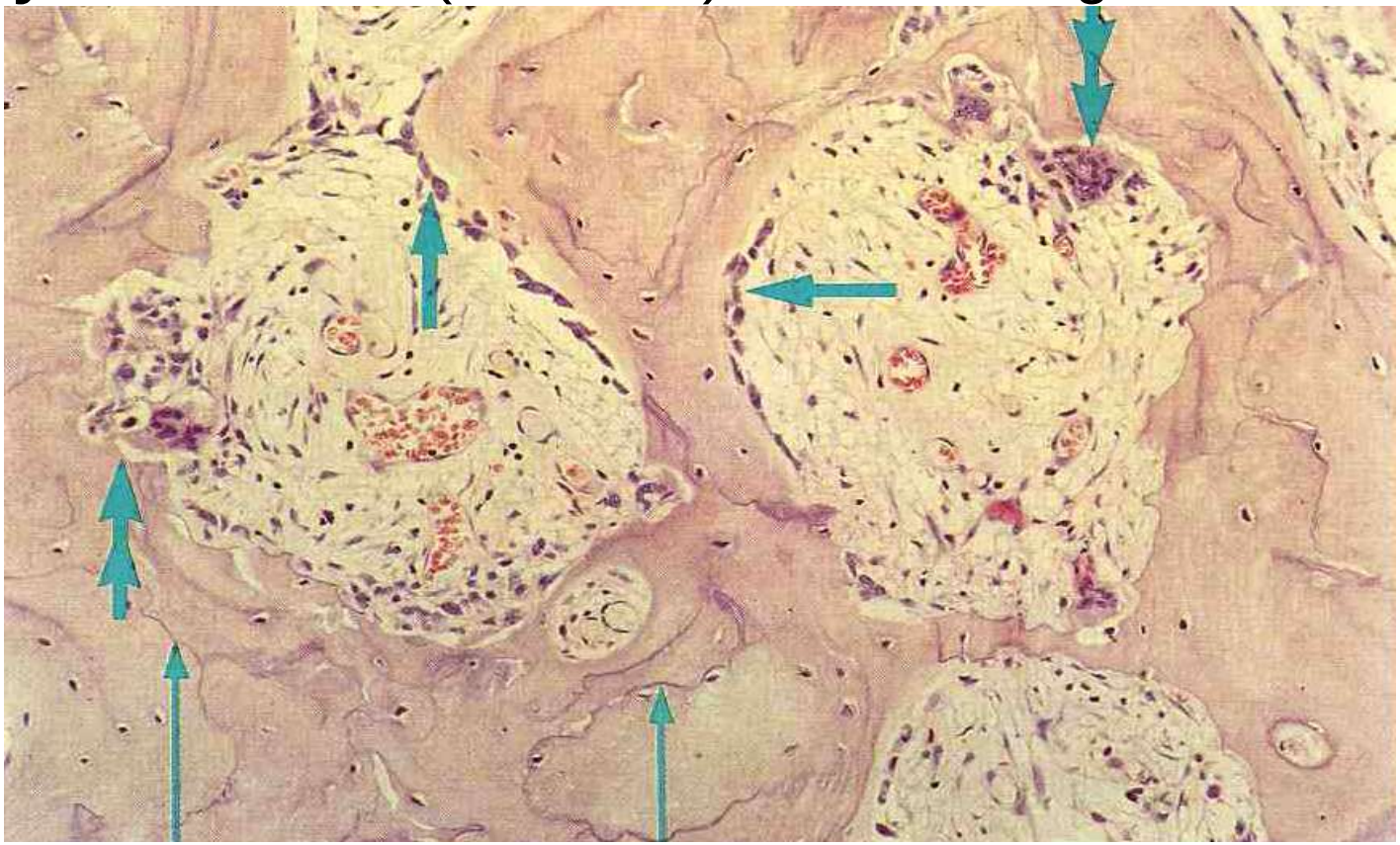
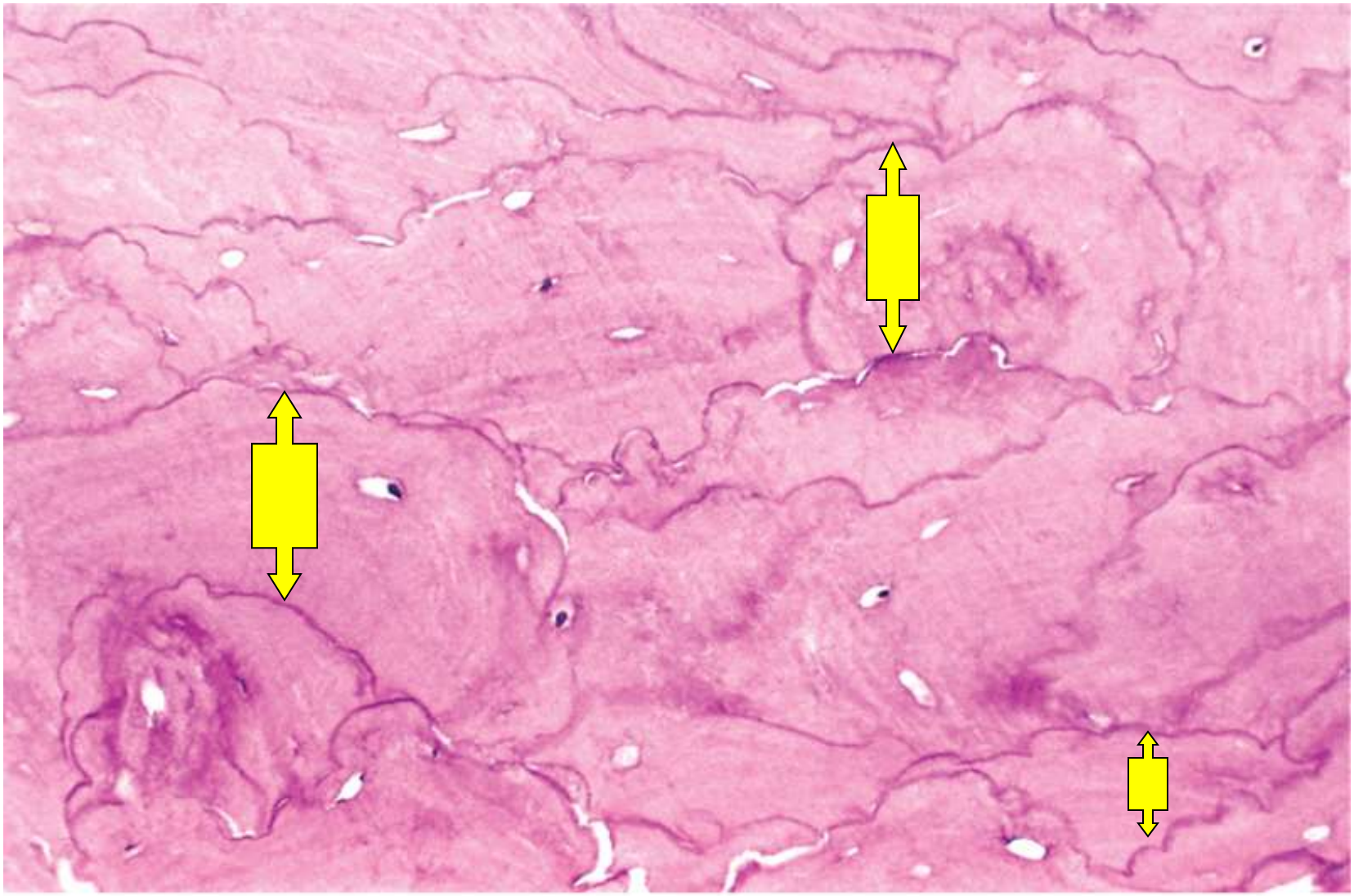
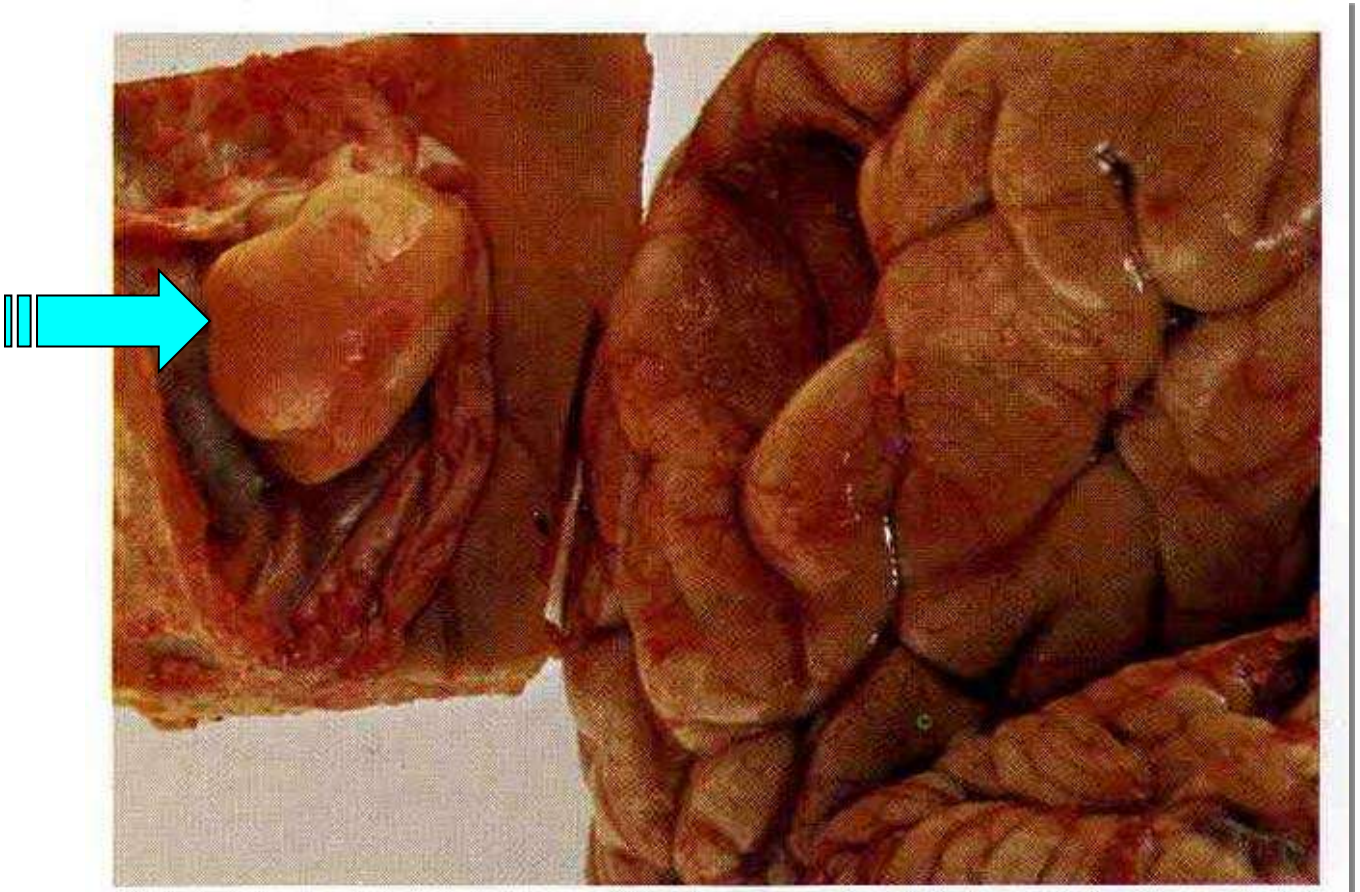


Fig. 21-5 ® **Pathognomonic** histologic feature of Paget disease is a **mosaic pattern** of lamellar bone (likened to jigsaw puzzle).



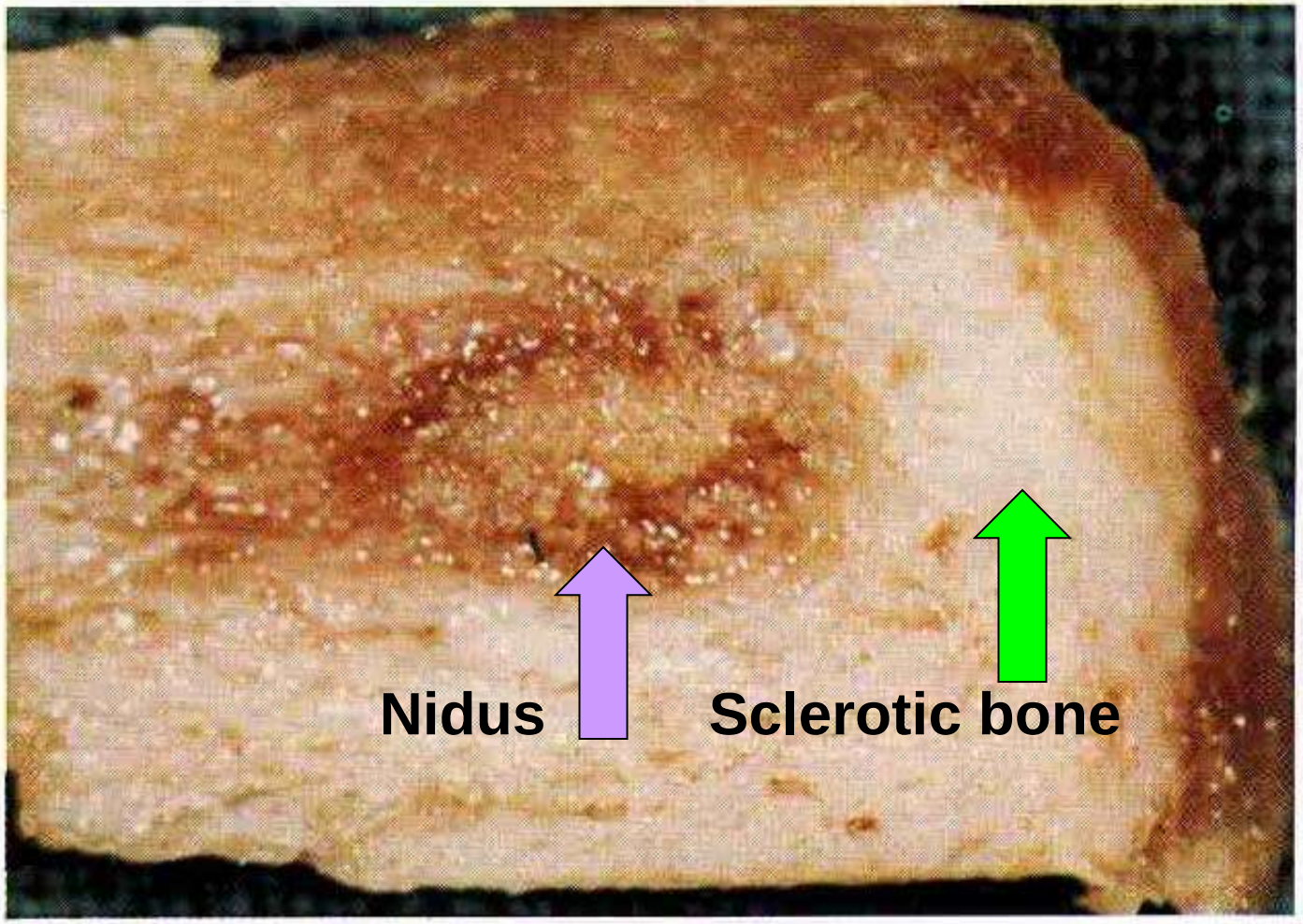
F13-57: **Osteoma: Skull.**

☹An **extremely hard (ivory) osteoma** arising from the petrous temporal bone & projects as a smooth lobulated yellowish-white mass from the floor of the middle cranial fossa, producing a deep depression in the overlying brain temporal lobe



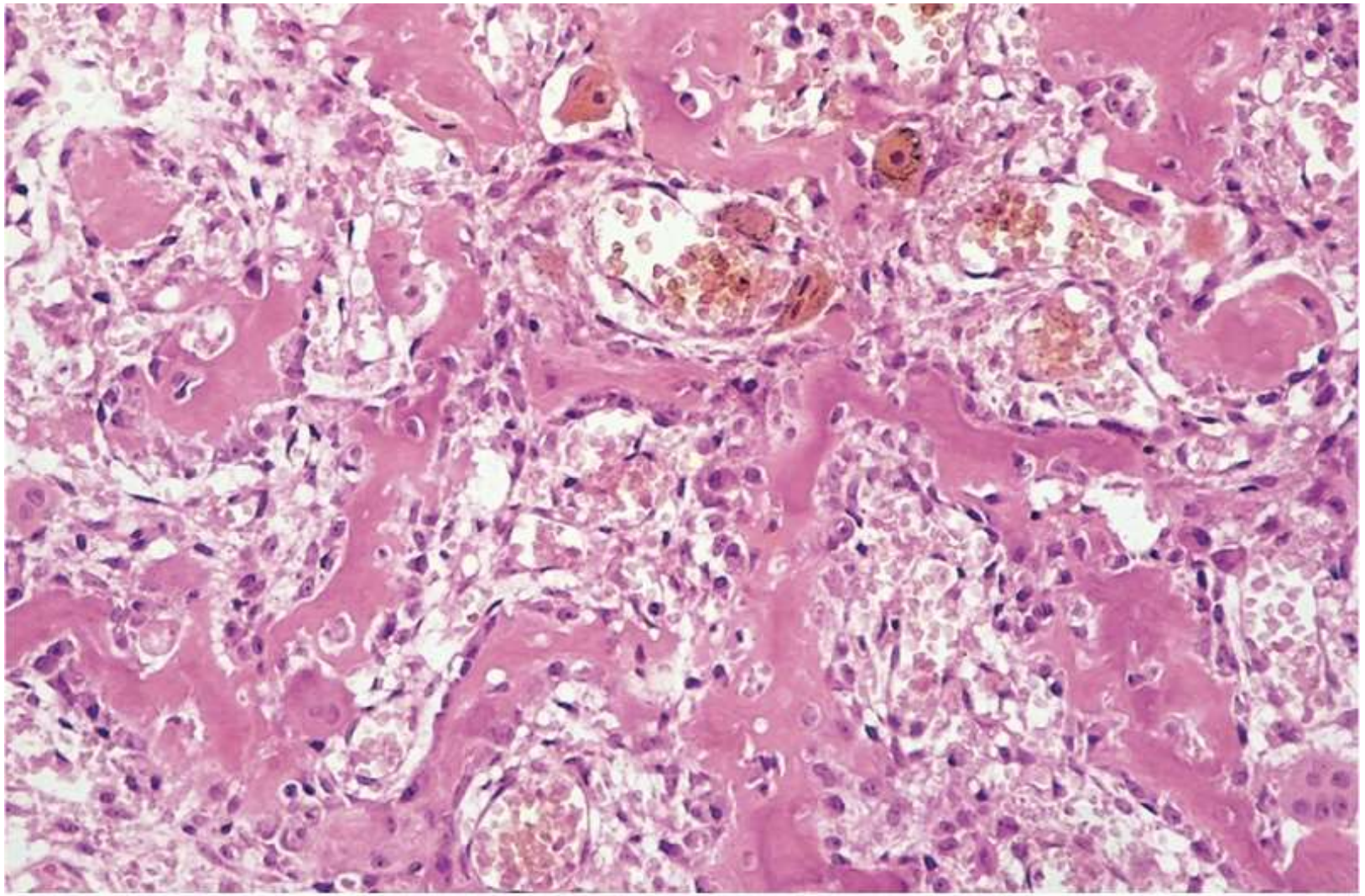
13.57 Ivory osteoma: skull

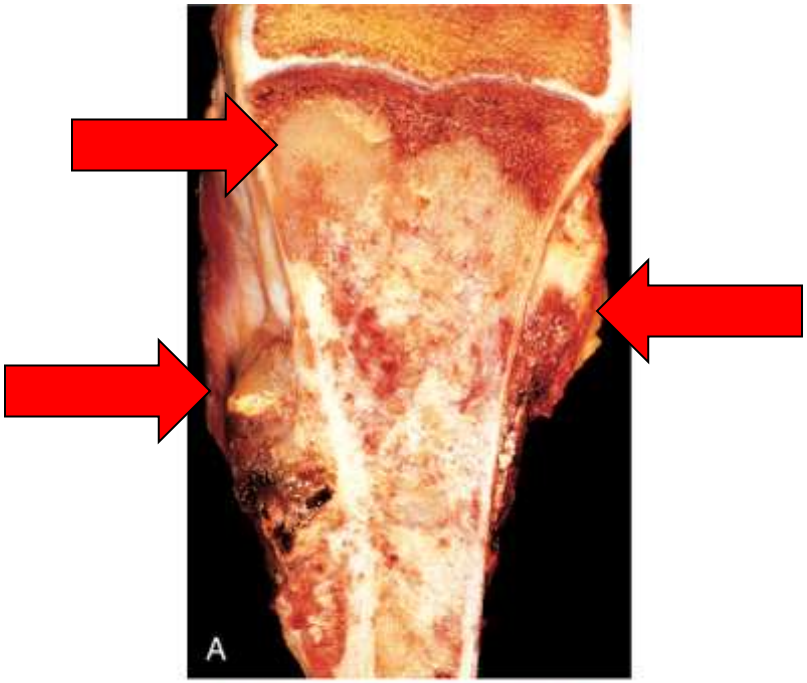
F13-59: **Osteoid osteoma.**
Small (1cm in Ø) oval lesion, with reddish-yellow central **(nidus),** surrounded by white **sclerotic bone.**

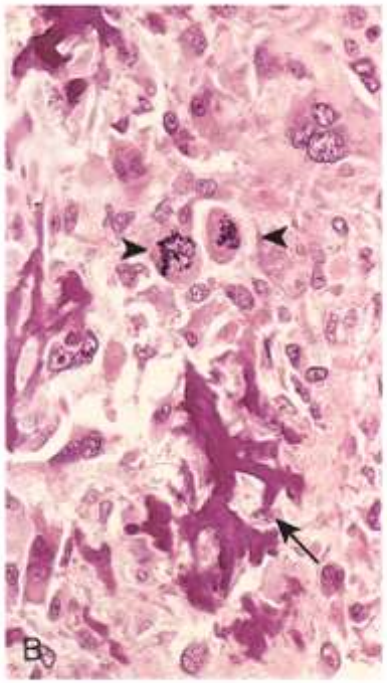


13.59 Osteoid osteoma

F21-8: **Osteoid osteoma.** Interlacing trabeculae of woven bone, rimmed by prominent osteoblasts with intertrabecular spaces filled by vascular loose connective tissue.

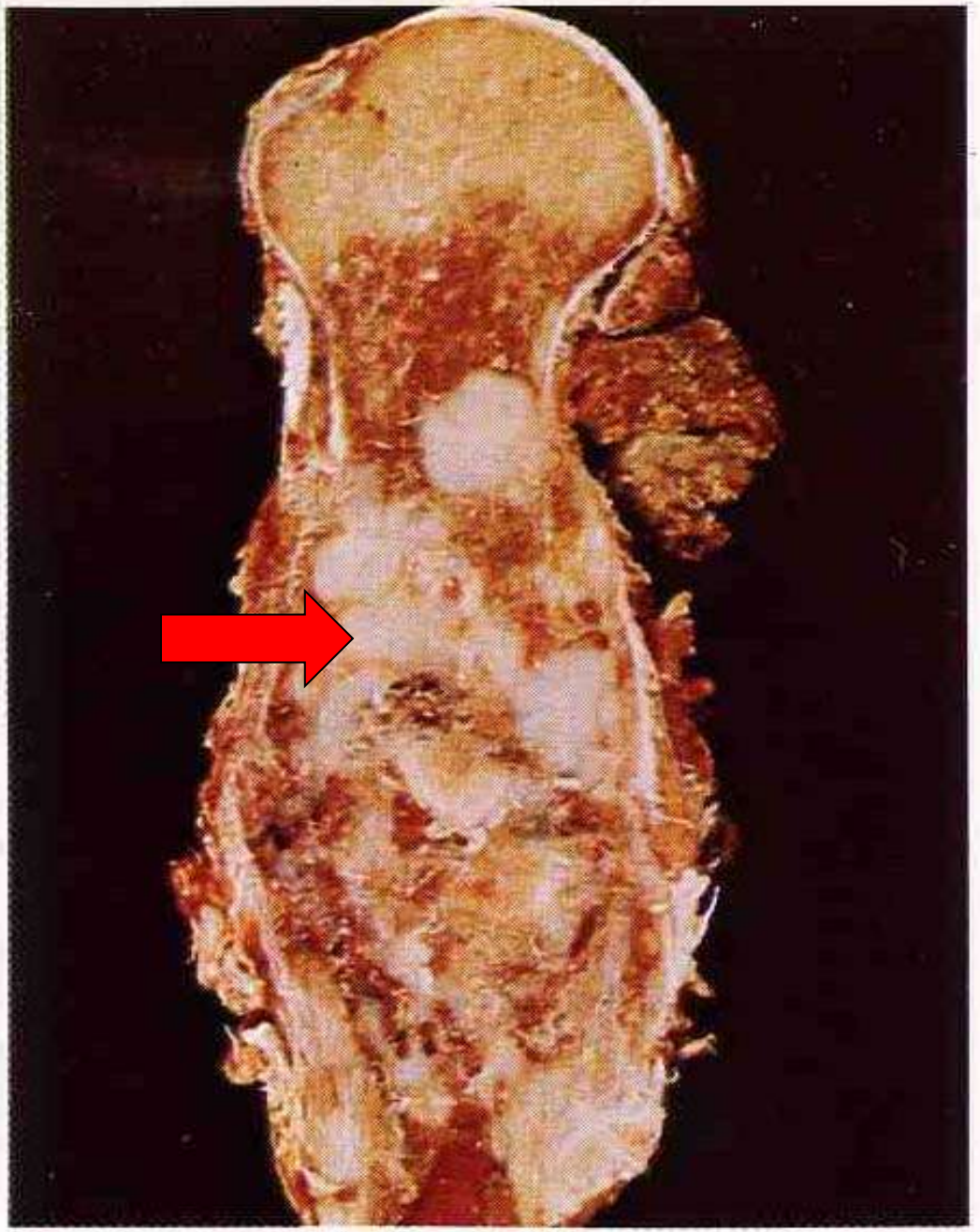






F21-9: **Osteosarcoma.**
A, Mass involving the upper end of the tibia. The tan-white tumor fills most of the medullary cavity of the metaphysis & proximal diaphysis.
It has infiltrated through the cortex, lifting the periosteum, & formed soft tissue masses on both sides of the bone.

B, ◙ H, coarse, lacelike pattern of neoplastic bone (arrow) produced by anaplastic tumor cells; with abnormal mitotic figure (arrowheads).

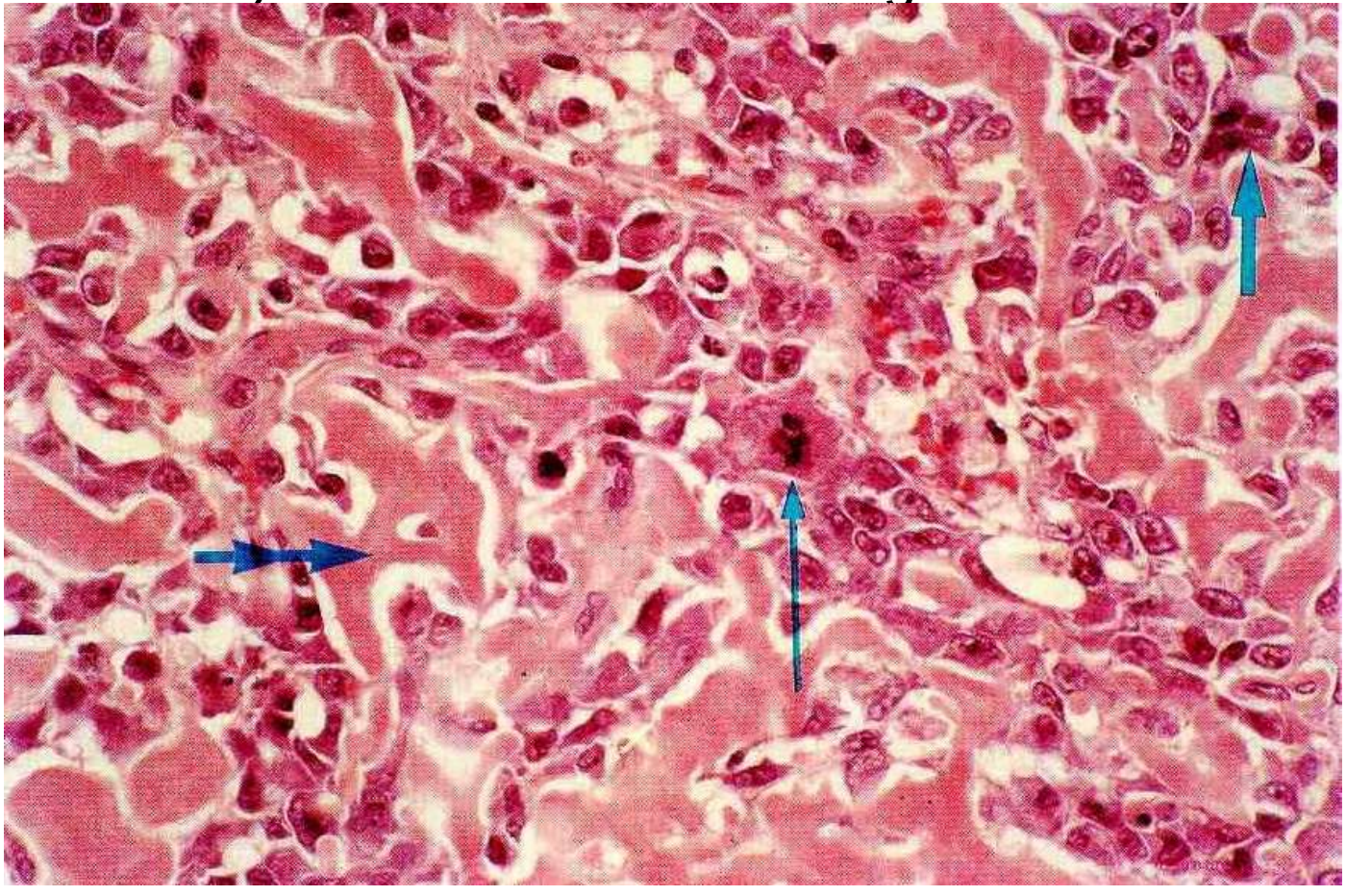


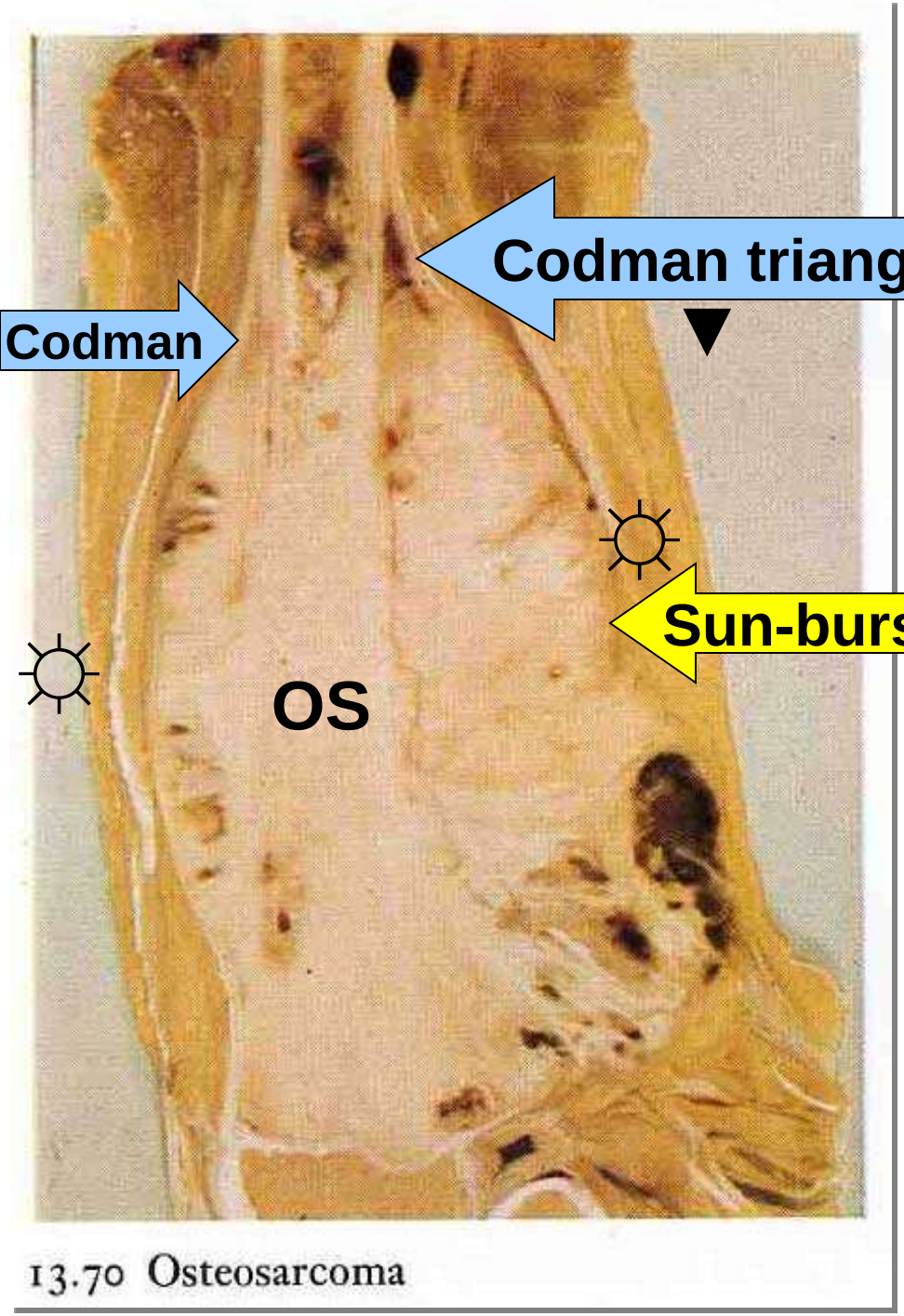
13.69 Osteosarcoma: humerus

F13-69: **Osteosarcoma: humerus.**

☹ The marrow cavity of the proximal part of the shaft of the humerus is replaced by a central whitish tumor, which expand & infiltrate the overlying cortex.

◙ 3.24: **Osteosarcoma: Bone.** Essential for the diagnosis is the **direct production of osteoid by the malignant osteoblasts** (double arrow)**. Pleomorphic** malignant osteoblasts with large pleomorphic vesicular nuclei, some with prominent nucleoli, & numerous abnormal mitotic figures (thin arrow), & tumor giant cells (thick arrow). Necrosis & hemorrhage are common.

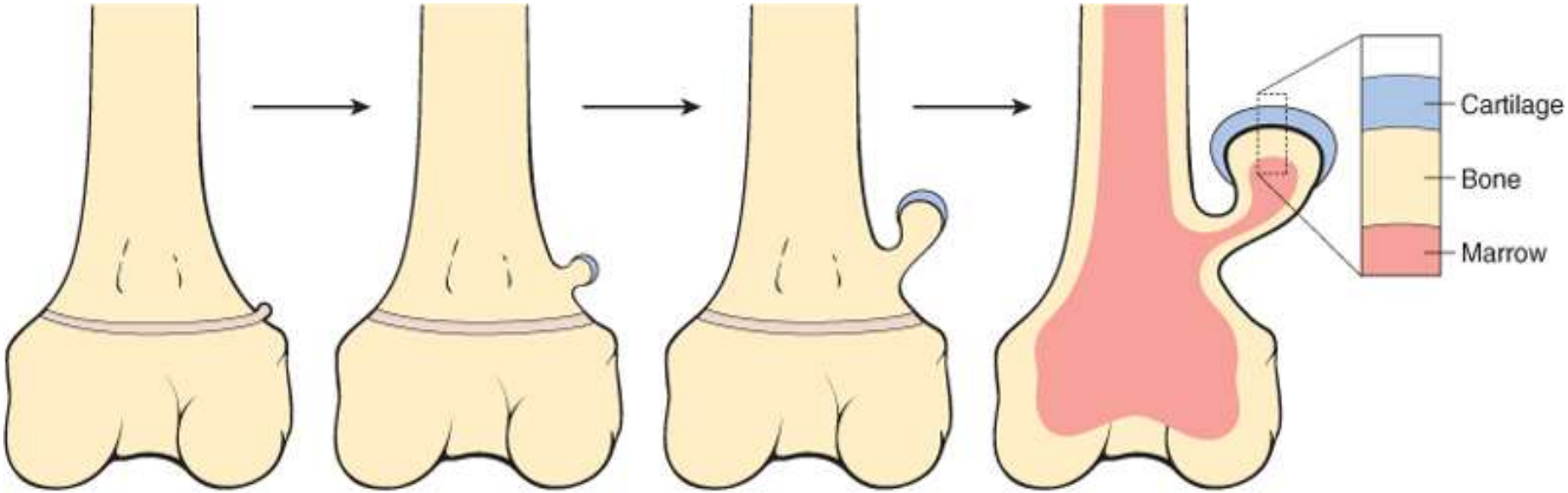




13.70 Osteosarcoma

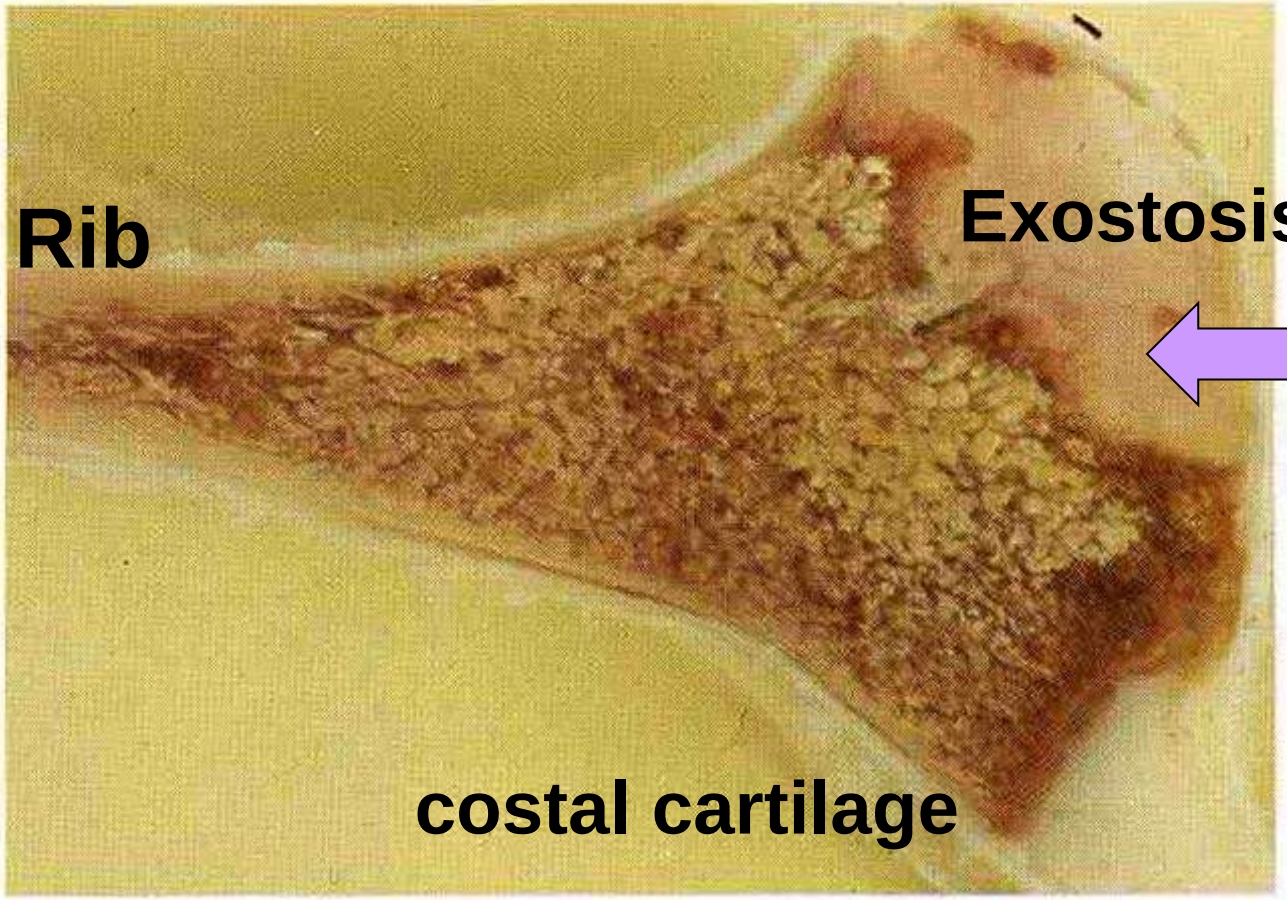
F13-70: **Osteosarcoma: (OS)**Dense (Turnip like) white tumor of bone metaphysis, obliterating the medullary cavity & infiltrating through the cortex on both sides, (1) producing marked elevation of the periosteum with characteristic: ▲**Codman triangle** seen. (2) Radiating vertical white spiculations of new bone (‘**Sun-burst**’☼ appearance) are present beneath the periosteum.

F21-10: The development of an **osteochondroma** ➔beginning with an outgrowth from the epiphyseal cartilage, ➔forming mushroom-shaped bony outgrowth.



F13-56: **Exostosis: rib.**

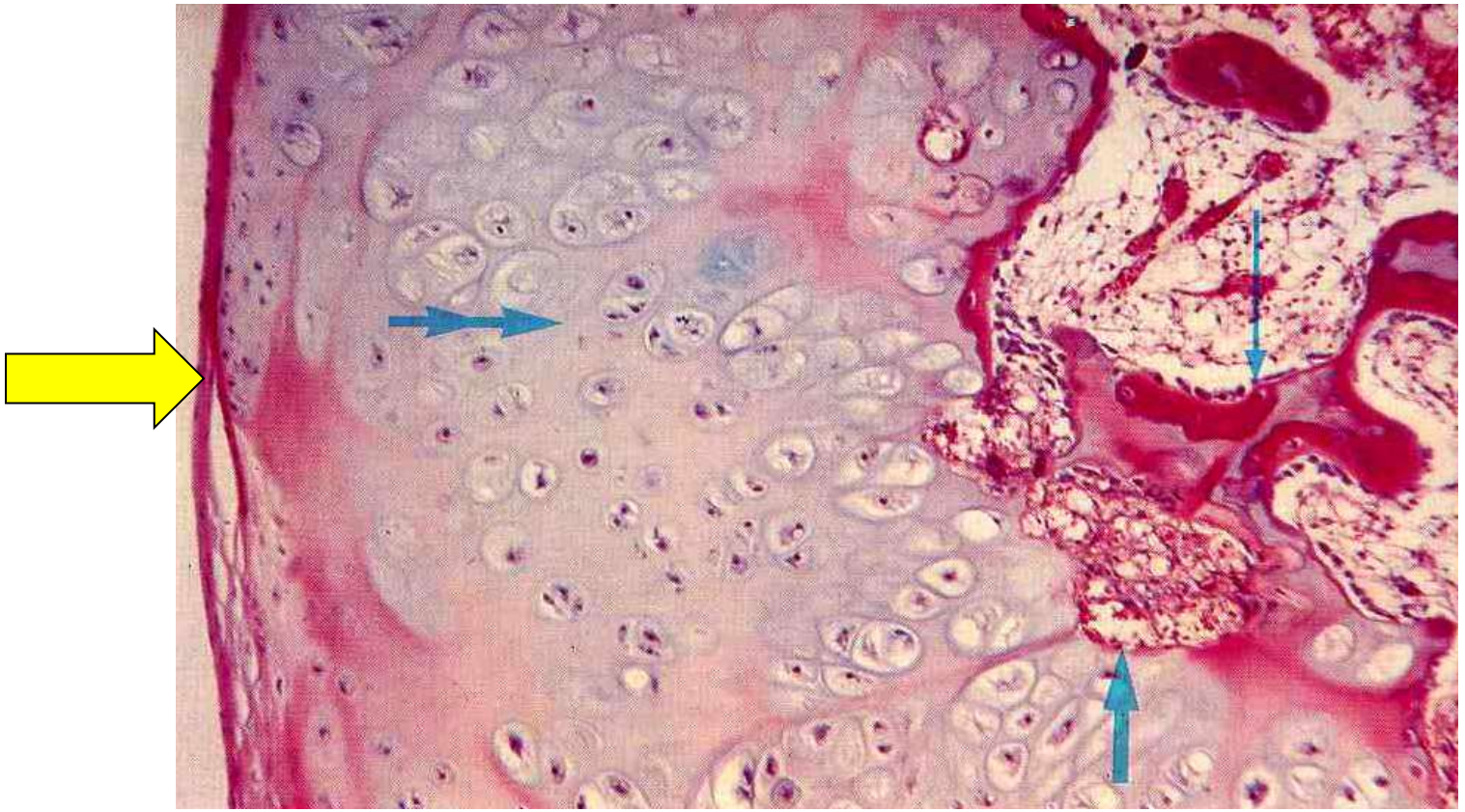
This is the junction of rib (left) & costal cartilage (lower right). A sessile bony mass with a cap of cartilage is attached to the part of the rib adjacent to the costal cartilage.



