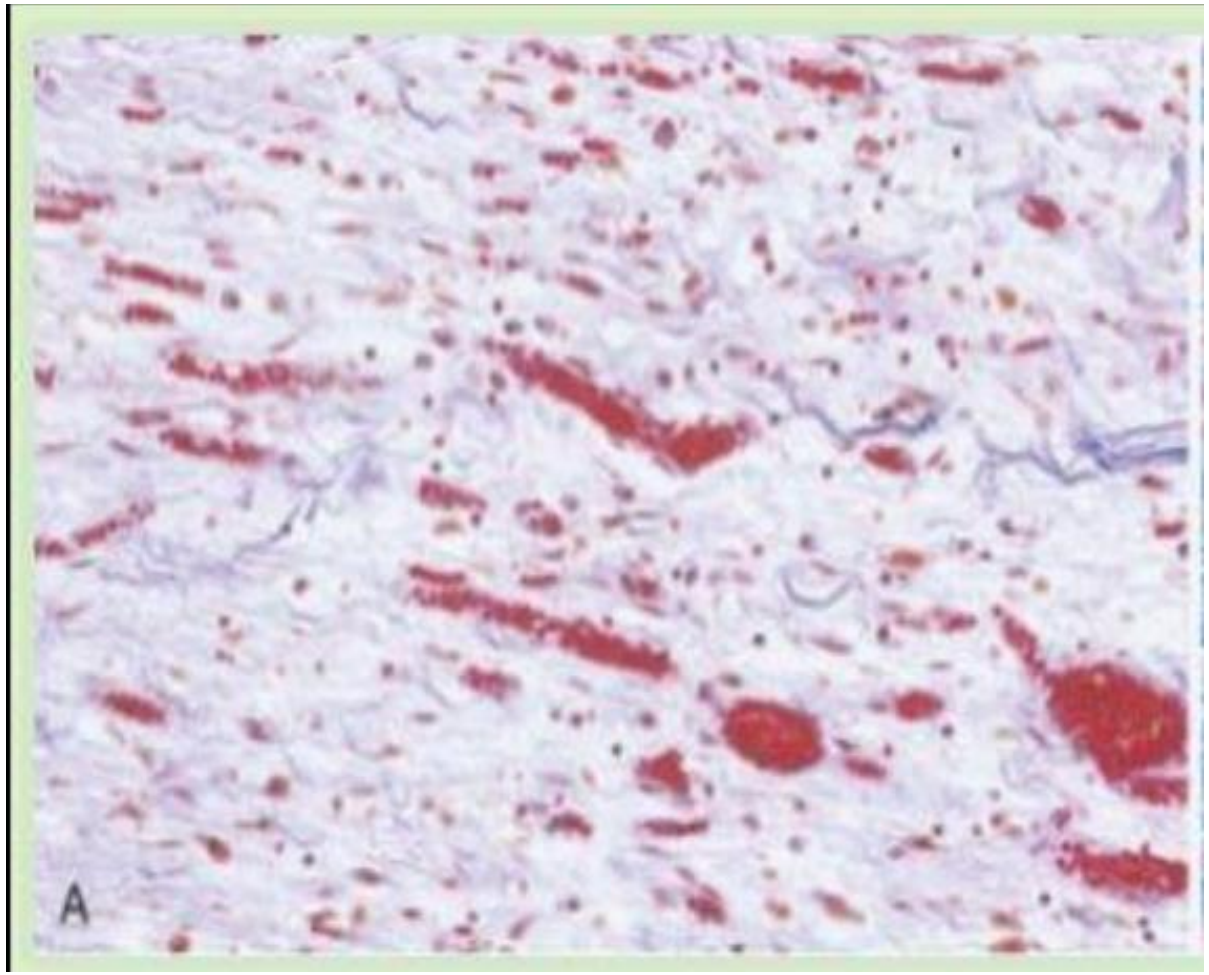
Pathology Final

By Layan Al-Amir

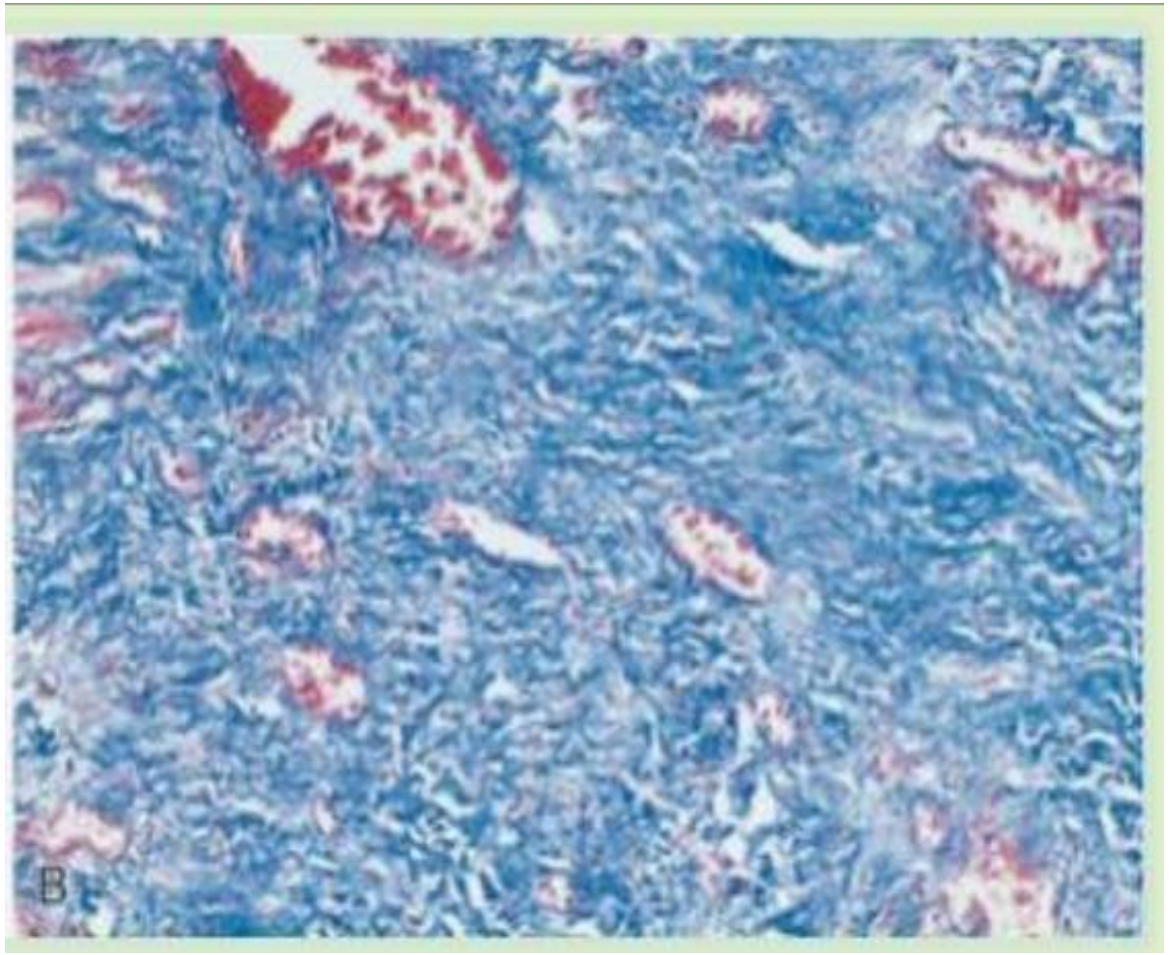
Repair



Early Granulation Tissue:

Histologically,

- It shows hundreds to thousands of small capillaries and blood vessels.
- Presence of collagen type III which is weaker and less durable than collagen type I (in blue).



Mature Scar Tissue:

Trichome Stain,

- It shows predominate collagen type I in blue, meaning it's a strong scar tissue.
- The number of blood vessels is significantly reduced compared to early granulation tissue.

