

# VASCULAR TUMORS

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- Tumors – Benign/Intermediate/Malignant
  - (A) Endothelial cells
  - (B) Pericytes
  - (C) Glomus body
- Congenital malformations
- Tumor like conditions: Ectasias
- Reactive vascular proliferations

# Benign Tumors & Tumorlike lesions

**(1) Hemangiomas** : Increased numbers of normal or abnormal vessels filled with blood.

Superficial locations like head & neck. Internal organs eg liver. Histologic variants:

**(a) Capillary Hemangioma.** Skin/mucous membranes 7% of all benign tumors of infancy. Spontaneous regression.

Morphology: Closely packed thin walled capillaries with flattened endothelial cells, filled with rbc's.

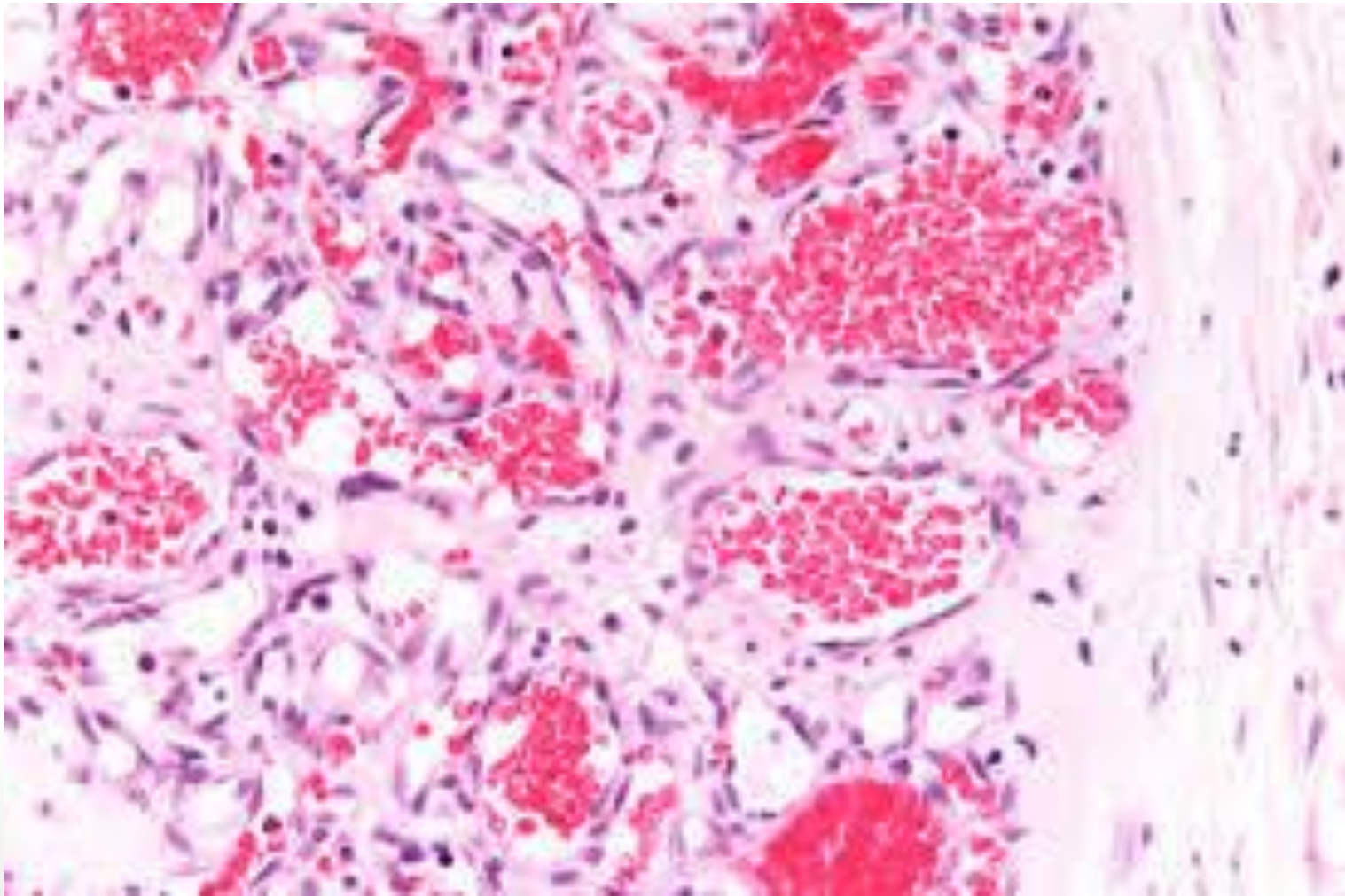
**(b) Cavernous Hemangioma:** Large dilated vascular channels, seen in organs like liver & brain. Thrombus formation/Dystrophic calcification, Do not regress spontaneously.