13.56 Exostosis: rib

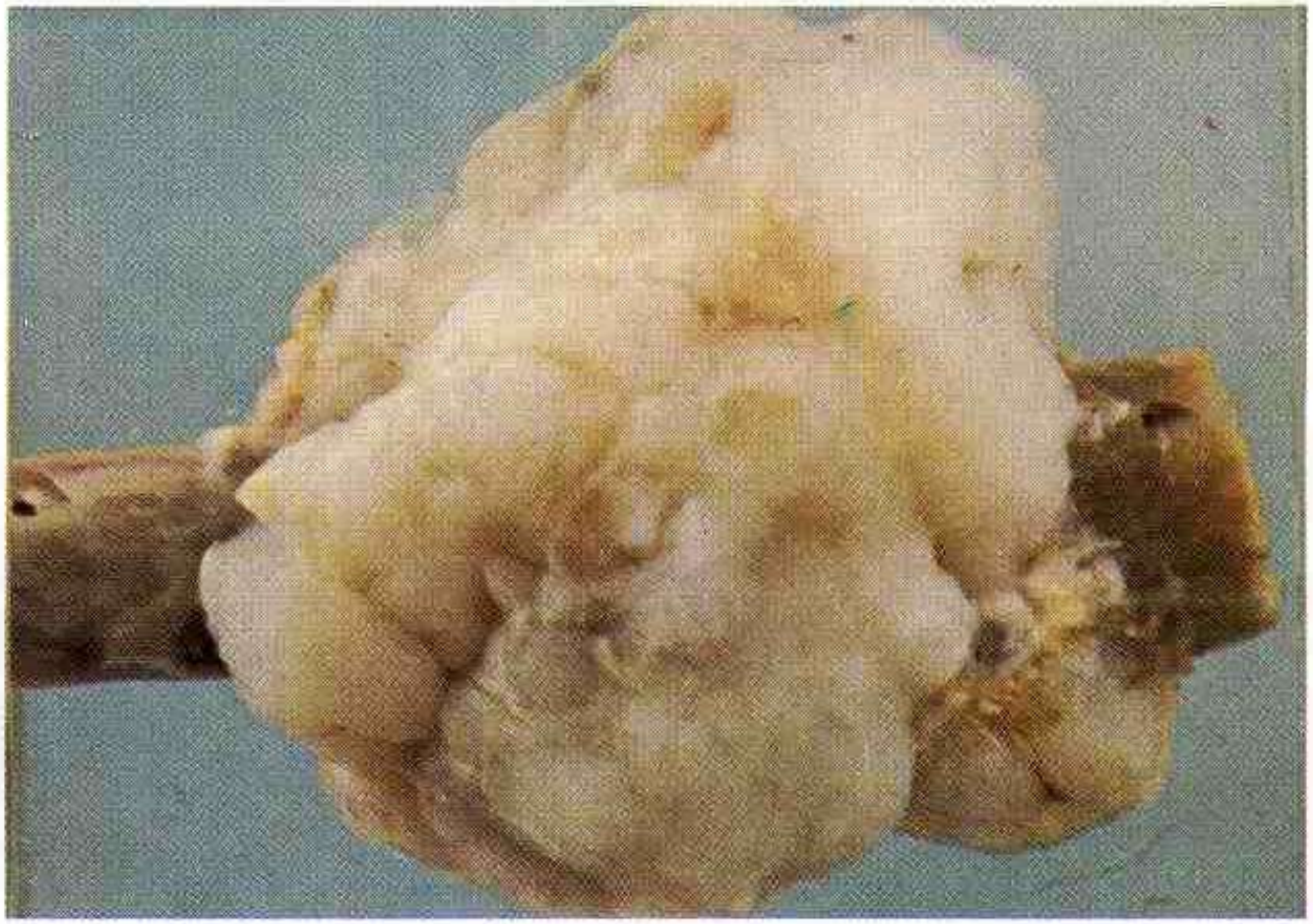
◙ 3.20: **Osteochondroma = Exostosis: Femur.**

Consist of cap of hyaline cartilage (double arrow), covered with connective tissue (left margin) continuous with the femur periosteum. Growth of osteochondroma is similar to that which occurs normally at the epiphysis, with the cap of cartilage acting like epiphyseal plate, forming trabeculae of mature bone in the under surface (thin arrow)



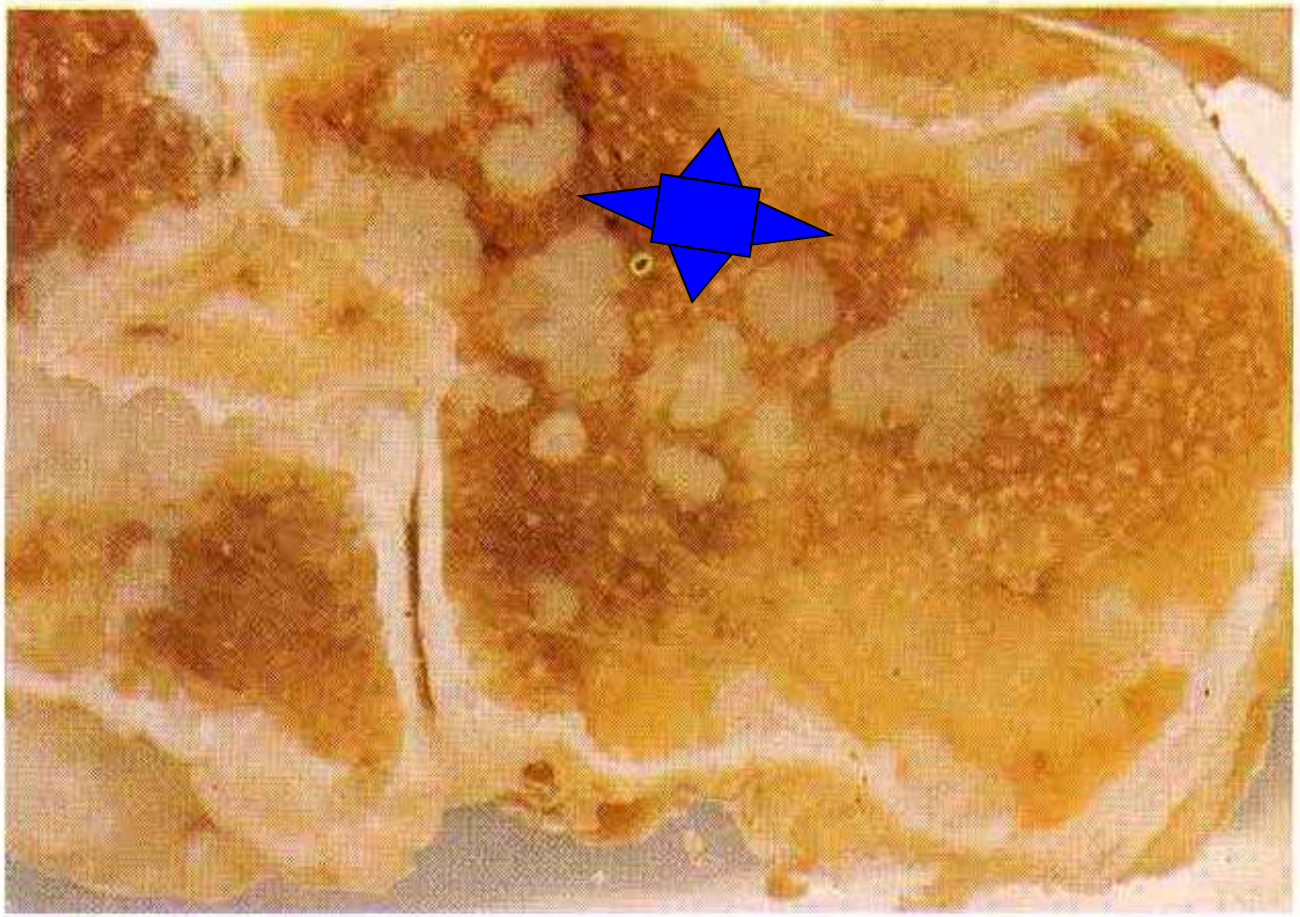
F13-58: **Chondroma: rib.**

☺ Lobulated , greyish-white, translucent tumor surrounding the rib. The tumor, in this case, is arising from the bone surface, so-called ***juxtacortical or ecchondroma.***

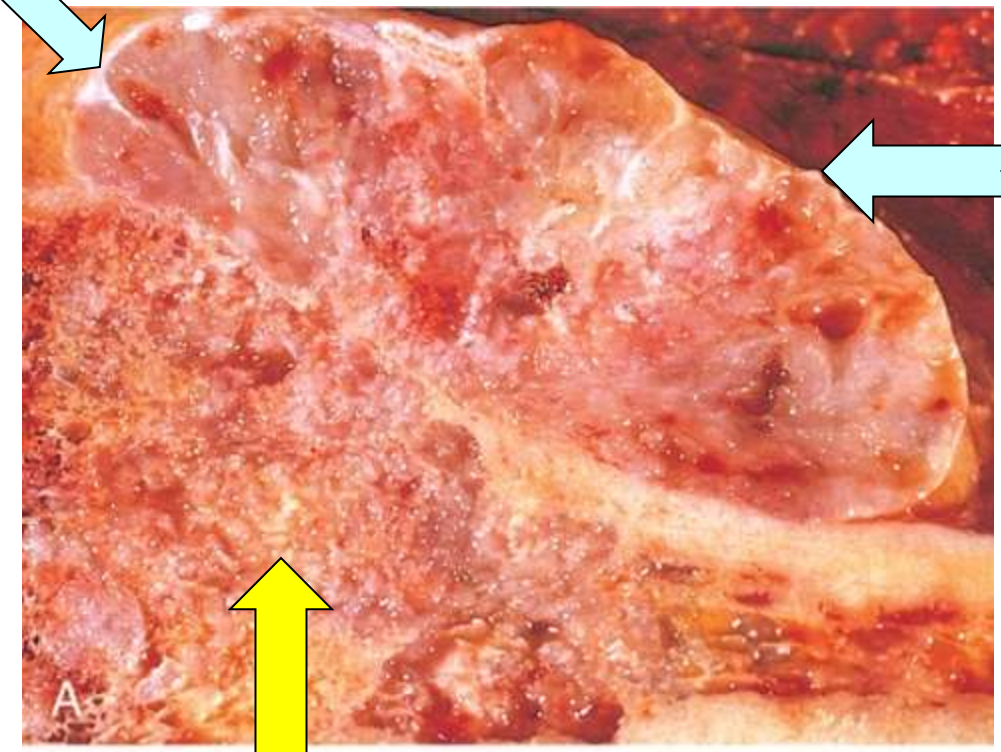


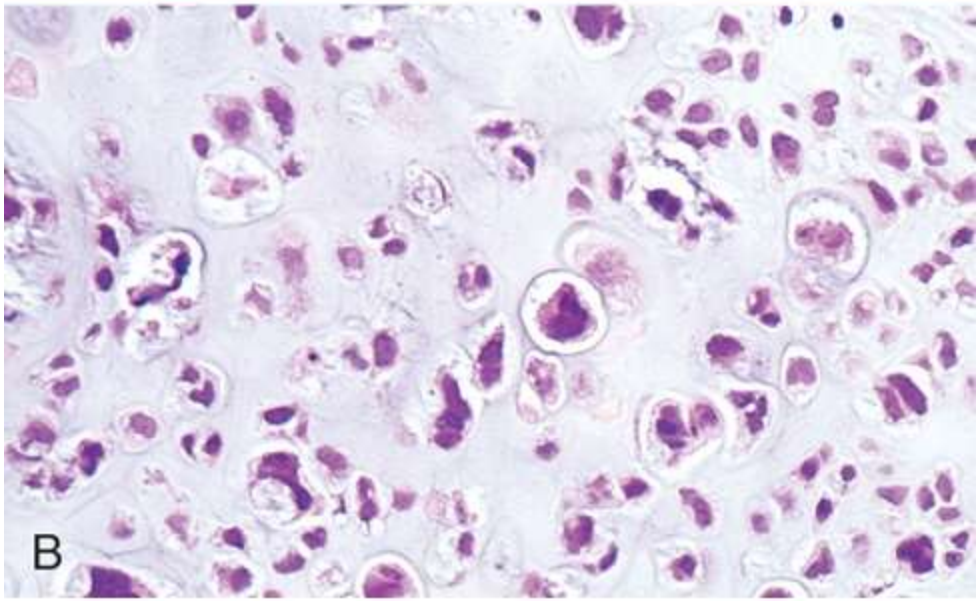
13.58 Chondroma: rib

F13-60: **Ollier's disease is** ➡ **Unilateral multiple enchondromatosis**(affecting one side of the body, Rt or Left) Figure shows multiple small rounded cartilaginous masses present within the os calics & adjacent bones of the foot.



13.60 Ollier's disease





F21-11:

Chondrosarcoma.

A, Malignant hyaline & myxoid cartilage expand the medullary cavity & grow through the cortex to form a sessile paracortical mass.

B, Anaplastic chondrocytes within a chondroid matrix.

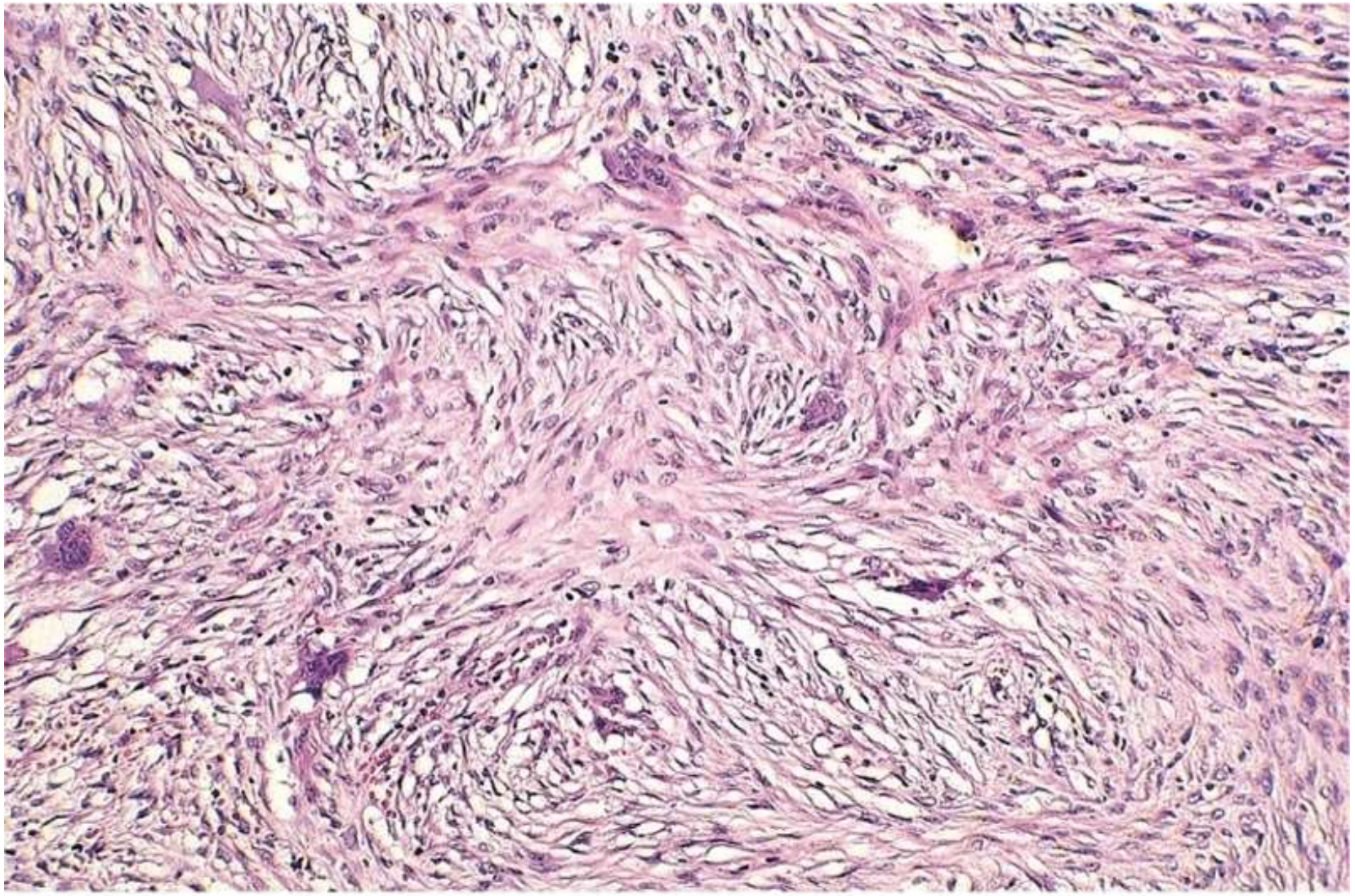
13.66 Chondrosarcoma: rib

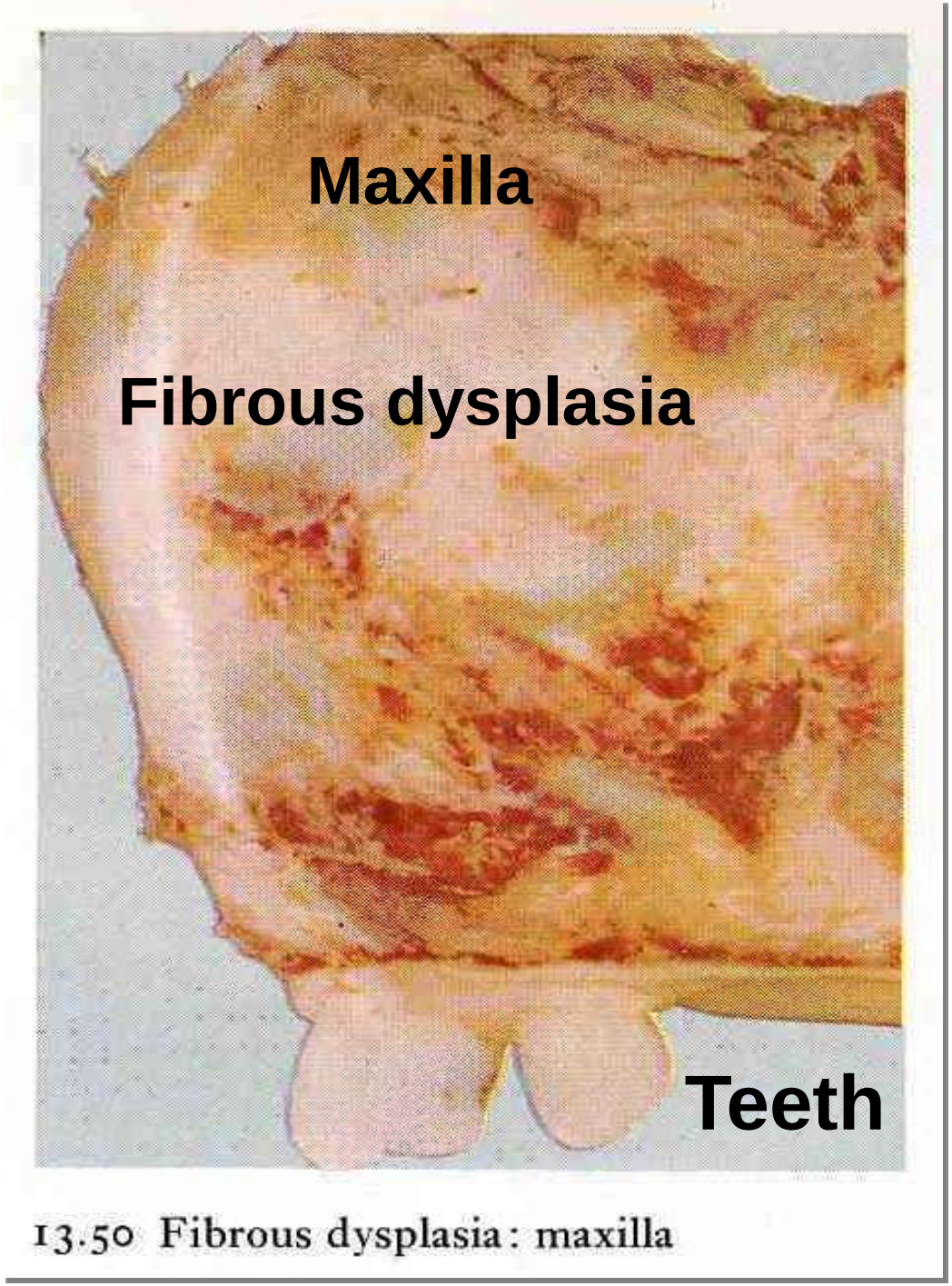
F13- 66:

Chondrosarcoma: rib.

Firm , lobulated tumor with bluish-white & translucent cut-surface,

F21-12: **Fibrous cortical defect or nonossifying fibroma,** with characteristic **storiform** pattern of spindle cells and scattered osteoclast-type giant cells.

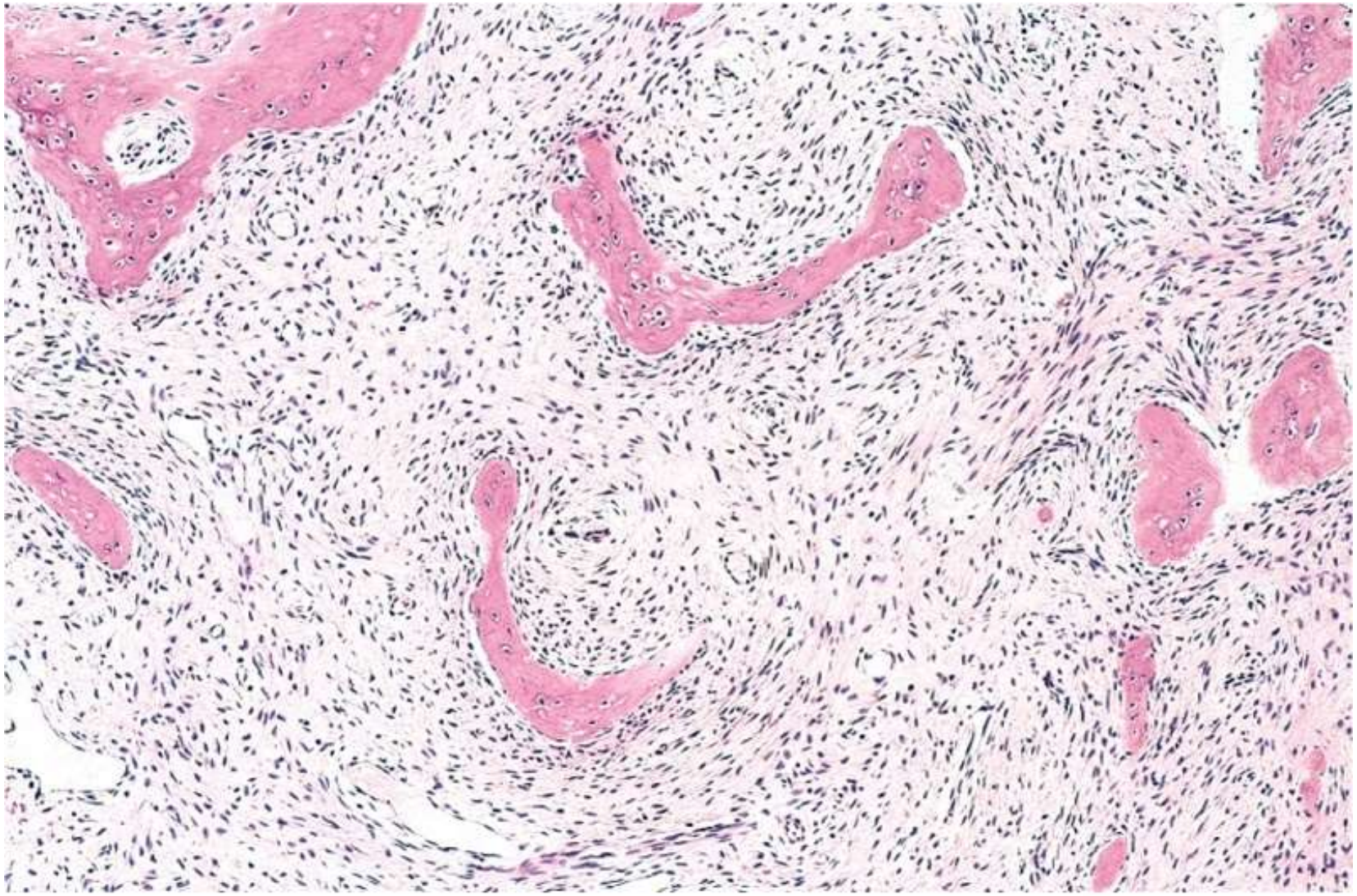


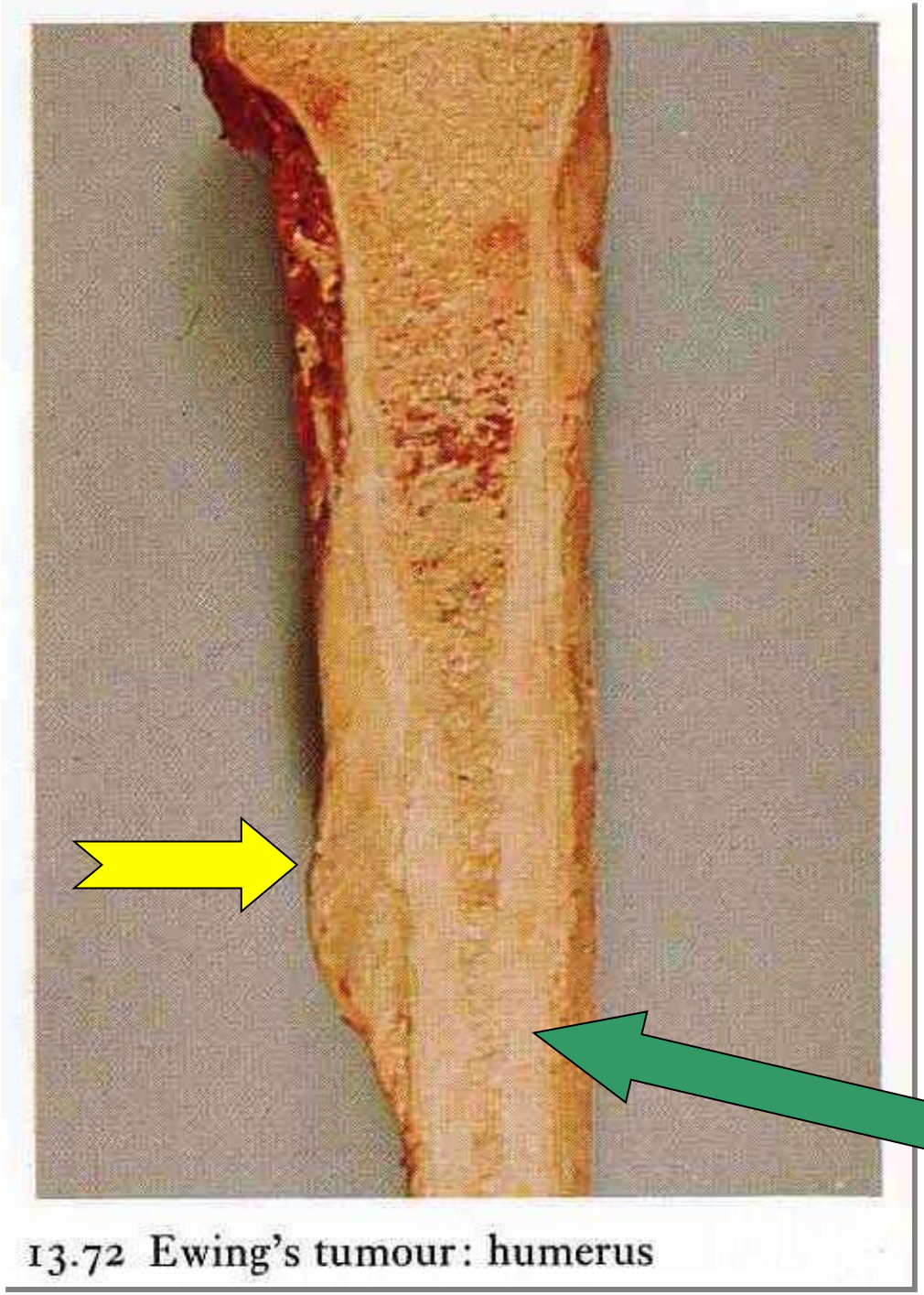


13.50 Fibrous dysplasia: maxilla

F13-50: **Fibrous dysplasia: maxilla.** Sagittal section of greatly expanded maxilla (with resulting disfigurement), showing replacement of the bone by yellowish-white fibrous tissue.

F21-13: **Fibrous dysplasia**. Curved trabeculae of woven bone (mimicking Chinese characters) arising in a fibrous tissue. Note the **absence** of osteoblasts rimming the bone trabeculae.

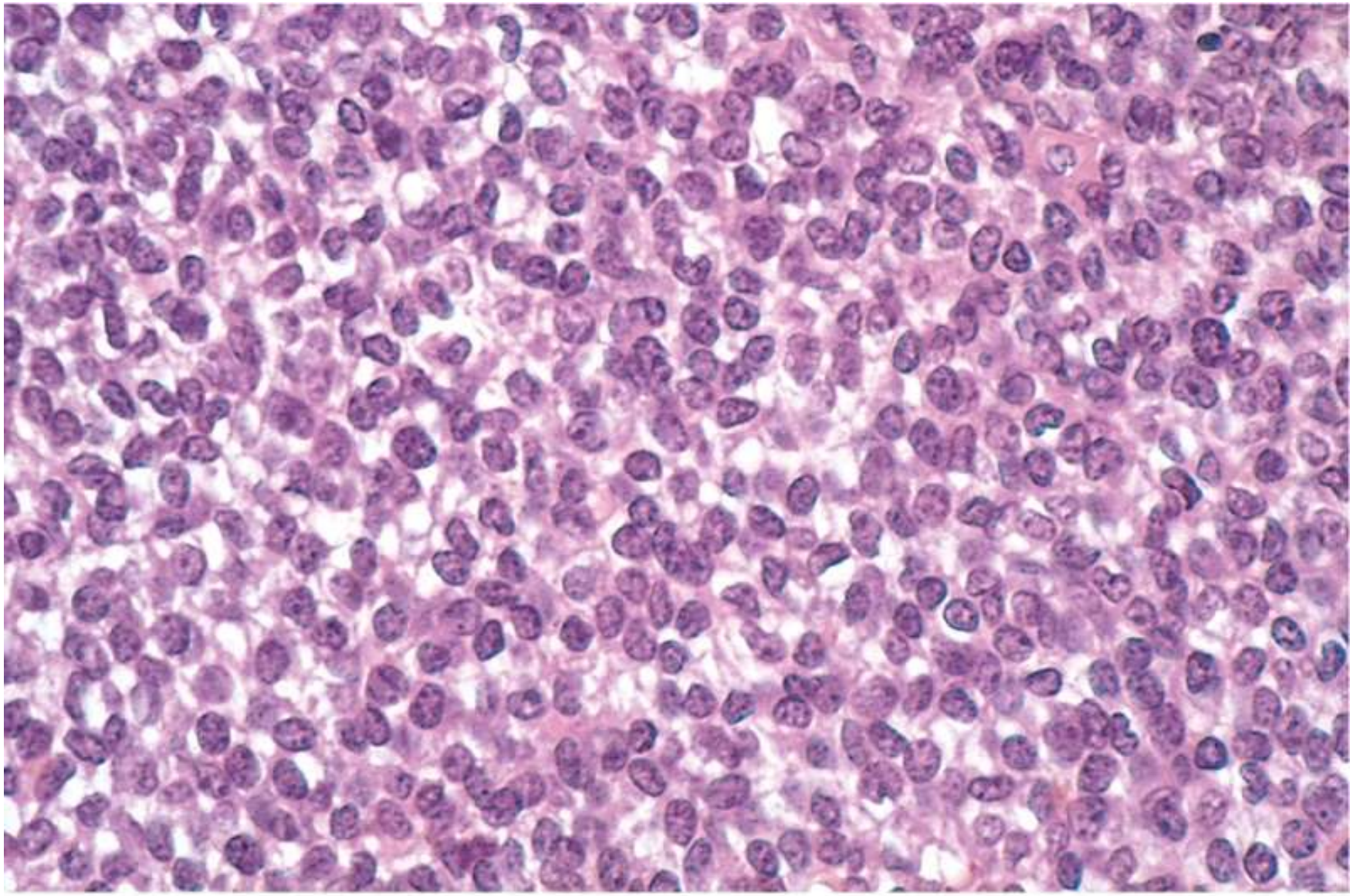




13.72 Ewing's tumour: humerus

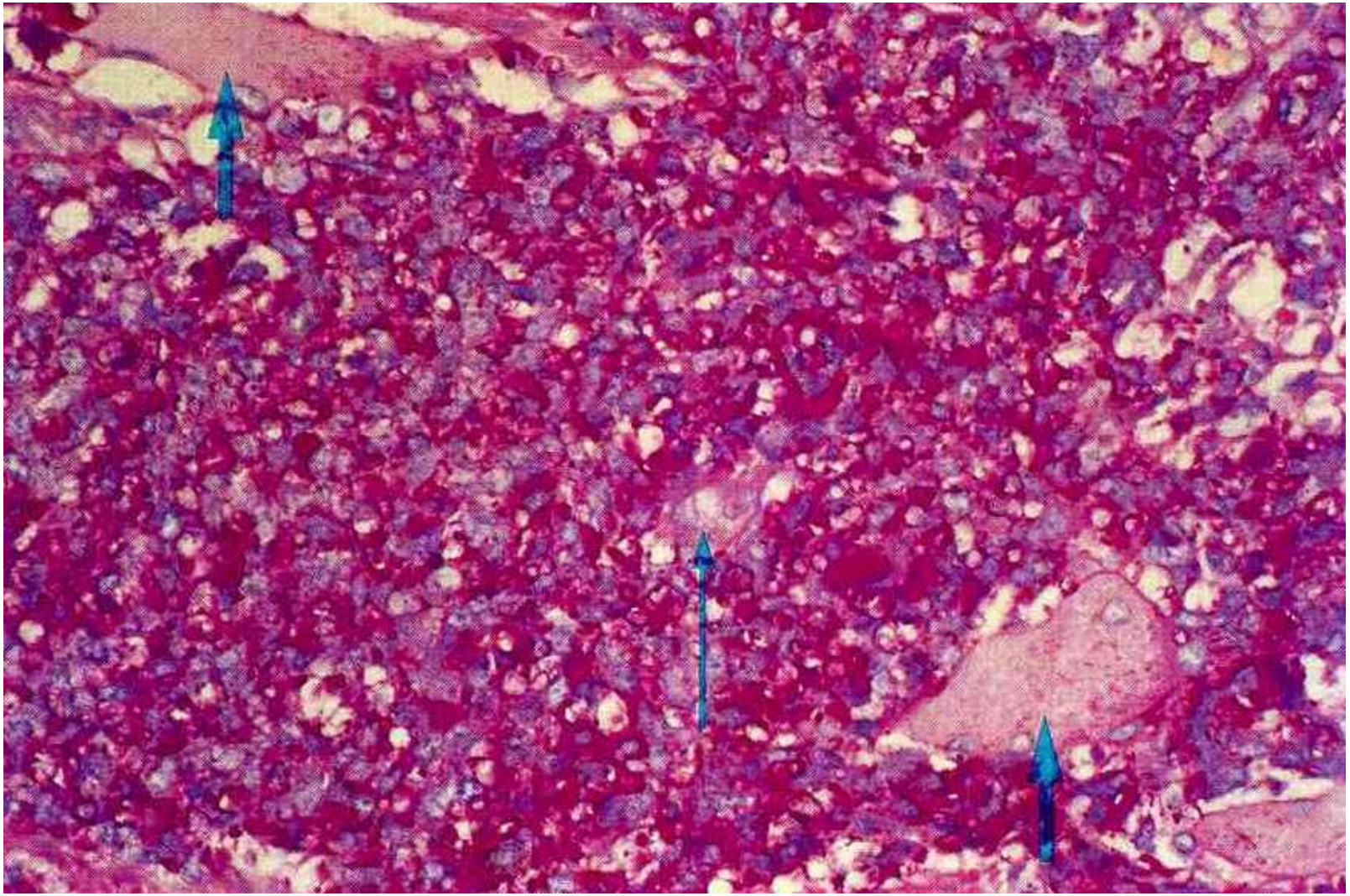
F13-72: **Ewing's sarcoma: humerus.** Yellowish-white swelling in the center of the diaphysis of the humerus, infiltrating the overlying cortex & periosteum, producing a fusiform mass ® The concentric periosteal bone formation (right) shows characteristic **'onion-skin appearance**.

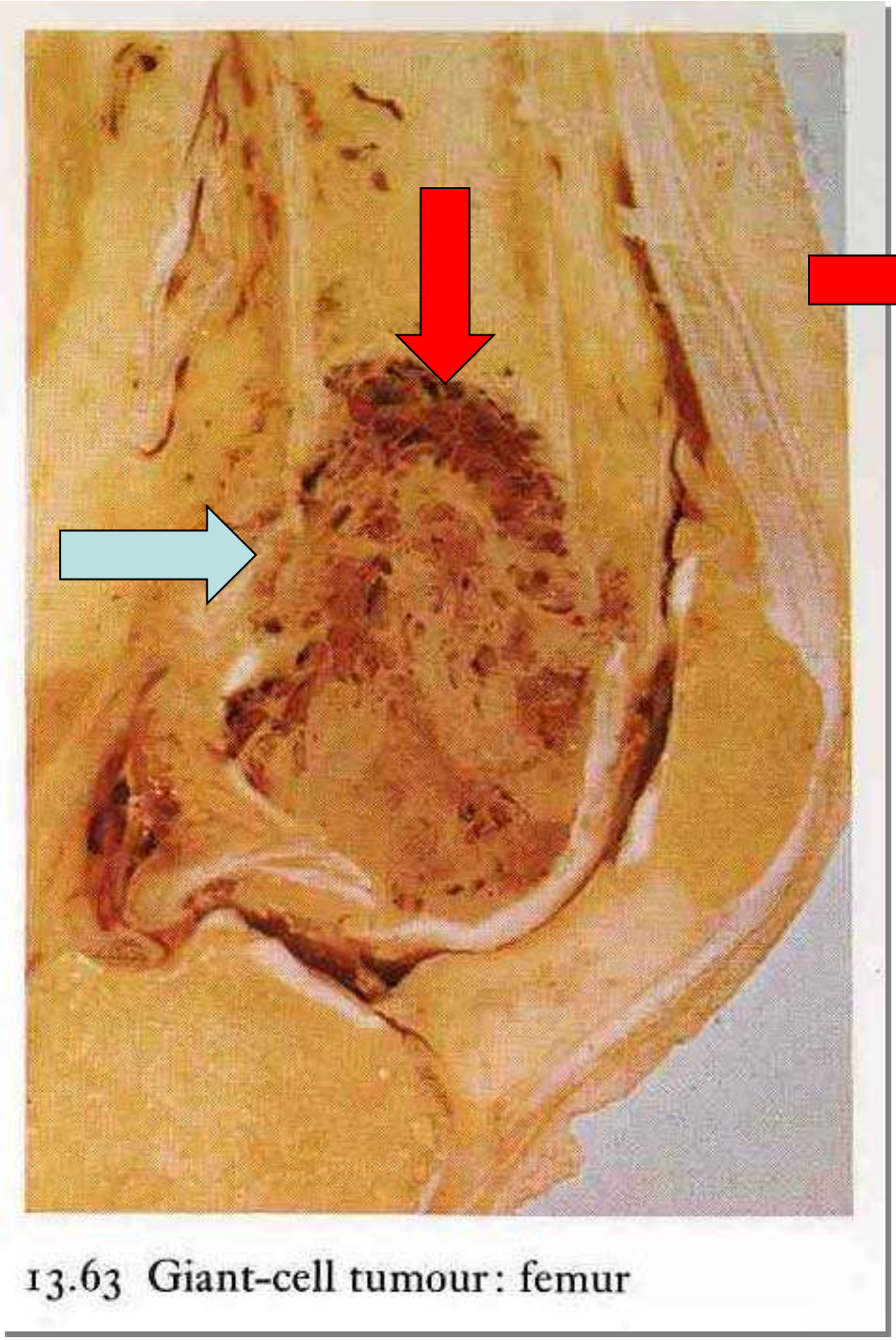
F21-14: **Ewing sarcoma,** consist of sheets of small round cells with scant, glycogen-rich cytoplasm.



◙ 3.30: **Ewing's sarcoma: scapula X360, PAS stain**

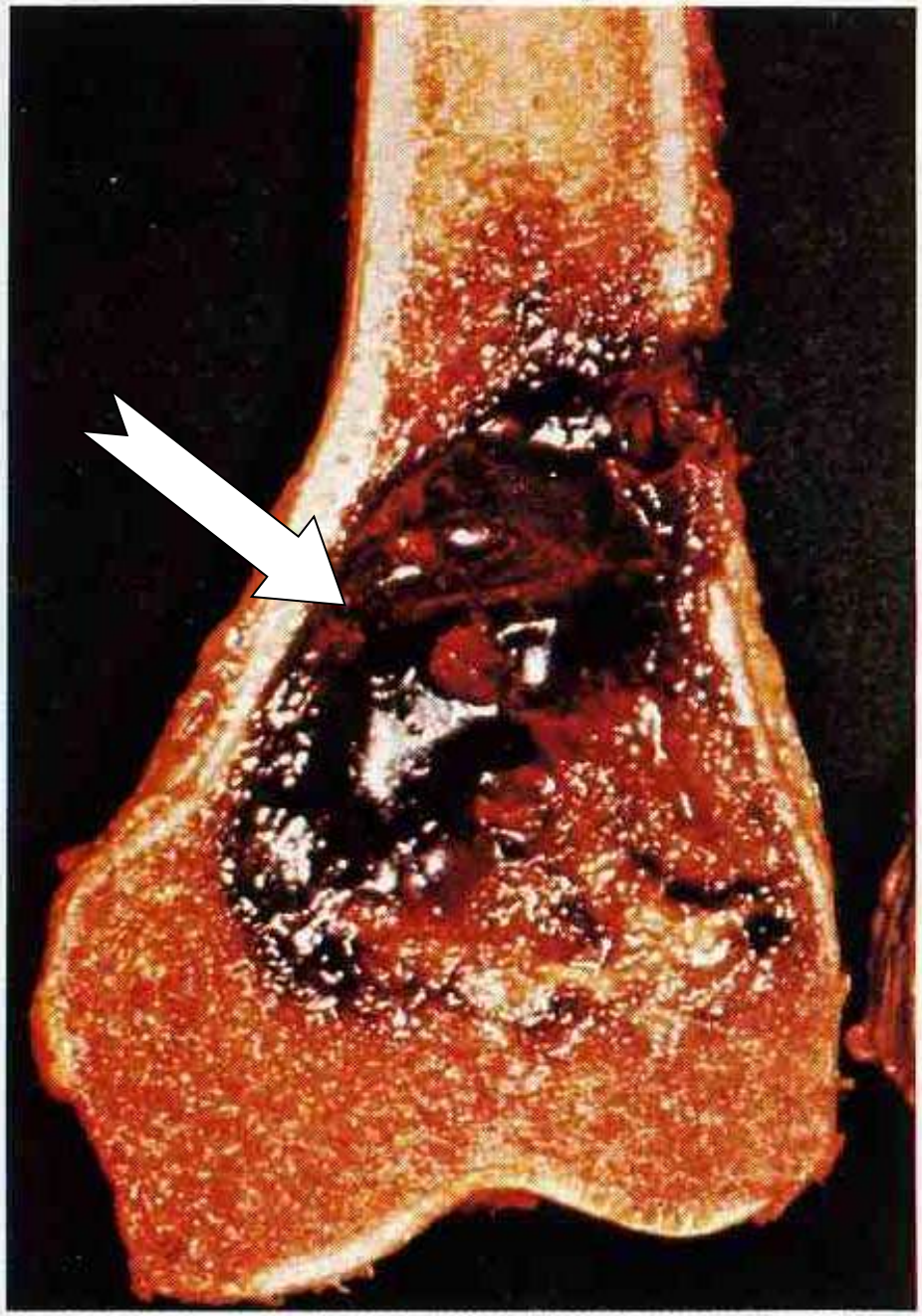
Sheets of uniformly small, round tumor cells with few mitoses & little intervening stroma. All cells have scant, glycogen-rich cytoplasm, which stains deep purplish-red color with PAS stain.





13.63 Giant-cell tumour: femur

F13-63: **Giant cell tumor of bone: femur.**
A brown tumor has expanded the **lower end** of the femur. There are areas of cystic degeneration & hemorrhage.
Over the tumor, the cortical bone is expanded & greatly thinned & destroyed.