Wound Dehiscence:

- It occurs due to weak sutures/poor surgical technique, wounds need additional support in obese patients.
- Happens because of Increased intra-abdominal pressure.

Venous Ulcers:

- Often found in the lower leg
- More Shallow
- Affected area is discolored, dusky brownish-darkish, due to chronic deposition of iron from: increased blood pressure and prolonged presence of blood in the area.

Arterial Ulcer:

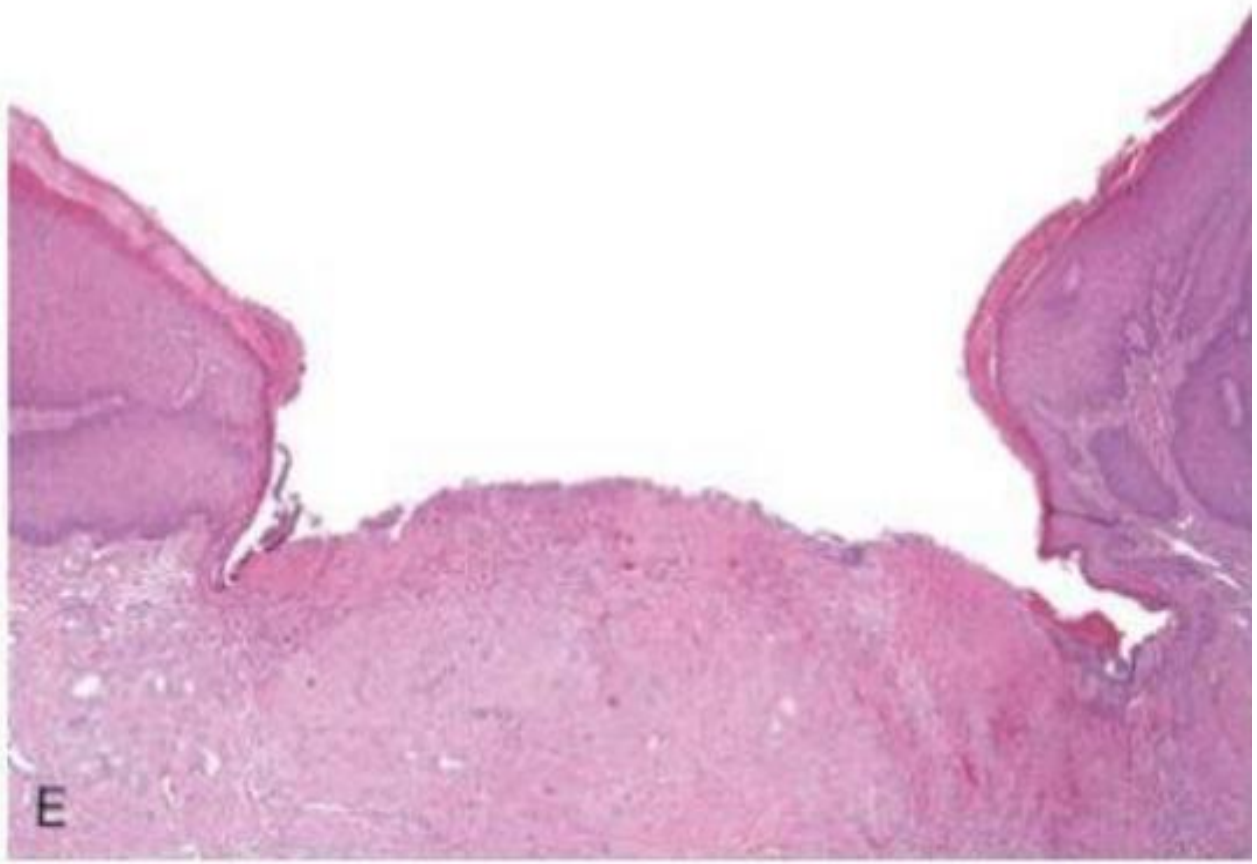
- More Dangerous due to Chronic Ischemia.
- Deeper, because the arterial blood supply is deficient, leading to tissue death and more severe wound formation.