*“von Hippel Lindau disease”* in which cav hemangiomas are seen in cerebellum, retina, liver, pancreas

# Gross app: Capillary Hemangioma



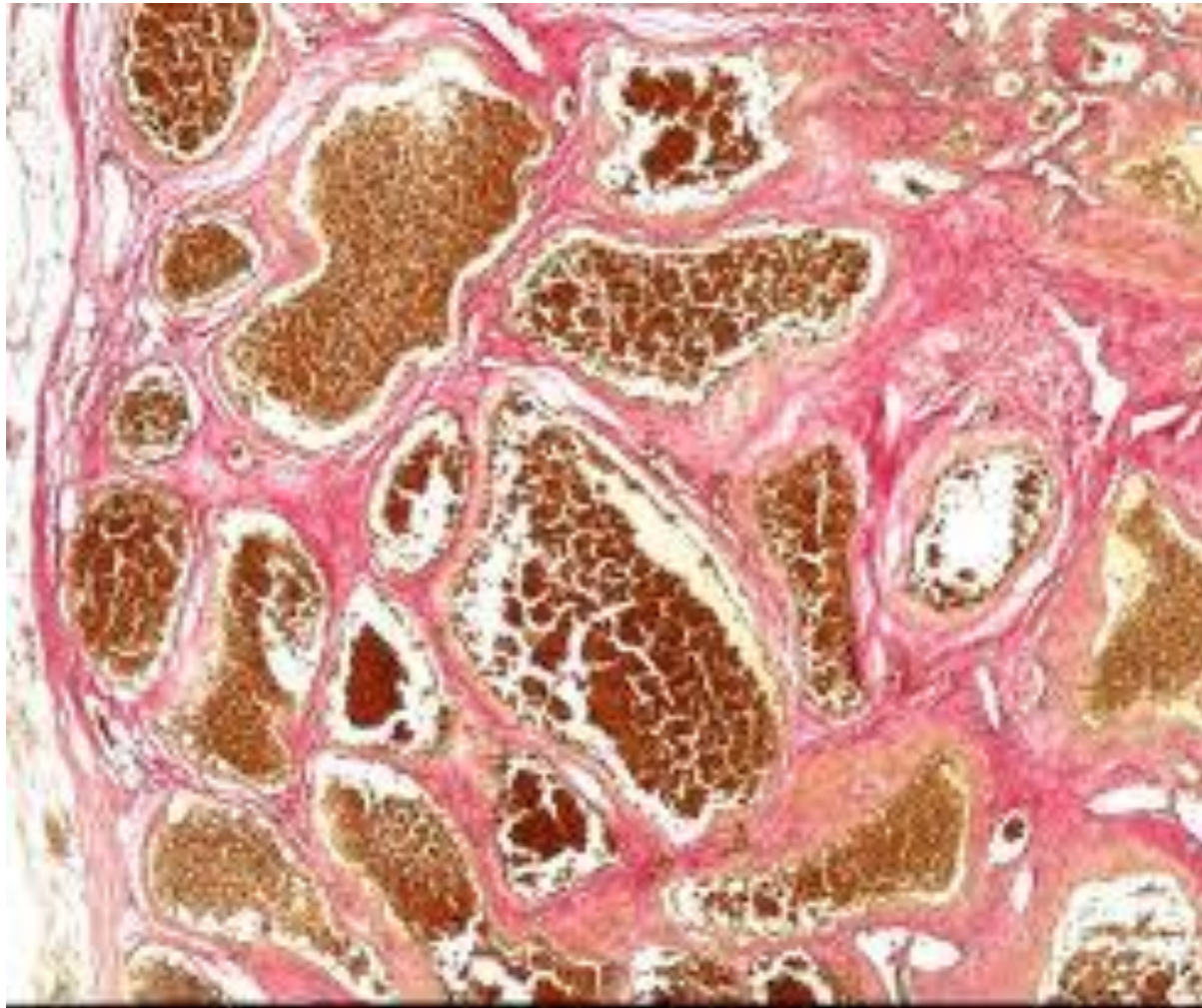
# Histology: Capillary Hemangioma



# Gross App: Cavernous Hemangioma, brain



# Histo: Cavernous Hemangioma

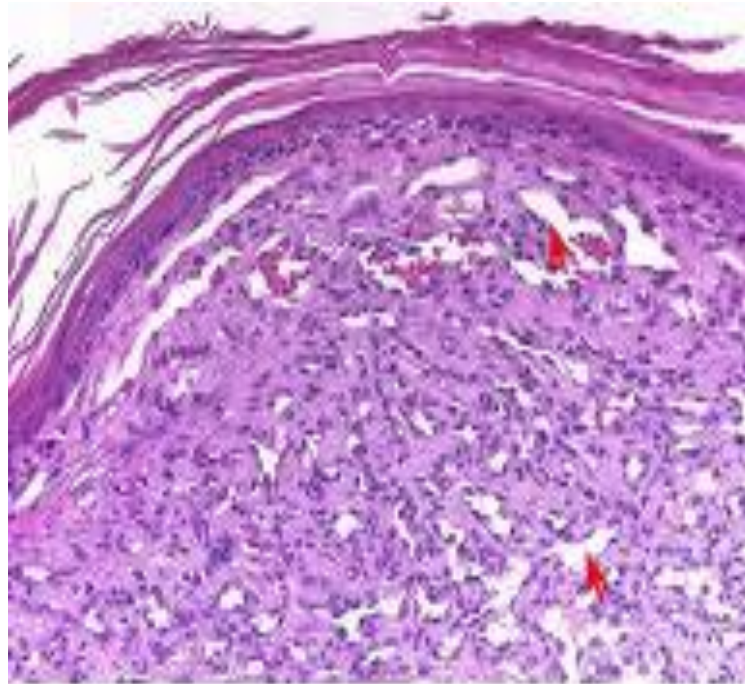