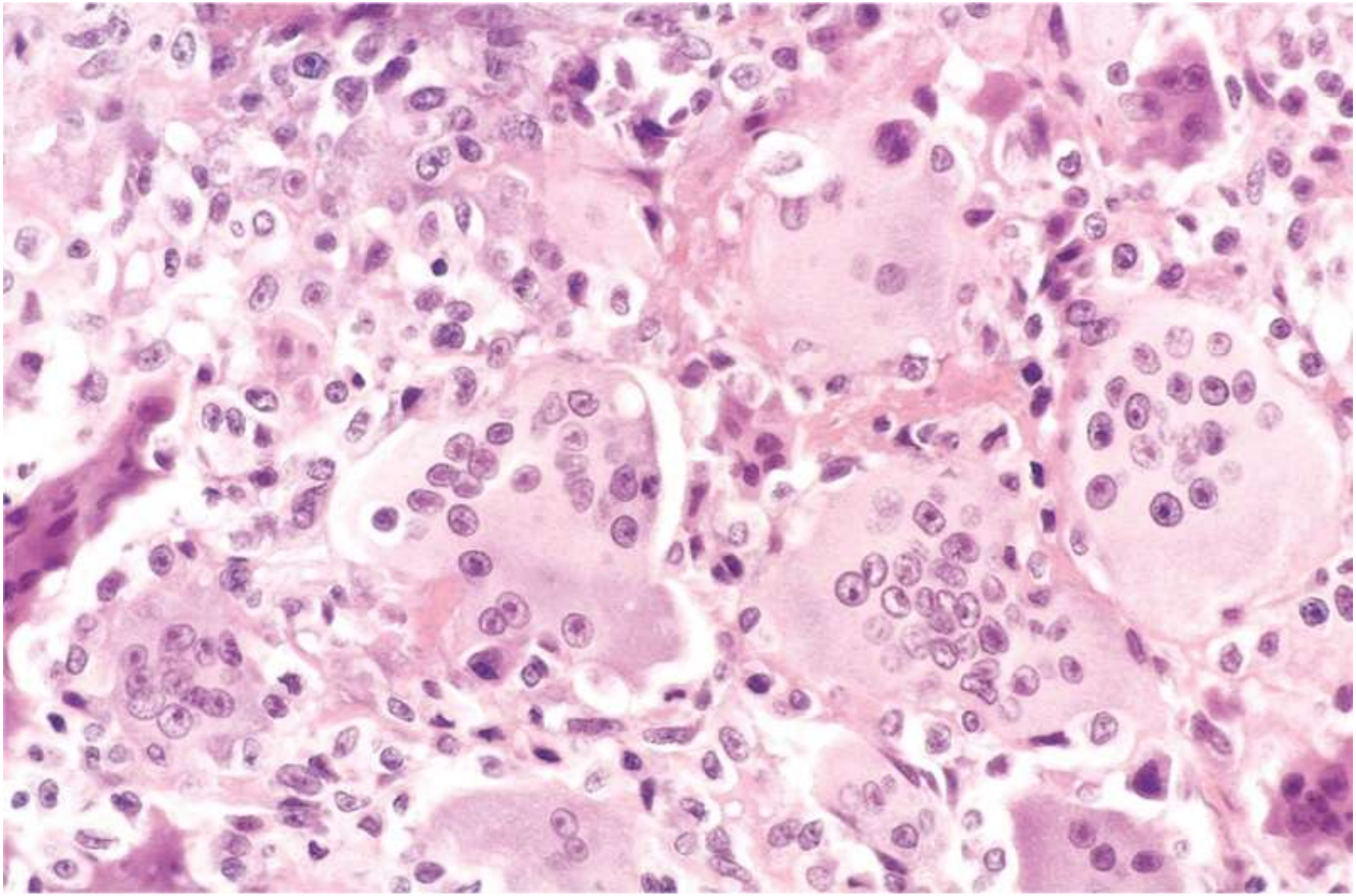


13.64 Giant-cell tumour: femur

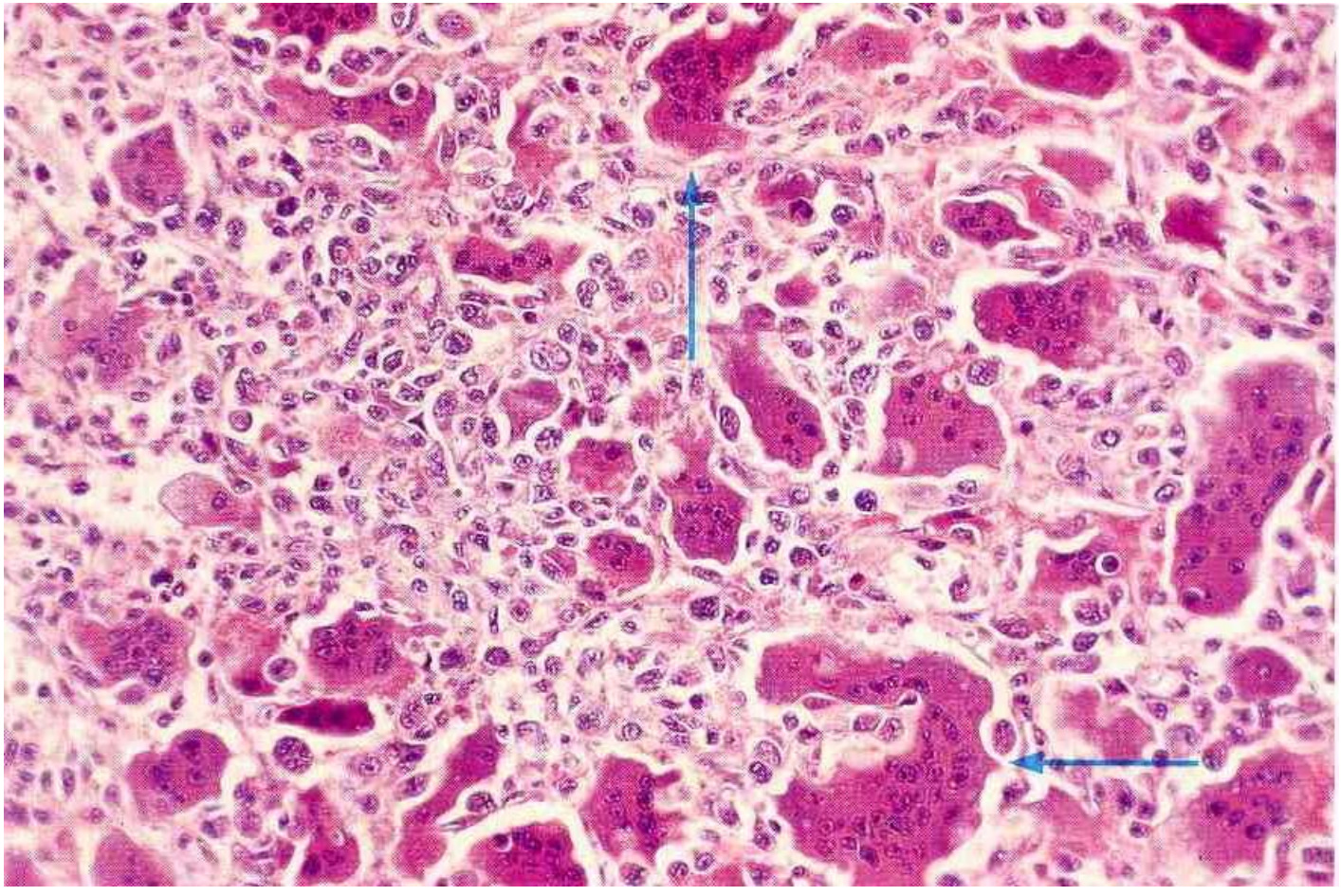
F13-64: **Giant-cell tumor (GCT) of bone: femur.**

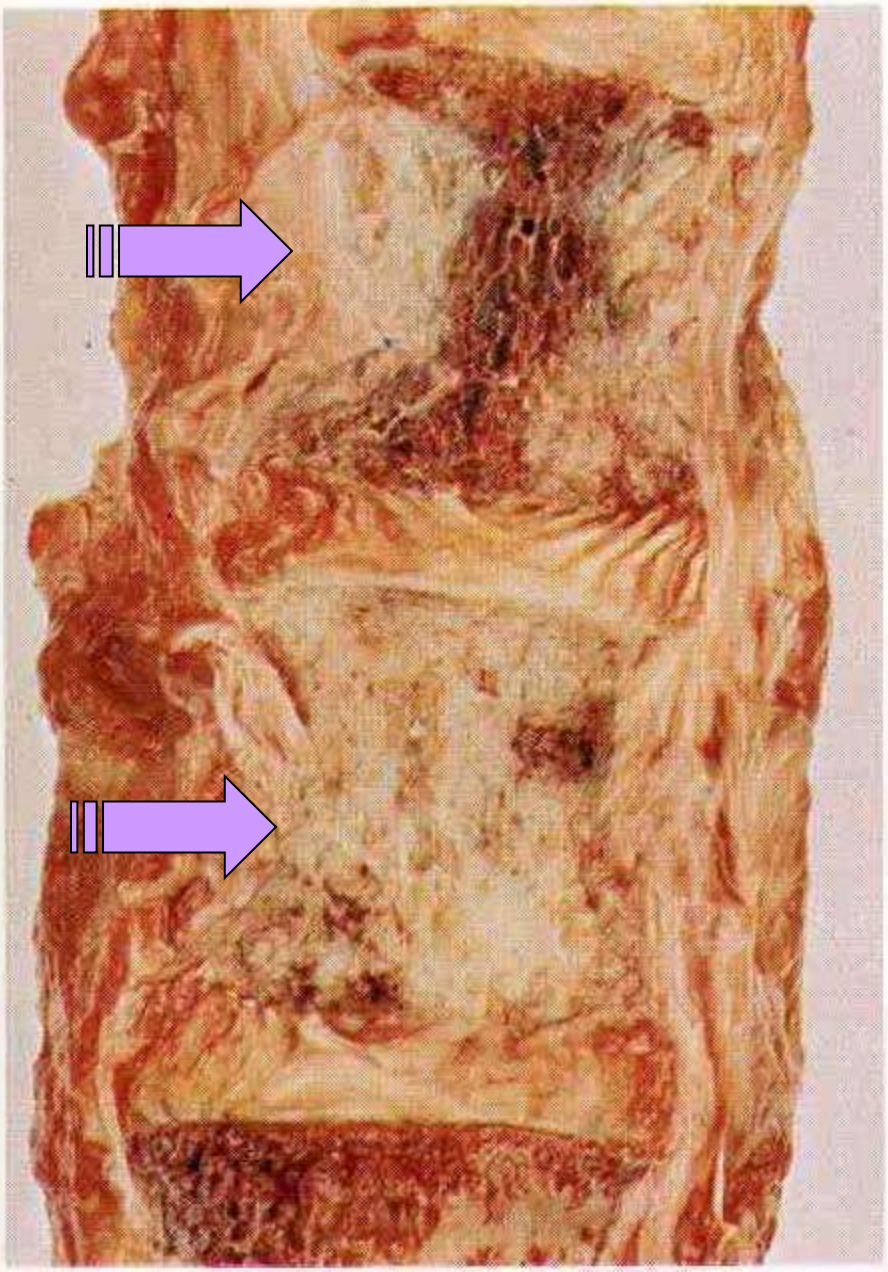
☹ Hemorrhagic red tumor of the lower femur, with thinning of the overlying bone cortex.

F21-15: **Giant cell tumor (GCT) of bone.** Tumor mononuclear cells, with abundant multinucleated giant cells.



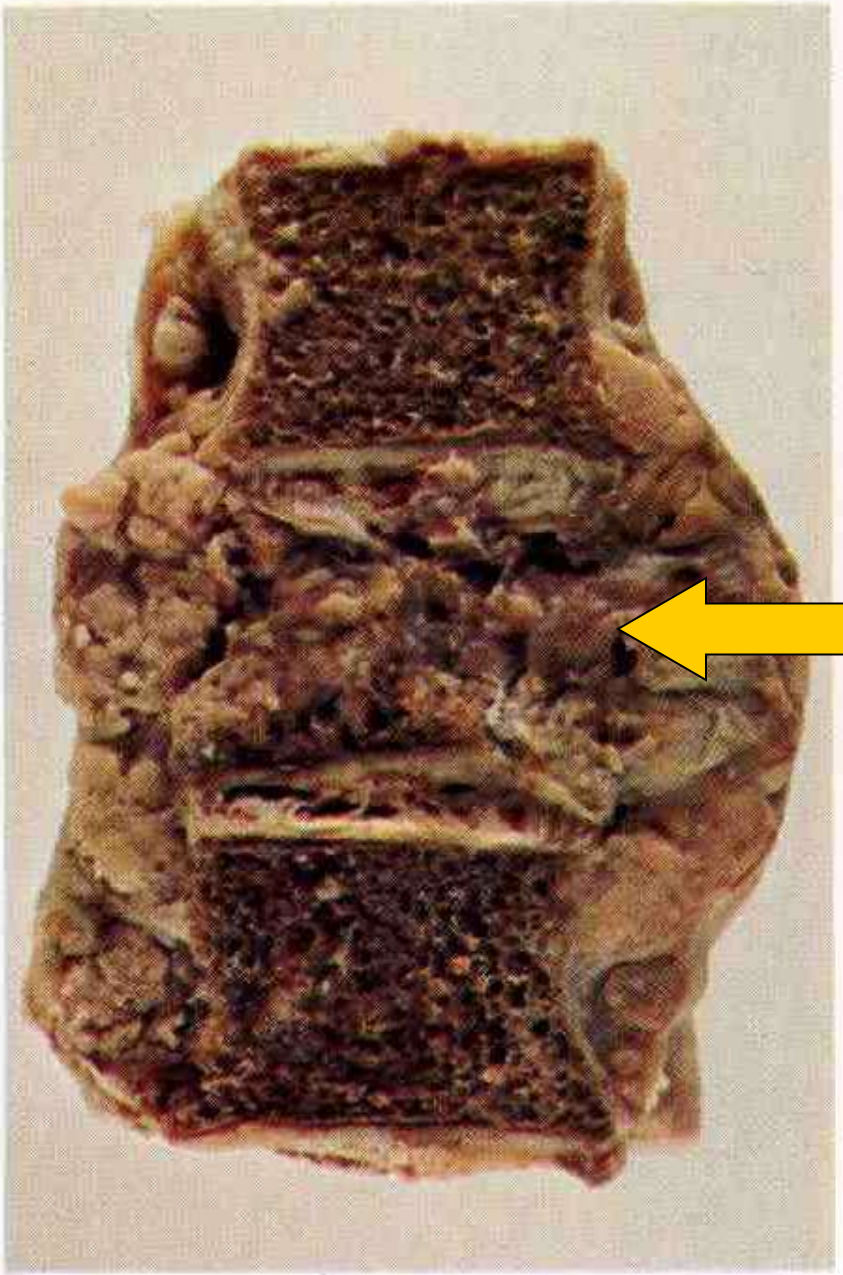
◙ 3.21: **Giant cell tumor (GCT) of bone (head of fibula)**
X215: Tumor consist of (1) **neoplastic,** pleomorphic, elongated & rounded **mononuclear cells of unknown origin**, with pleomorphic pale & vesicular nuclei containing prominent nucleoli, (2) many multinucleated, osteoclast-like cells (arrows). The tumor is **extensively osteolytic** & **<u>never form osteoid</u>**.





13.76 Secondary carcinoma: vertebrae

F13-76: **Secondary carcinoma: vertebrae.** Female with H/O mastectomy for ca breast. At PM, multiple pale & **osteoblastic** (**osteosclerotic**) bone secondaries were found extensively infiltrating & replacing two lumber vertebral bodies

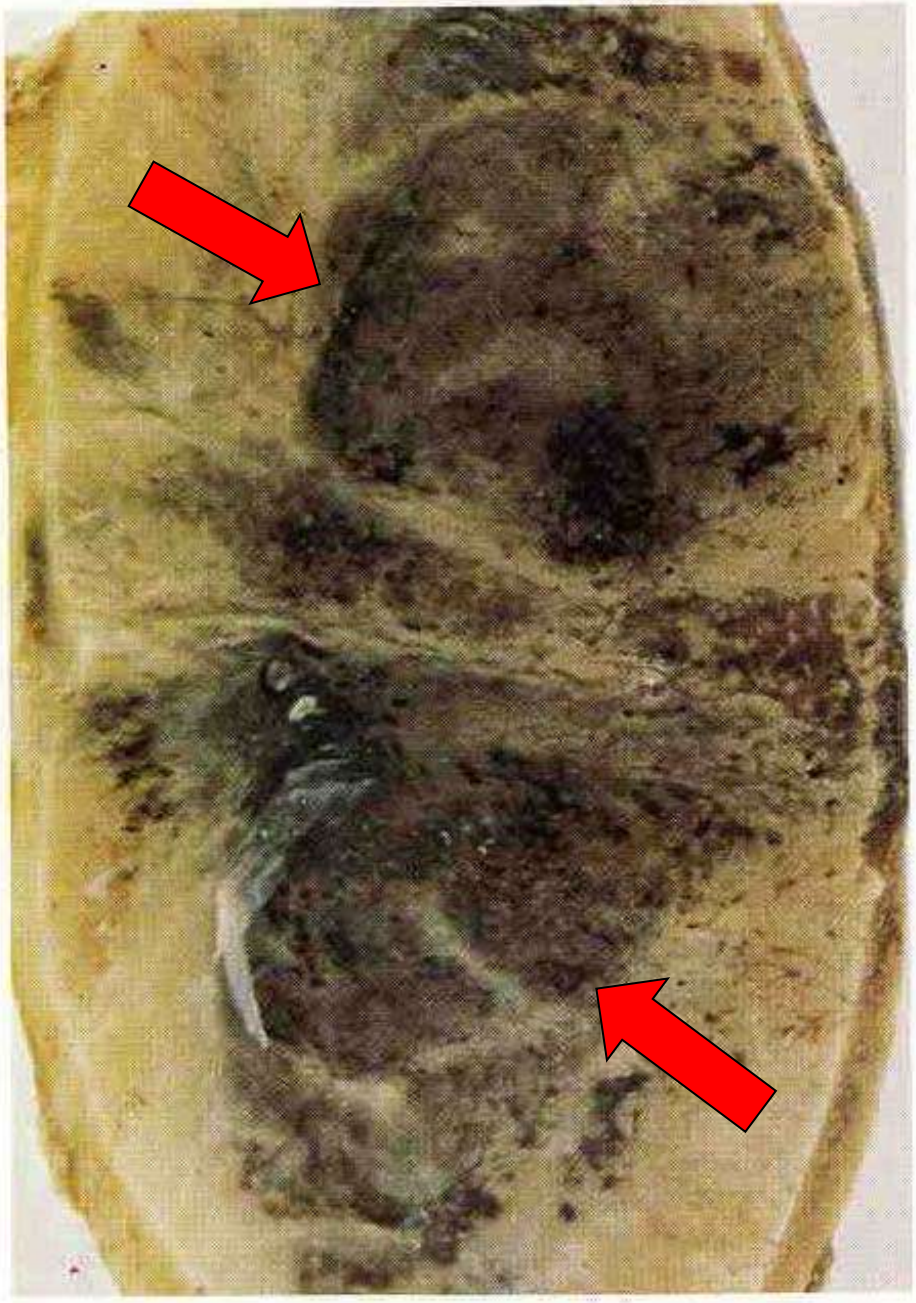


13.78 Secondary sarcoma: vertebrae

F13-78: **Secondary sarcoma: vertebrae.**

Patient with H/O primary paratesticular leiomyosracoma.

At PM, one of the vertebral bodies has been extensively invaded by grey-pink sarcomatous secondary causing collapse & compression-fracture.

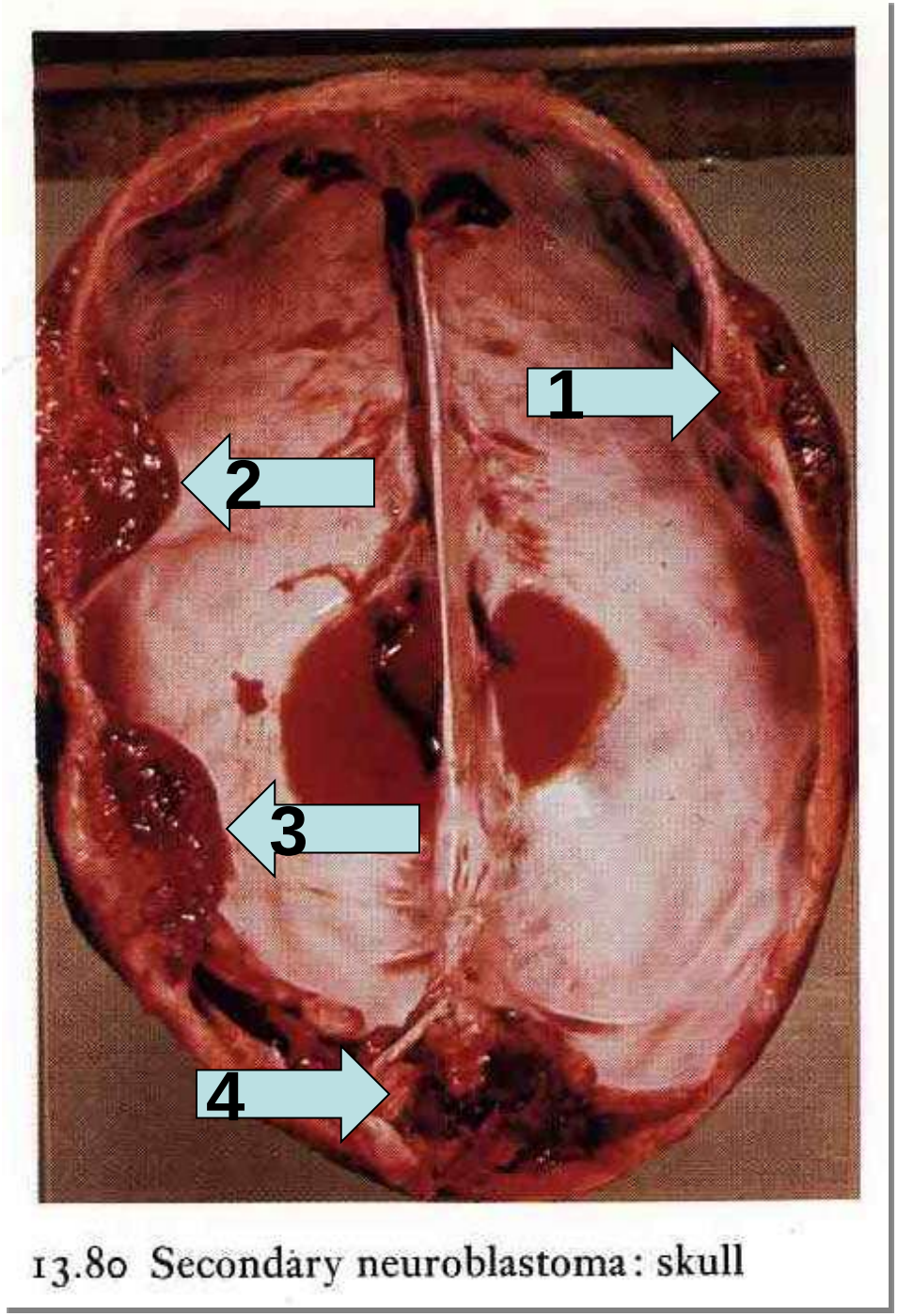


13.79 Secondary melanoma: skull

F13-79:Secondary melanoma: skull.

★ This patient had a primary malignant melanoma of the occipital skin 9 years earlier, which recurred locally & subsequently invaded the skull & dura by direct spread (a rare case, because most secondary deposits in bone are hematogenous in origin).

☻ At PM, there is extensive **direct spread** & infiltration of the skull bone (calvarium) by the black melanoma tumor.



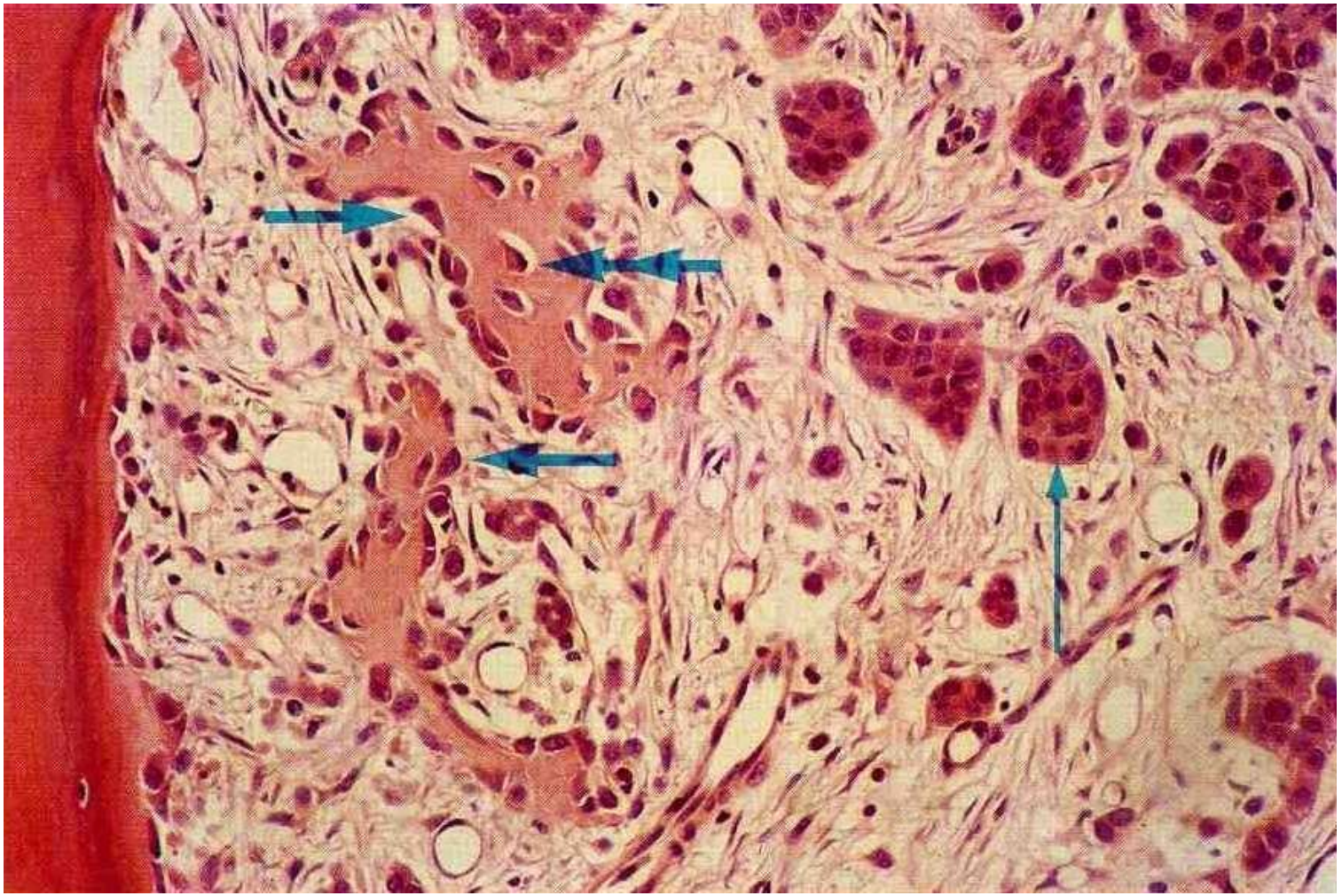
13.80 Secondary neuroblastoma: skull

F13-80: **Secondary neuroblastoma: skull.**

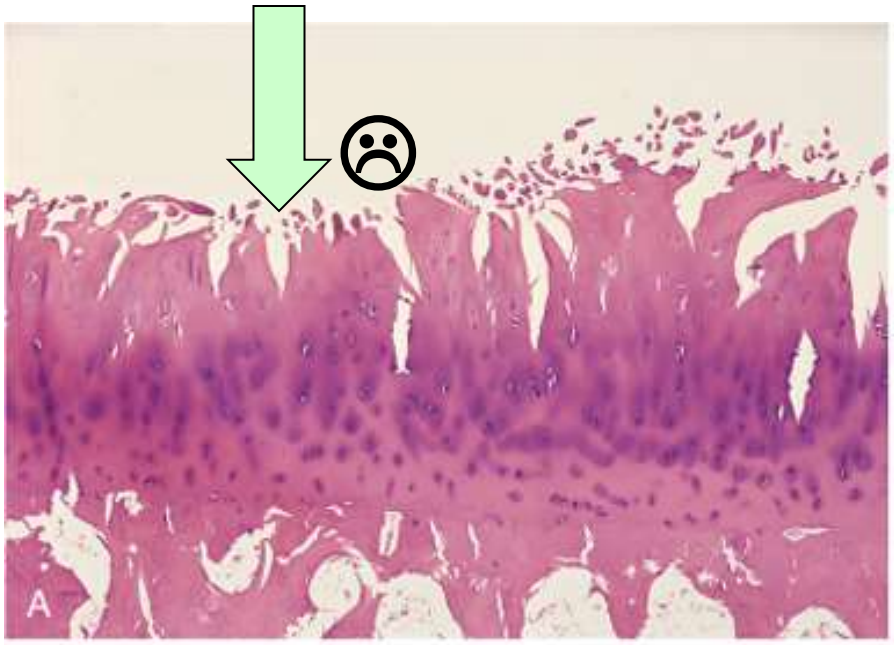
☹ Four large hemorrhagic, malignant neuroblastomatous secondary deposits destroying the diploe, inner & outer tables of the calvarium.

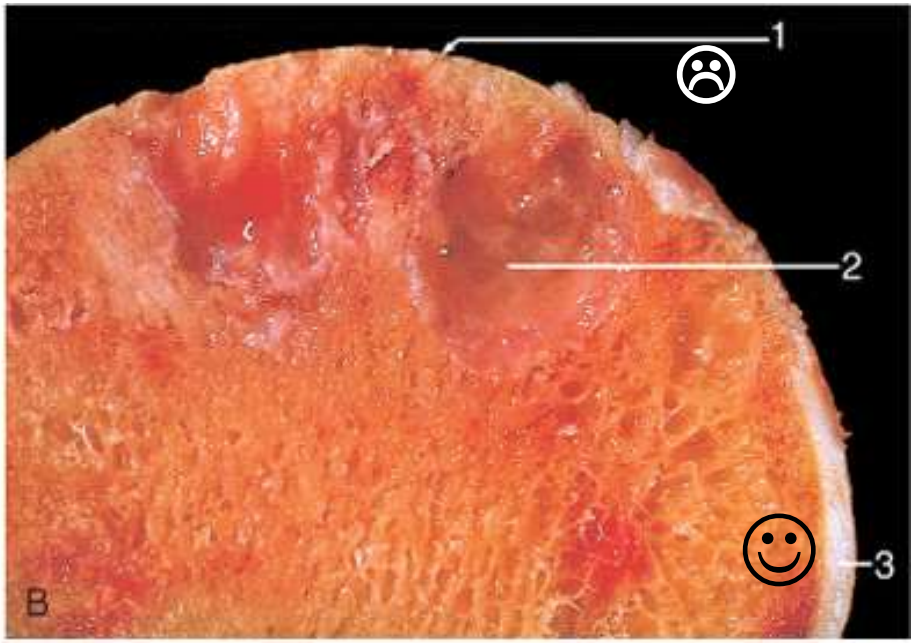
★In children, neuroblastoma of the adrenal medulla is the commonest source of bone metastases.

◙ 13-16: **Secondary carcinoma: marrow X360.** Iliac crest of a 62 years old male. (1) multiple nodules of malignant tumor cells secondaries infiltrating the BM (thin arrow), (2) The malignant cells induced new, woven bone trabeculae formation (thick arrows) **(osteoblastic or sclerotic secondaries).**

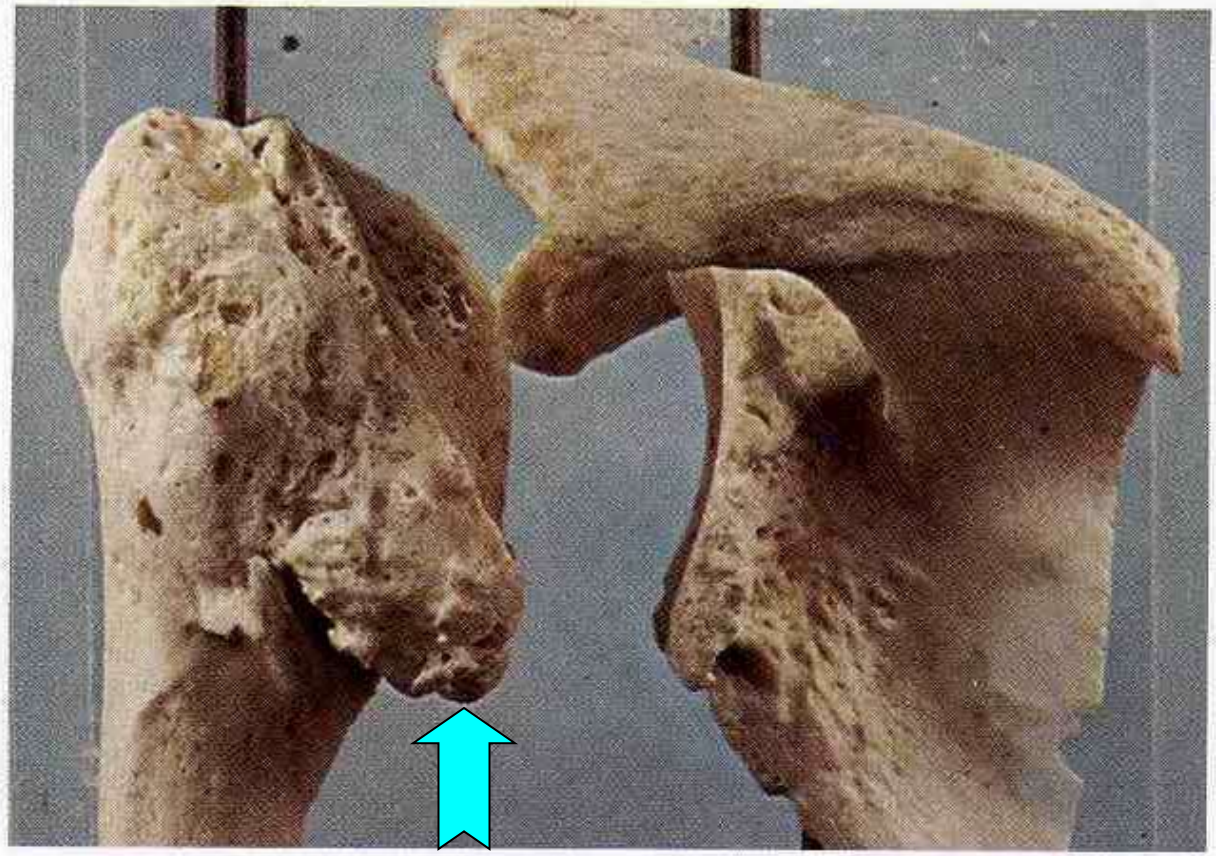


F 21-16: **Osteoarthritis (OA).**
A, Histological demonstration of the characteristic **fibrillation** of the articular cartilage.
B, Severe osteoarthritis with,**1.** Eburnated **(polished)** articular surface exposing subchondral bone.
2. Subchondral **cyst**. **3. Residual** articular cartilage.



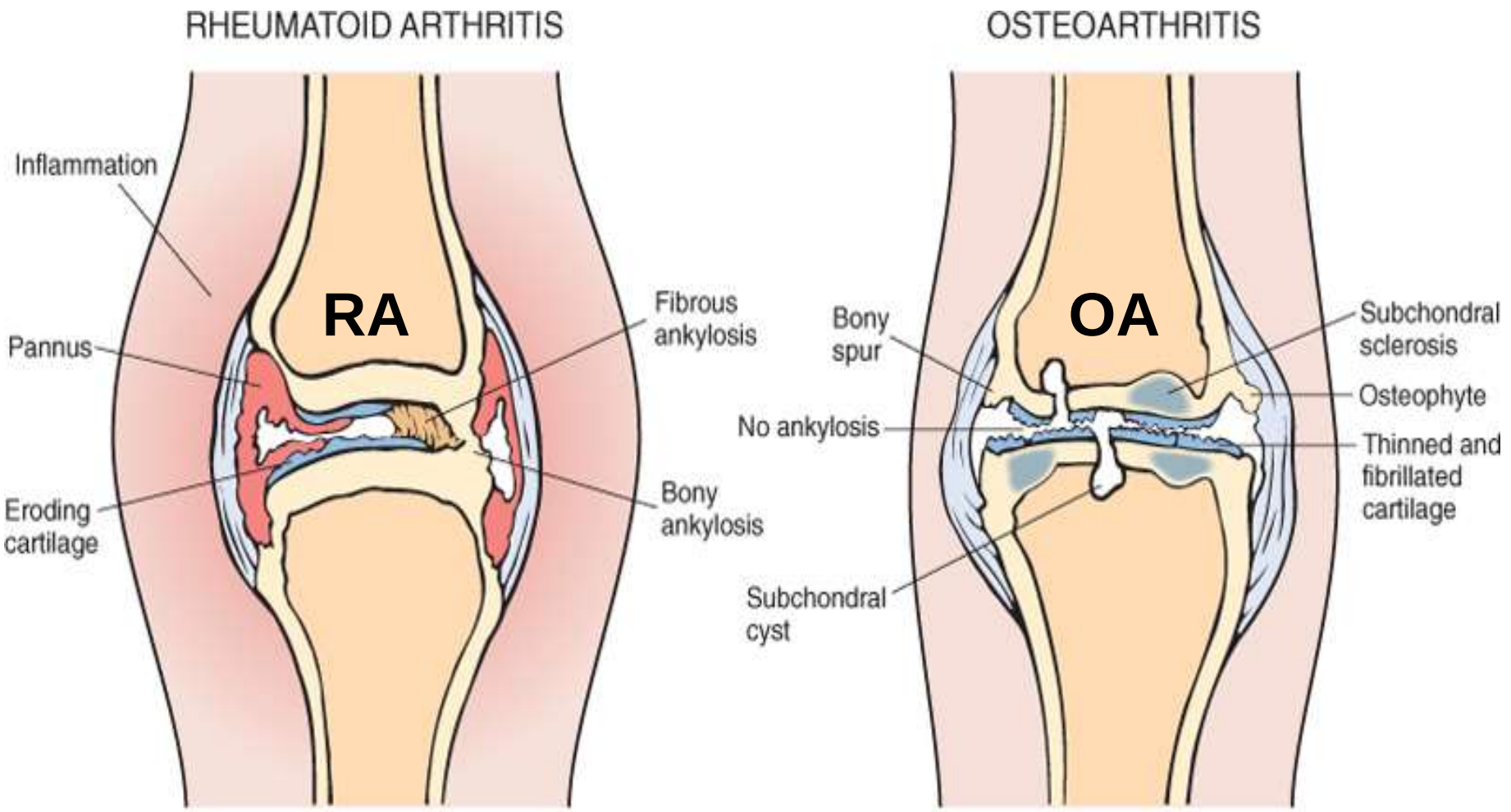


F13-17; **Osteoarthritis (OA): shoulder-joint.**
Dried specimen of the shoulder-joint showing the head & neck of humerus (left) &the scapula (right). The head of the humerus is severely **distorted**, with irregular projecting **outgrowths of new bone (marginal osteophytes**).

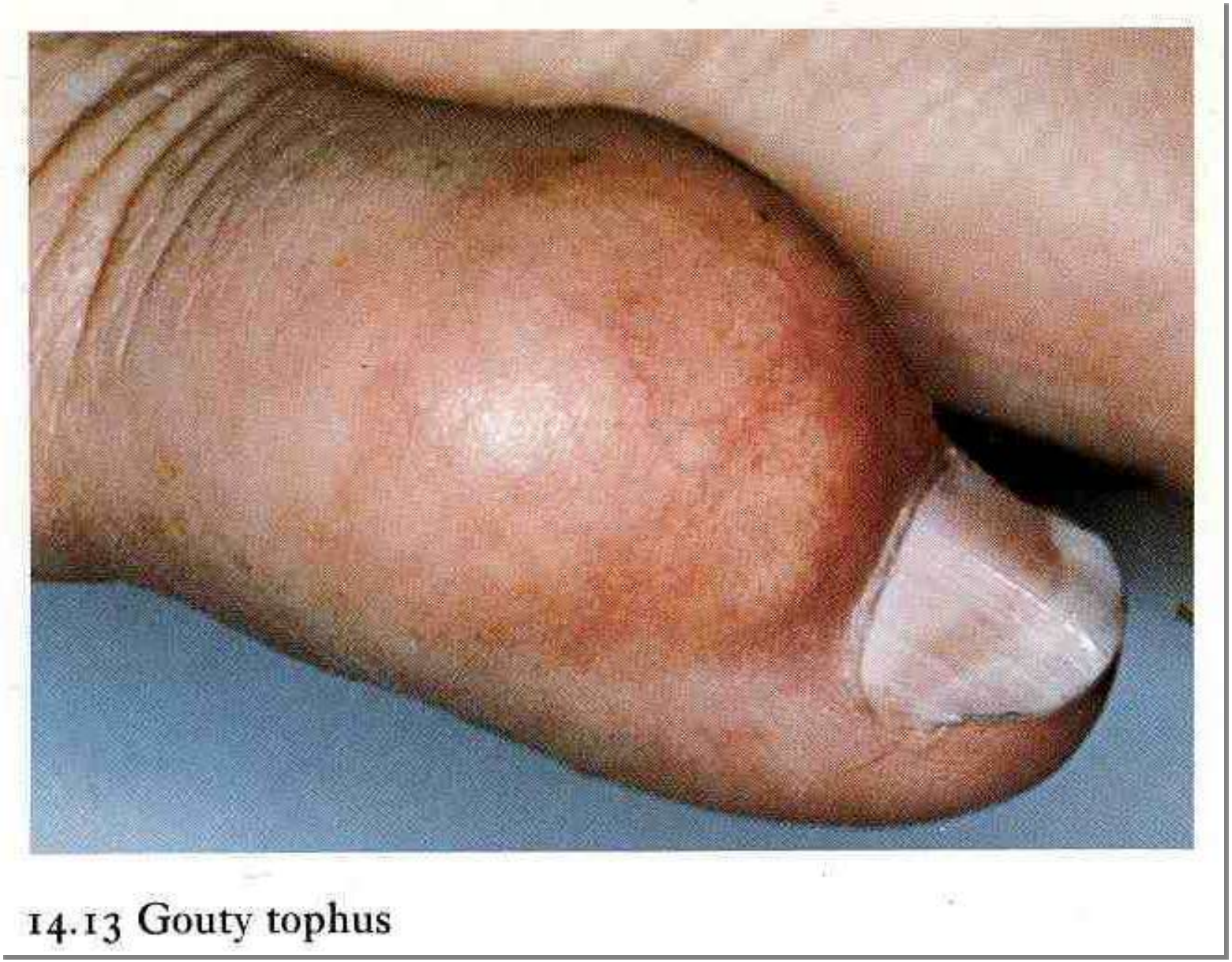


13.17 Osteoarthritis: shoulder-joint

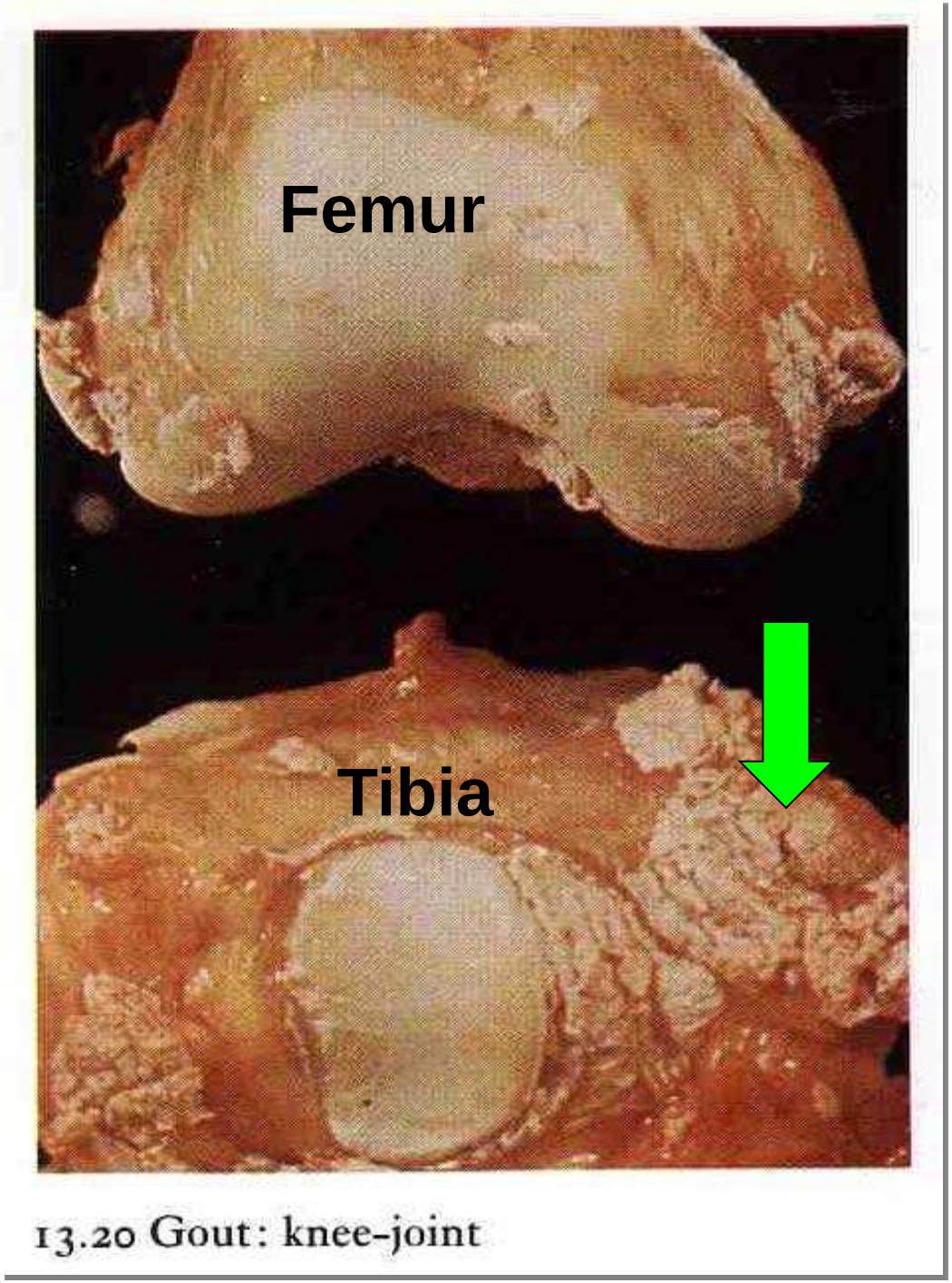
F 21-17: Comparison of the morphologic features of **RA** & **OA.**



F14-13: **Acute gouty arthritis with tophus.** Red shiny swelling over the terminal phalanx of the fifth finger.



14.13 Gouty tophus

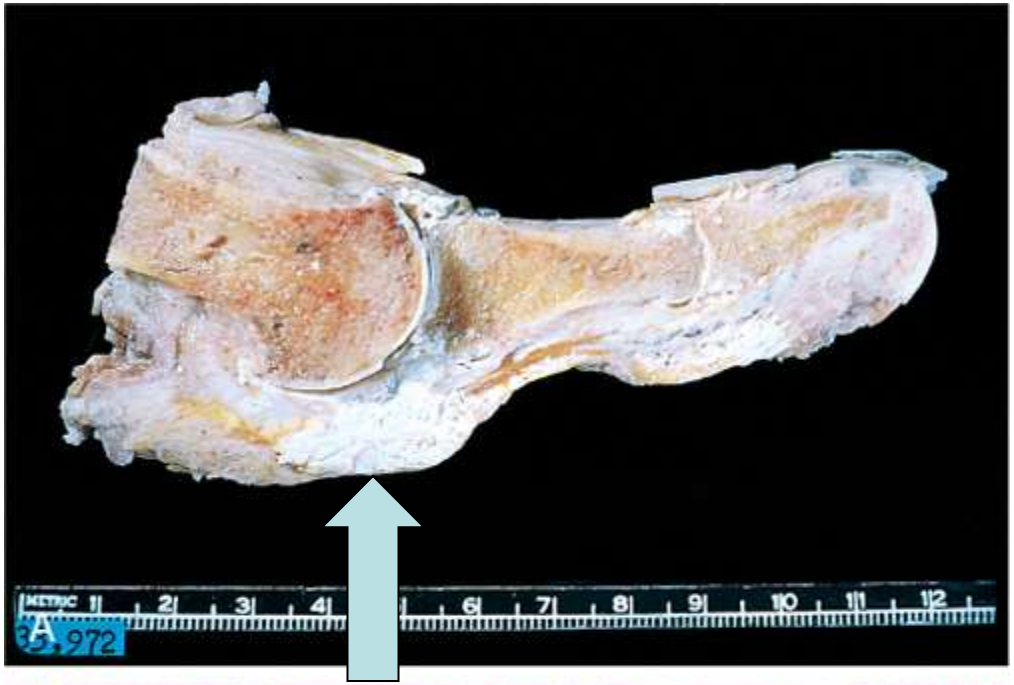


13.20 Gout: knee-joint

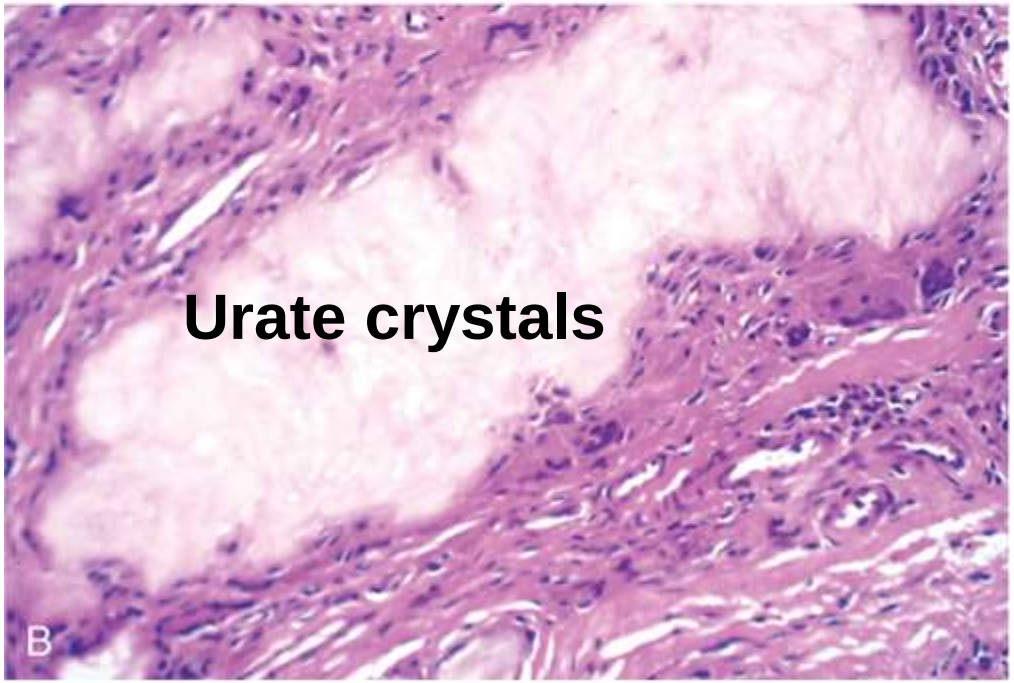
F13-20: **Gout : knee-joint**.

The femoral & tibial articular surfaces of the knee-joint are displayed.

☹ Chalky-white tophi (**the ® <u>pathognomonic</u> hallmarks of gout)** deposits, have formed over & destroyed the articular cartilage & the peri-articular tissues.



