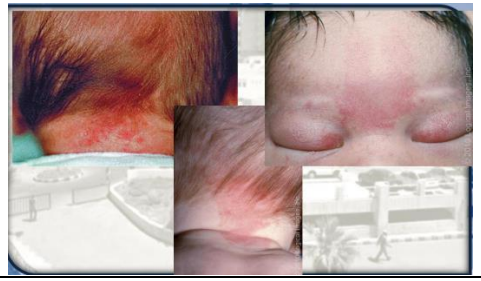
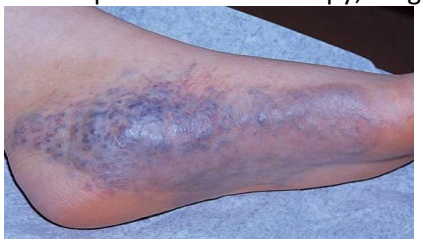
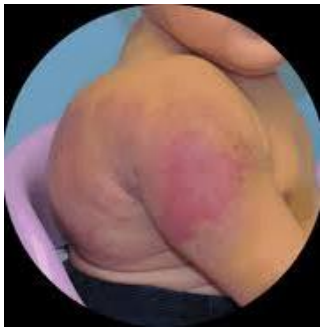
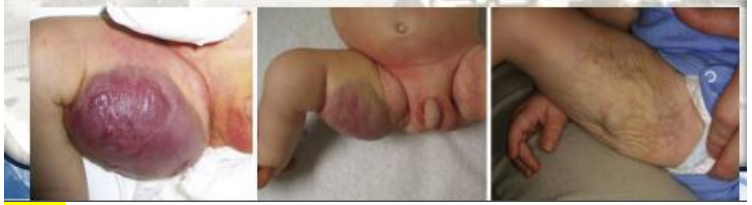
Vascular anomalies overview	**Vascular tumors (Infantile hemangiomas aka strawberry naevae)**	**Vascular malformations**
Beginning	De novo or tiny lesion at age of 3-4 weeks	Present since birth (formed during the 4^{th}-10^{th} week of gestation).
Growth phases	-Proliferative phase→rapid, distressing, and disfiguring phase, until 6 to 12 months. -Involution phase→decrease in size and fading of the red color, last till 5 to 9 years of age.	Parallel to the growth of the child.
Histology	-Endothelial cells with high mitotic figures, mast cells. -There are special receptors GLUT-1.	-mature endothelial cells with normal turnover. -no receptors, no mast cells in between.
Epidemiology	Female to male is 3:1. More common in pre-mature babies. 80% are solitary, 20% are multiple. Most of them (60%) are in the head and neck, less in trunk and less in the extremities.	Almost always sporadic. Female to male 1:1. Types: either high flow or low flow (Capillary, venous, arterial, lymph or combined).
Complications	Complications that indicate the treatment: **1) Obstruction:** hemangioma can grow in the eyelid obstructing the vision leading to amblyopia (lazy eye). They may also obstruct airway or auditory canal. **2) Bleeding.** **3) Skeletal distortion.** **4) Congestive heart failure** due to multiple hemangiomas. **5) Ulceration and infection.**	1-Erosion of bones leading to fractures. 2-Stealing blood from a limb leading to atrophy of distal parts. 3-Entrapment of platelets. 4-Bleeding.
Treatment	1-Managed by expectant observation. 2-Treatment in complicated cases: Beta blockers. Intralesional steroids. Laser. Surgery: excision, tracheostomy.	-In cases of complications or cosmetic reasons. -Never resolves spontaneously. -Treatment: surgery, laser, embolization.

Vascular anomalies	Characteristics (Site & shape)	Treatment
Capillary malformation: Port-wine stain.	-Site: Face→trigeminal distribution. -Shape: flat, sharply demarcated, grow proportional to the child, their surface is studded with nodules.  -Note: it can be part of sturge-weber syndrome.	Pulse dye laser → Which can lighten the color for a few years. Surgery → reducing hypertrophied areas.
Capillary malformation: Nevus simplex (macular stain).	- Shape: as single or multiple blanchable, pink-red patches in newborn infants. -Site: most commonly on the eyelid, glabella, and midline of the nape of the neck. Less common on the scalp, nose, lip, and back. 	- generally, fades within one to two years.
Venous malformation	-Shape: Blue, low-flow, compressible soft tissue mass, empty on elevation. -Site: can affect most tissues. -presentation: disfigurement, pain, coagulopathy (d-dimer, fibrinogen). -Genetic abnormalities: 5% *Krit-1, TIE-2 and Glomulin genes *Blue rubber bleb syndrome	* Symptomatic: Compression garments, NSAIDs, anticoagulants, IVC filter. * Therapeutic: Sclerotherapy, Surgery. 

Lymphatic malformation		-treatment: Surgery (macro), sclerotherapy (micro) by OK-432. -complications of surgery: Seroma or infection.
Arteriovenous malformation	- High-flow malformation (has characteristic nidus with arterial feeder, arteriovenous fistula, and enlarged vein).	For the symptomatic stages (3 and 4): Combination of interventional radiology, excisional surgery and reconstruction. Some lesions can be controlled with repeated embolization. **Schobinger clinical classification for arteriovenous malformations** **Stage** — **Description** I (Quiescence) — Pink/blue stain, warmth, and arteriovascular shunting II (Expansion) — Stage I plus enlargement, pulsations, thrills and bruit III (Destruction) — Stage II plus either dystrophic skin changes, ulceration, bleeding, pain or tissue necrosis IV (Decompensation) — Stage III plus high-output cardiac failure Adapted from Schobinger, Hansen, Probaz et al., 1998

Other Vascular tumors	Kaposi form hemangioendothelioma	Congenital hemangioma	Pyogenic granulomas
Time to appear	Appear early infancy	As the name suggests these are fully developed at birth and three subtypes have been recognized so far. (RICH, NICH, PICH) They are negative for GLUT-1.	Acquired
Presentation & Treatment	– Kassabach-Merritt phenomenon KMP. - Locally aggressive.  -Treatment: mTOR +ve : Sirolimus.	**RICH**: • These are un- common entities that, unlike infantile haemangiomas exhibit a much faster involution with full regression by 1 year of age. • They present as large masses, often on the legs. They are firmer than infantile haemangiomas, with or without telangiectatic changes. They leave a plaque-like residuum, which may regress further to leave an atrophic patch of skin  **NICH**: • These are rare tumours that mimic infantile haemangiomas and are of similar texture. • They are present as round or oval masses, with flat shape or moderately bossed and accompanying telangiectasia, and may have a halo. • They do not exhibit further growth and do not regress. • Treatment is by surgical excision.  **PICH**: • This is a recently described variant which looks li slowly regresses by age 10	• lobular capillary hemangioma – benign vascular tumor of the skin or mucous membranes characterized by rapid growth and friable surface. – starts as a small red papule that grows rapidly over weeks to months and then stabilizes – bleeds profusely after minor trauma and may become ulcerated. Bleeding is difficult to control and often recurrent.