# Gross. Pyogenic Granuloma (Lobular capillary





# Histo: Pyogenic Granuloma (Lobular capillary hemangioma)

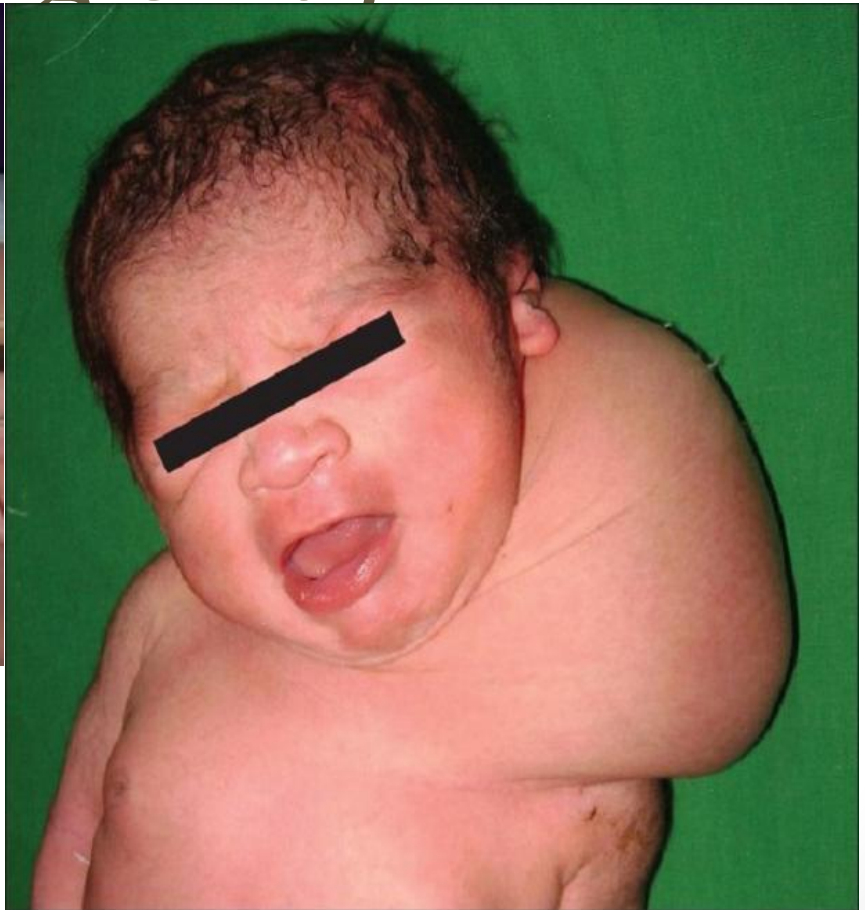


▲ Capillary vessels

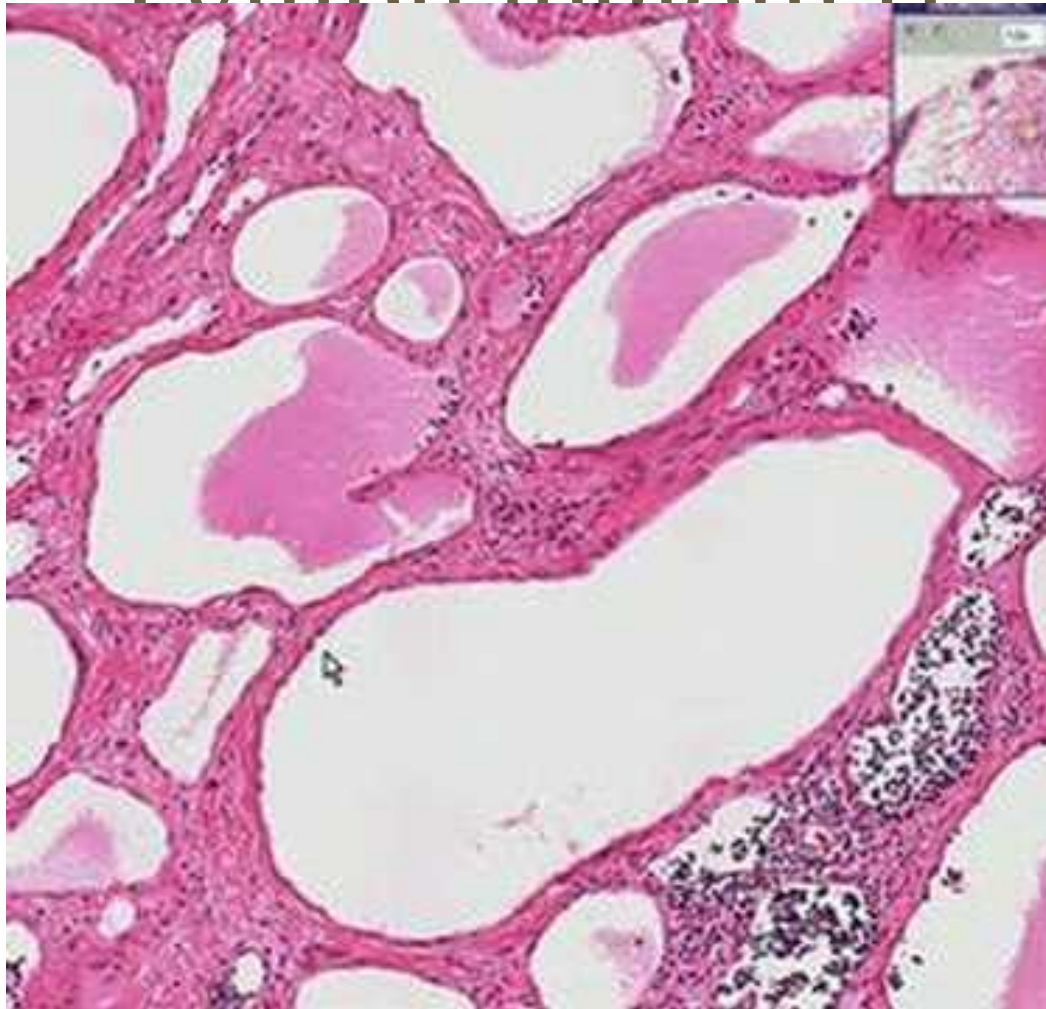
# Lymphangiomas

- (1) Capillary(Simple) Lymphangiomas** – seen in head, neck & axilla. Distinguished from Capillary Hemangioma by the absence of RBC's.
- (2) Cavernous Lymphangiomas(Cystic Hygroma)** – Neck or Axilla of children, can be large producing deformities in the neck.  
Morphology: Dilated lymphatic spaces lined by flattened endothelial cells with lymphoid aggregates in the walls.  
Turner's syndrome