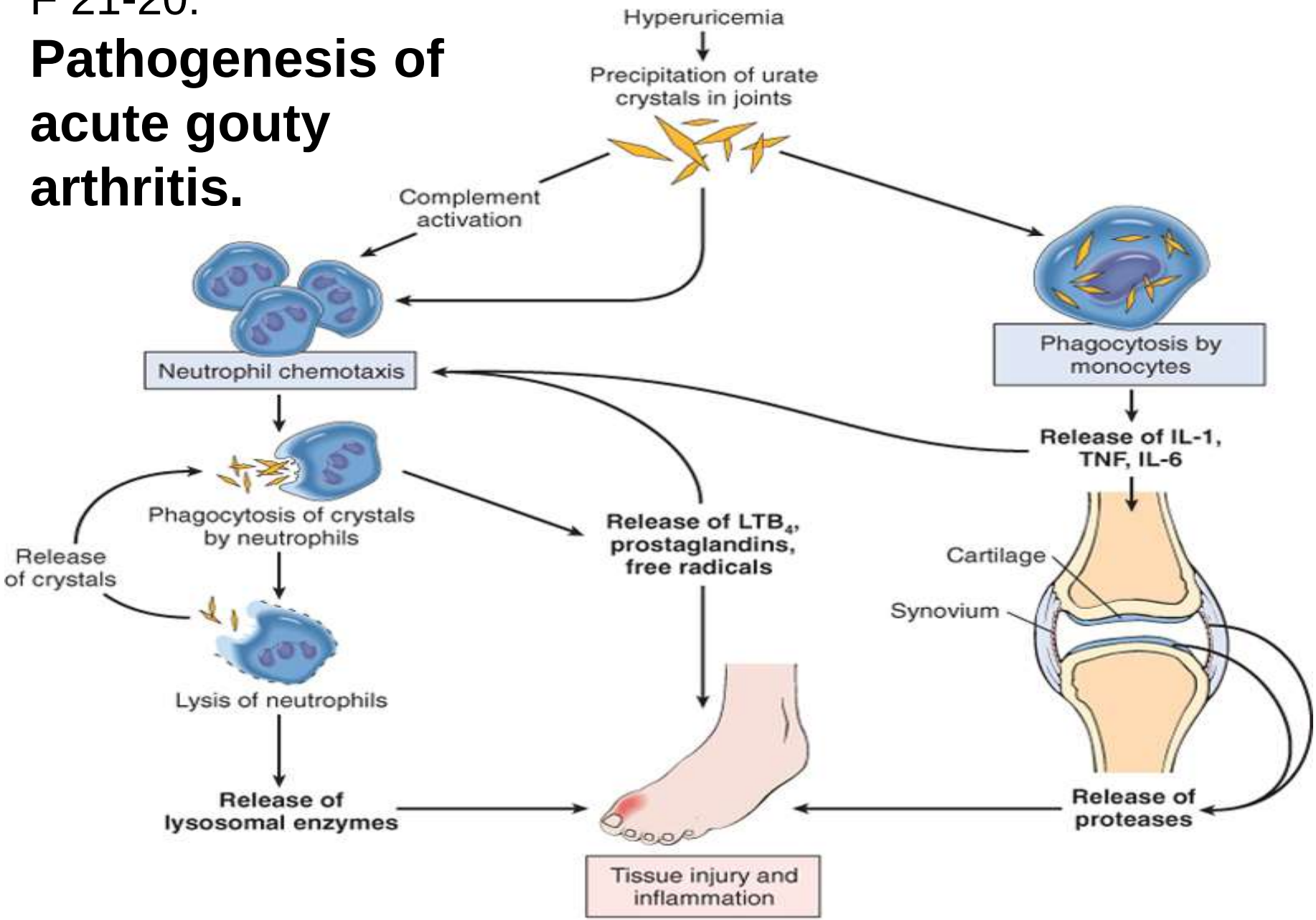
F 21-18: **Gout.**
A, Amputated great toe with tophi involving the joint & soft tissues



B, Gouty tophus.
An aggregate of dissolved urate crystals is surrounded by reactive fibroblasts, mononuclear inflammatory cells & giant cells.

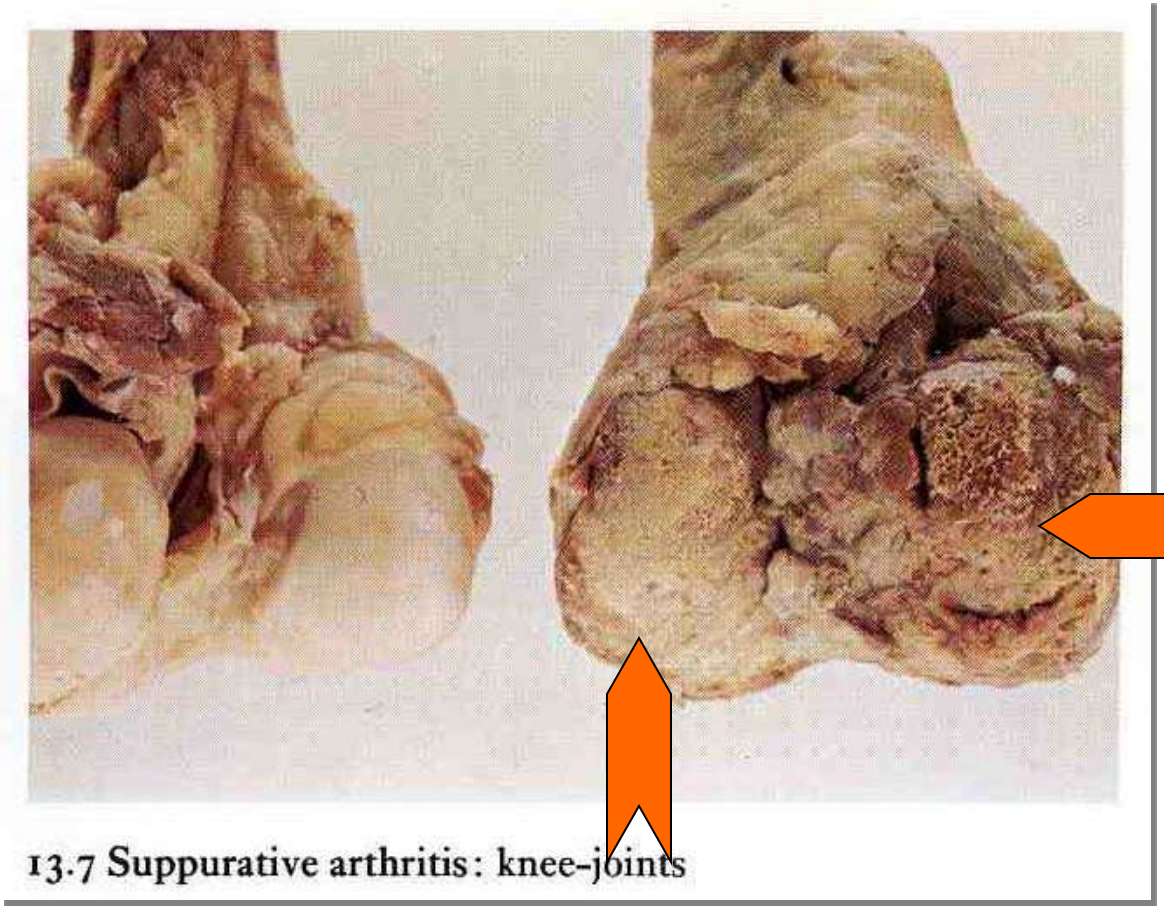
F 21-20:

Pathogenesis of acute gouty arthritis.



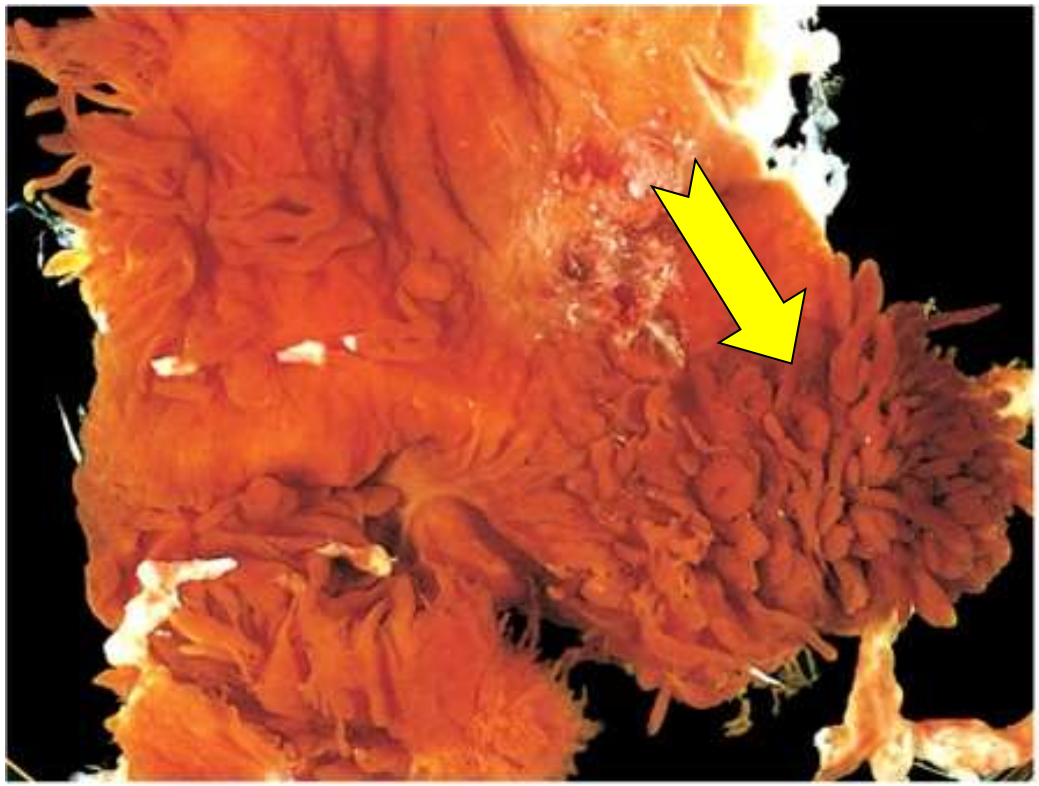
F13-7: **Suppurative Arthritis: knee-joints.**

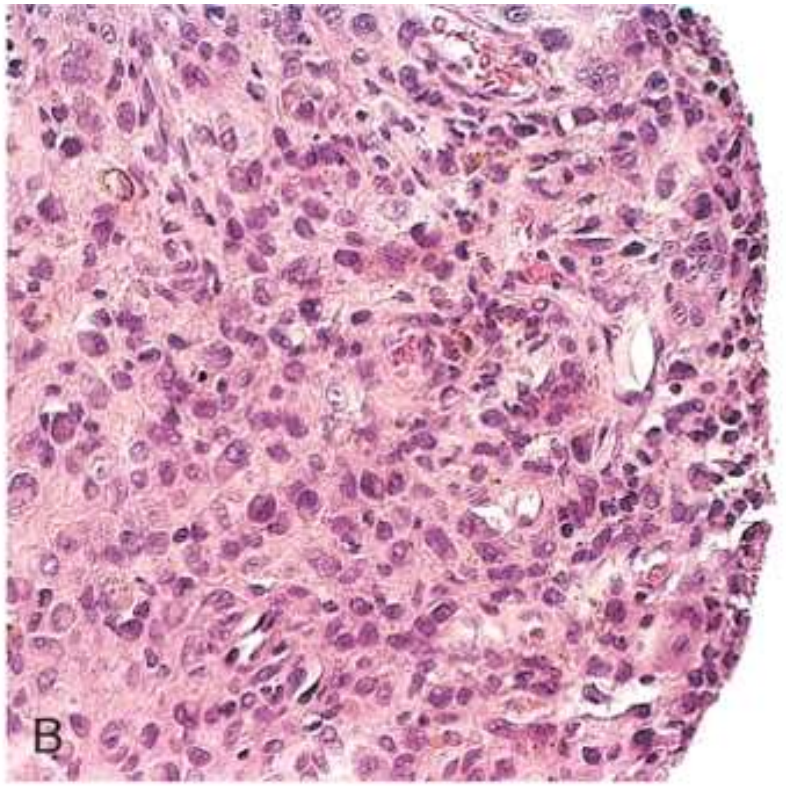
A 58-year-old woman with ☹ acute bacterial endocarditis due to ***beta- hemolytic streptococci,*** who ☹ developed blood-born **acute OM** of the femur & ☹ **acute suppurative arthritis** of the both knee-joints (arrows, shown). The femur epicondyles (right) are covered with a greenish fibrinopurulent exudate.



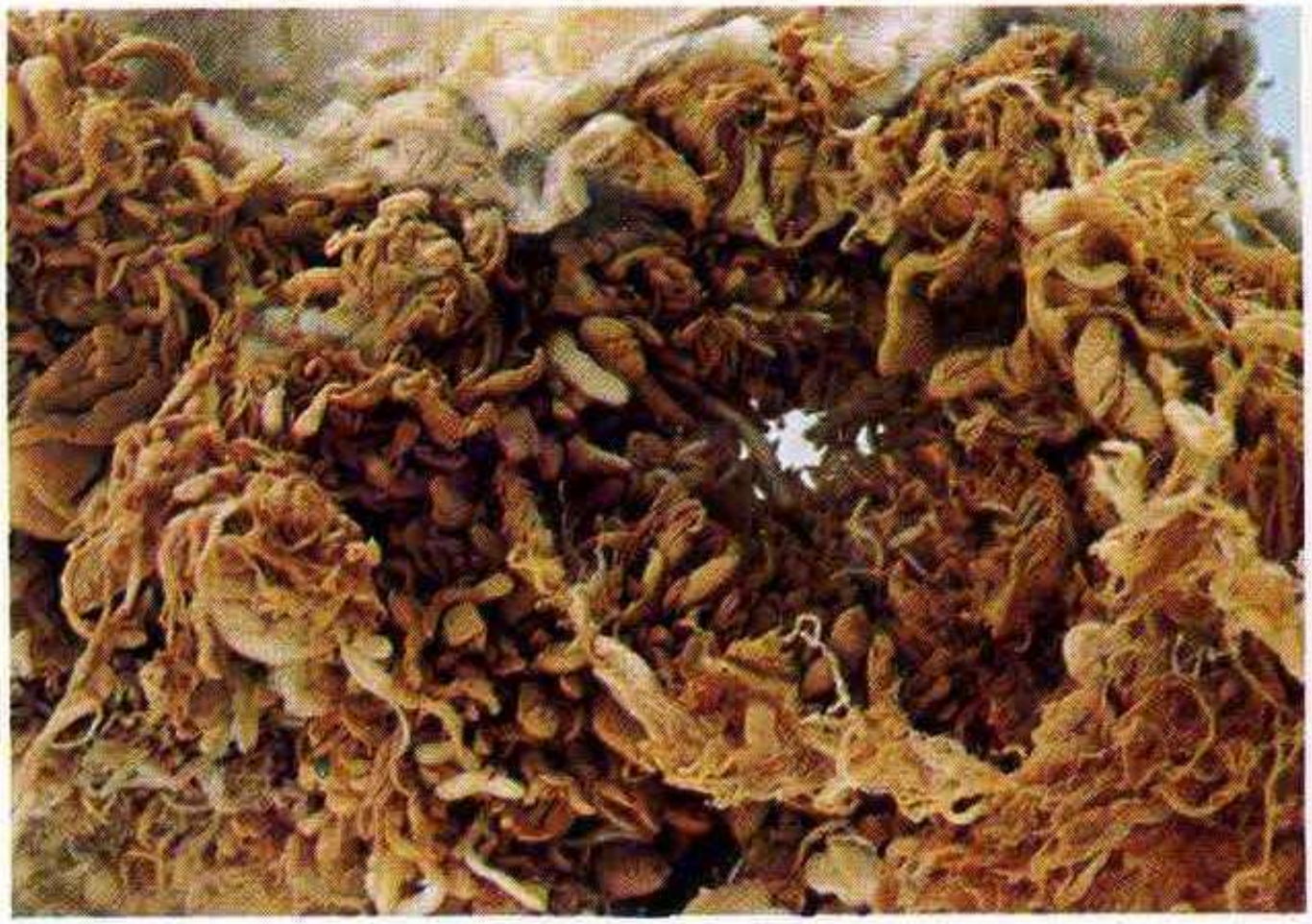
13.7 Suppurative arthritis: knee-joints

F 21-21: **Pigmented villonodular synovitis (PVNS).**
A, Excised synovium with diffuse fronds & nodules typical of PVNS (arrow).
b, Sheets of proliferating cells in PVNS bulging the synovial lining.



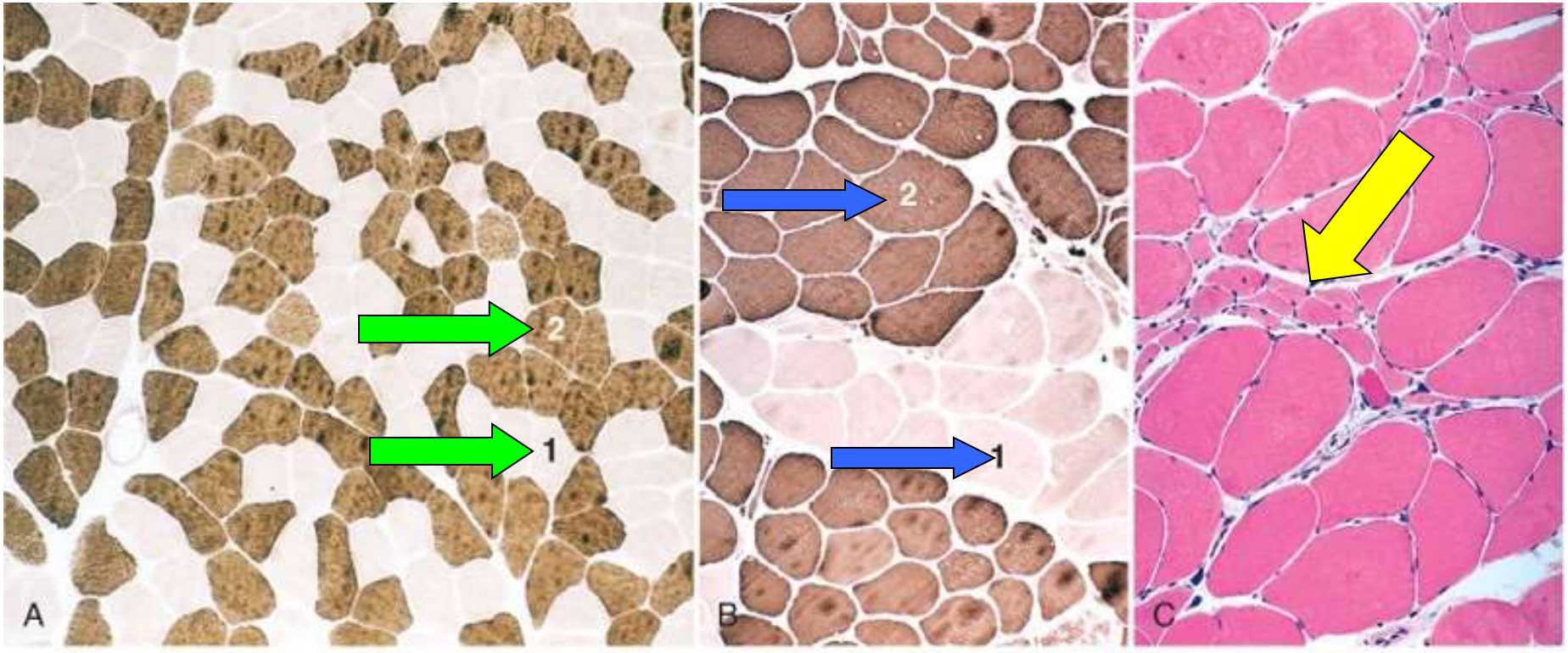


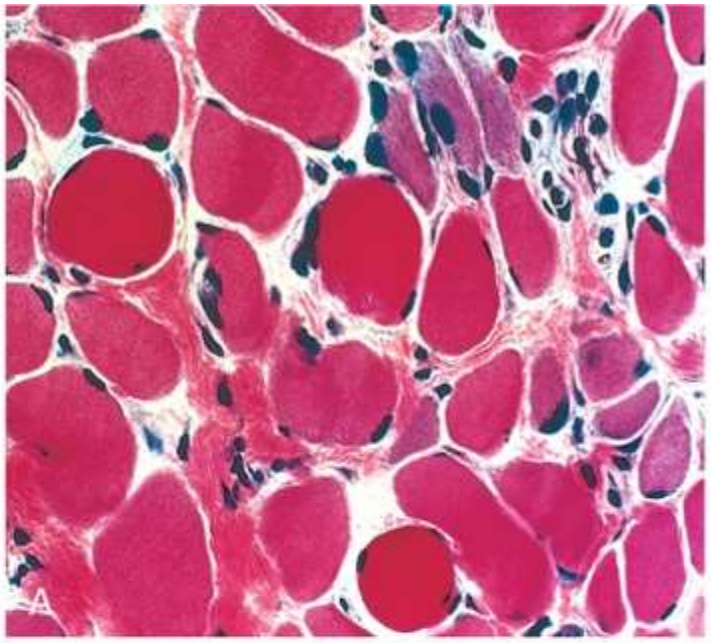
F13-23: **Pigmented villonodular synovitis: knee-joint. PVNS** usually presents as monoarticular tumor affecting the **knee in 80% of cases.** The normal synovial membrane of the knee-joint is replaced by villo-nodular brown masses of the tumor.

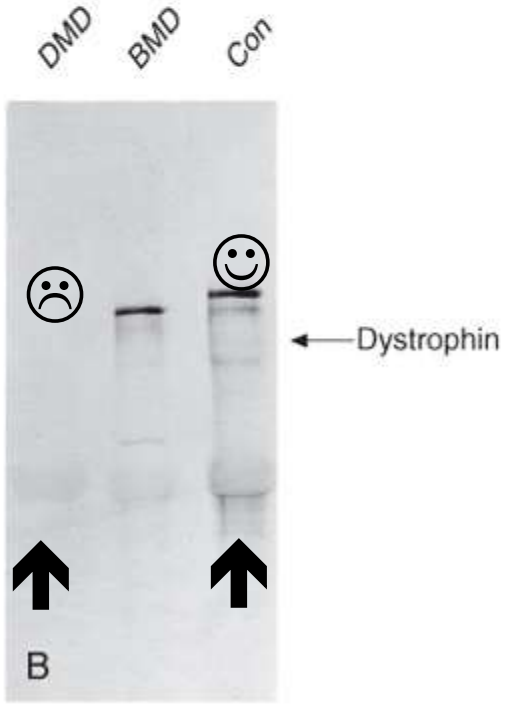


13.23 Villo-nodular synovitis: knee-joint

F 21-22: **A,** ATPase histochemical staining at pH9.4, of ☺ **Normal muscle, showing checkerboard distribution of intermingled type 1 (*light*) & type 2 (*dark*) fibers**.
B, in contrast, 😐 **after reinnervation of muscle,** fibers of either histochemical 1 & 2 types are **grouped** together.
C, A cluster of atrophic fibers **(group atrophy)** in the center (arrow) ® **hallmark of** ☹ **recurrent neurogenic atrophy**.

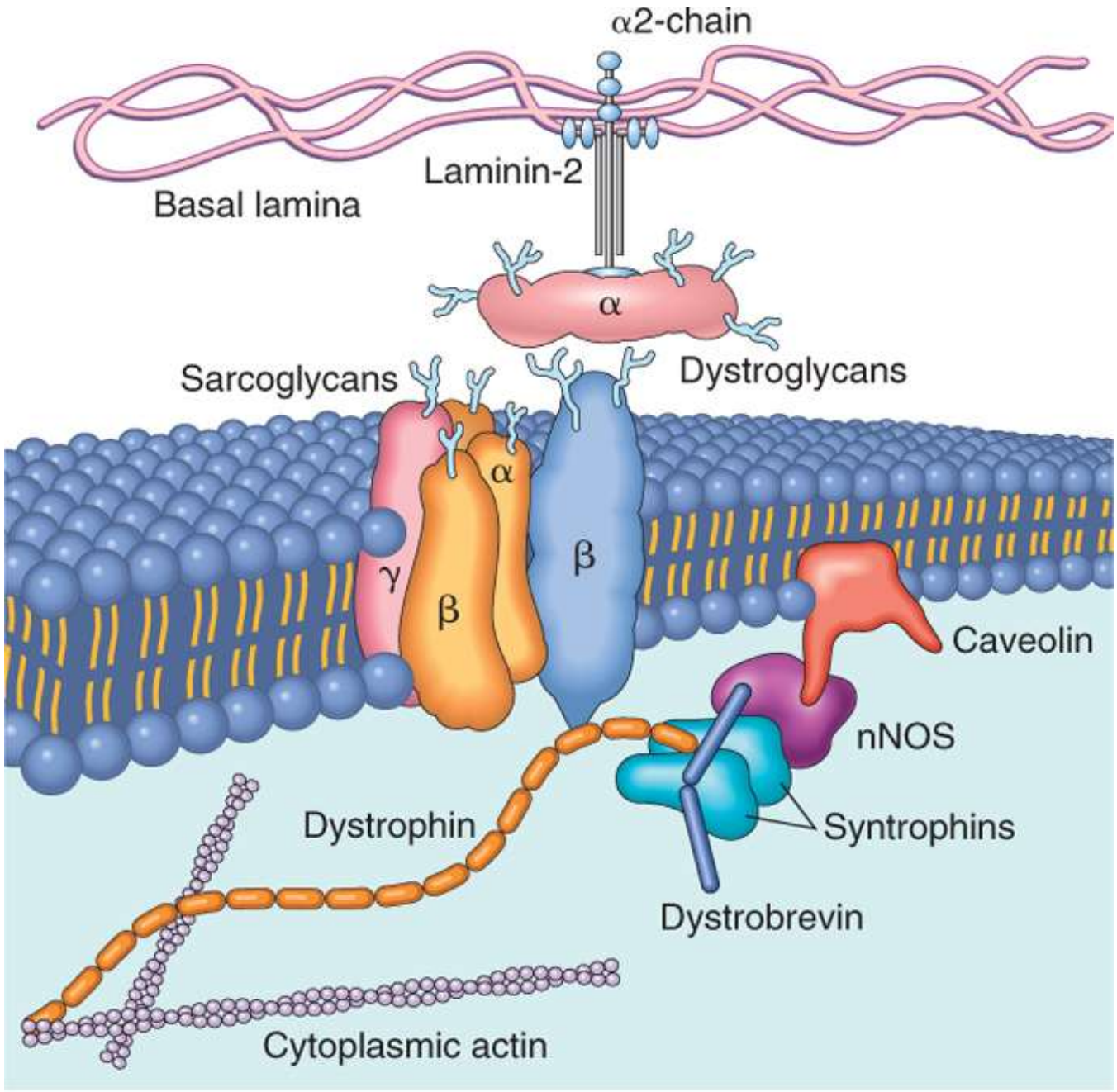






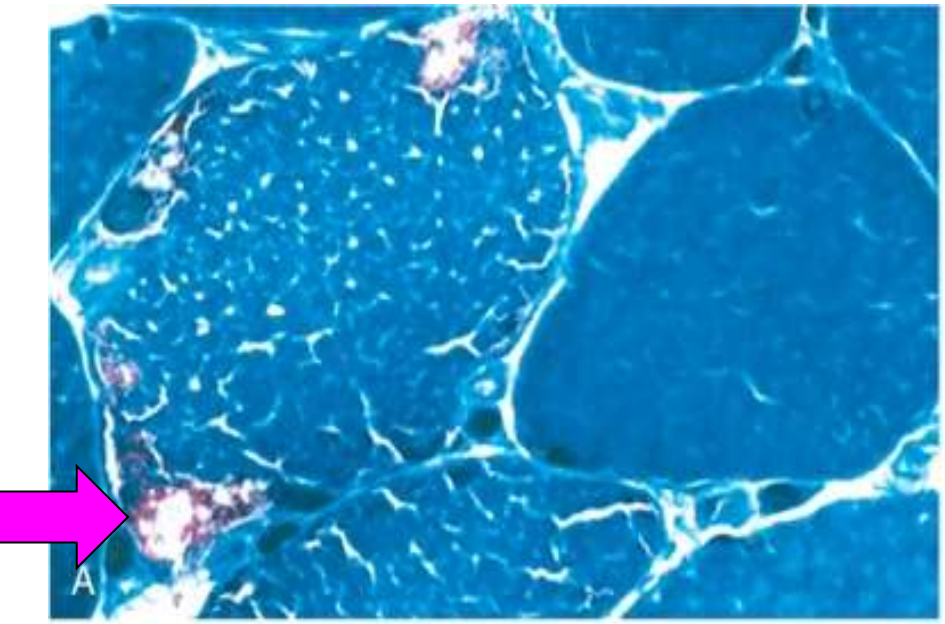
F 21-23: **A, Duchenne muscular dystrophy (DMD)** showing:
(1) variation in muscle fiber size,
(2) ↑ increased endomysial connective tissue, &
(3) regenerating fibers (blue hue).

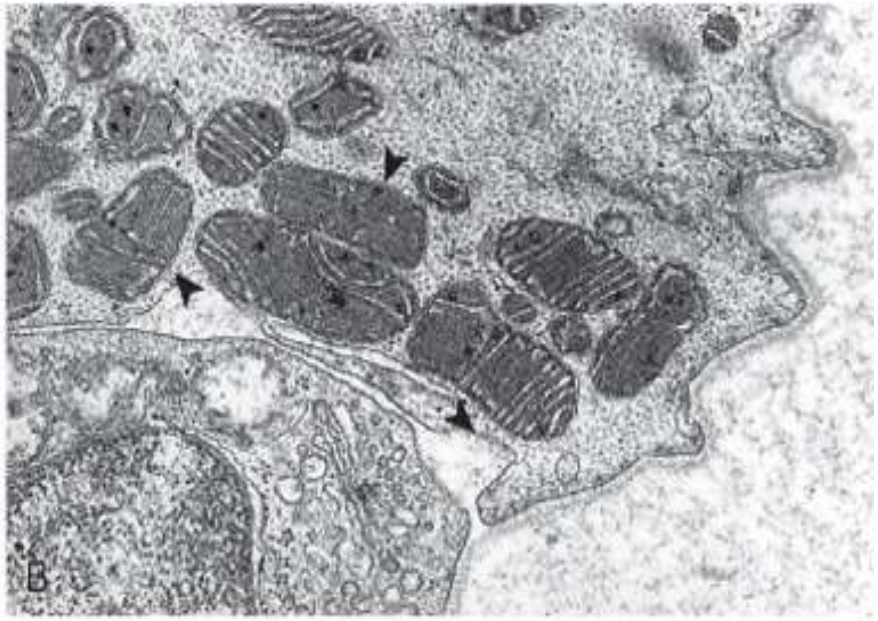
B, western blot showing ☹ absence of dystrophin in (DMD) & altered dystrophin size in Becker muscle dystrophy (BMD) compared with ☺ control (Con)



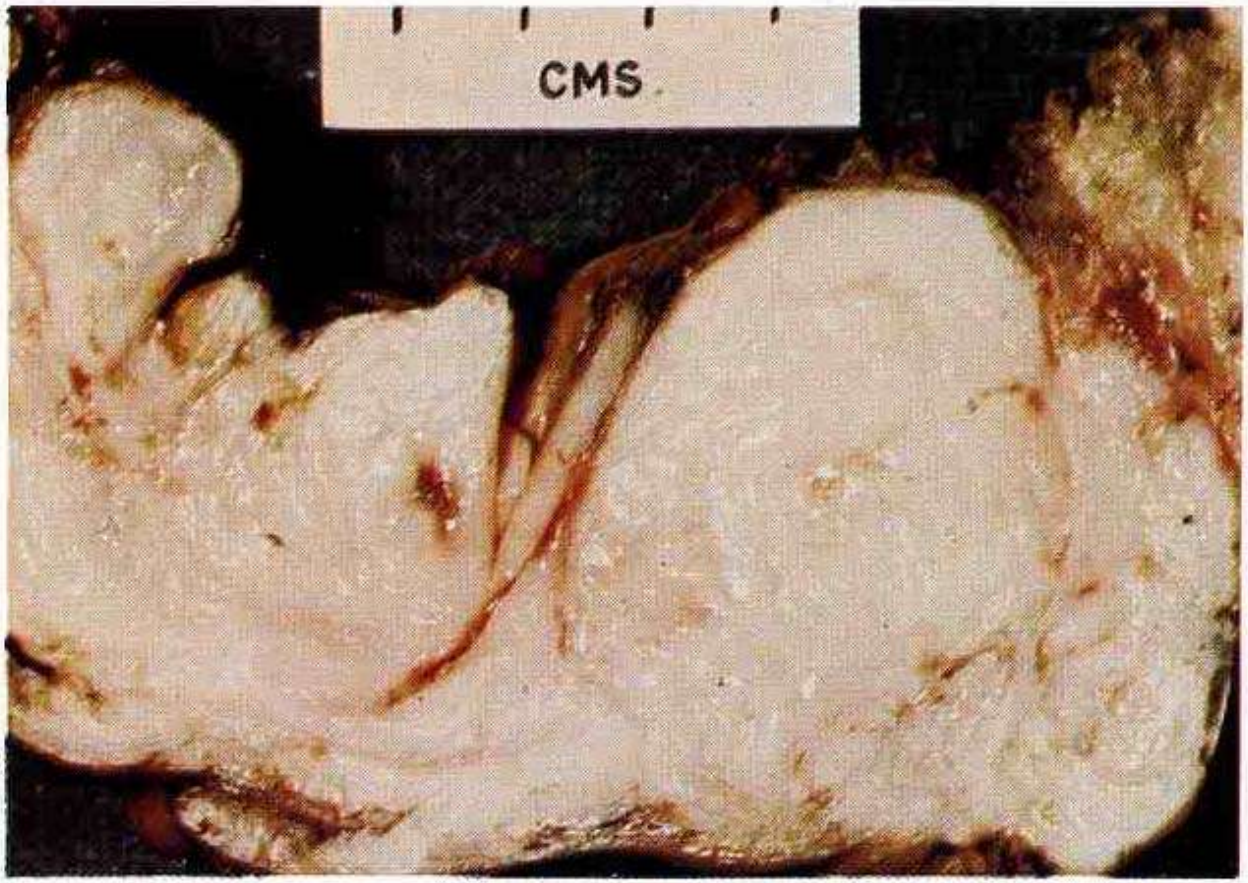
F21-24: The relationship between the cell membrane (sarcolemma) & the sarcolemmal associated proteins.

F 21-25: **A**, **Mitochondrial myopathy** showing an irregular fiber with subsarcolemmal collections of mitochondria that stain red with the modified Gomori trichrome stain (ragged red fiber).
B, EM of mitochondria from biopsy specimen in A showing **"parking lot"** inclusions (arrowheads).



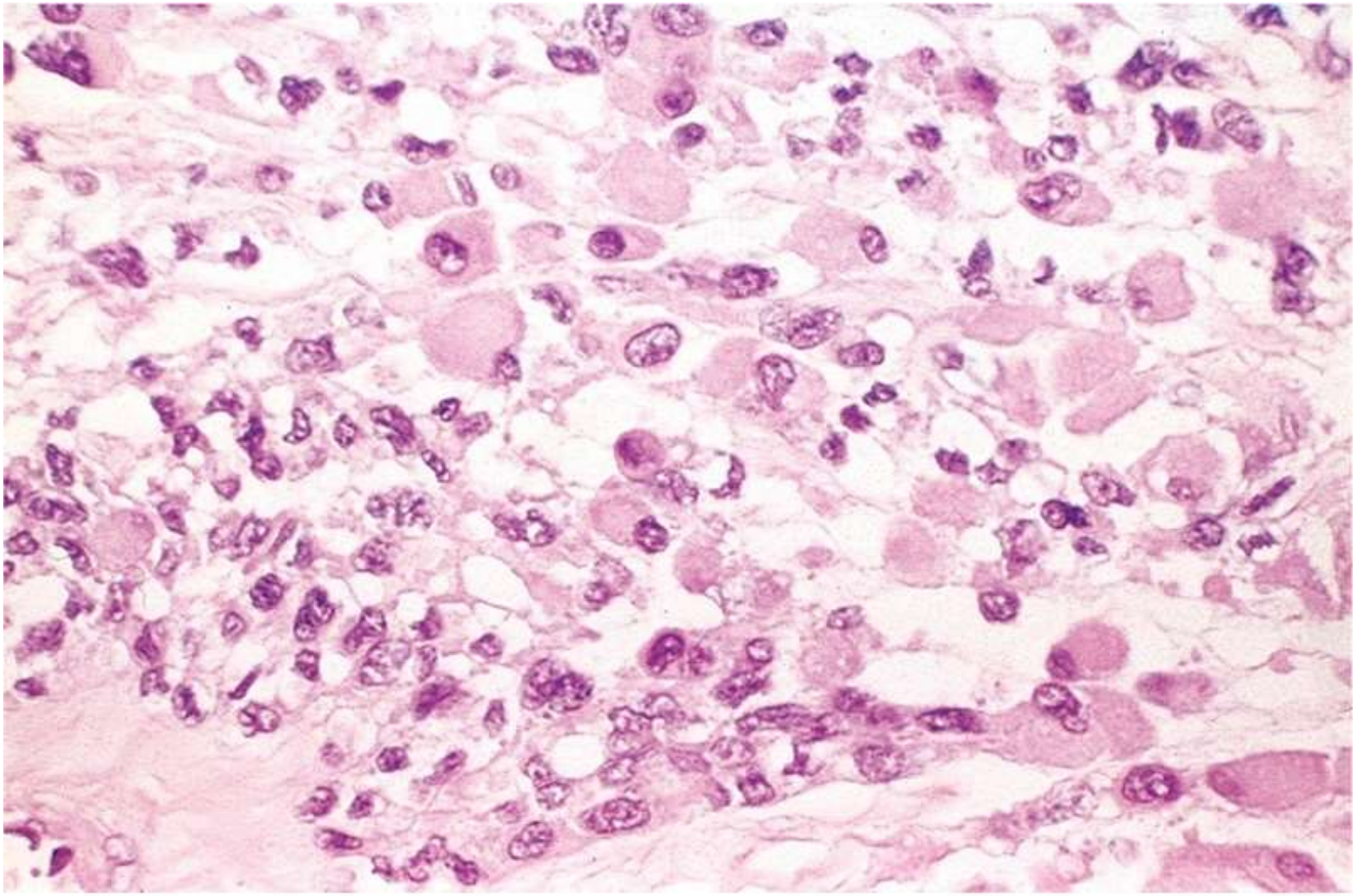


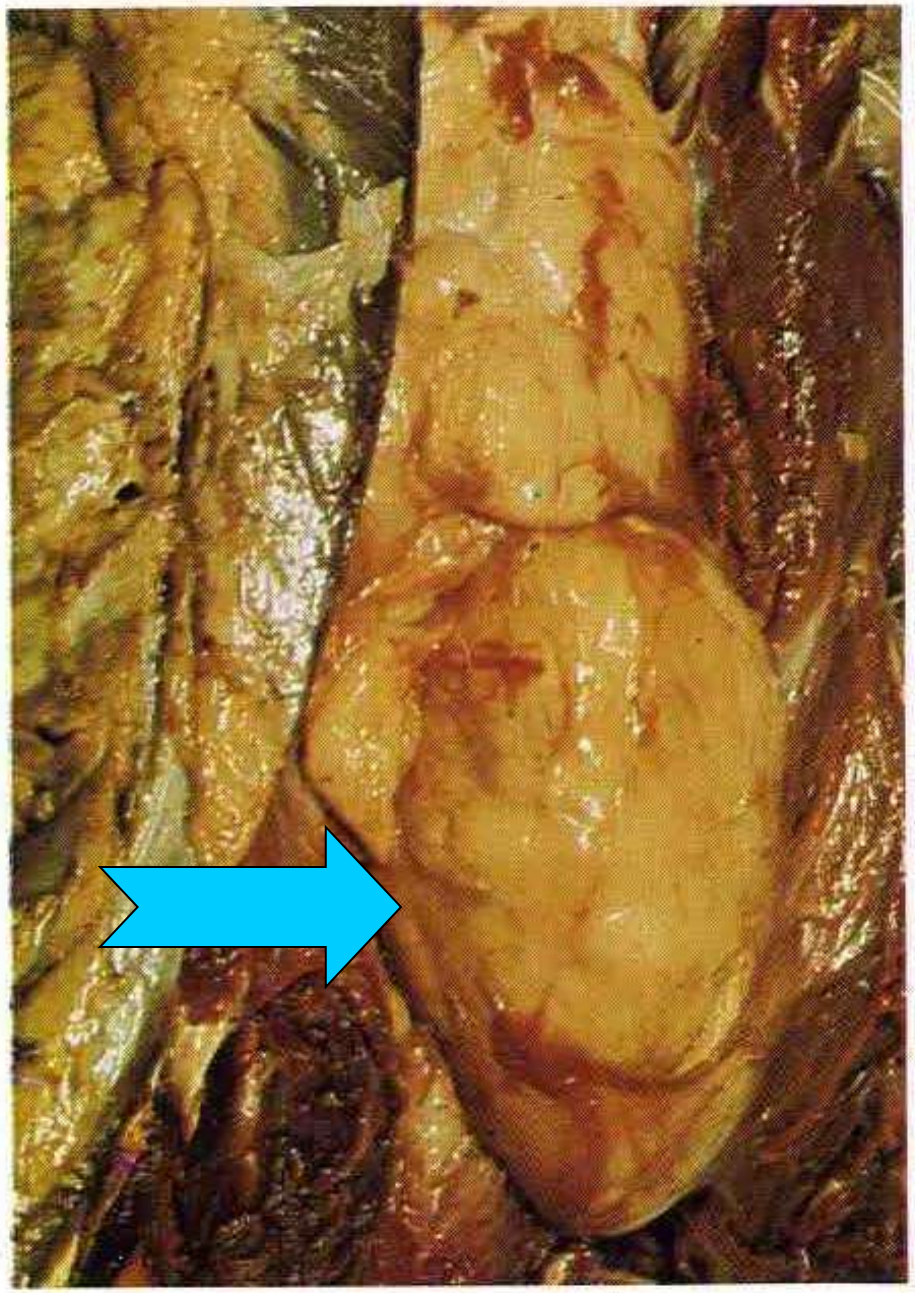
F13-89: **Sarcoma botryoides (the commonest sub-type of rhabomyosarcoma): urogenital sinus of a <u>neonate</u>.**
Lobulated, polypoidal & myxomatous, pink-white tumor arising from the region of the urogenital sinus in a grapelike masses. The tumor recur & metastasis & having very poor prognosis.



13.89 Rhabdomyosarcoma: urogenital sinus

F21-26: **Rhabomyosarcoma.**
The rhabomyoblasts are large, round with abundant eosinophilic cytoplasm; No cross-striation are evident here.

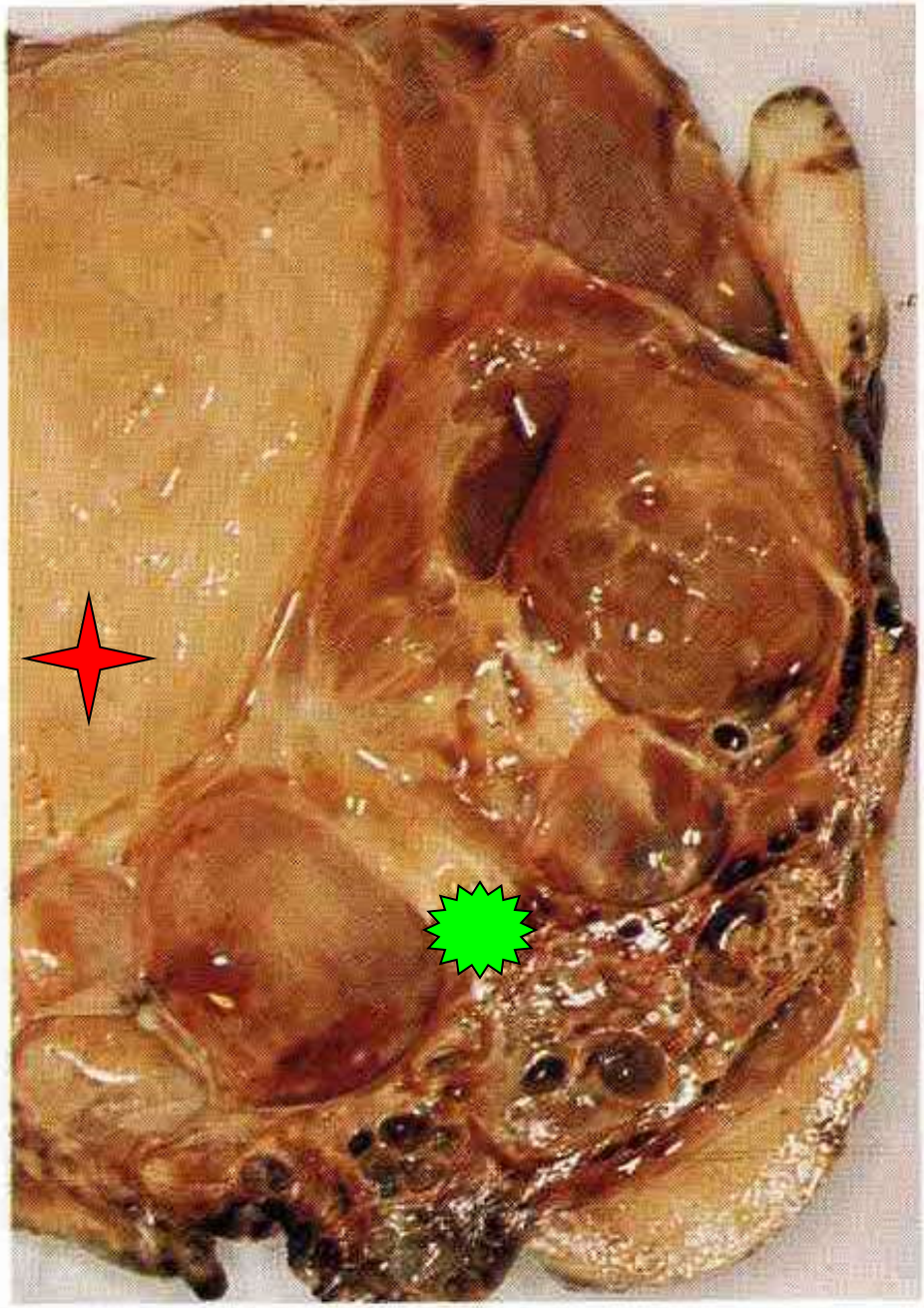




13.82 Liposarcoma

F13-82: **Liposarcoma: Thigh.**

Large, deeply-seated, lobulated, & encapsulated bright yellow mass situated between the muscles of the thigh.



13.83 Myxoid liposarcoma

F13-83: **Myxoid liposarcoma.**

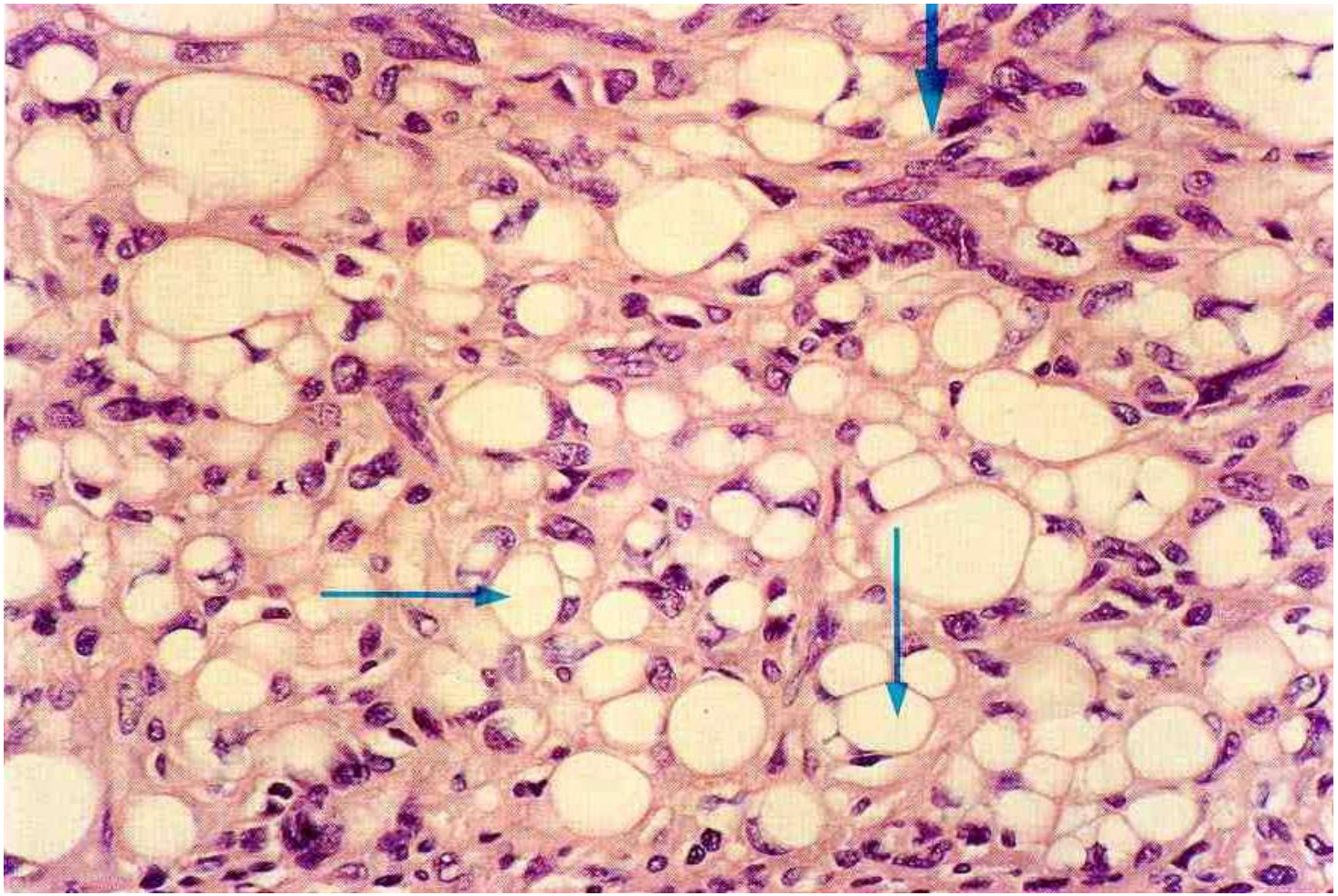
The cut surface of this specimen shows a very variable pattern, which

ranges from smooth yellow lobulated fat (top left),

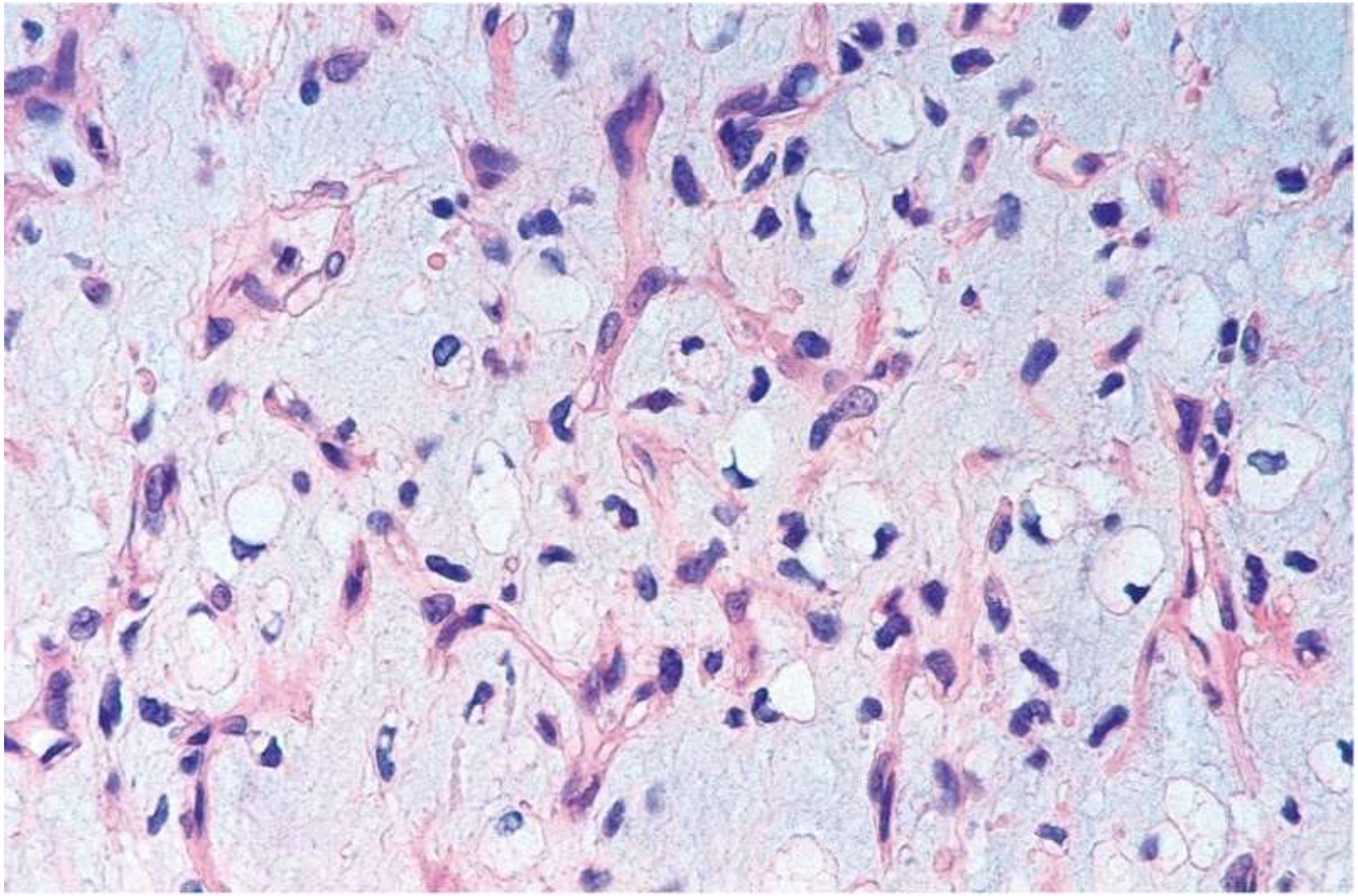
to myxoid gelatinous tissue (below) with extensive areas of cystic degeneration & hemorrhage

◙ 3.50: **Liposarcoma: Thigh.** Section from **a** large (3165g) tumor removed from the thigh of a woman 65 yeas of age. O/S, the tumor was partially necrotic, creamy-white.

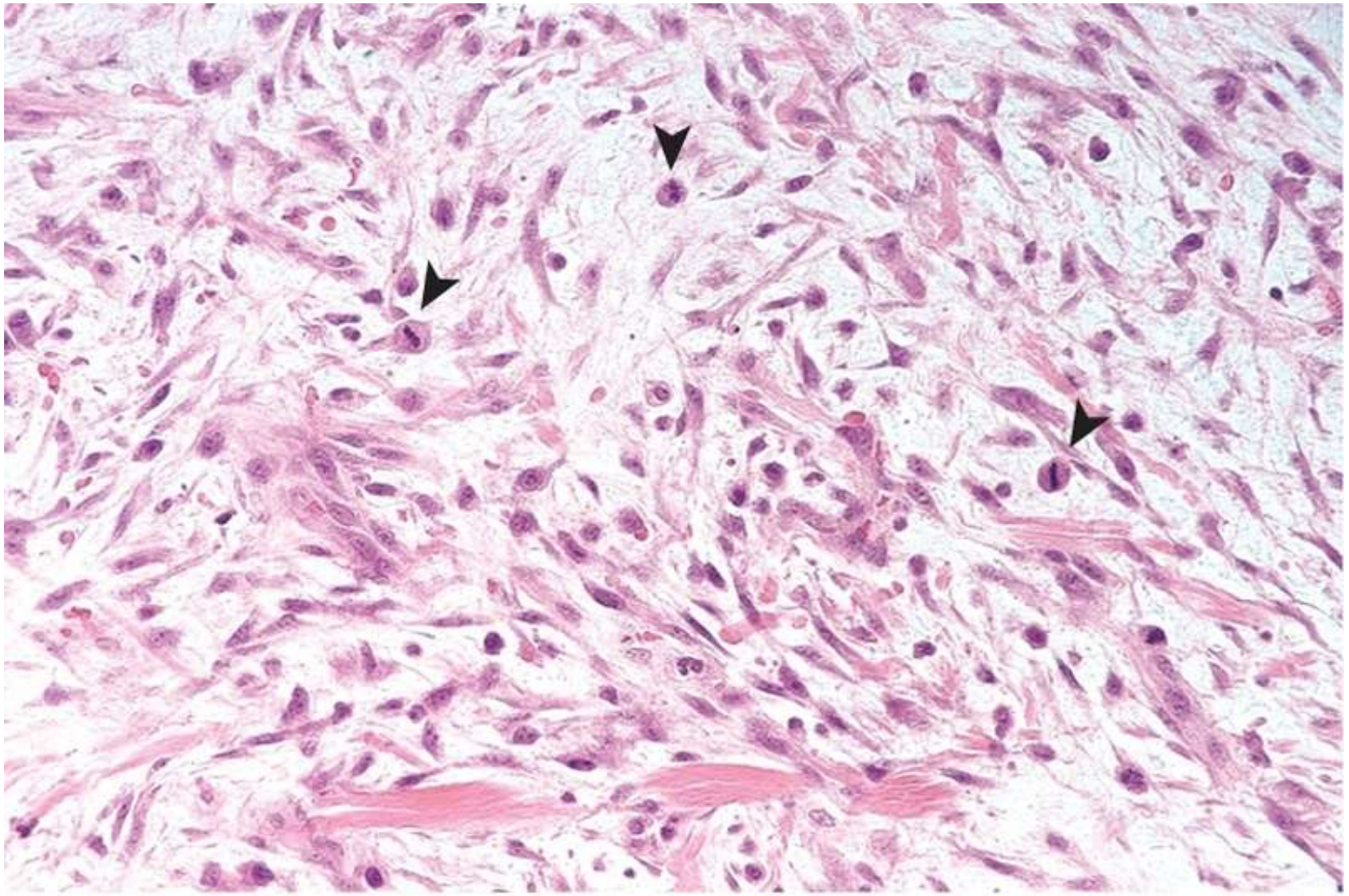
◙ There is a mixture of lipoblasts with fat vacuoles in their cytoplasm (thin arrows) & pleomorphic fibroblasts (thick arrow).



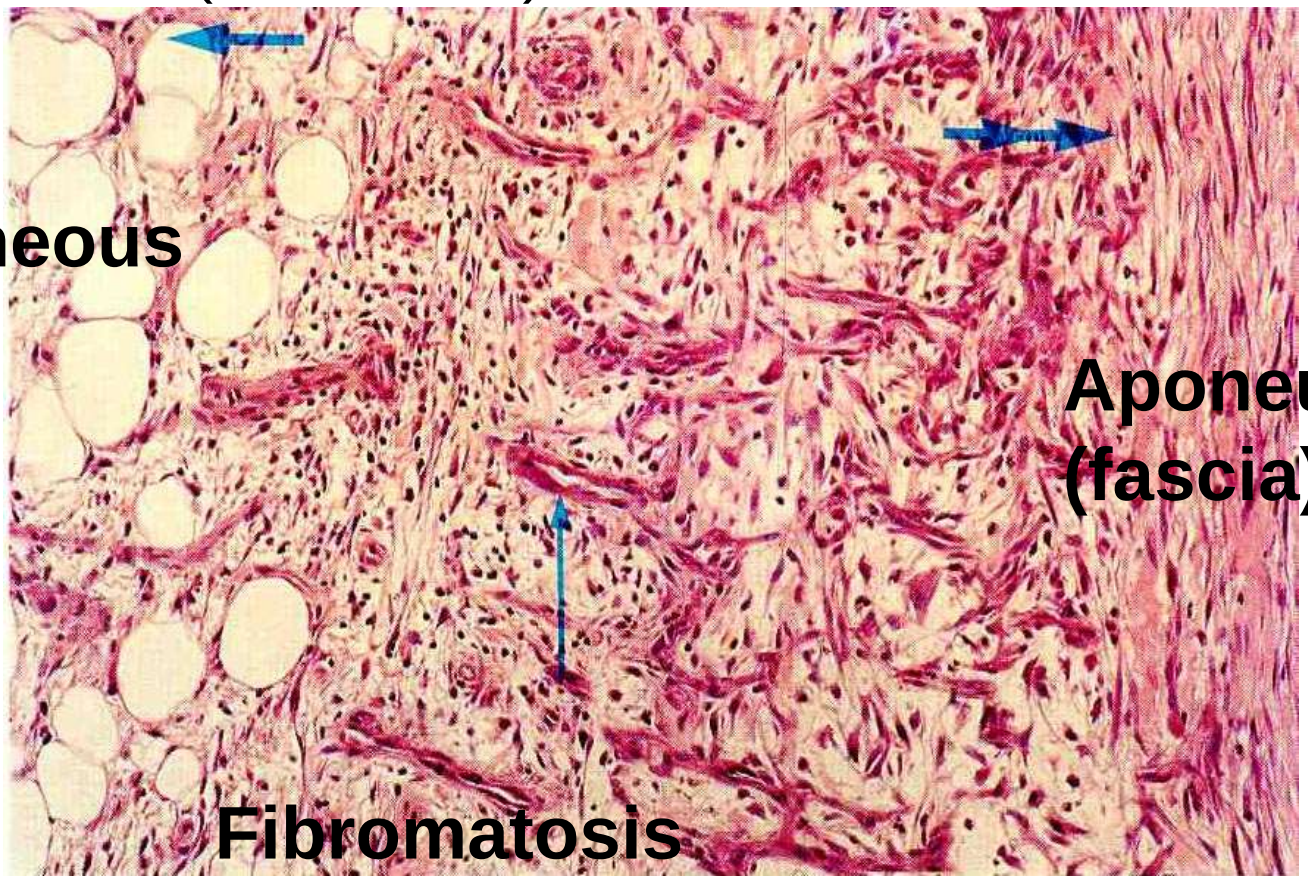
F 21-27: **Myxoid liposarcoma.** Adult- appearing fat cells & more primitive cells, with lipid vacuoles (lipoblasts) are scattered in the abundant myxoid matrix.



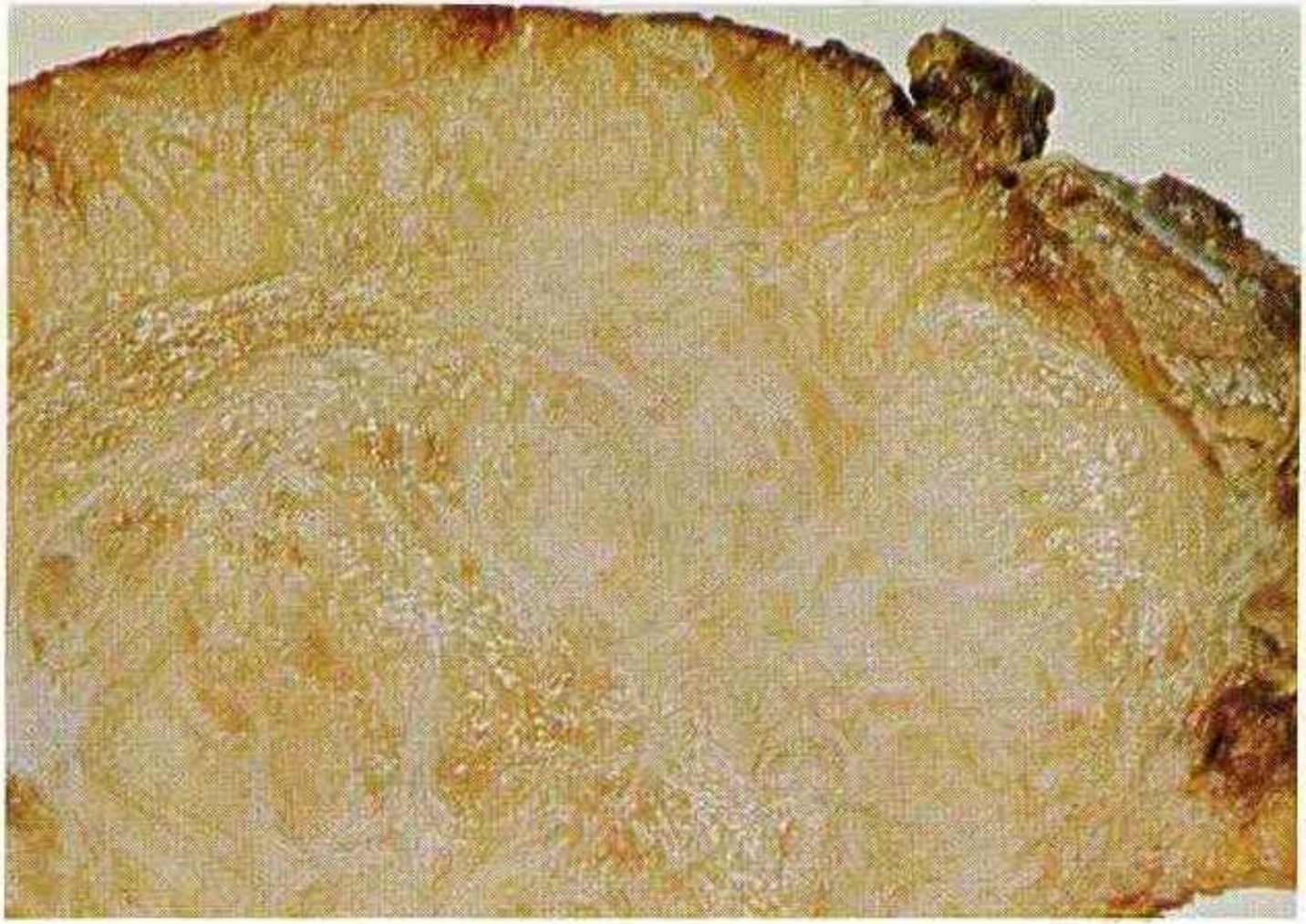
F 21-28: **Nodular fasciitis.** A **highly cellular** lesion composed of plump spindle cells, surrounded by myxoid stroma with prominent **mitotic activity** (arrowheads).



◙ 3.41: **Fibromatosis.** Subcutaneous mass of the medial aspect of the left arm from a 46-year-old man. Originating from the collagenous fibrous tissue aponeurosis (fascia, double arrow), there is a newly formed, loose, highly cellular fibroblastic tissue with mitotic figures & large number of blood vessels in the center (fibromatosis, thin arrow), which is advancing into the subcutaneous fat (thick arrow).



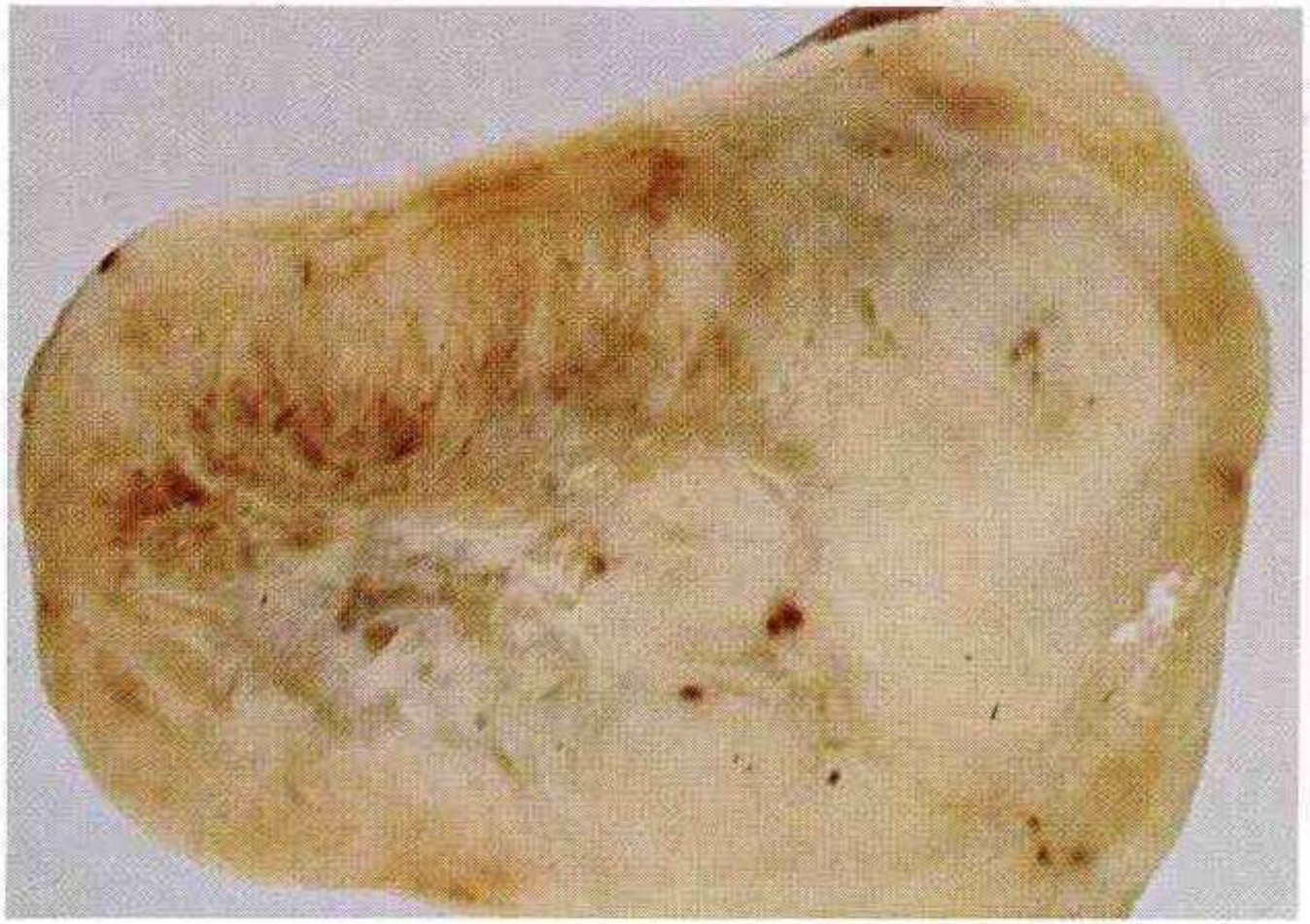
F13-85: **Infiltrating fibromatosis (*Desmoid tumor)*.** Greyish-white mass, traversed by interweaving bundles of fibrous tissue, infiltrating the adjacent subcutaneous fat .



13.85 Infiltrating fibromatosis

F13-87: **Fibrosarcoma: chest wall.**

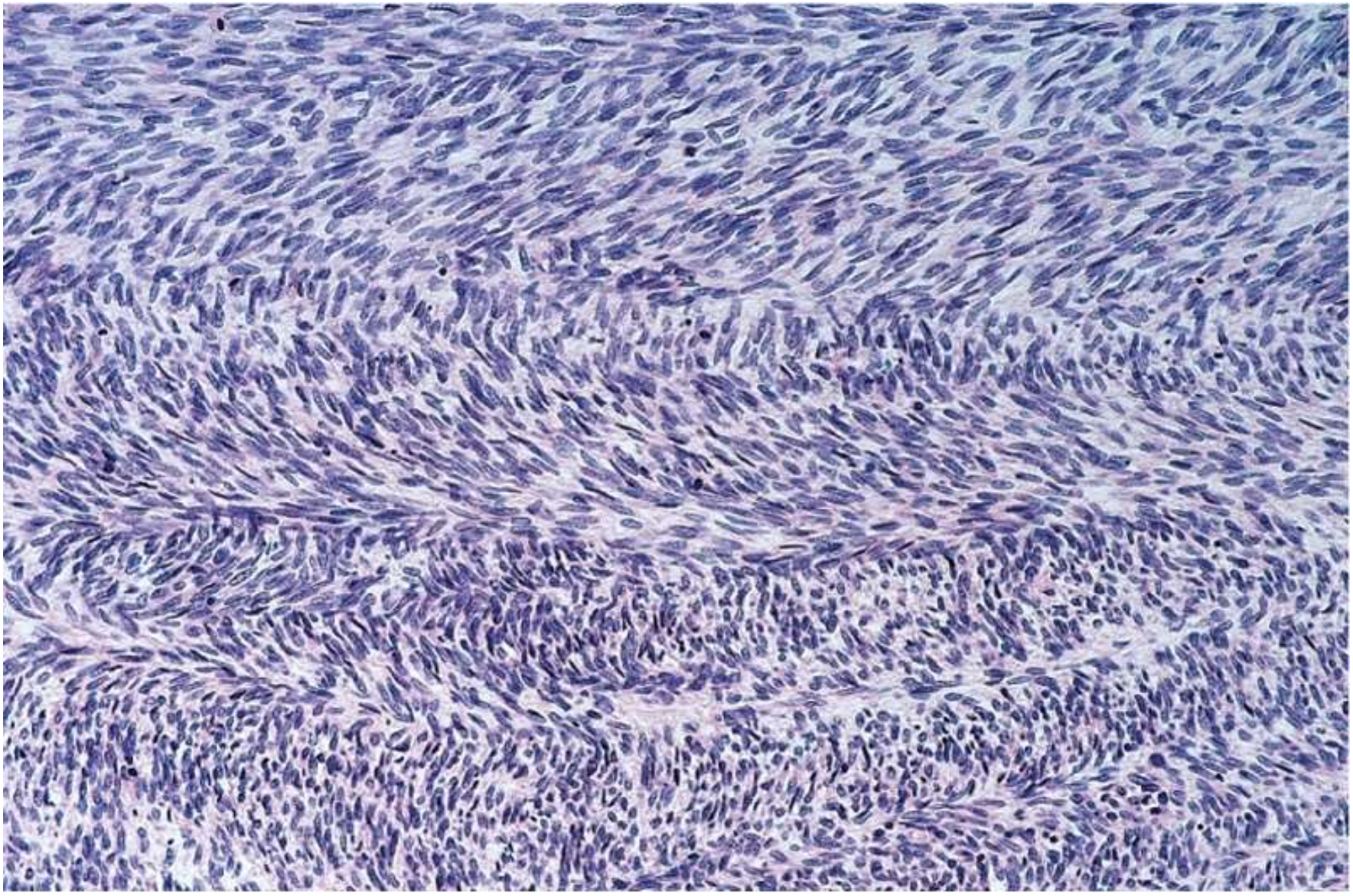
Local recurrence of fibrosarcoma in the chest wall of a 47-year-old woman. The large smooth ovoid tumor, with creamy-white C/S shows cystic degeneration & hemorrhage (left).



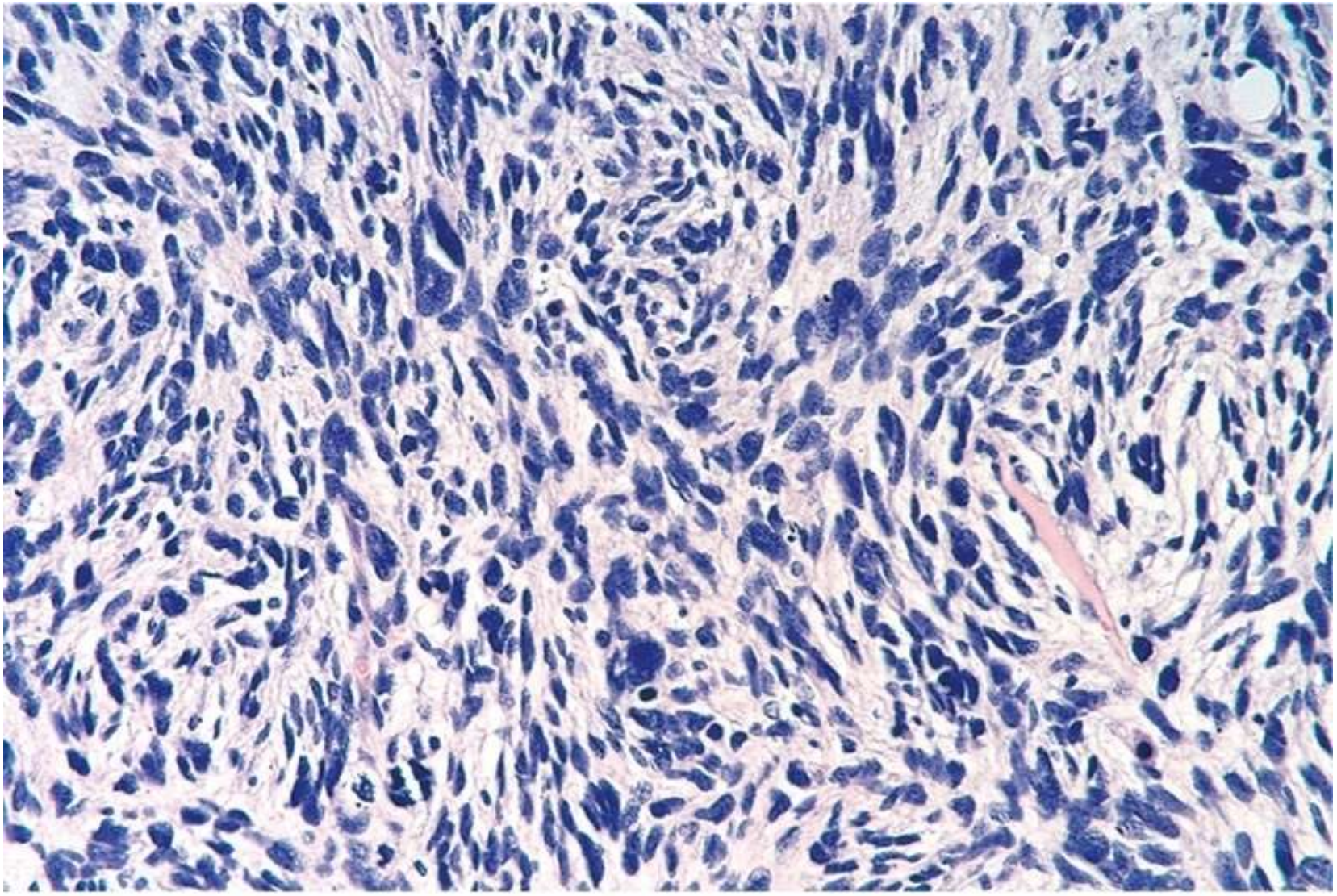
13.87 Fibrosarcoma: chest wall

F 21-29: **Fibrosarcoma.**

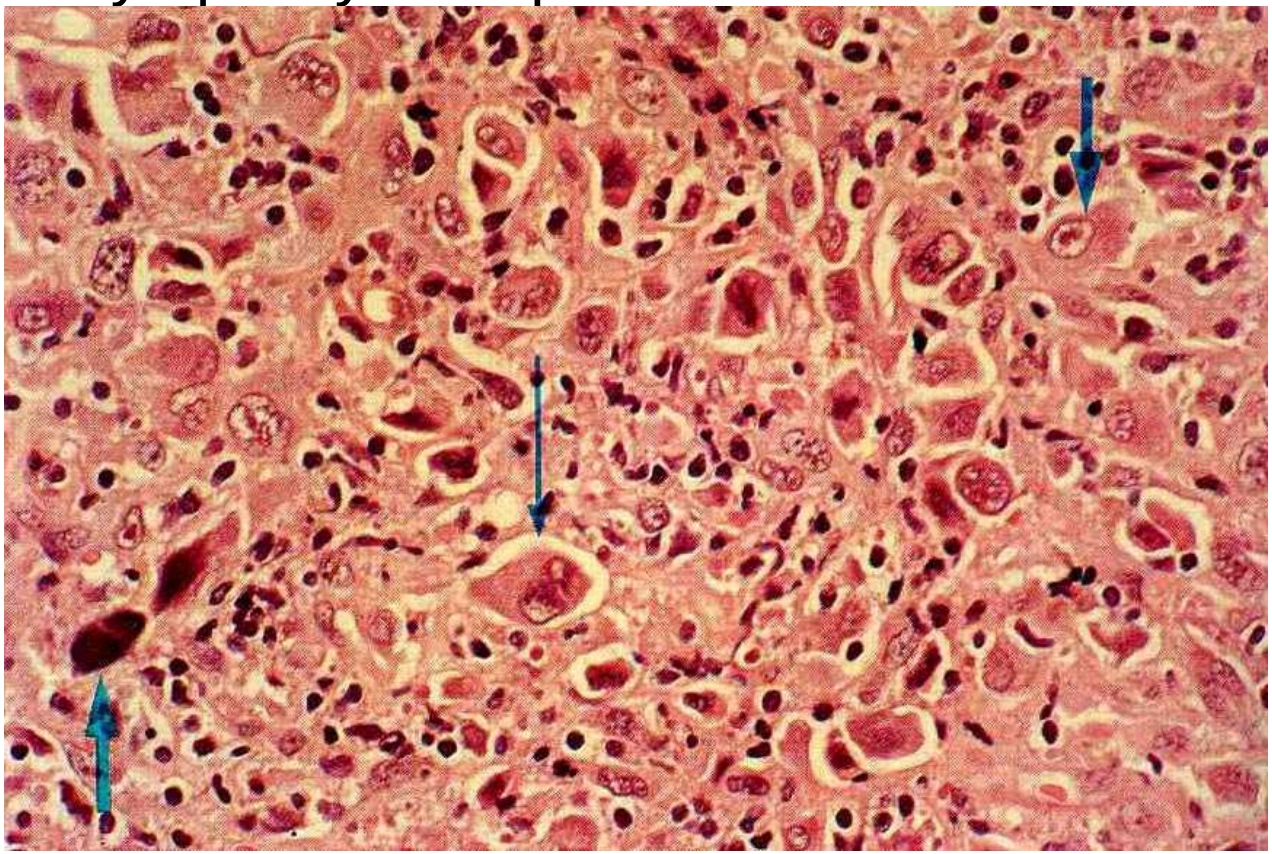
Malignant spindle cells, arranged in a **herringbone** pattern.



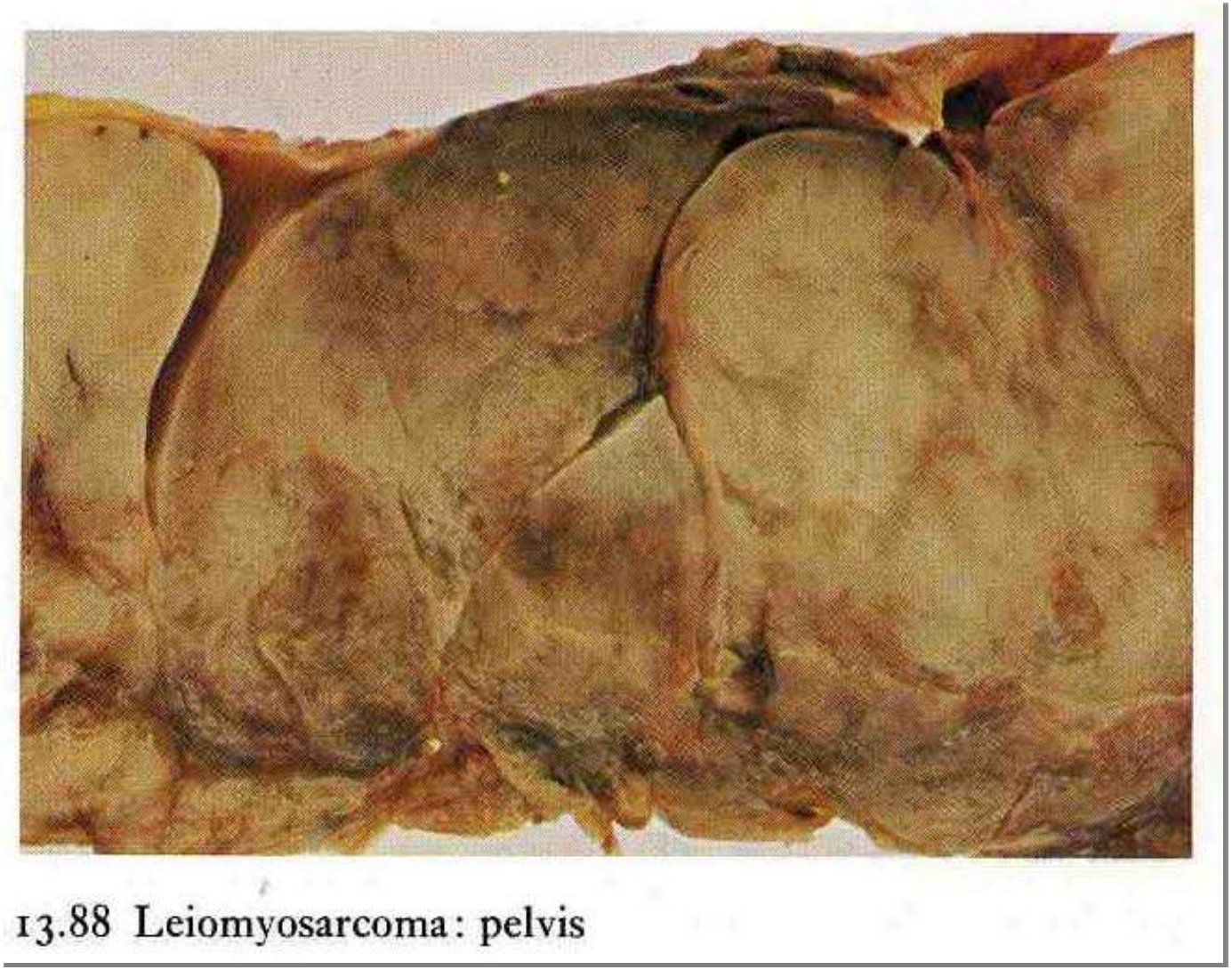
F 21-30: **Malignant fibrous histiocytoma (MFH).** Fascicles of **pleomorphic** plump spindle cells in a swirling **(storiform)** pattern



◙ 3.55 **Malignant fibrous histiocytoma: Scapular region.** The tumor composed of (1) mainly, very large rounded histiocytes (thin arrow), with abundant eosinophilic cytoplasm & well-defined margins, & extremely pleomorphic nuclei & nucleoli (top right). Many **giant cells** with hyperchromatic nuclei (thick arrow, bottom left) are present, (2) few malignant spindle cell tumor, & (3) scattered lymphocytes & plasma cells.

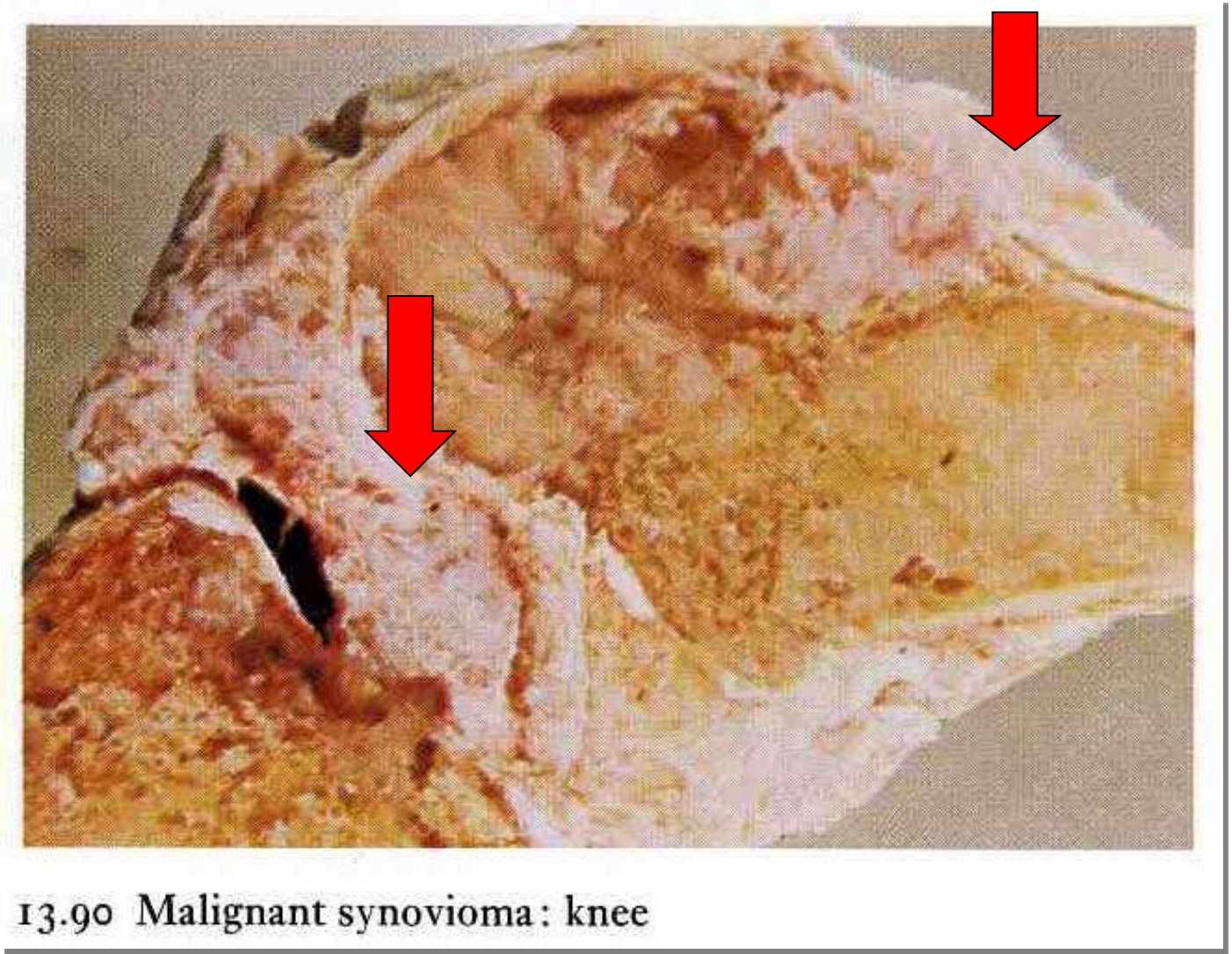


F13-88: **Leiomyosarcoma: reteroperitonium (commonest site).** A 55-year-old women, who had this bulky, irregularly – lobulated, grey-white mass which traversed by a slit-like clefts. Such tumor tend to metastasis by blood to the liver & lungs.



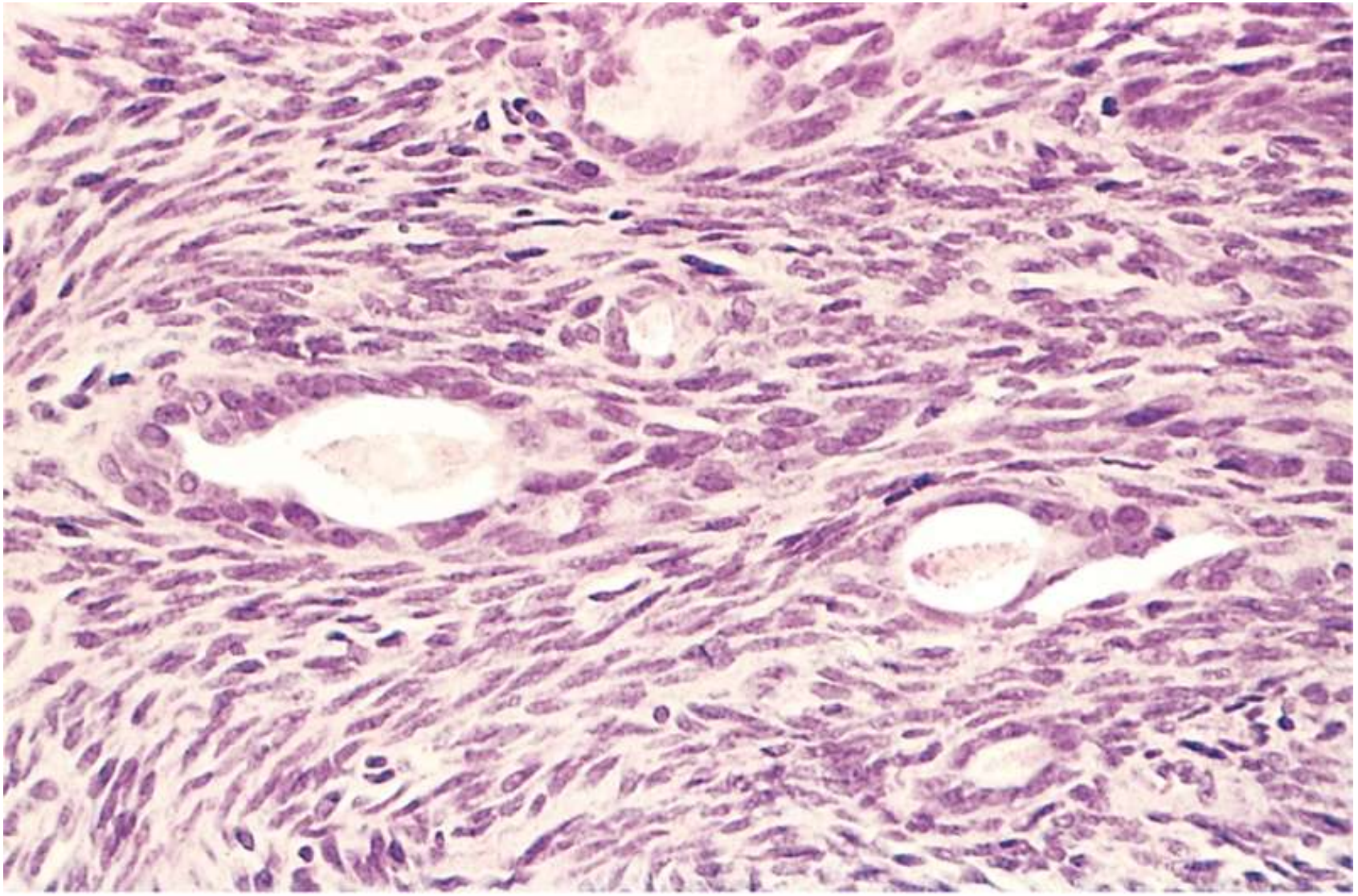
13.88 Leiomyosarcoma: pelvis

F13-90: **Synovial sarcoma: knee.** ☹ Knee-joint sagittal section, showing large pinkish-white tumor infiltrating the lower femur (top), & extending into the knee-joint, & spreading over the articular surface of the tibia (bottom).