# Gross App: Cystic Hygroma (Cavernous Lymphangioma)



# Histo: Cystic Hygroma (Cavernous Lymphangioma)



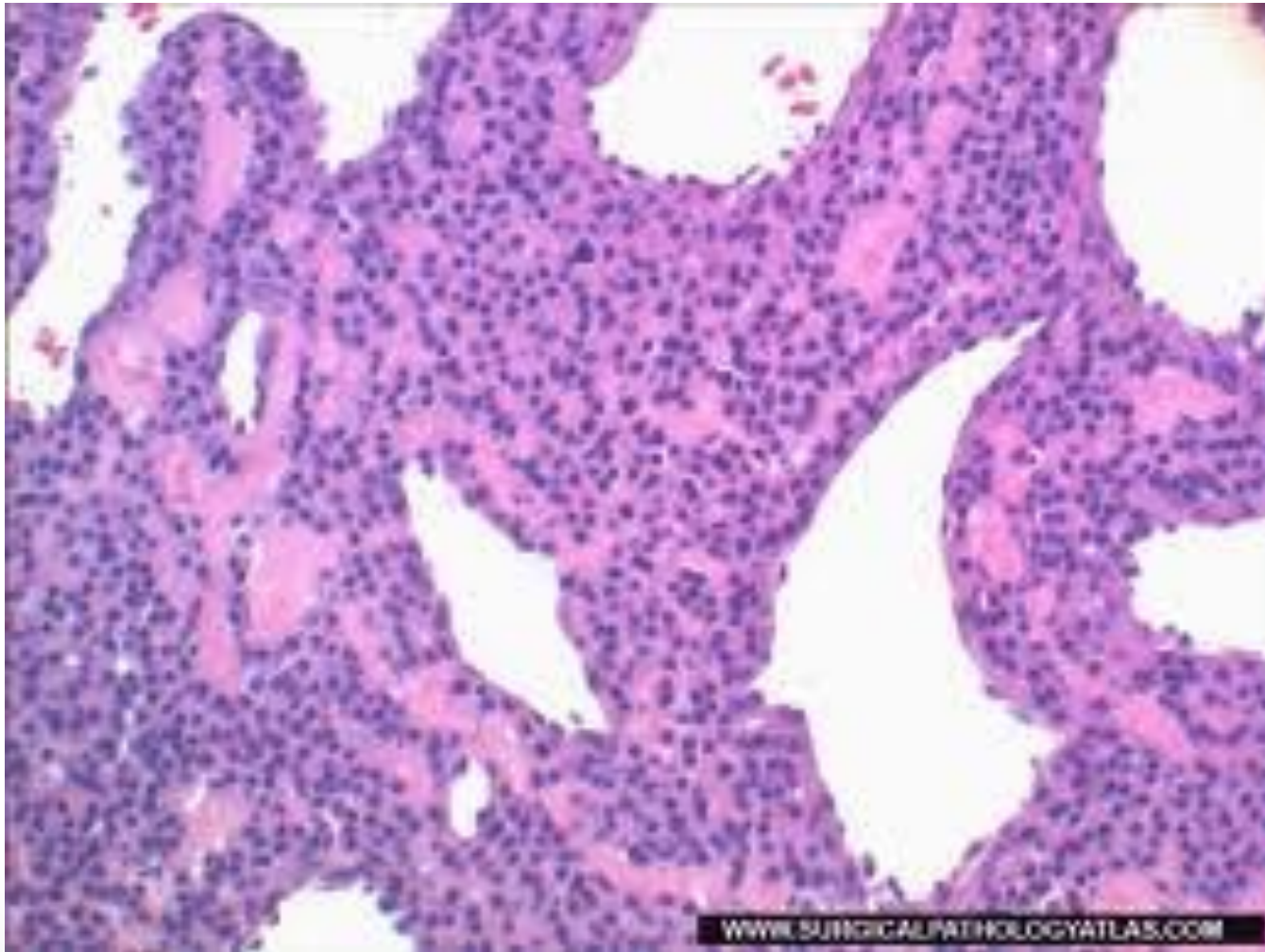
# Glomus tumor (Glomangioma)

- Small solitary painful lesion arising from ***Glomus body*** (present in dermis – role in temperature regulation)
- Location: hand, foot under fingernails & on tympanic membrane
- Morphology: Aggregates & nests of specialized glomus cells closely related to branching vascular channels.

# Gross: Glomus tumor (Glomangioma)



# Histo: Glomus tumor (Glomangioma)



# Bacillary Angiomatosis(BA)

- BA is a vascular proliferation/angiomatosis assoc with infection of the '***Bartonella***' genus.
- Caused by ***Bartonella henselae*** – mostly transmitted by cat scratch/bite(*Causative org-Cat Scratch disease*)***Bartonella quintana***-transmitted by human body lice (*Causative organism of Trench fever*)
- Seen in AIDS & immunocompromised pts.
- Characterized by tumor like masses formed by the proliferation of blood vessels in the skin & organs like bone, brain.