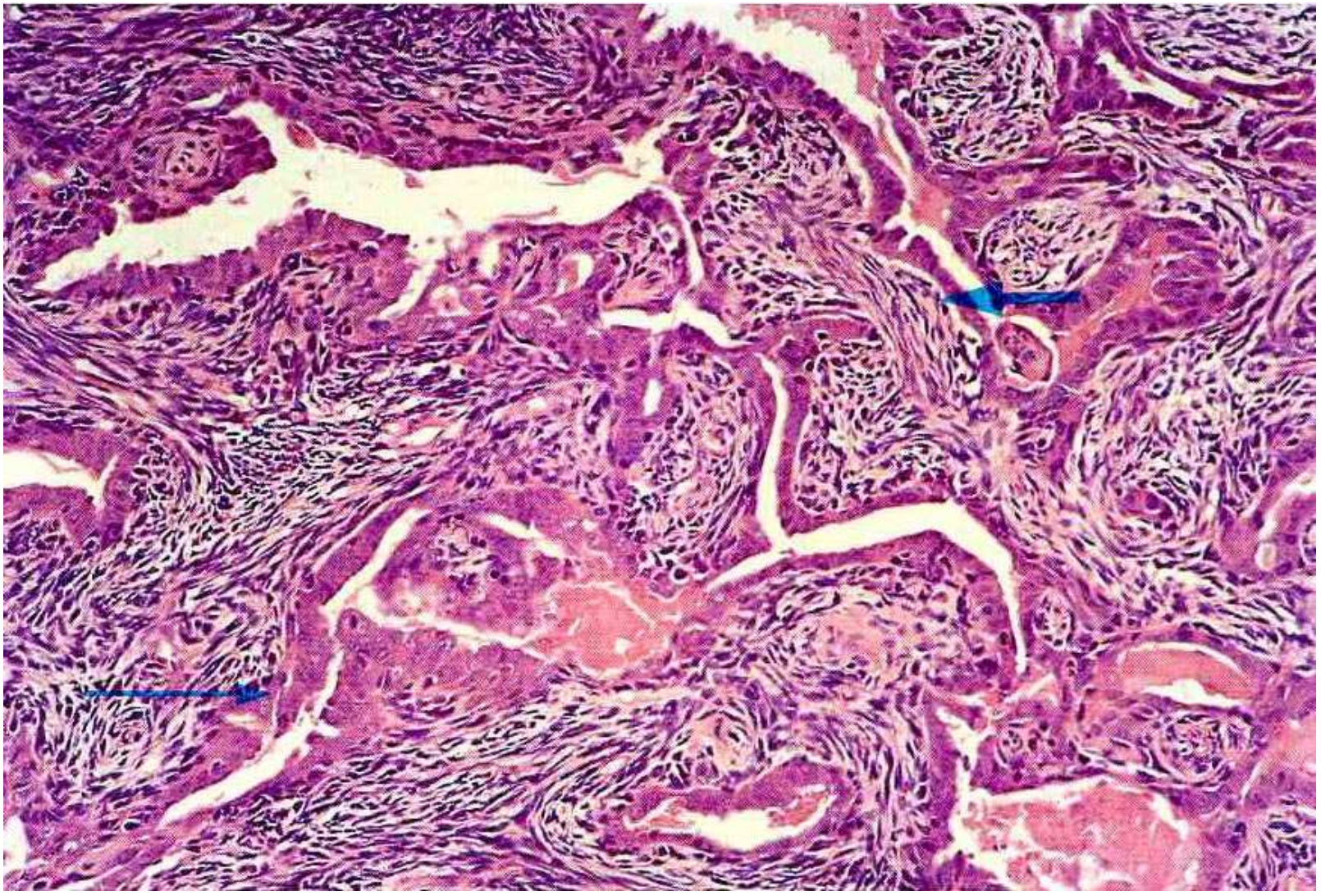


13.90 Malignant synovioma: knee

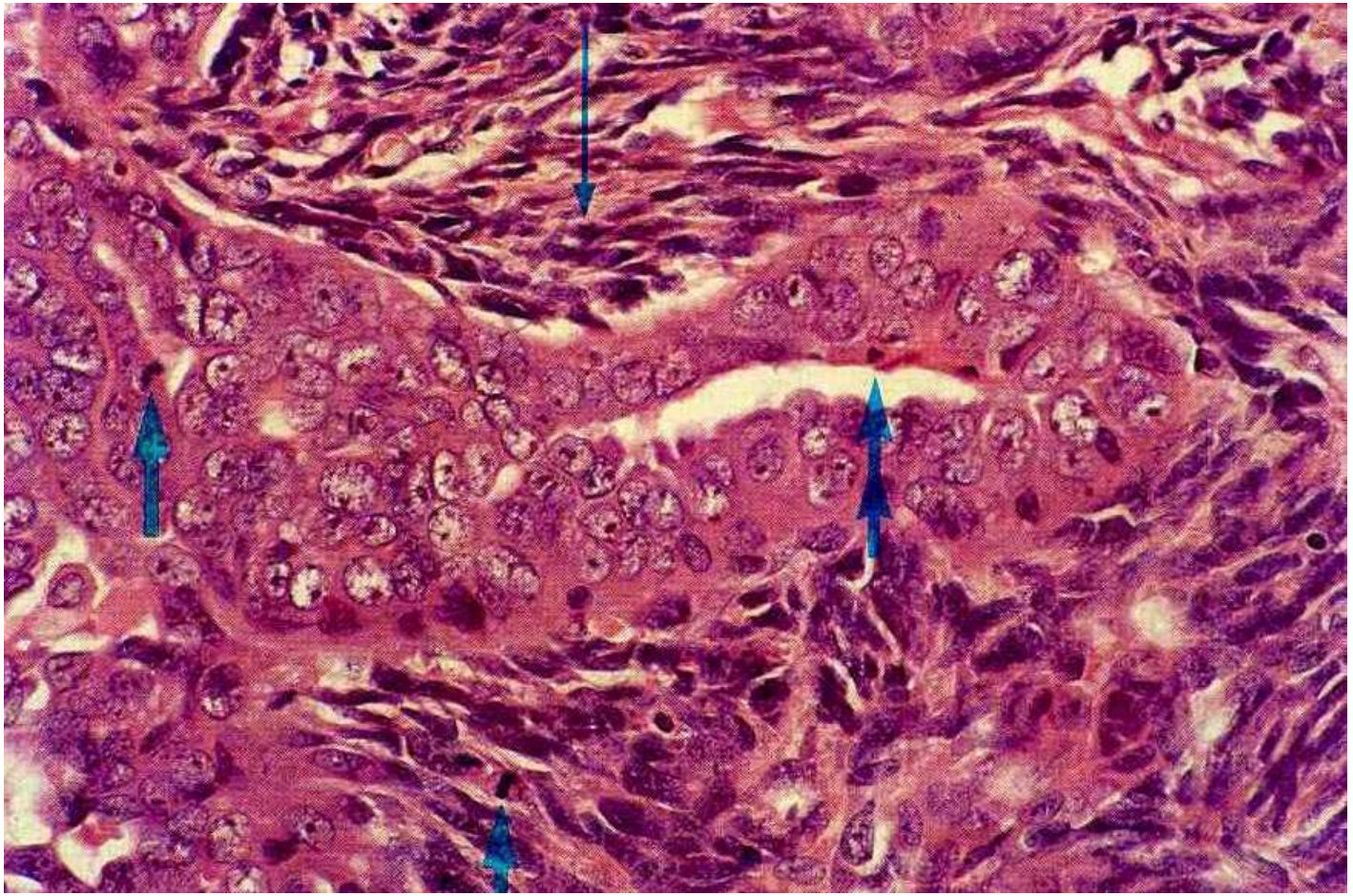
F21-31: **Synovial sarcoma** showing classic biphasic spindle cell & gland-like histologic appearance.



◙ 3.43: **Synovial sarcoma <u>X150.</u>** Classic biphasic pattern, with (1) spindle cell **sarcomatous** elements (thick arrow) forming stroma around the (2) the gland-like **carcinomatous** epithelial cell element (thin arrow) .



◙ 3.44: **Synovial sarcoma <u>X360.</u>** Note the (1) large gland-like clefts, lined with several irregular layers of large epithelial cells (double arrow) with **NO BASEMENT MEMBRANE** between them & (2) the closely packed spindle-shaped, sarcoma cells (thin arrow) which form the stroma. Mitotic figures (thick arrow) are present among both epithelial & stromal cells.



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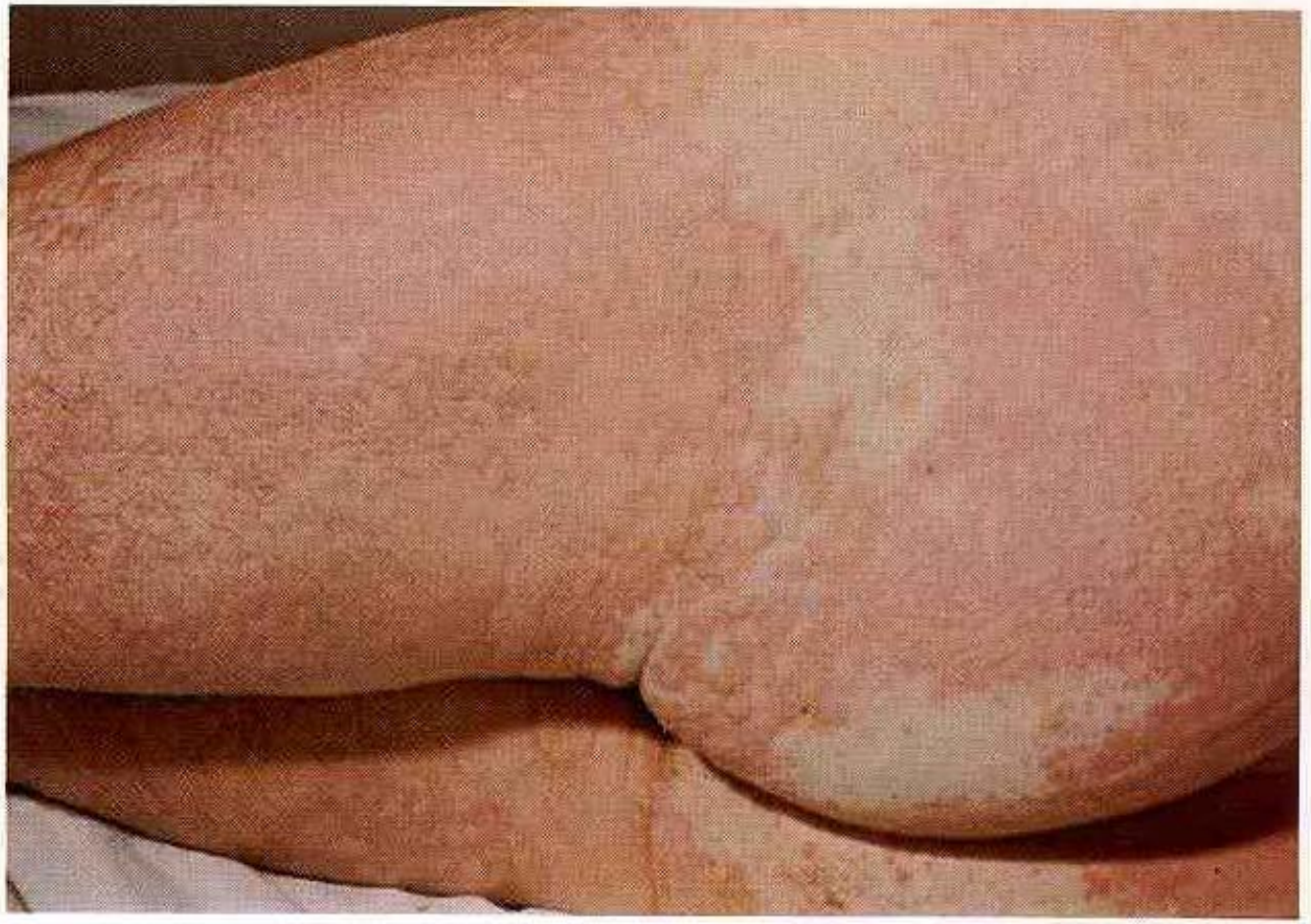
PATHOLOGY

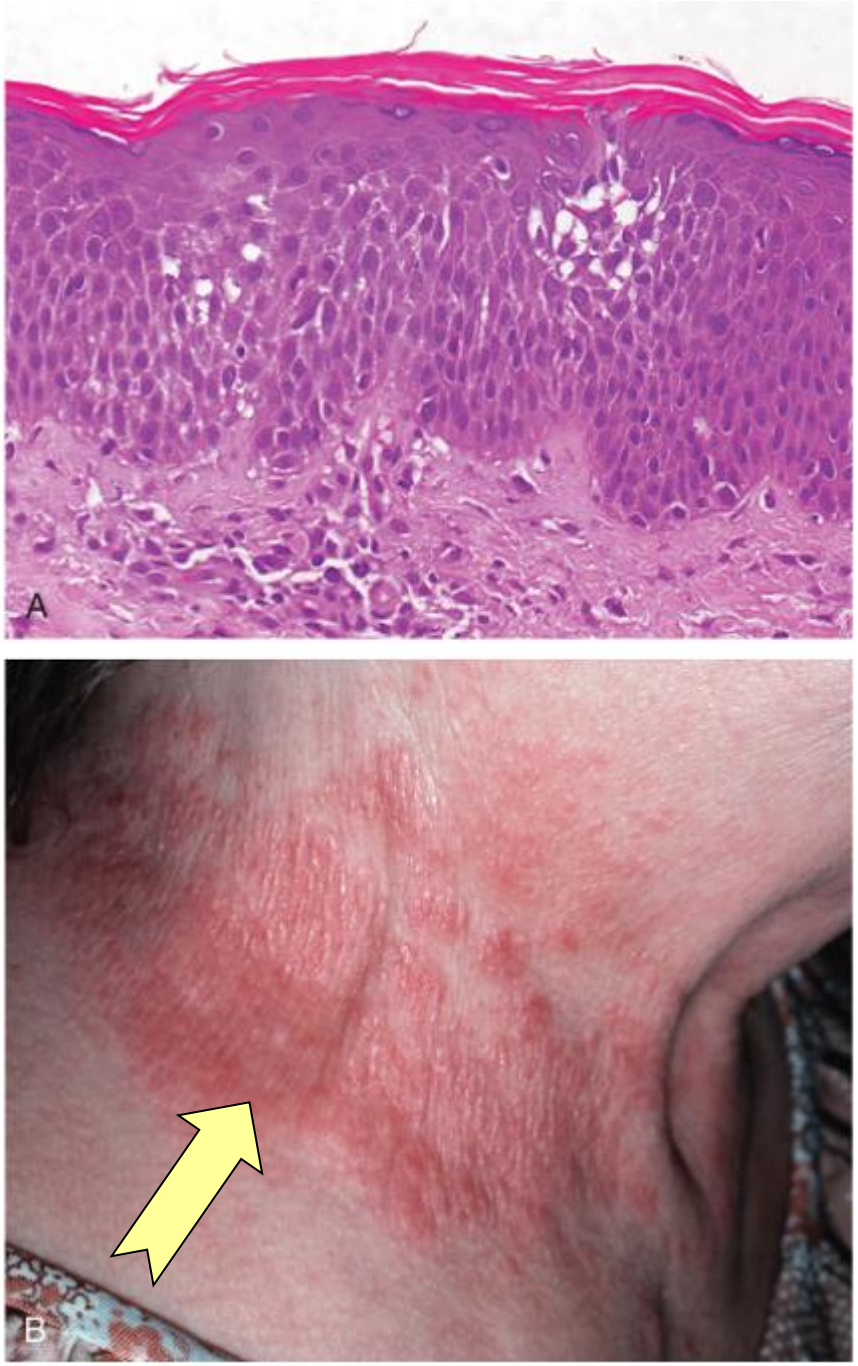
Skin

DONE BY : Volunteer

F14-10: **Urticaria.** The skin of the left buttock & upper thigh is covered with a **diffuse**, **semi-confluent pink maculo-papular rash,** slightly raised due to dermal **edema**. The lesions are usually transient & subside in 2 to 3 days.

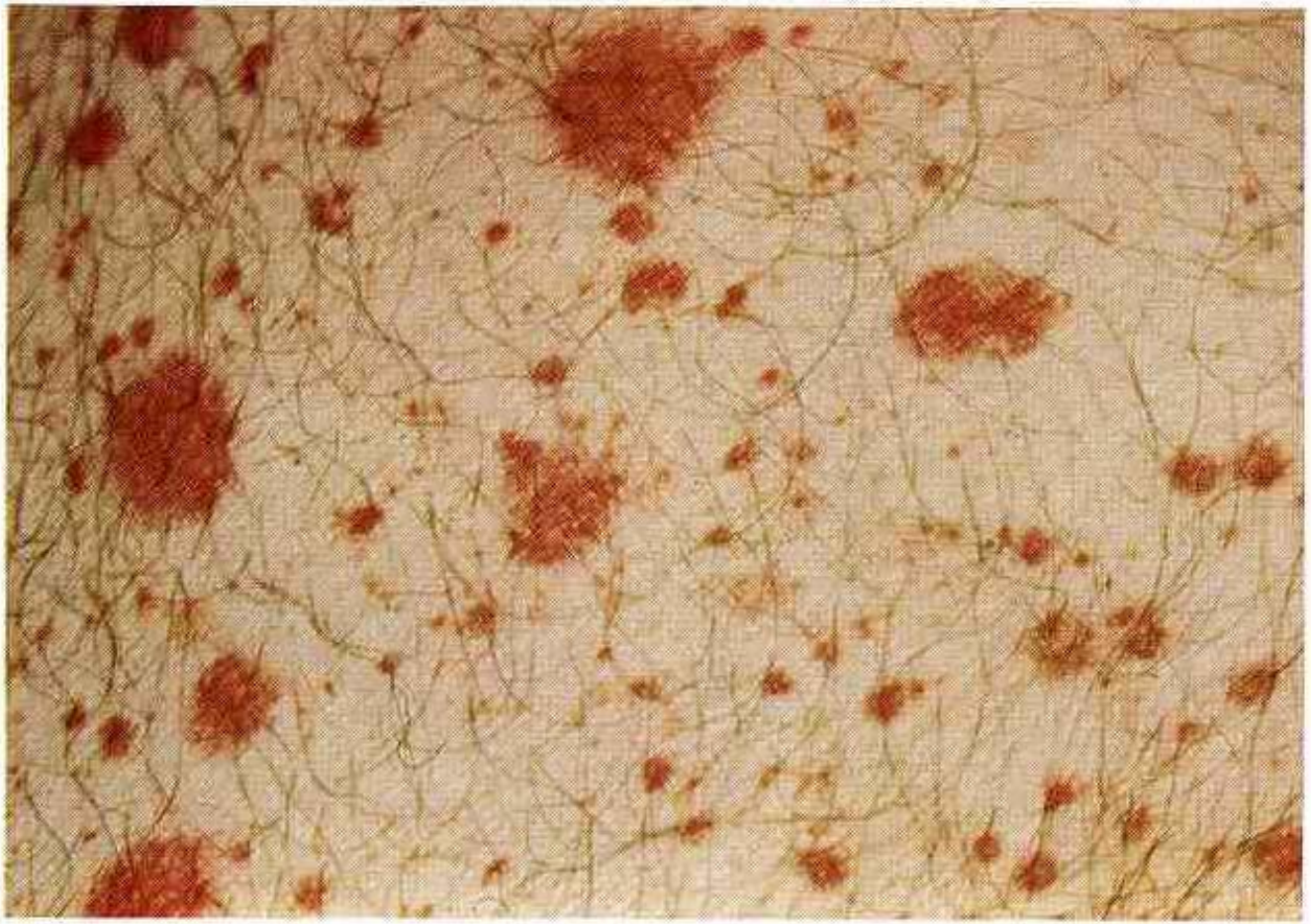


14.10 Urticaria

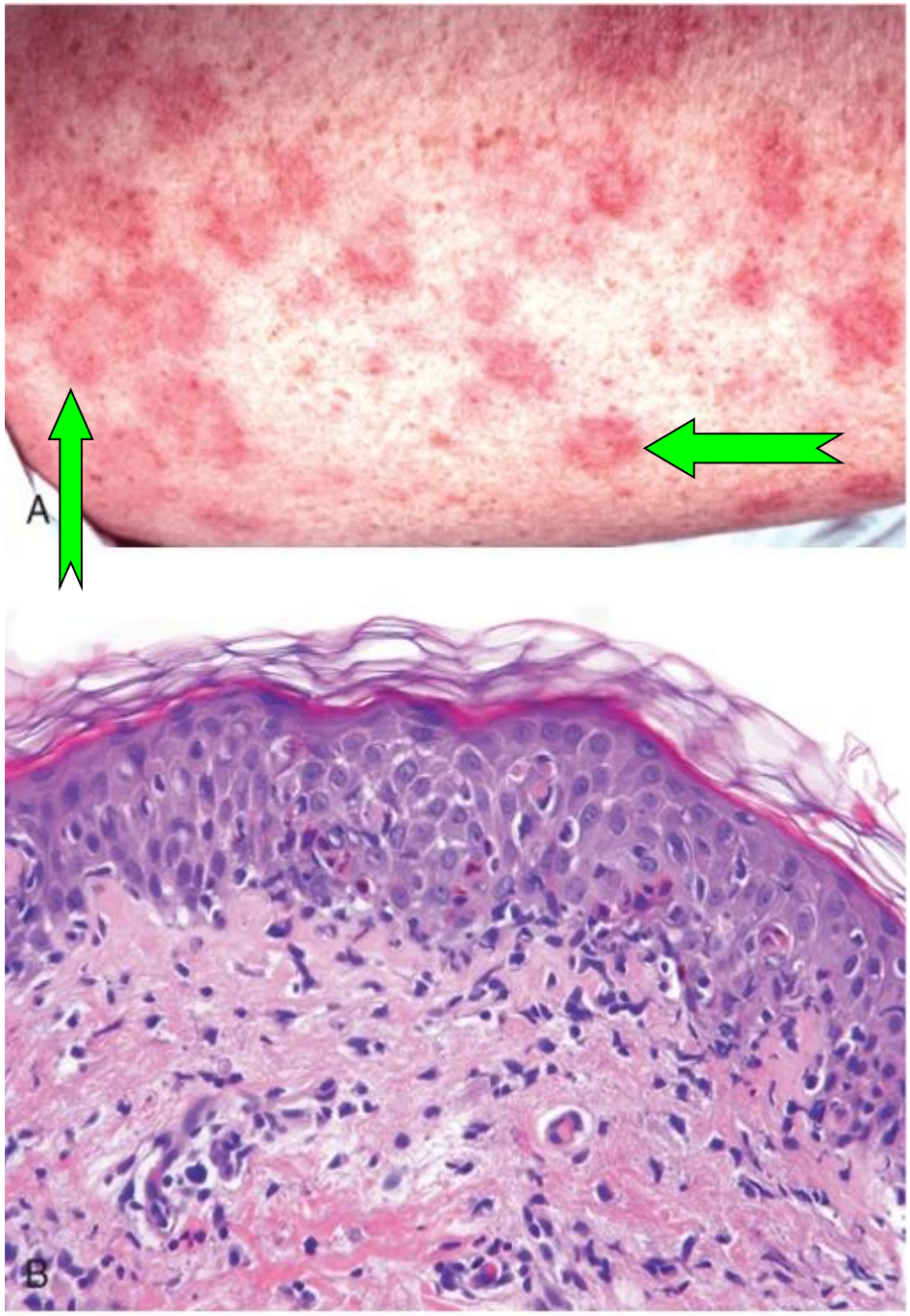


F 22-1: **Eczematous (contact) dermatitis.**
A, Spongiosis = fluid accumulation between epidermal cells, results in stretching of intercellular connections until broken (thus the term spongiotic dermatitis).
B, Note the patterned erythema & scale associated with **nickel contact** dermatitis resulting from this woman's **necklace.**

F14-9: **Erythema multiforme,** macular type. **Result of toxic *hypersensitivity response to drugs,*** *which* includes sulfonamides, penicillin, salicylates, hydantoins antiepileptic, & antimalarials, so-called **drug rash.**



14.9 Drug rash



F 22-2: **Erythema multiforme.**

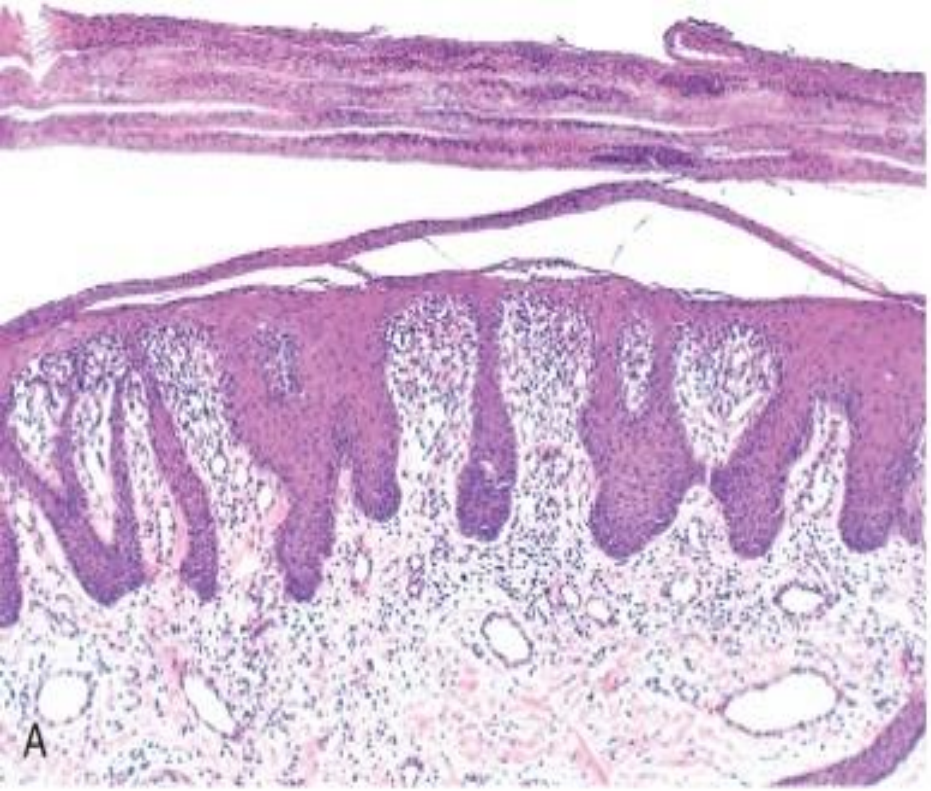
A, Characteristic **target-like appearance of erythema multiforme minor,** with **central** zone of dusky **pink-gray** discoloration that correlates with epidermal necrosis or early blister formation, surrounded by a **pink-red rim.**

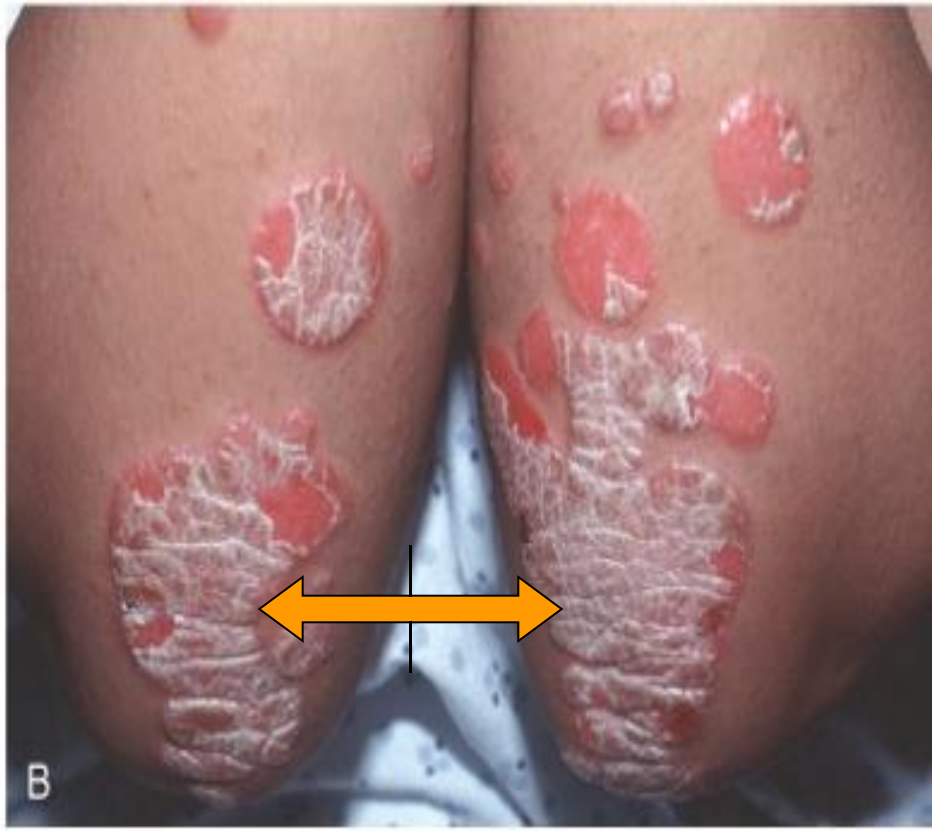
B, Interface dermatitis, with aligment of lymphocytes along the **dermoepidermal junction** causing destruction of the basal epidermal cells.

F 22-3: **Psoriasis:**

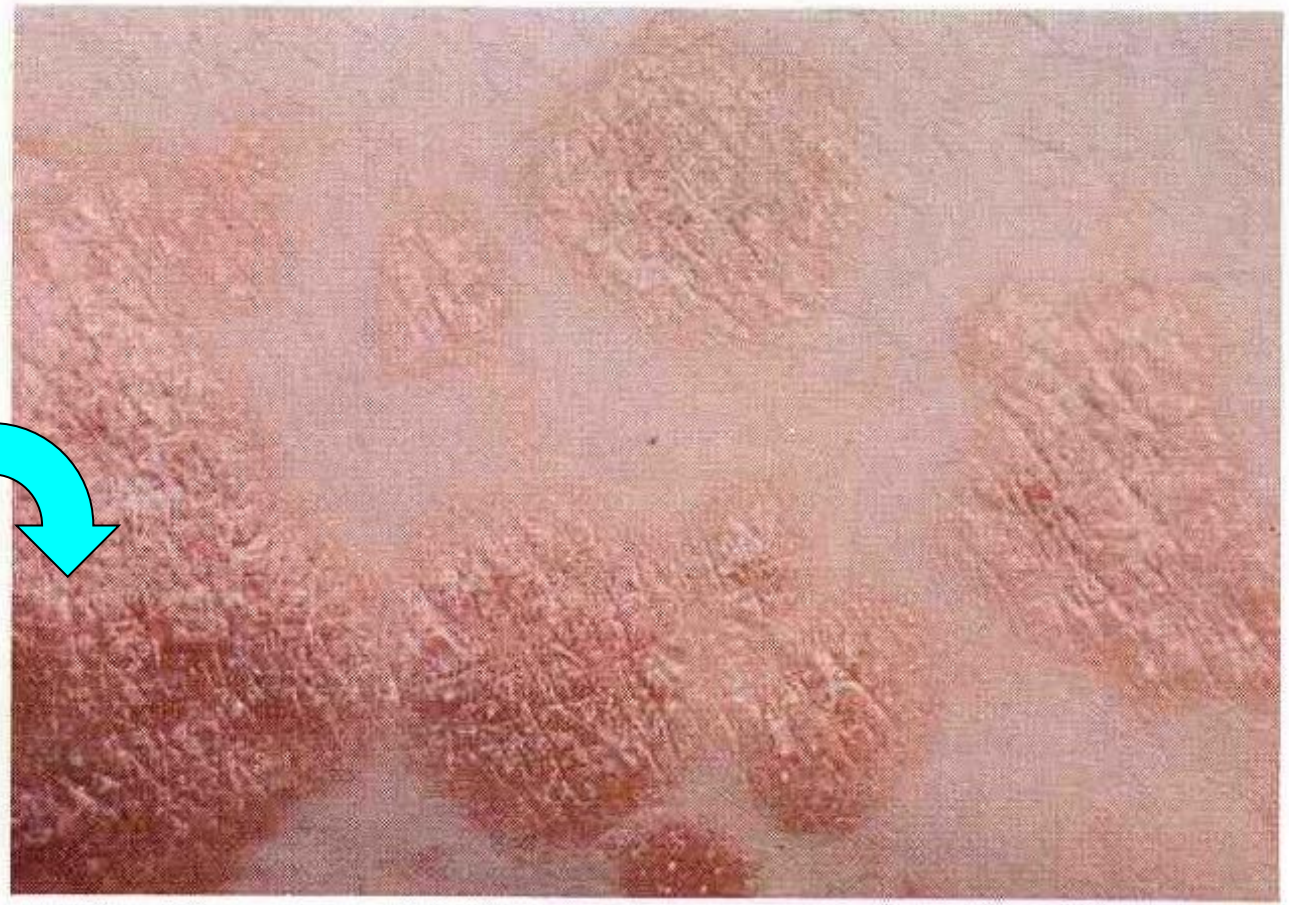
A, Typical plaques showing prominent parakeratotic scale focally infiltrated by neutrophils + marked acanthosis with uniform downward extension of the rete ridges.

B, Chronic plaques of psoriasis show **silvery-white scale** on the surface of **erythematous plaques**.





F14-12: **Lichen planus.** Polygonal**,** glistening , flat-topped pinkish papules, the surface of which contain characteristic whitish lines **(Wickham's striae).** ►Itchy chronic papules (lasting months to years) typically distributed over flexor aspects of the wrists, forearms & legs.

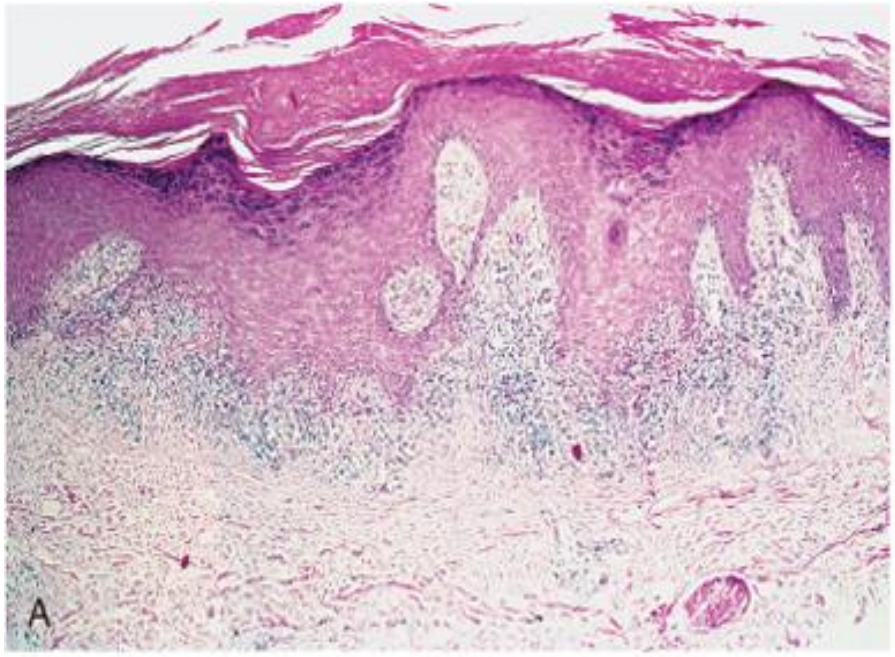


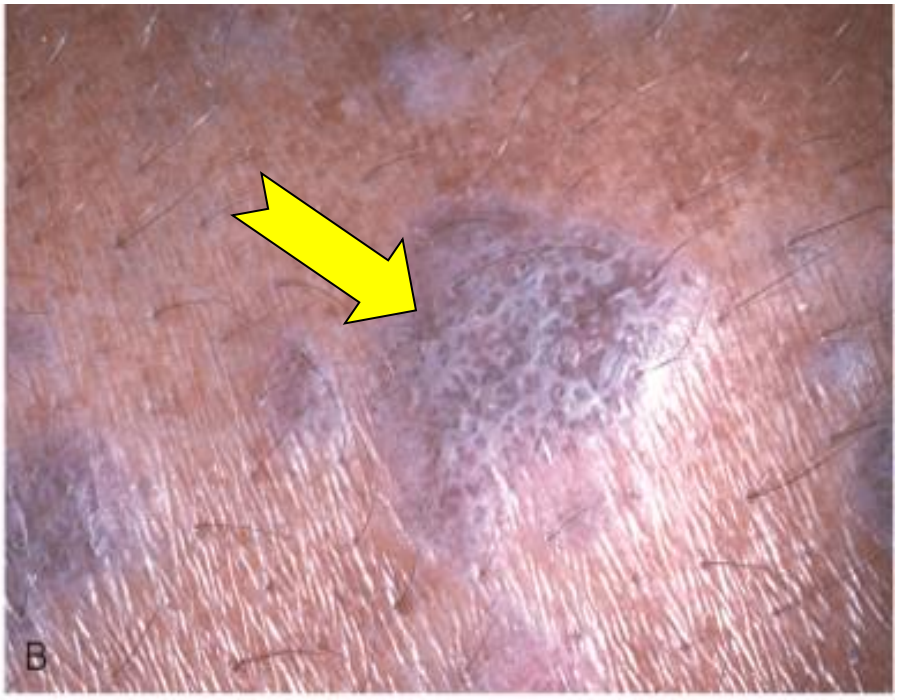
14.12 Lichen planus

F 22-4: **Lichen planus.**

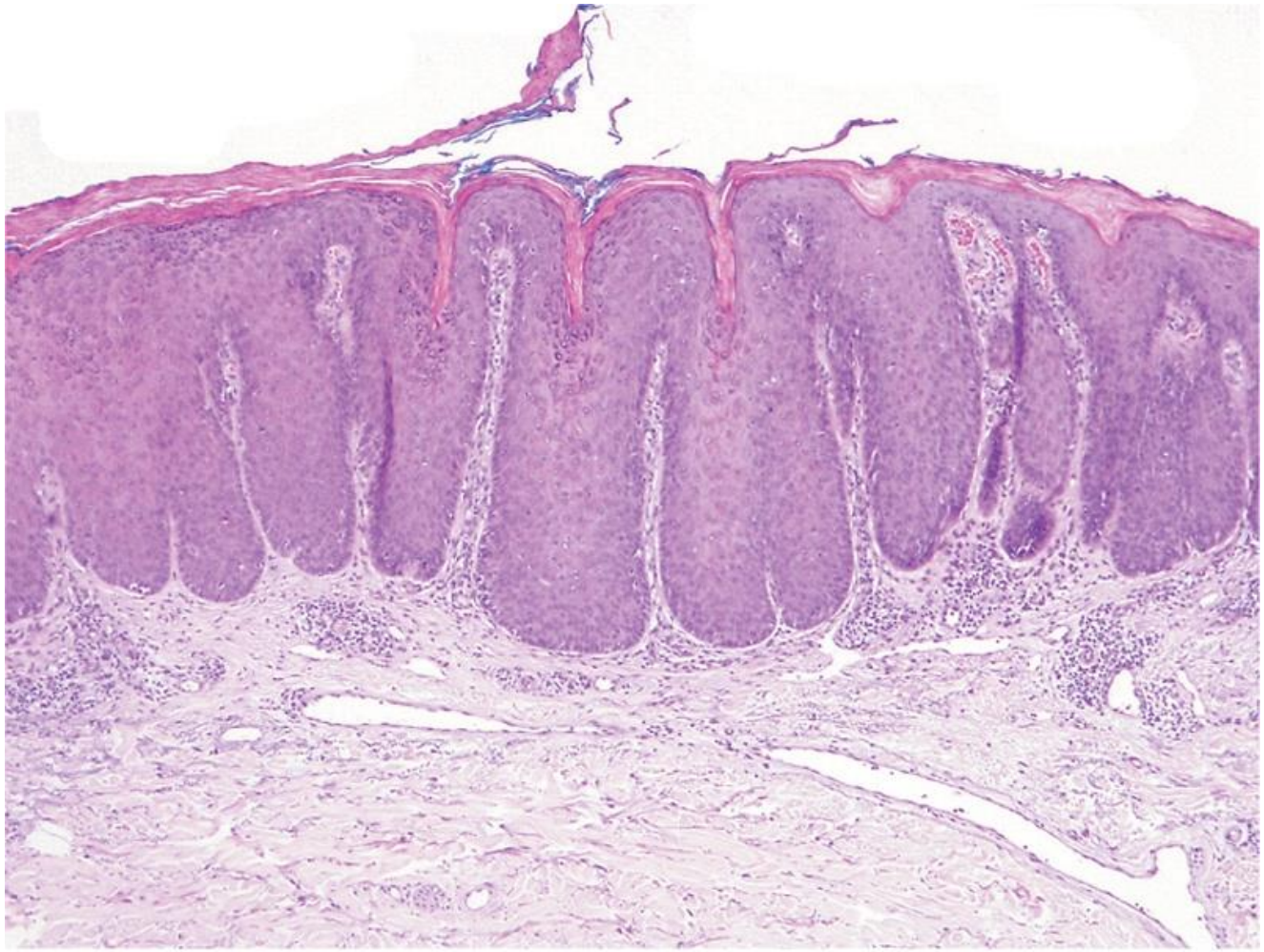
A, There is **interface dermatitis**, with a thick & dens band of lymphocytes along the dermoepidermal junction. The rete ridges show pointed “saw- tooth,” architecture. There is also **acanthosis + hypergranulosis + & hyperkeratosis.**

B, Multiple flat-topped papules with white, lacey or netlike markings **(Wickham striae)** are characteristic.

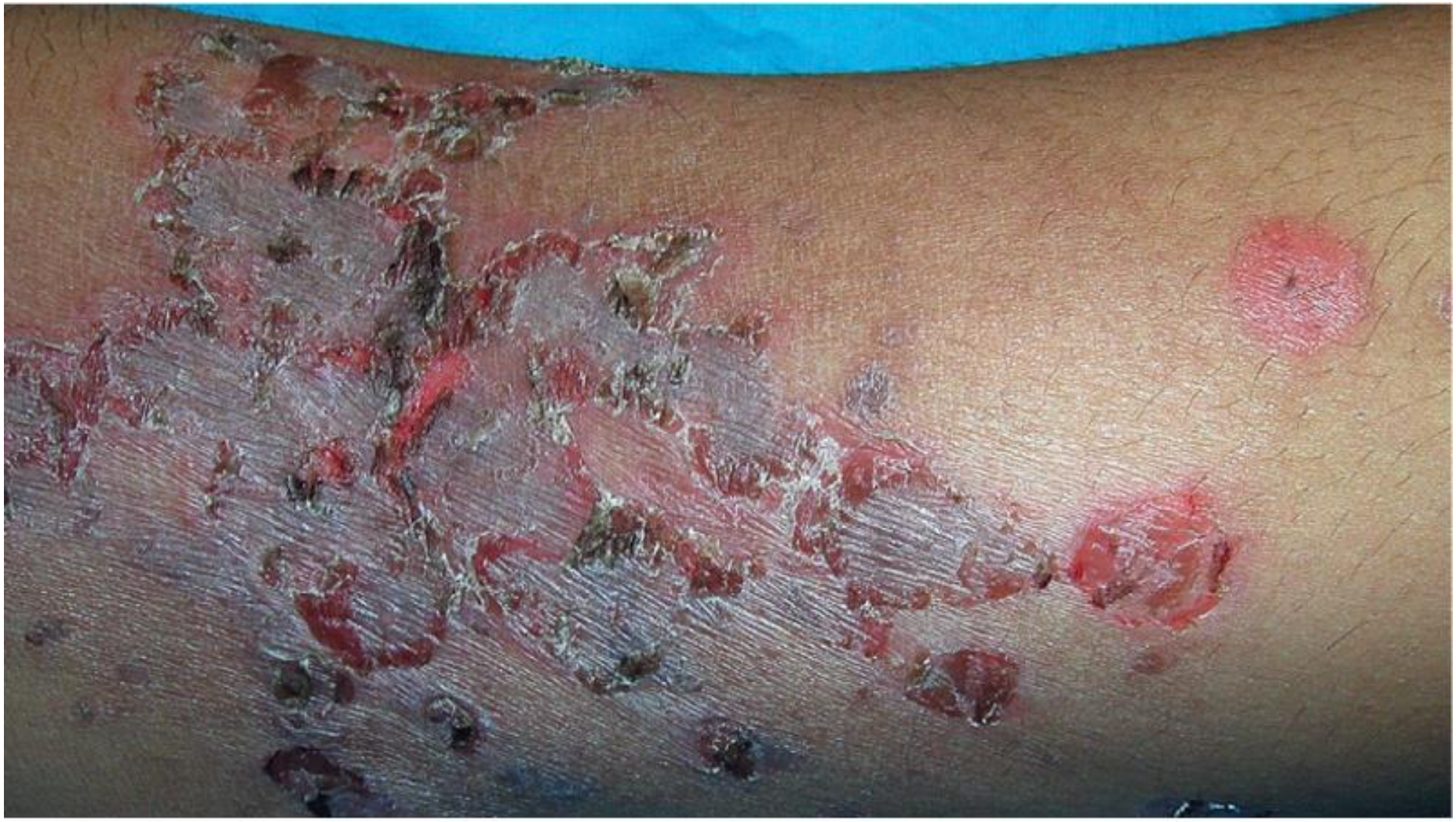




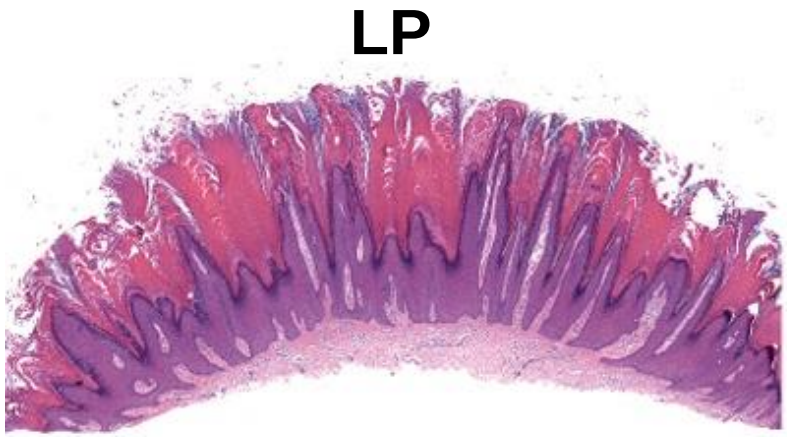
F 22-5: **Lichen simplex chronics**. **Acanthosis (with elongation of the rete ridges)**+ **hypergranulosis**+ **hyperkeratosis**+ superficial dermal fibrosis & vascular ectasia. There is **no cytological atypia** thus distinguishing it form squamous cell carcinoma.

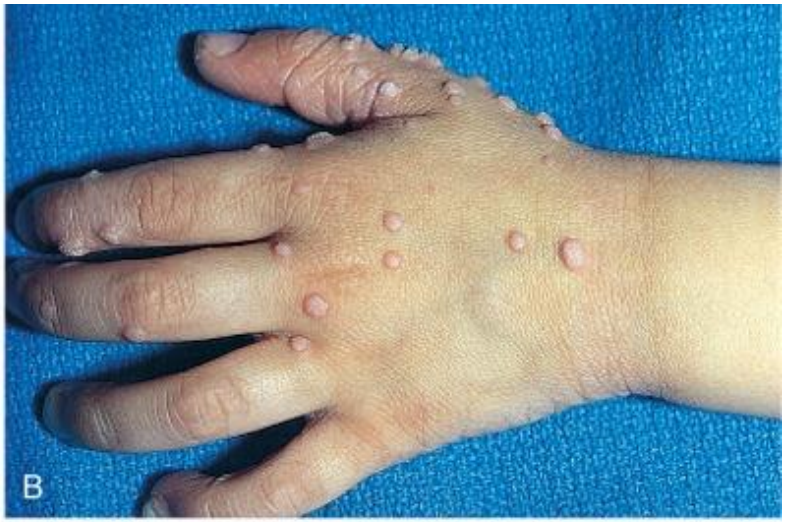


F 22-6: **Microbial infections**. This child's arm is involved by **impetigo** resulting from a superficial bacterial infection.



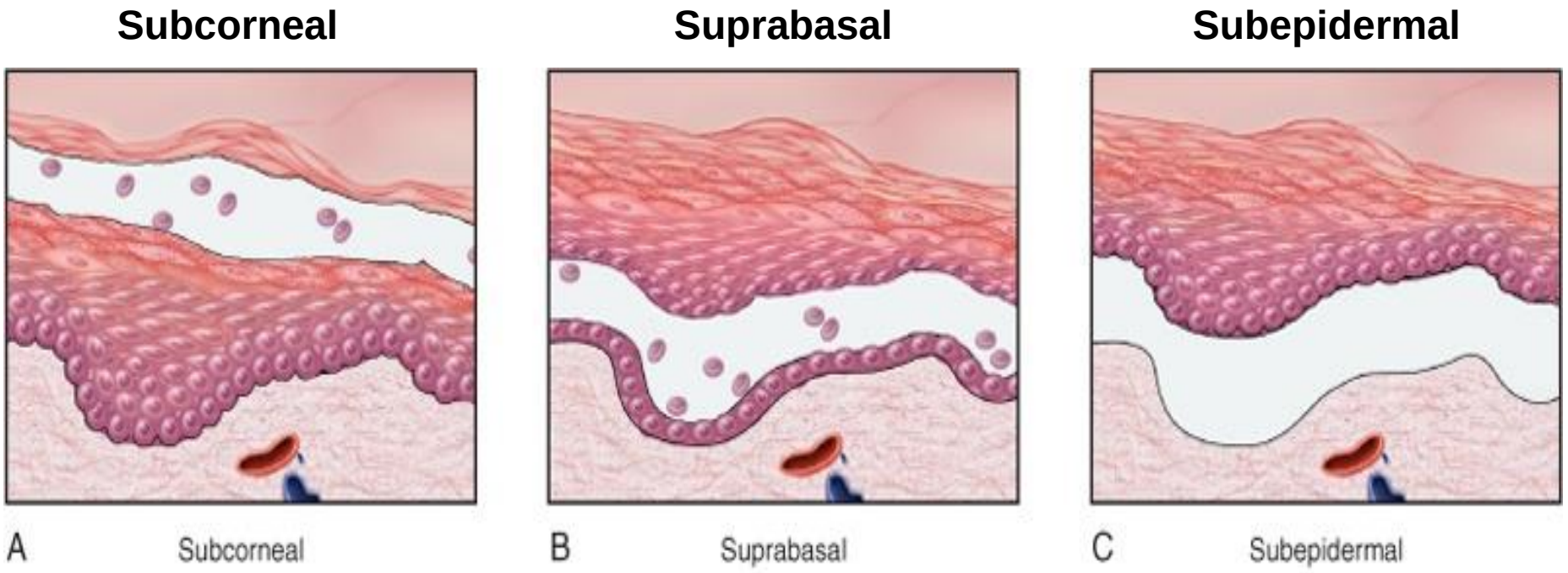
F 22-7: **Verruca vulgaris**. **A, LP symmetrical** papillary epidermal proliferation radiating like the points of a crown (top). **HP** shows nuclear pallor, prominent keratohyalin granules of HPV infection

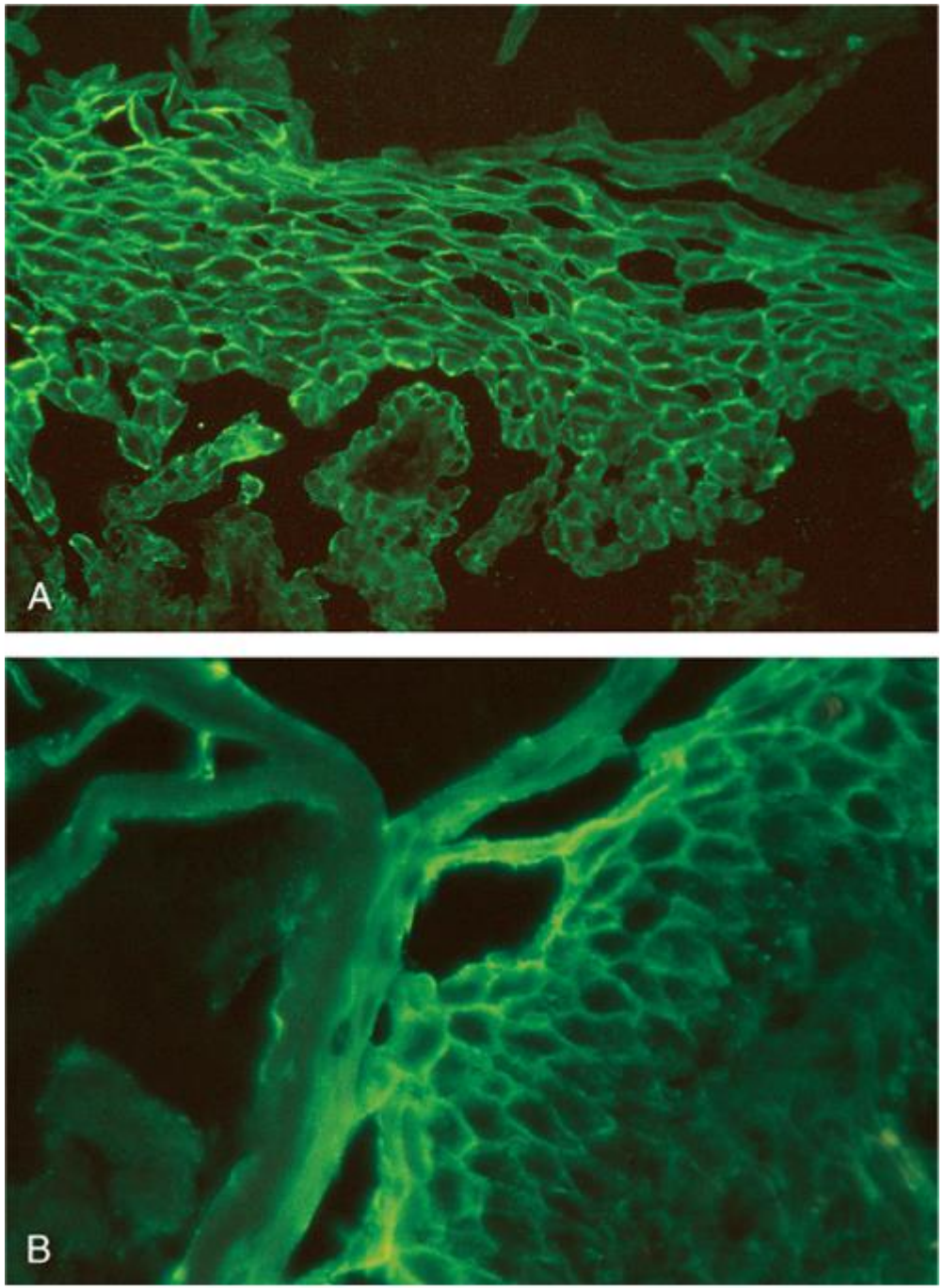




B, Multiple papules with rough, pebble-like surfaces at infection sites.

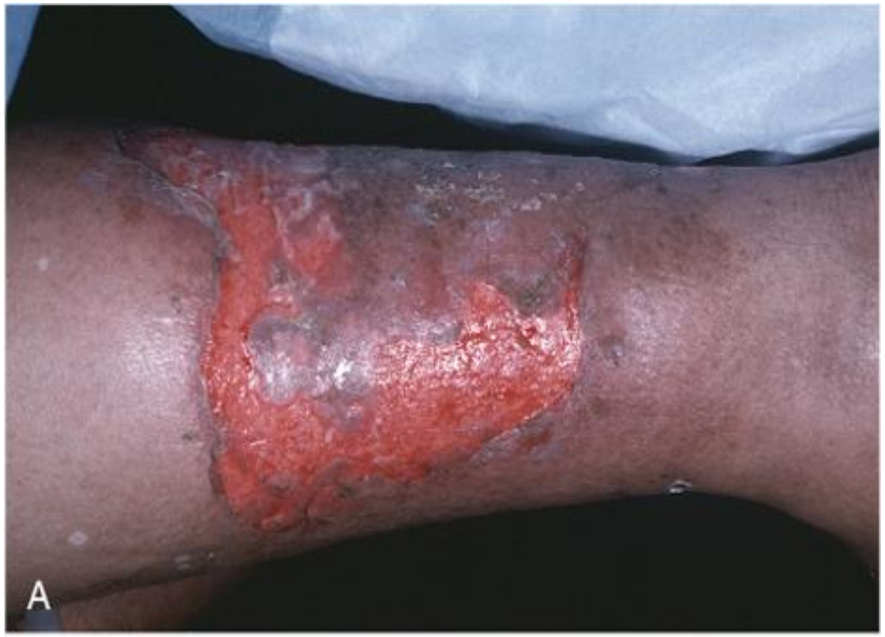
F 22-8: **Levels of blister formation**.
A, Subcorneal (as in pemphigus foliaceus).
B, Suprabasal (as in pemphigus vulgaris).
C, Subepidermal (as in bullous pemphigoid or dermatitis herpetiformis).

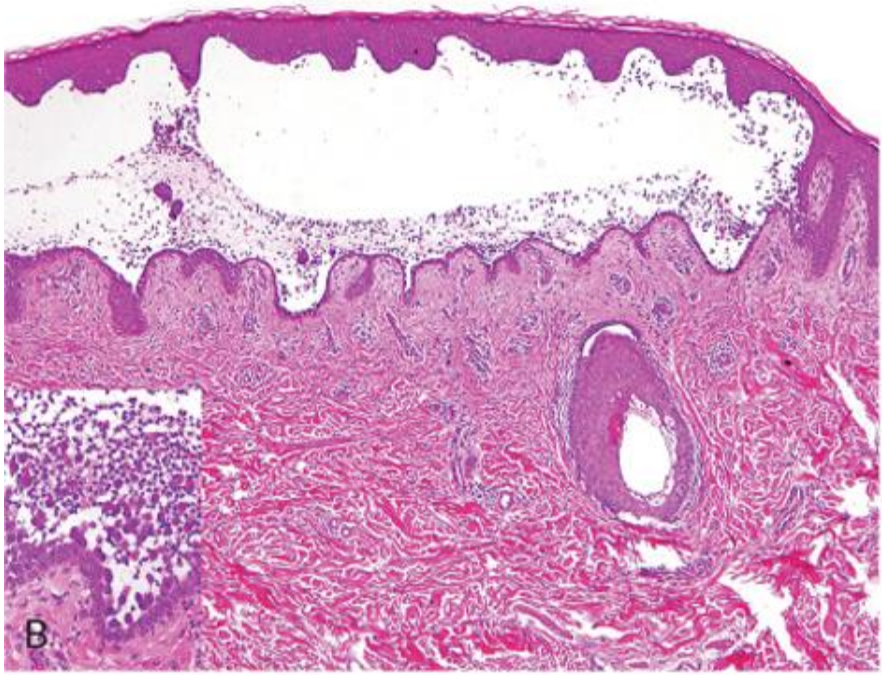




F 22-9: **A, Pemphigus vulgaris.**
There is **uniform** deposition of immunoglobulin & complement (green) along the cell membranes of keratinocytes, producing a characteristic **“fishnet”** appearance.

B, The immunoglobulin deposits are more superficial in **pemphigus foliaceus.**

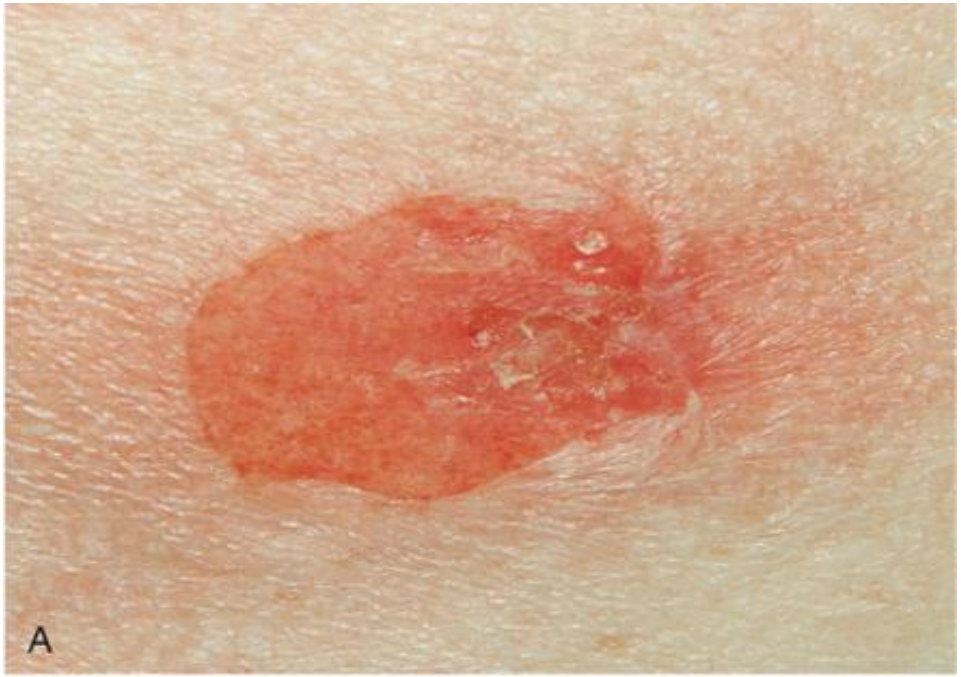


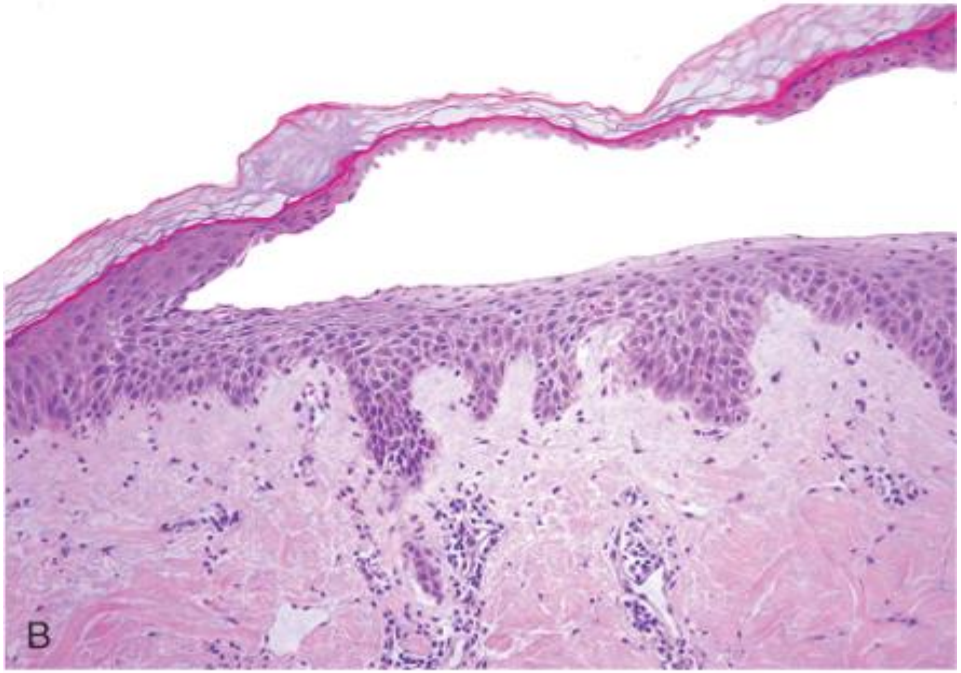


F 22-10: **Pemphigus vulgaris. A,** Leg eroded area representing confluent blisters with loss of their roofs.

B, Suprabasal acantholysis results in a suprabasal (intraepidermal) blister, containing rounded kertatinocytes that are separated from their neighbors.

▲Initially, a single row of basal cells is present on the floor of the blister, but these cells can divide & repopulate this area with keratinocytes, as seen in this case (inset, at lower left)

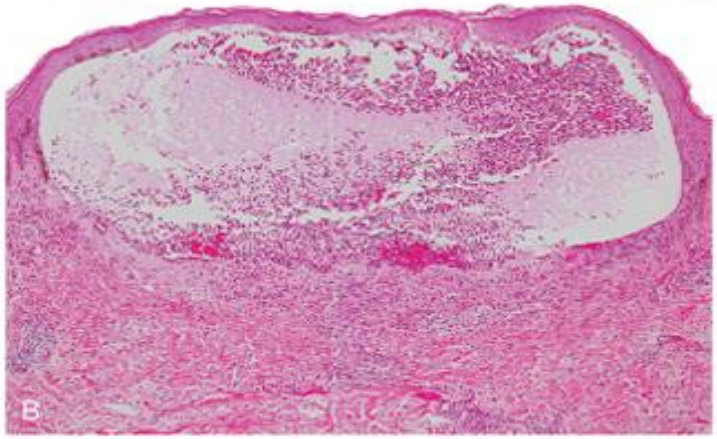


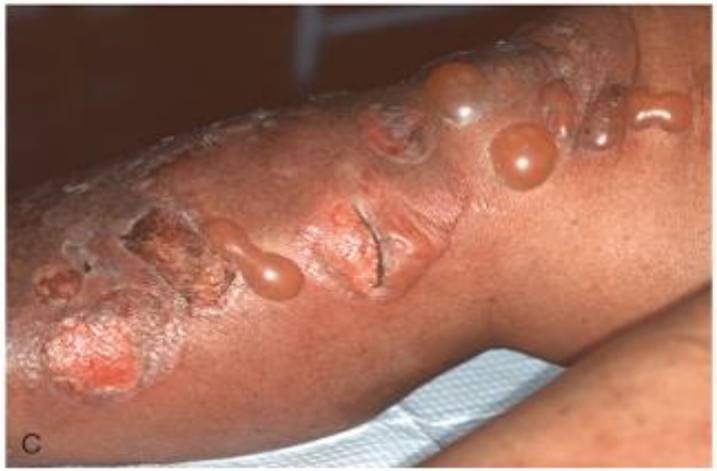


F 22-11: **Pemphigus foliaceus.**

A, Blisters are much less erosive than those seen in pemphigus vulgaris, since the level of the blisters (subcorneal) is more superficial.

B, Subcorneal separation of the epithelium is seen.





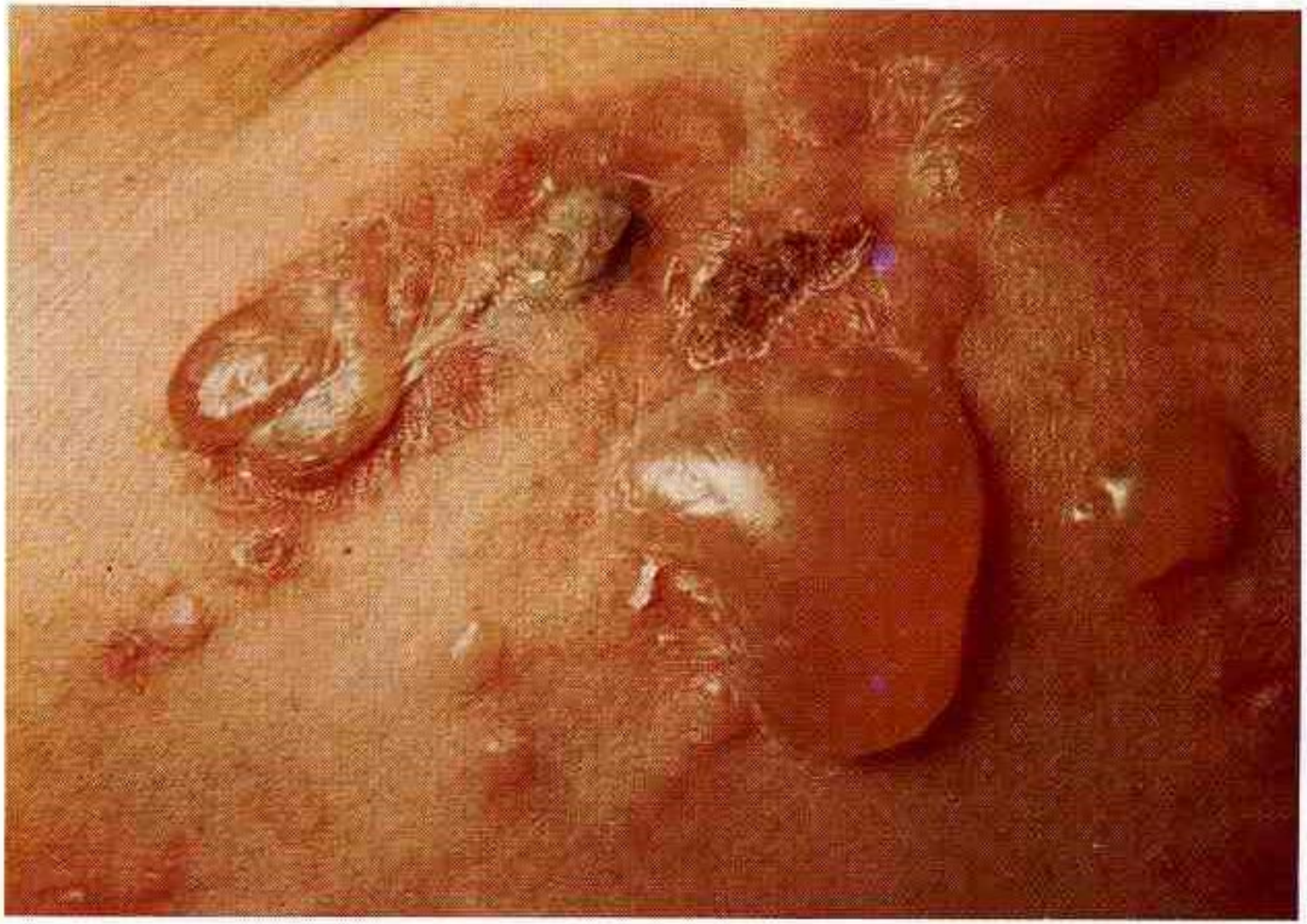
F22-12 **Bullous pemphigoid**

A, Both IgG Ab & complement can be detected by direct immunofluorescence as a **liner band** outlining the subepidermal basement membrane zone.

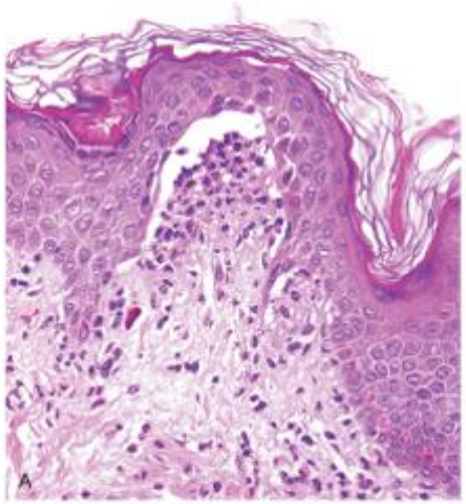
B, The **subepidermal** vesicle has an inflammatory infiltrate rich in eosinophils.

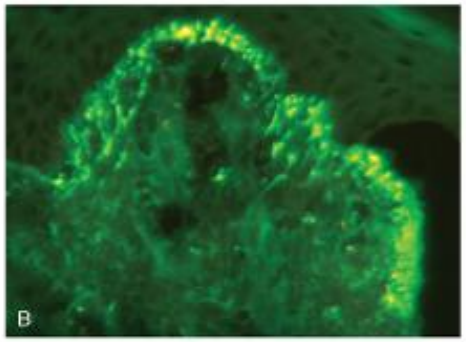
C, Tense, fluid-filled blisters result from vacuolization of the basal layer, producing subepidermal blisters.

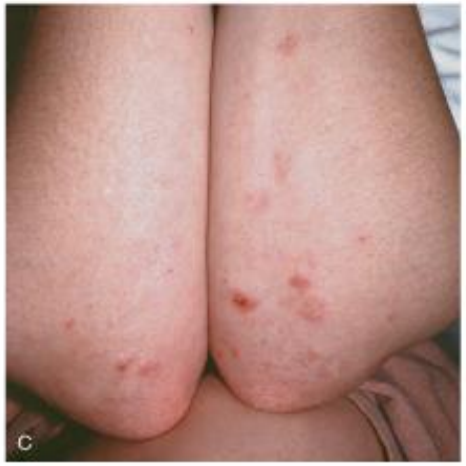
F14-11: **Bullous pemphigoid.** Several swollen vesicles (bullae) & their content of clear yellow fluid



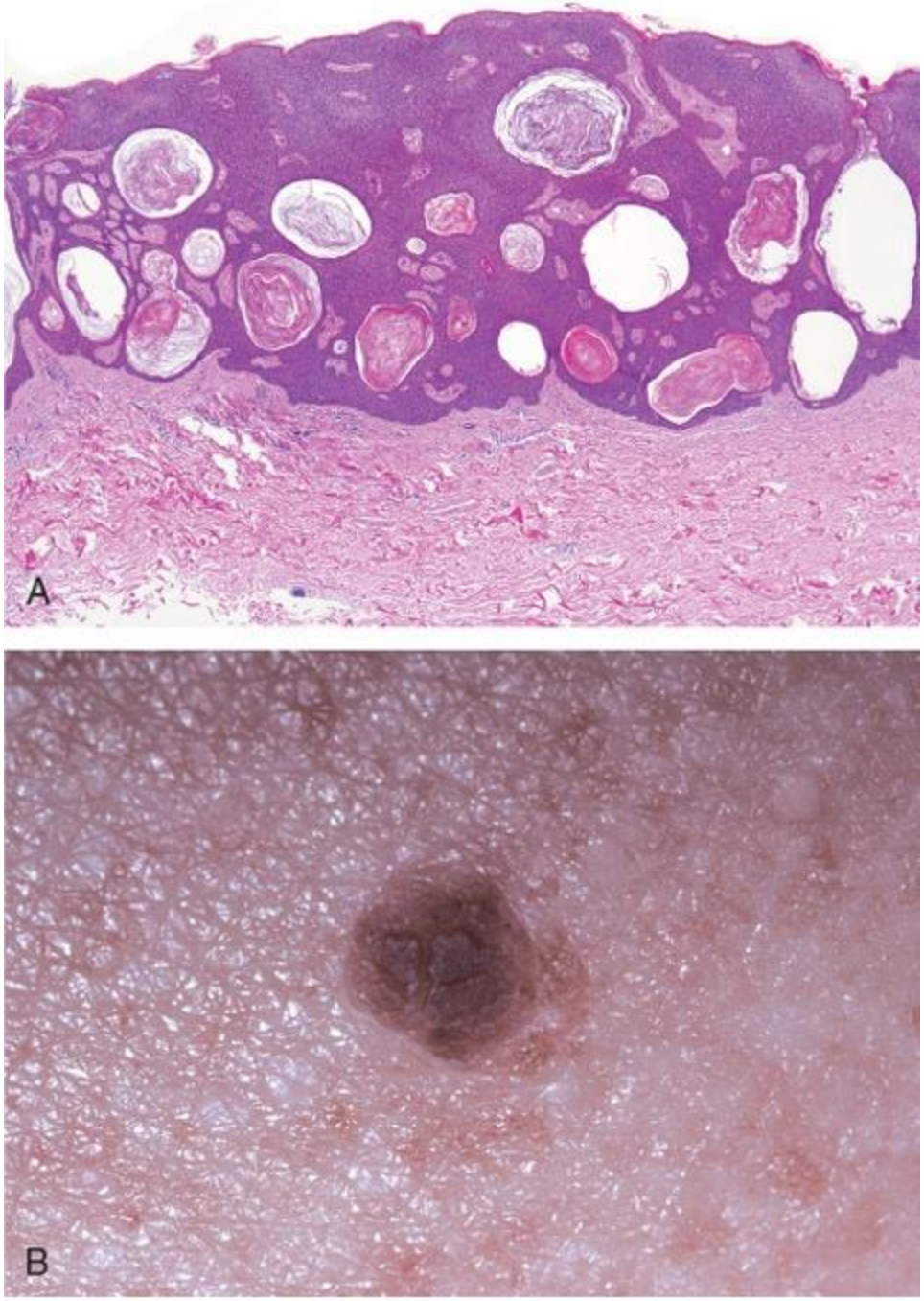
14.11 Bullous pemphigoid







F 22-13: **Dermatitis herpetiformis.**
A, The blisters are associated with basal cell layer injury initially caused by accumulation of neutrophils (microabscesses) at the tips of dermal papillae.
B, Selective & characteristic deposition of IgA auto-Ab at the tips of dermal papillae.
C, Elbows & arms grouped lesions, consist of intact & eroded (usually scratched) erythematous blisters.

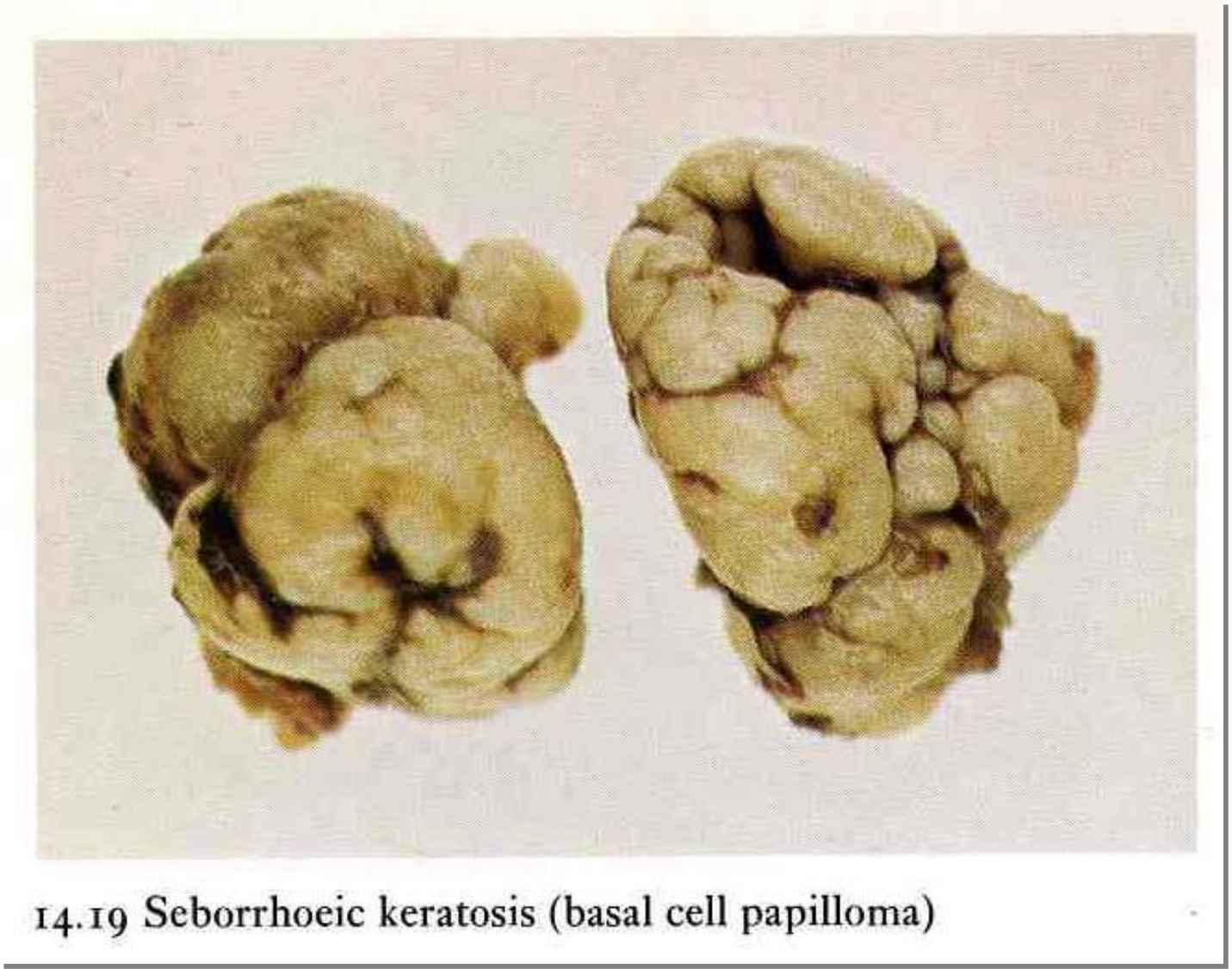


F 22-14: **Seborrheic keratosis (Basal cell papilloma).**

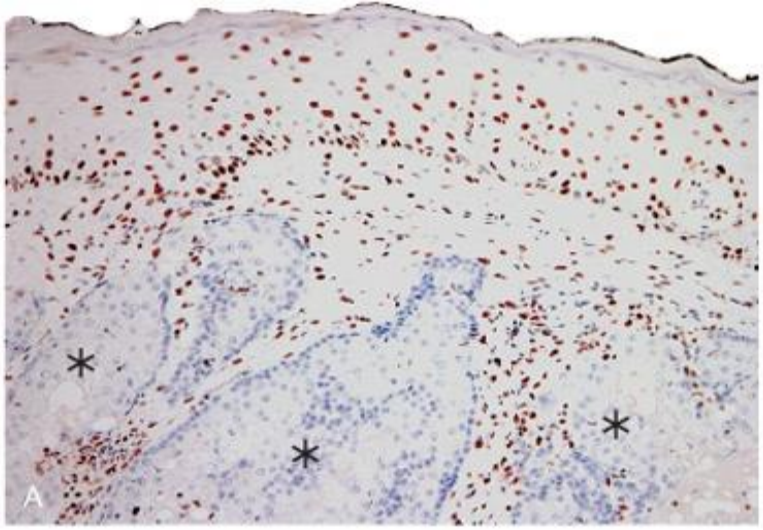
A, Tumor consists of proliferating, benign basaloid keratinocytes with a tendency to form keratin microcysts (horn cysts).

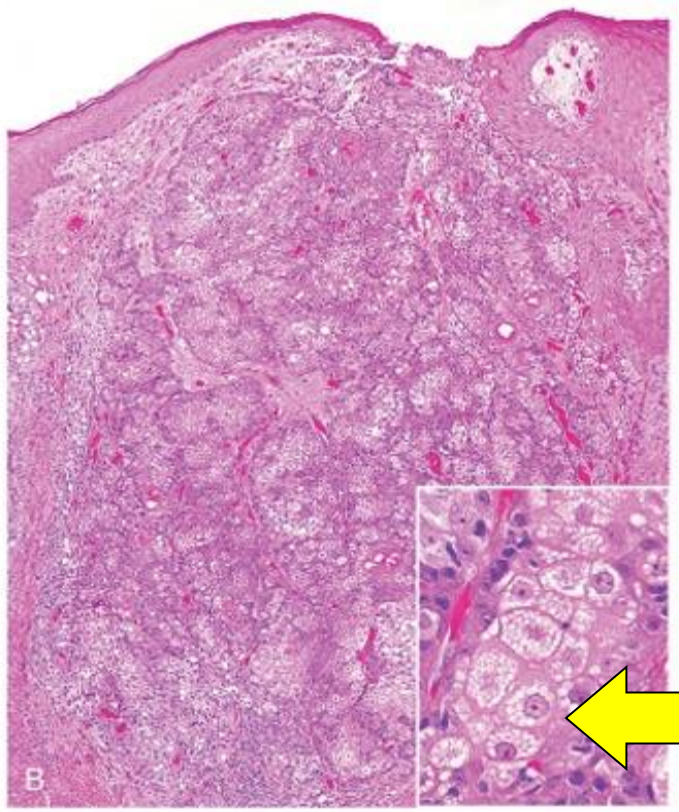
B, This roughen, brown, waxy lesion almost appears to be “stuck on the skin.

F14-19: **Seborrheic keratosis (Basal cell papilloma)**
A bisected, grey-brown pigmented & lobulated 1.5cm in Ø, sharply- defined papillomatous growth.



14.19 Seborrhoeic keratosis (basal cell papilloma)

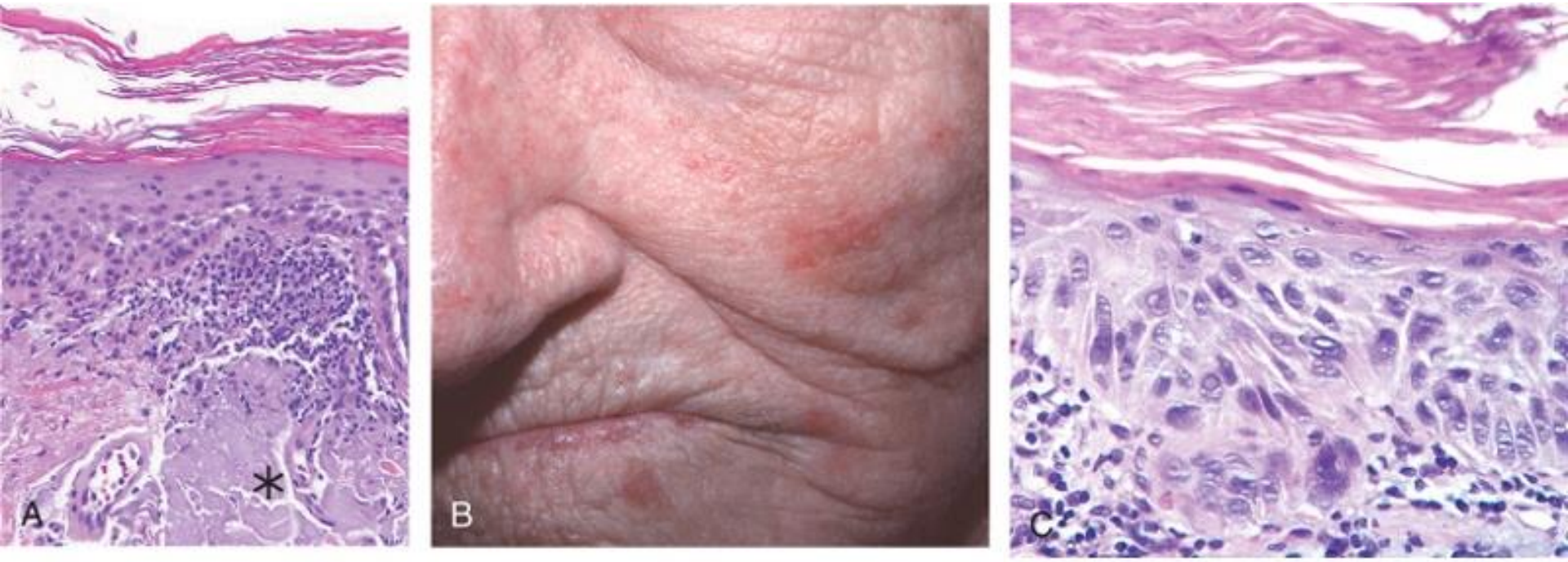




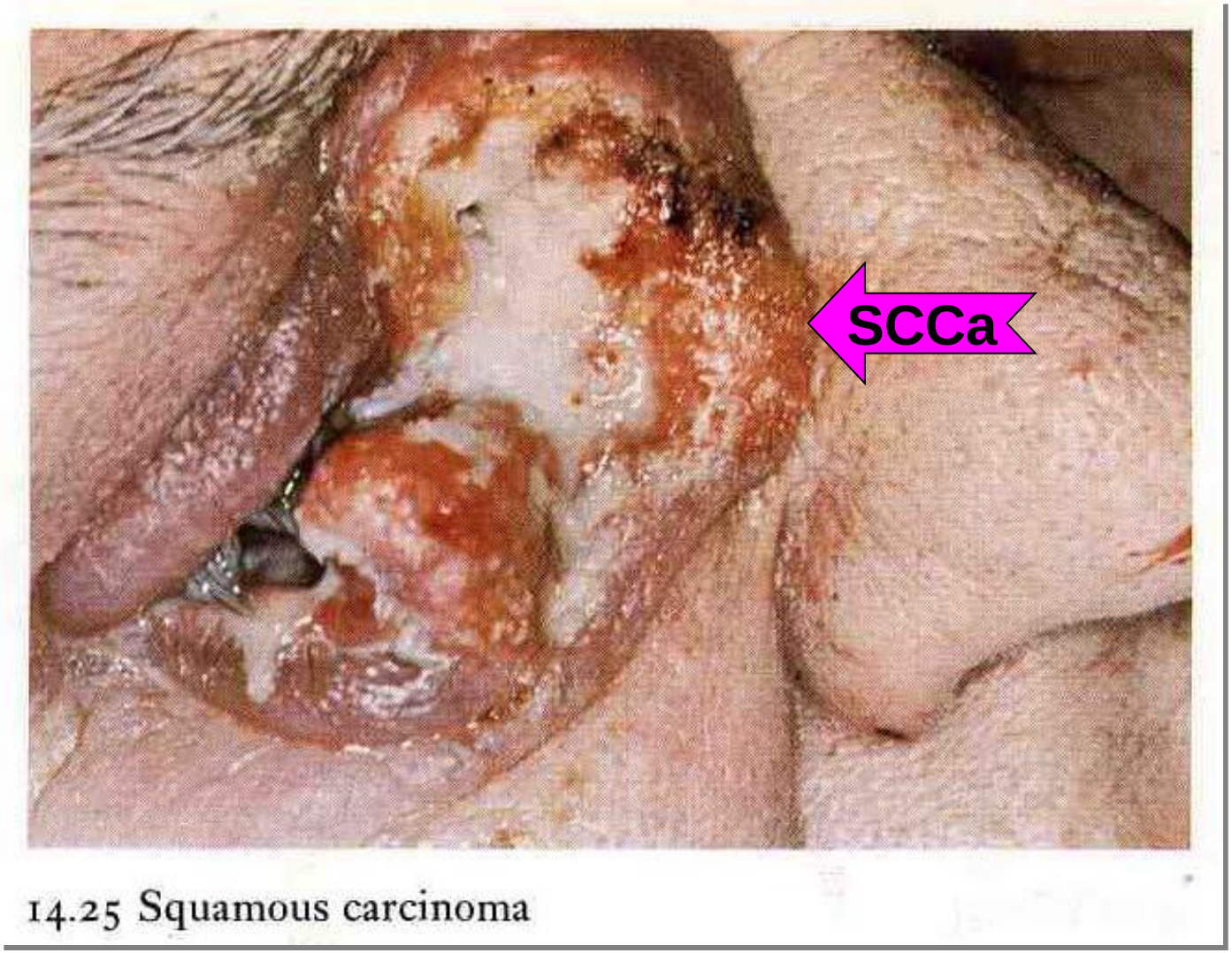
F 22-15: **Sebaceous adenoma.**
A, Immunohistochemistry reveals loss **(✱)** of nuclear expression of the DNA mismatch repair protein **MSH2;** but **retention** in normal epidermis & lymphocytes, indicating probable association with the Muir-Torre syndrome

B, HP: lobular proliferation of sebocytes with ↑ peripheral basaloid cells & more mature sebocytes in the central portion. Characteristic of sebocytes is vacuolated cytoplasm (inset)

F 22-16: **Actinic keratosis.**
A, Basal cell layer atypia (dyskeratosis) associated with marked hyperkeratosis, parakeratosis, & dermal solar elastosis (✳)
B, Lesions on the cheek, nose, & chin of this woman forming zones of redness or sandpaper-like keratinization.
C, More advanced lesions show **full-thickness atypia**, qualifying as **carcinoma in situ.**

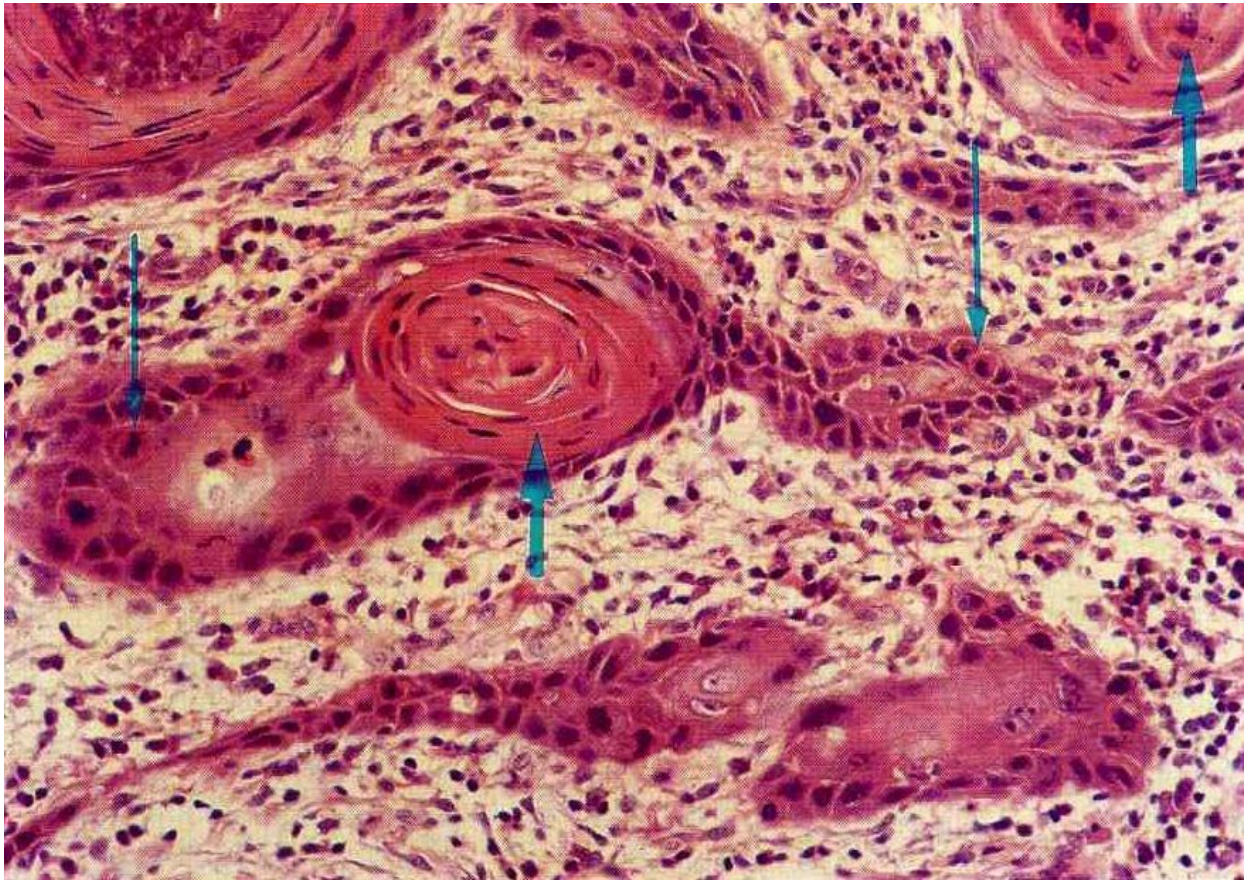


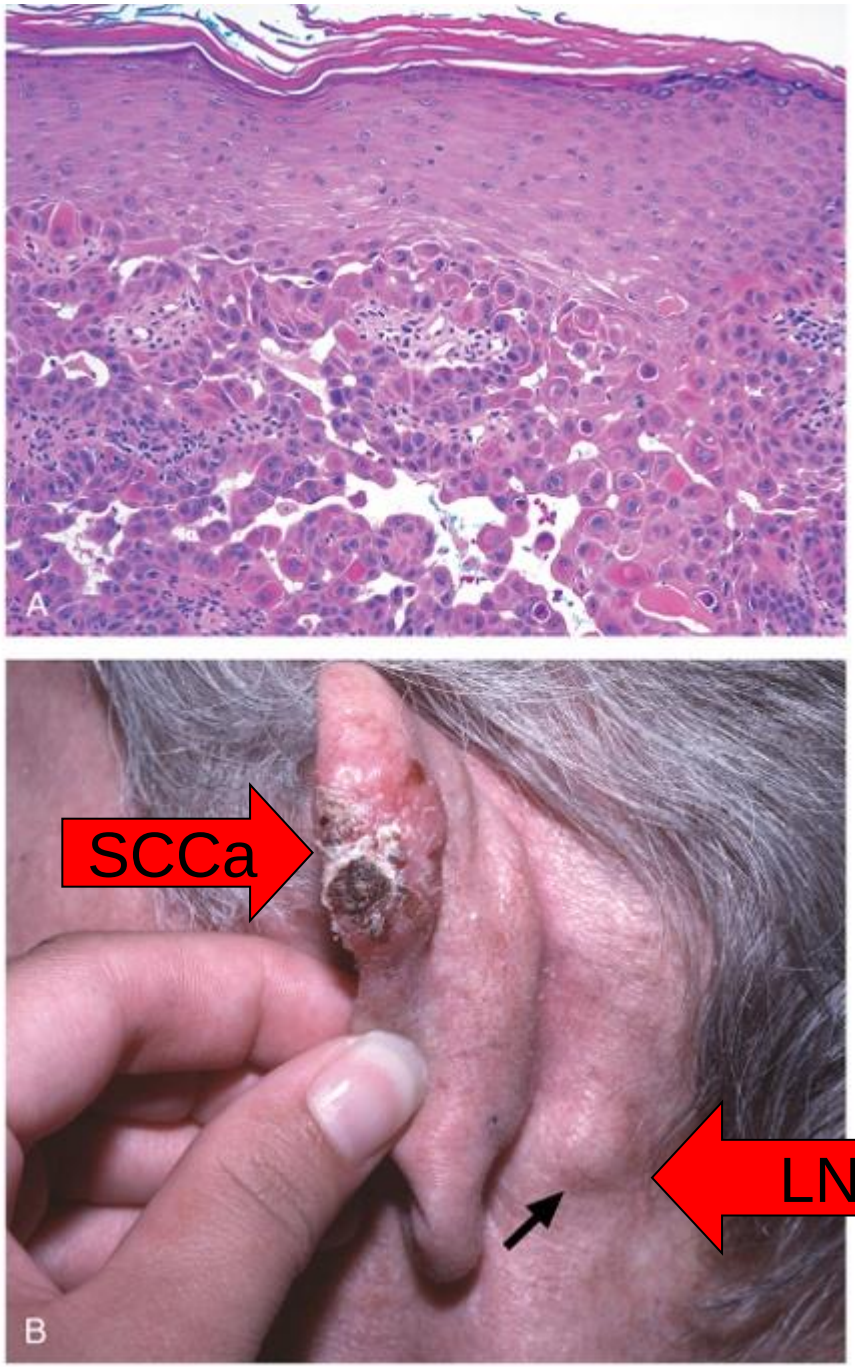
F14-25: **Squamous cell carcinoma: Skin.**
☹ Advanced SCCa of the inner canthus of the right eye.
The large papillary growth forms elevated mass, with areas of ulceration covered with a thick creamy-white slough.