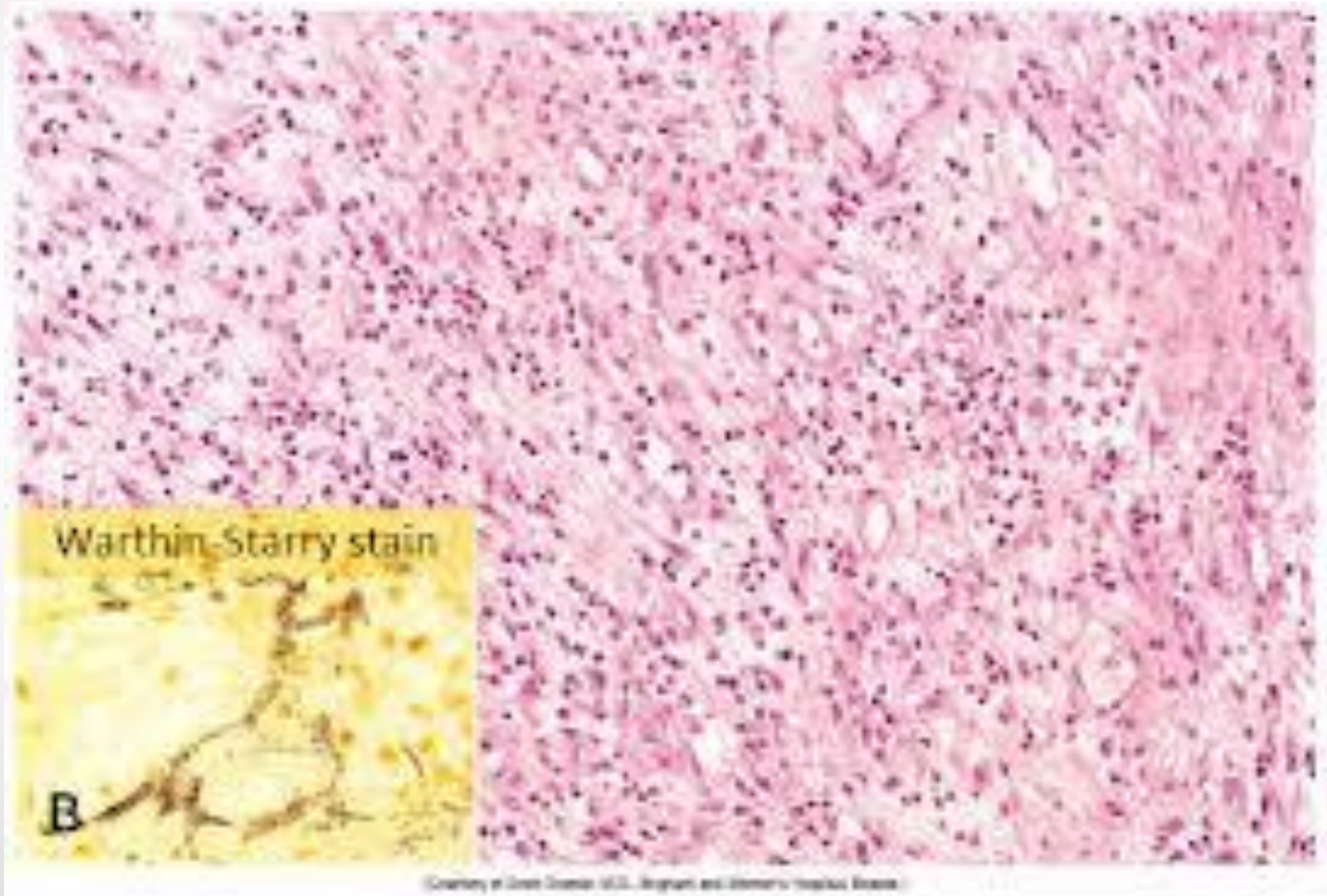
# Bacillary Angiomatosis

- **Clinical presentation:** Papules/ Nodules which are red, globular, non-blanching. Lichenoid plaques. Subcutaneous nodules.
- **Microscopic picture:** Proliferation of capillaries with plump endothelial cells showing mitosis. Neutrophils, nuclear debris seen. Causal organism seen on special stains (Warthin-Starry)
- **Mechanism:** Bacteria → Induction of host *Hypoxia inducible factor 1 alpha* → VEGF production → capillary proliferation.

# Gross App: Bacillary Angiomatosis



# Histo: Bacillary Angiomatosis



# Intermediate grade tumors- Kaposi Sarcoma (KS)

- KS: *'AIDS defining illness'* 4 forms are known
- **(1) Chronic/ Classic KS** : Not associated with AIDS
- **(2) Lymphadenopathic/ African KS**: Not assoc with AIDS. Assoc with lymphadenopathy. Aggressive form of KS which involves the viscera.
- **(3) Transplant-associated KS**: in solid organ transplantation when the pt is immunosuppressants
- **(4) AIDS associated/ Epidemic KS**: Most common malignancy in AIDS patients. Involves lymph nodes, viscera, wide dissemination.

# Kaposi Sarcoma (KS)

- **Pathogenesis:** Human herpesvirus-8(HHV-8) or KS associated herpesvirus(KSHV) identified in cutaneous KS lesion in AIDS. Also in 95% of all KS lesions.
- Induction of a lytic & latent infection in endothelial cells
  - (a) Lytic infection → Release of cytokines from HIV infected T cells. Induction of VEGF by virally coded G protein
  - (b) Latent infection → Disruption of proliferation controls by KSHV proteins