14.25 Squamous carcinoma

◙ 14-50: **Squamous cell carcinoma.** Malignant squamous epithelial cells forming **long strands**, containing
(1) foci of laminated sheets of deeply eosinophilic keratinized epithelial cells (thick arrows, **‘cell nests’ or ‘epithelial pearls**’.
(2) At the periphery of the strands, there are larger squamous cells with large hyperchromatic & pleomorphic nuclei & numerous mitotic figures (thin arrows).

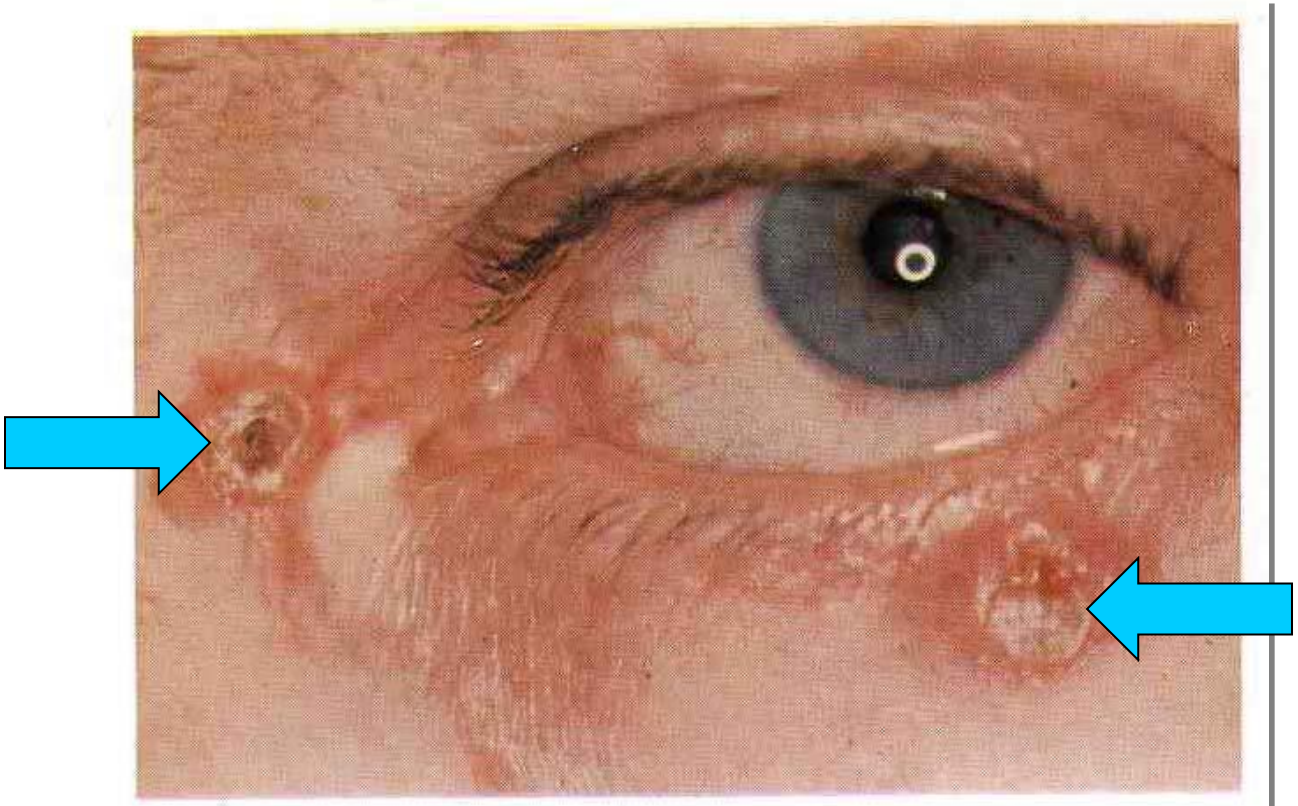




F 22-17: **Invasive squamous cell carcinoma.**
A, The SCCa invades the dermis as irregular projections of atypical squamous epithelium; this particular case is acantholytic (i.e., the squamous cells are poorly cohesive).
B, A nodular hyperkeratotic SCCa occurring on the ear, with **metastasis** to a postauricular lymph node (arrow).

F14-23: **Basal cell carcinoma:** Two BCCa of the left eye, in the inner canthus & on the lower eyelid. Both are smooth ulcerated nodules with characteristic **"rolled"** red border.

☼ **<u>BCCa is the most common human cancer in the world</u>**, is a locally invasive, slowly growing cancer, occurs predominantly in **fair- skinned people** (as in this patient), in the part of the face bounded by the hairline, ears & upper lip.

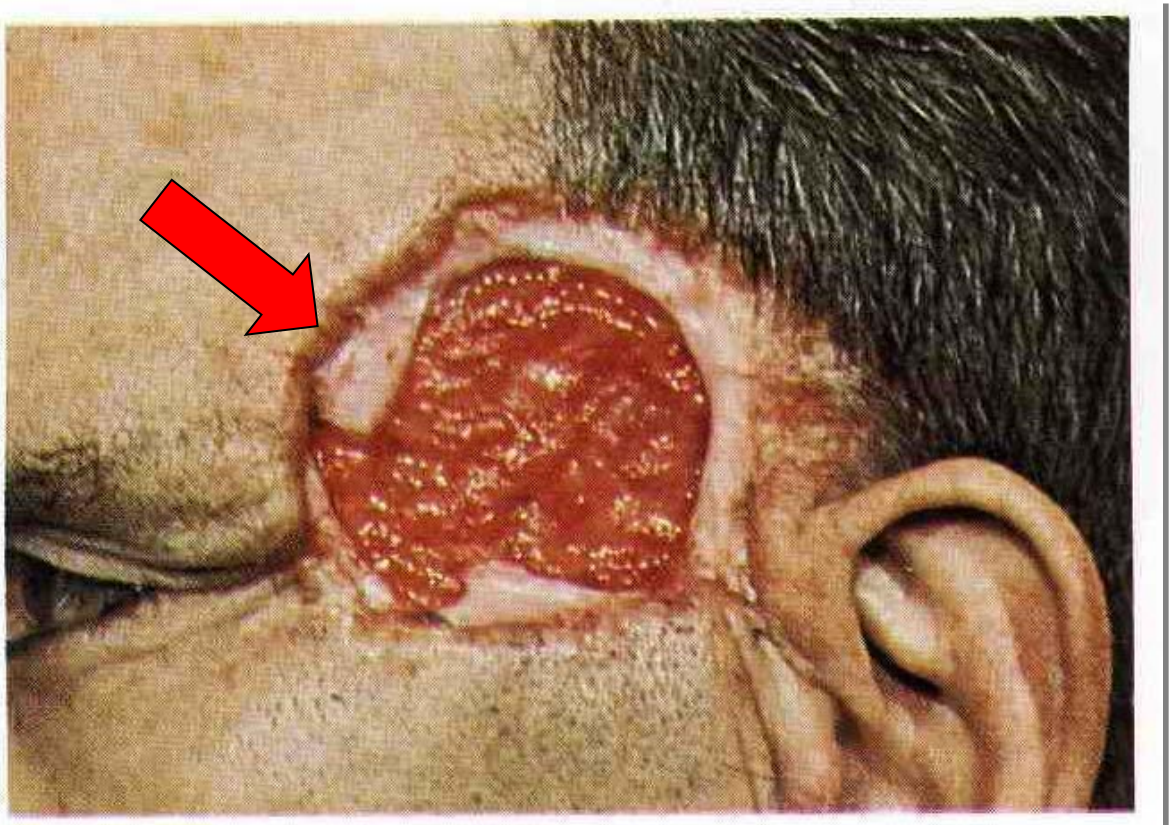


14.23 Basal cell carcinoma ('rodent ulcer')

F14-24: **Basal cell carcinoma ('Rodent ulcer')**

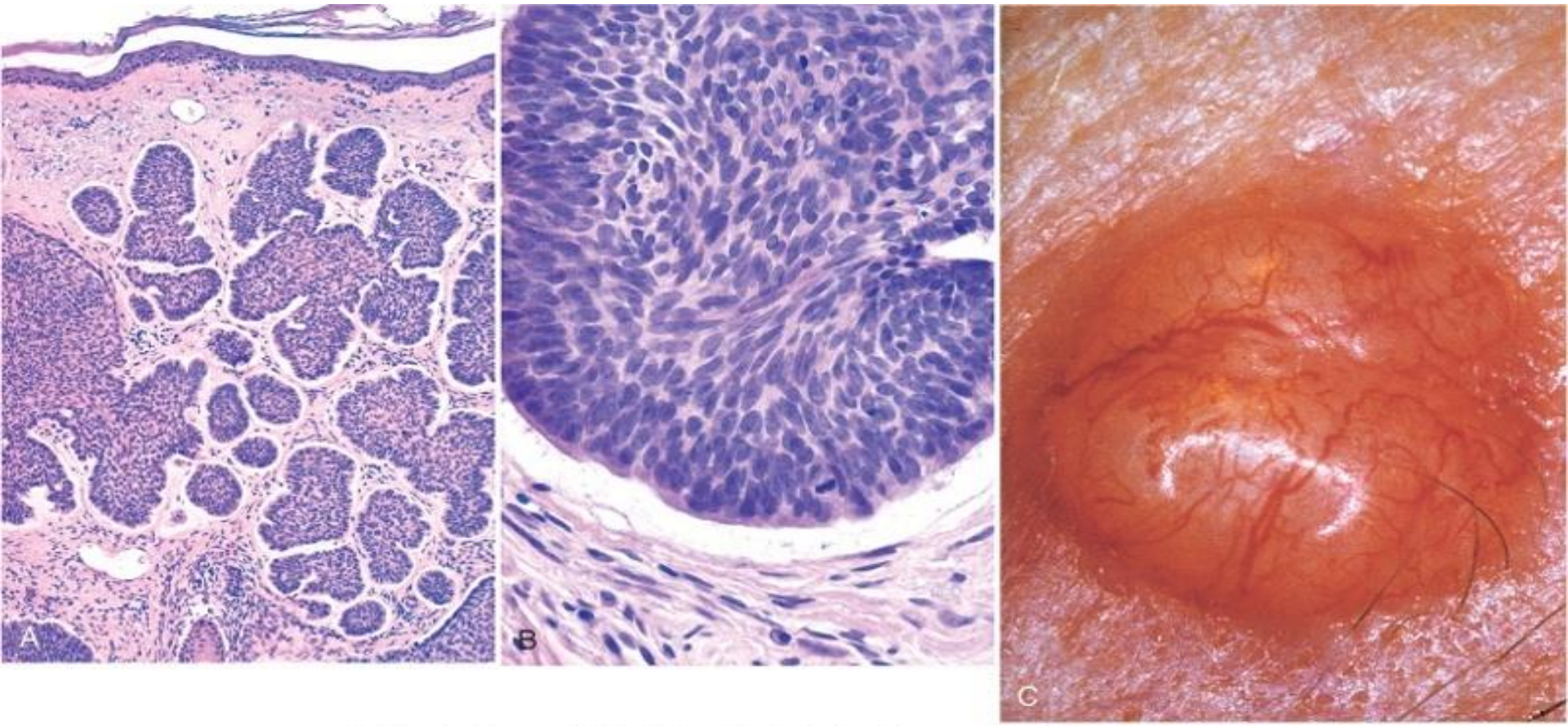
Advance, large ulcerating BCCa of the left temporal region, with bright red granular base & a smooth, white, rolled border.

☼This is the cicatricial type of BCCa which is characterized by:
(1) superficial peripheral spread (arrow) with ulceration &
(2) subsequent central scarring (so-called **fire in the field**).

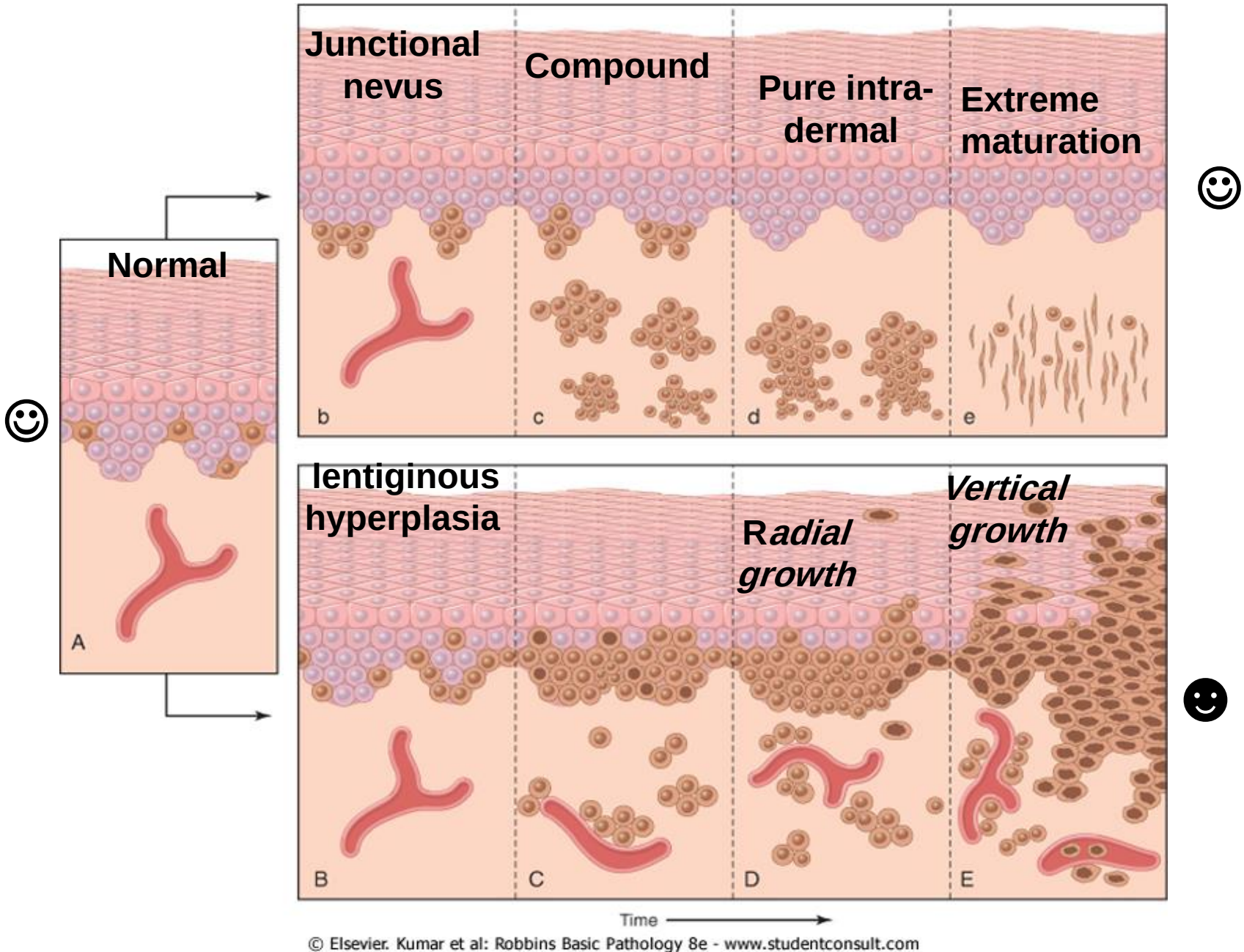


14.24 Basal cell carcinoma ('rodent ulcer')

F 22-18: **Basal cell carcinoma, in A,** formed by multiple nodules of **basaloid cells** infiltrating a fibrotic stroma.
B, Tumor cells (similar to basal cell layer cells of normal epithelium) with scant cytoplasm & small hyperchromatic nuclei& typical (1) **peripheral palisading** &(2) **clefting** from the stroma.
C, Pearly smooth papule with associated telangiectatic vessels.



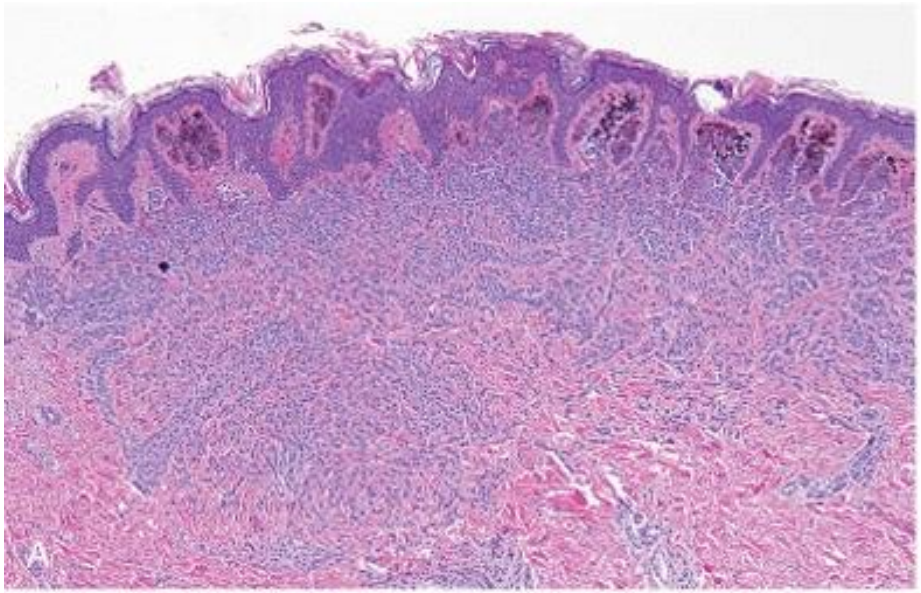
F 22-22: Development of melanocytic nevi & melanoma.

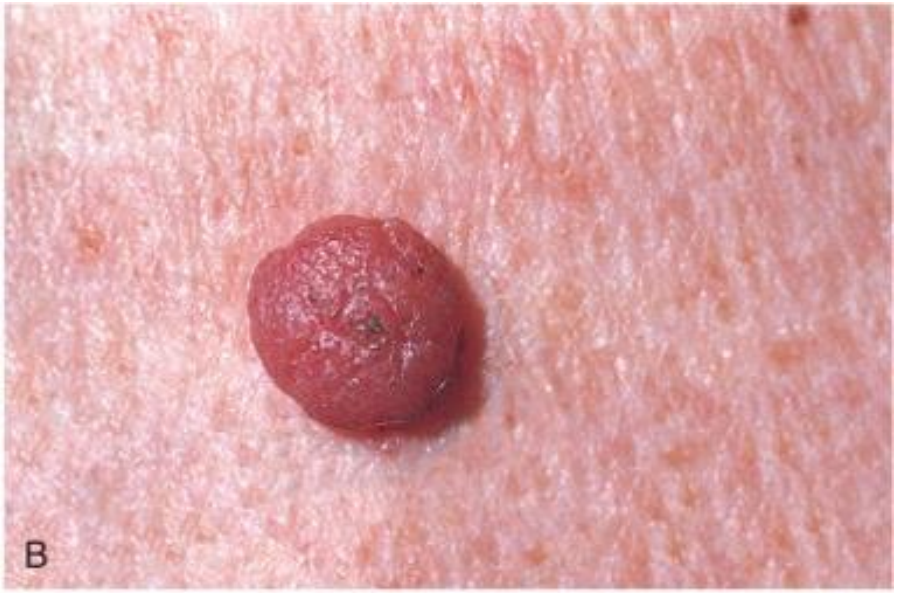


F 22-19: **Melanotyic (Nevocytic) nevous.**

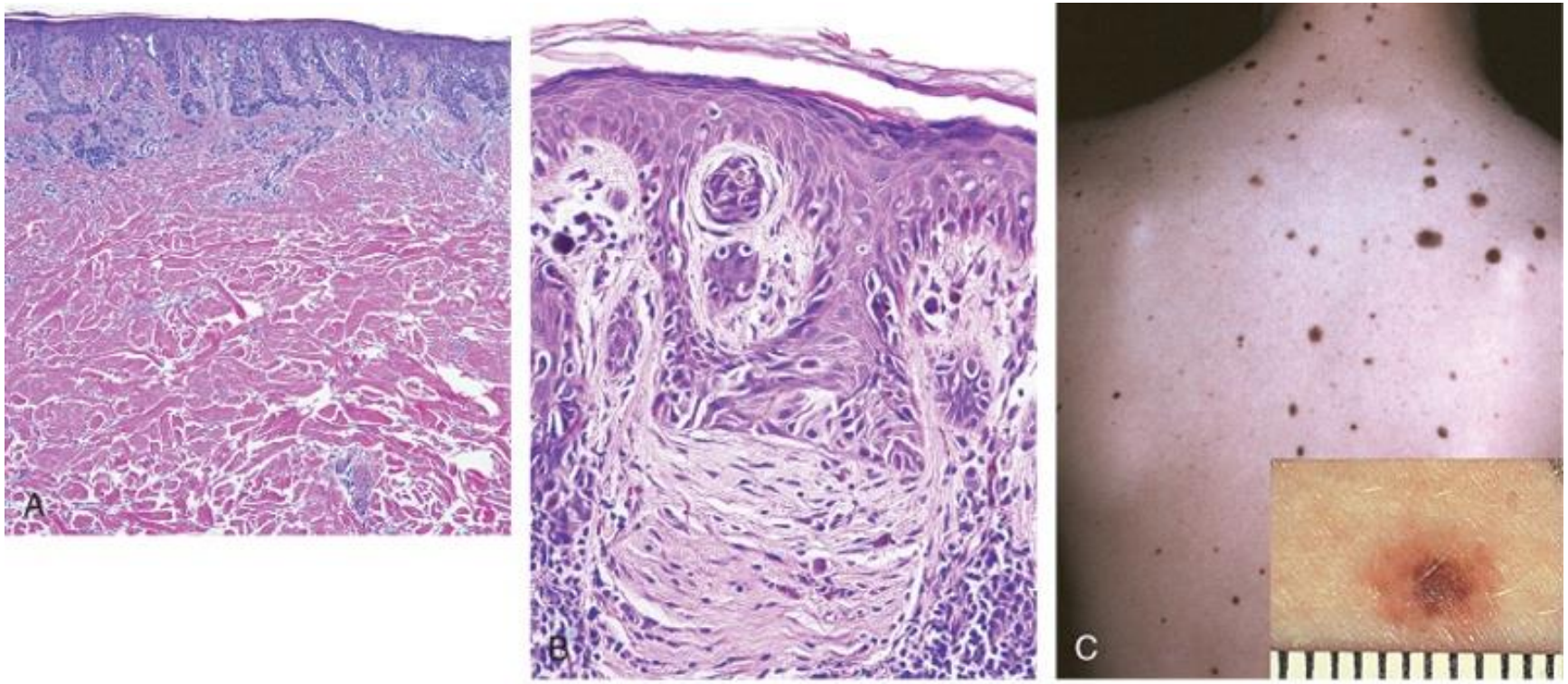
A, ◙ Pure dermal nevus, showing rounded melanocytes extending into the dermis with loss of pigmentation & cells becoming smaller & more separated with depth, sings of maturation.

B, Grossly, melanocytic nevi are relatively small, symmetric, & uniformly pigmented.

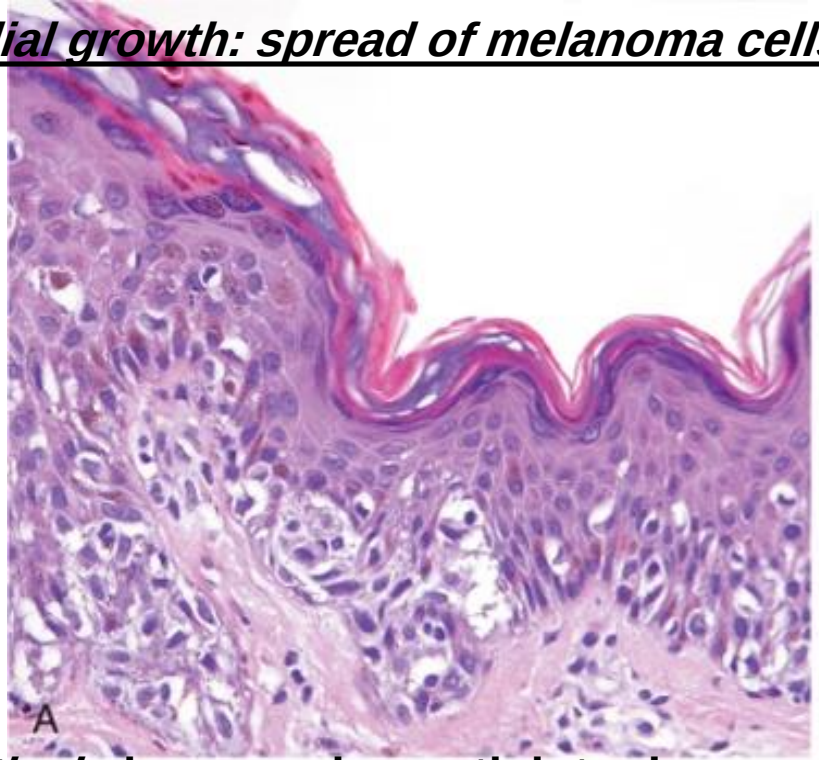


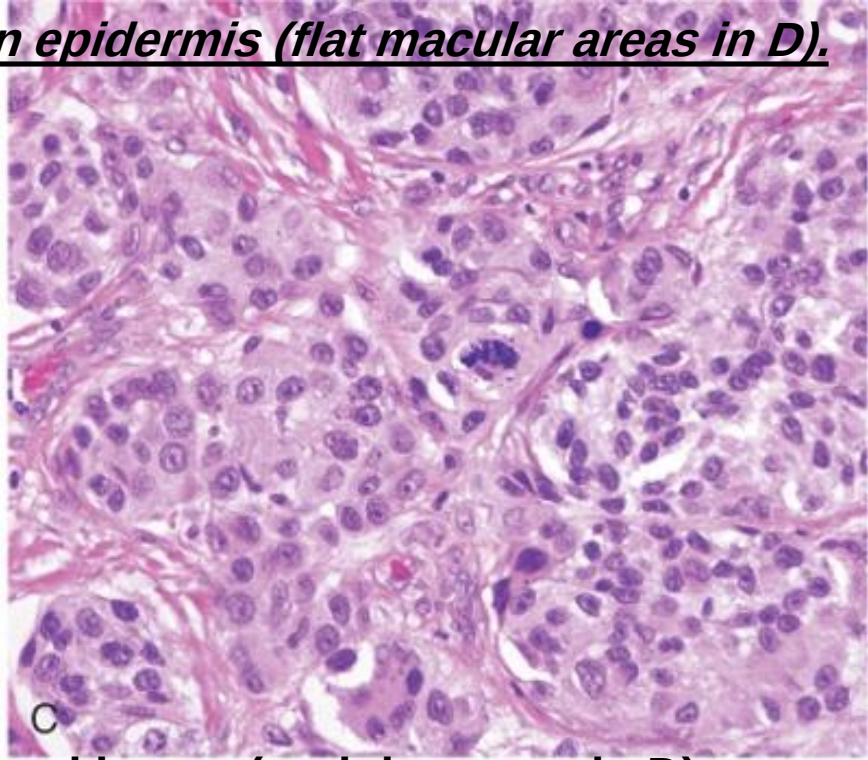


F 22-20: **A, <u>Compound dysplastic nevi</u>** = central **<u>dermal</u>** component, correlates (see C, inset) with the more pigmented & raised central zone + an asymmetric “shoulder” of **<u>junctional</u>** melanocytes (left) correlates with the less pigmented flat peripheral rim. **B, Atypical** nevous cells with irregular & hyperchromatic nuclei. **C, Back of dysplastic nevous syndrome individual** with numerous irregular nevi {>5mm in Ø with irregular borders & variable pigmentation (inset)}.

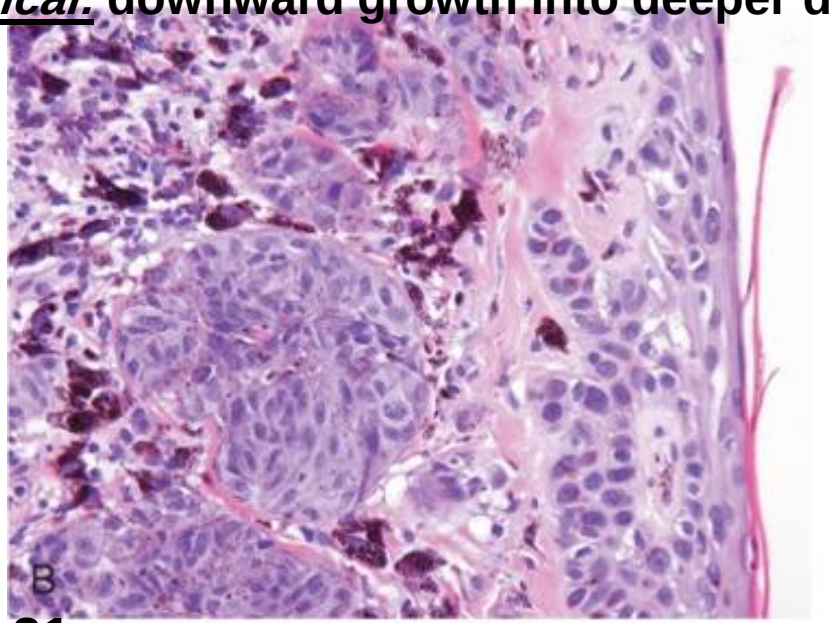


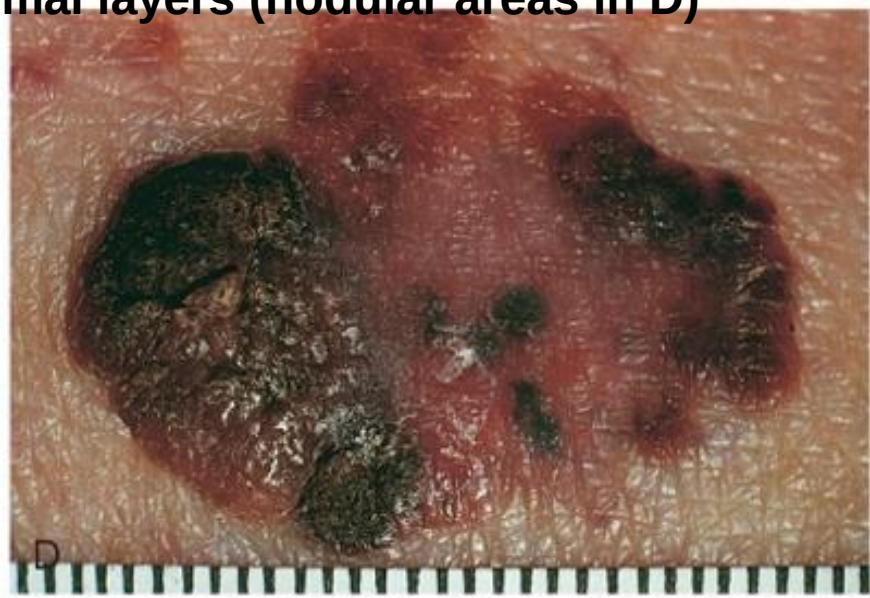
A, R*adial growth: spread of melanoma cells in epidermis (flat macular areas in D).*





B, Vertical: **downward growth into deeper dermal layers (nodular areas in D)**

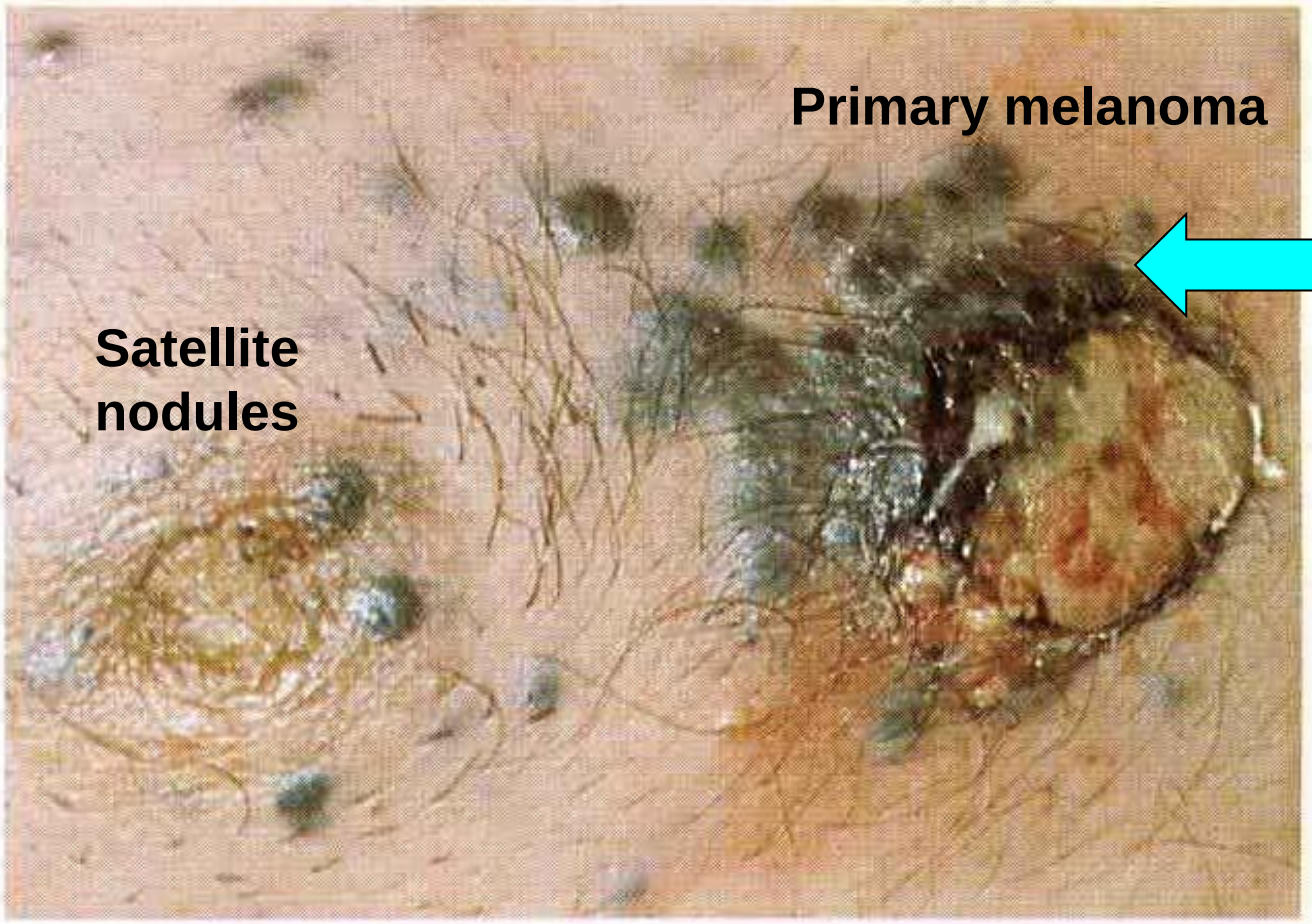




F 22-21

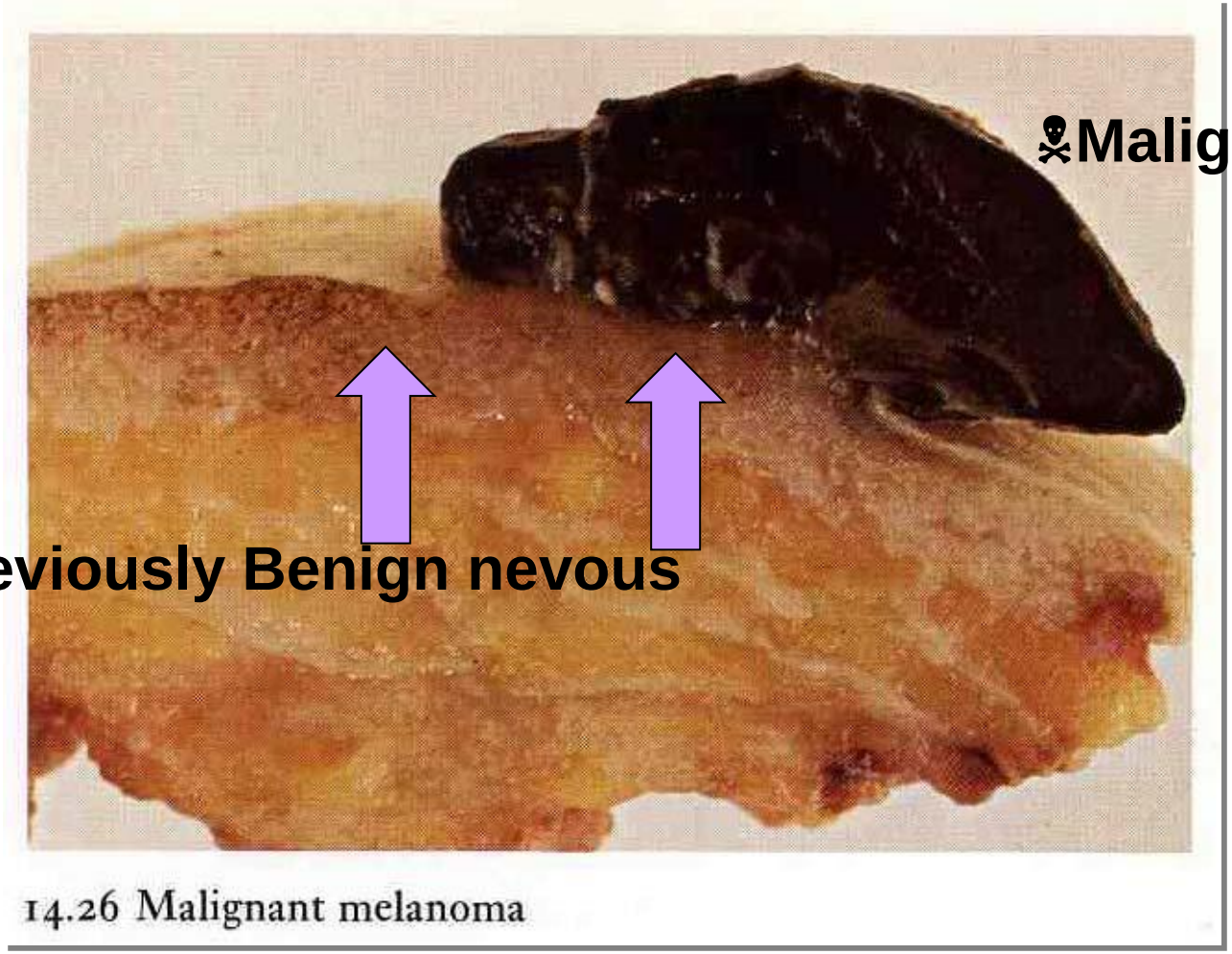
F14-27: **Malignant melanoma. Local spread.**

☹ Many small metastatic satellite nodules have formed in the tissue around the ulcerated & pigmented primary melanoma (right) which was situated on the **chest wall.**



14.27 Malignant melanoma

F14-26: **Malignant melanoma.** Deeply pigmented, black, elevated tumor 2X2X1cm situated on the **skin of the back**. Note that in the dermis, beneath & to the left of the tumor, there is a diffuse flat spreading brownish-colored lesion, suggesting that the melanoma arose in a previously benign nevous.

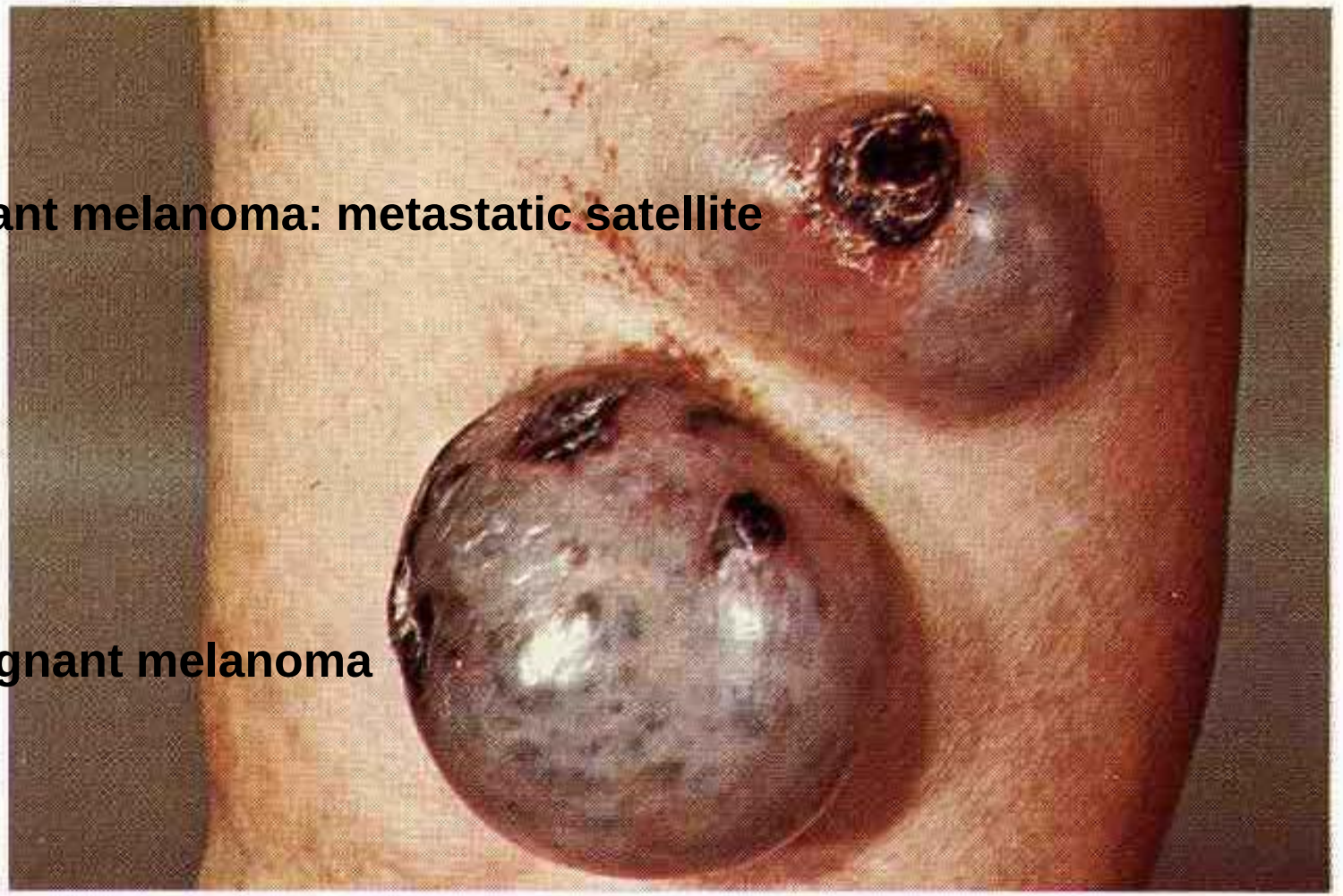


14.26 Malignant melanoma

F14-28: **Malignant melanoma** of the **back of the knee.**
☹Lower large blue-black spherical mass is the **primary** cancer.
☹ ☹ The **ulcerated** nodule above it is a **metastatic** satellite.

Malignant melanoma: metastatic satellite

Primary malignant melanoma



14.28 Malignant melanoma


thank
you