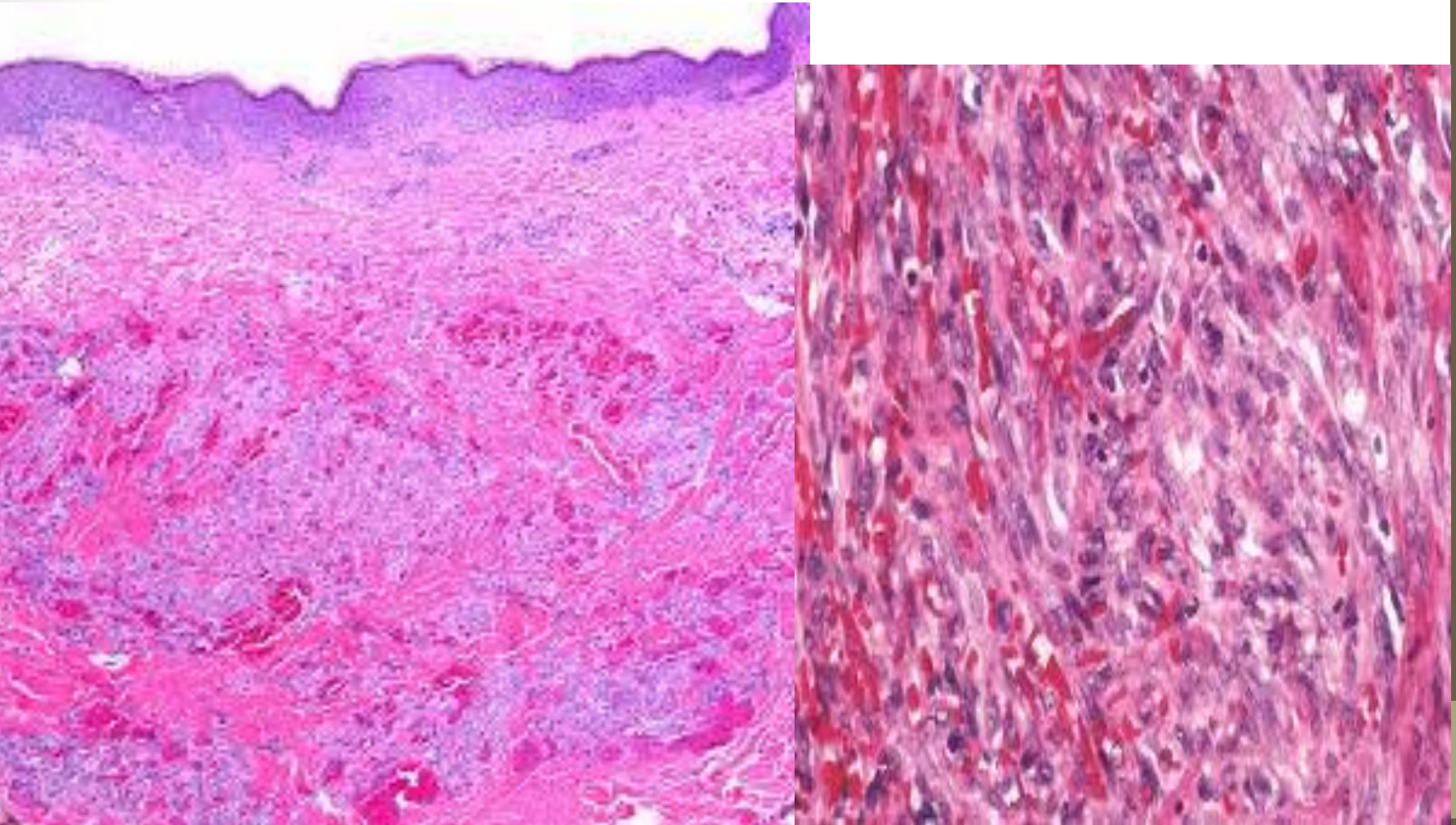
# Kaposi Sarcoma (KS)

- **Morphology:** 3 stages- Patch, Plaque, Nodule
- **Patch stage:** reddish, purple patches in lower limbs showing dilated irregular vascular spaces lined by endothelial cells, inflammatory cells, Can be confused with granulation tissue.
- **Plaque stage:** Large violaceous raised plaques ch by dilated irregular vascular channels surrounded by plump spindle cells. Inflammatory cells, extravasated rbc's & hemosiderin laden macrophages
- **Nodule stage:** Plump, proliferating spindle cells, slit like vessels with rbc's, inflammatory cells, hemorrhages, hemosiderin pigment

# Gross App: Kaposi Sarcoma (KS)



# Histo: Kaposi Sarcoma (KS)





# Intermediate grade & Malignant Vascular Tumors

- HEMANGIOENDOTHELIOMA Intermediate grade
- ANGIOSARCOMA:(malignant tumor of endothelial cells) common sites are skin, soft tissues, breast, liver.
- HEMANGIOPERICYTOMA:(malignant tumor of the pericytes) common sites are retroperitoneum and lower extremities.

# Aneurysms

- Localized abnormal dilatation of a blood vessel.
- (1) True Aneurysm (saccular)
- (2) True Aneurysm (fusiform)
- (3) False Aneurysm/Dissecting Aneurysm – defect in vascular wall → extravascular/pulsating hematoma
- (4) Dissection – dissecting hematoma between the layers of the vessel wall

# Aneurysms

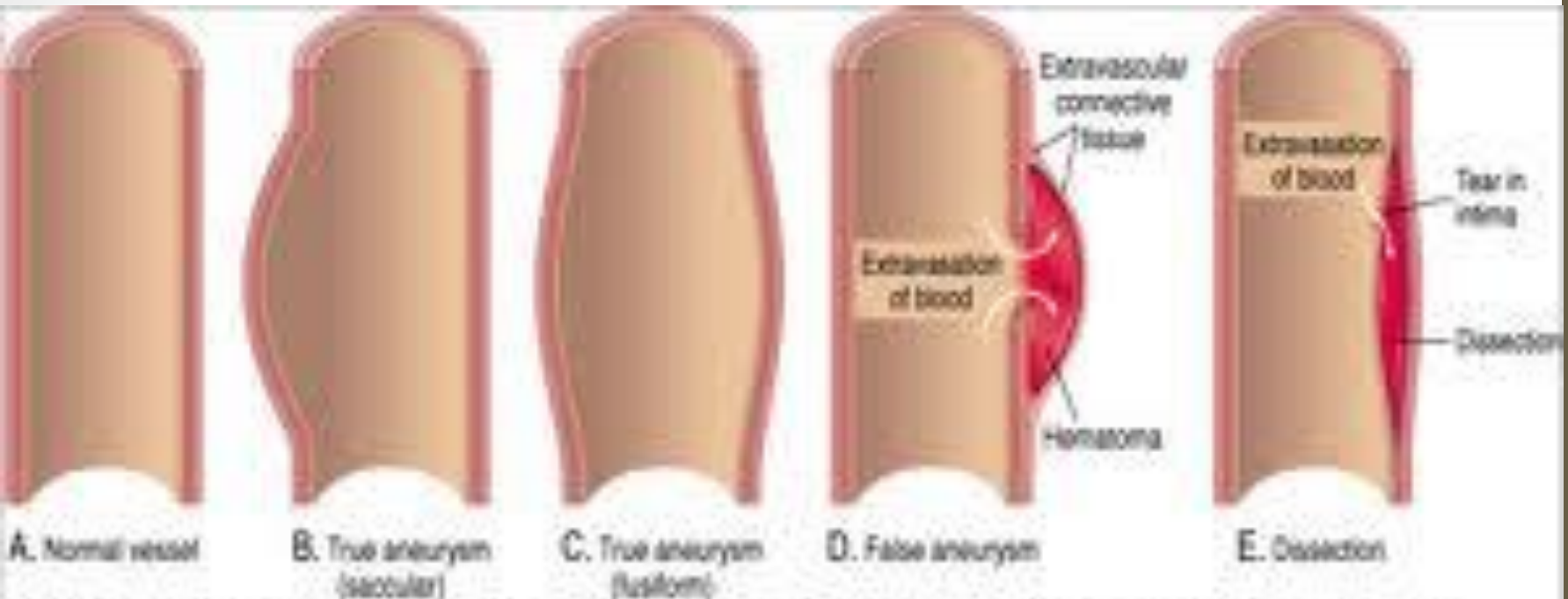


Fig. 10-17. Aneurysms. **A**, Normal vessel. **B**, True aneurysm, saccular type. The wall focally bulges outward and may be attenuated but is otherwise intact. **C**, True aneurysm, fusiform type. There is circumferential dilation of the vessel, without rupture. **D**, False aneurysm. The wall is ruptured, and there is a collection of blood (hematoma) that is bounded externally by adherent extravascular tissues. **E**, Dissection. Blood has entered (dissected) the wall of the vessel and separated the layers. Although this is shown as occurring through a tear in the lumen, dissections can also occur by rupture of the vessels of the vaso vasorum within the media.

# Aneurysms

- **Pathogenesis:** (1) **Atherosclerosis**(abdominal aorta)  
(2) **Hypertension** (ascending aorta)  
(3) **Cystic Medial Degeneration** eg *Marfan's syndrome* (defective synthesis of protein *fibrillin* with weakened elastic tissue) *Ehlers- Danlos syndrome* (defective Type II collagen synthesis)  
*Scurvy* ( altered collagen cross-linking)  
(4) Other conditions which weaken vessel walls-  
*Vasculitis*, *Congenital defects* (berry aneurysms in the Circle of Willis), *Mycotic aneurysms* (infective origin)