Diabetic Ulcers:

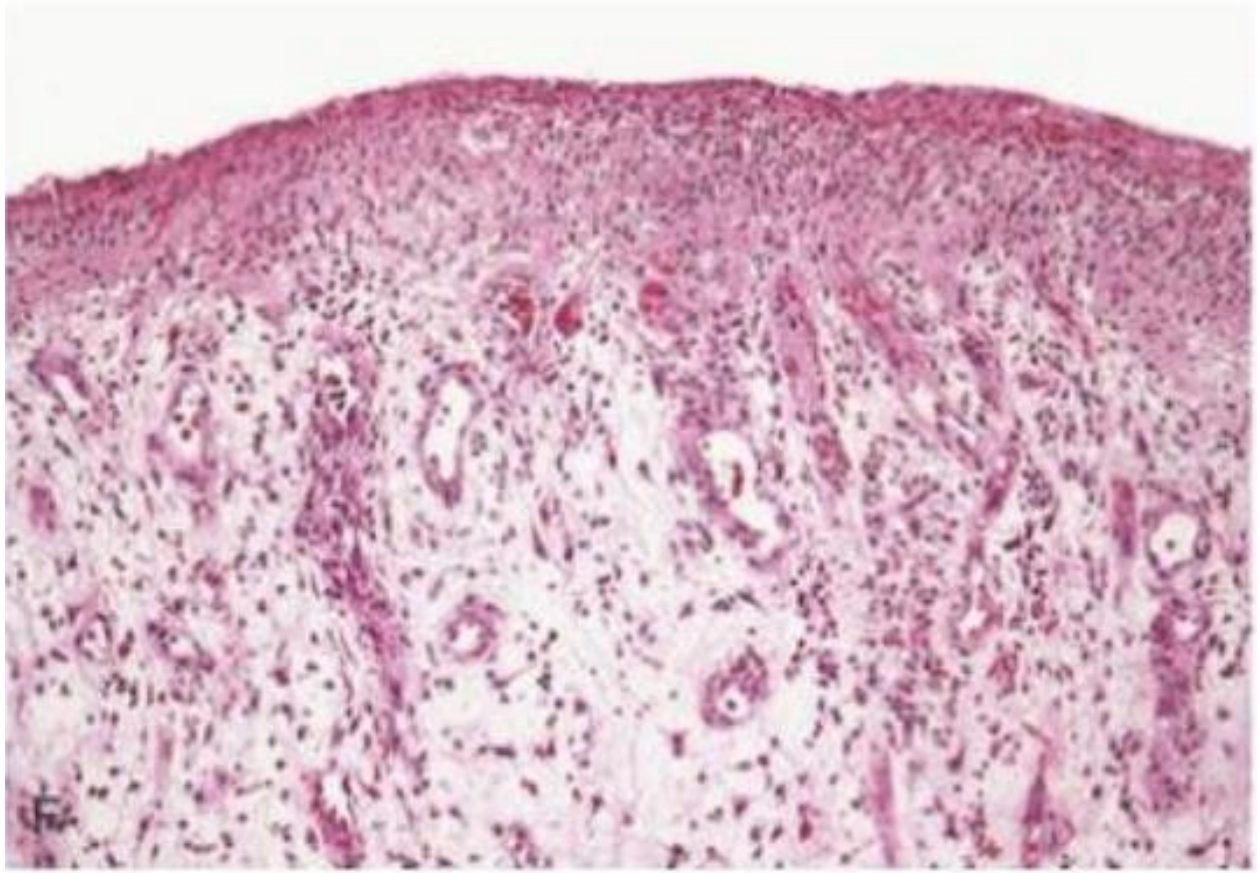
- Usually found in foot, patients often experience difficulty in treating these ulcers.
- Primary factor is **chronic hyperglycemia**, which leads to various complications, including **peripheral neuropathy.**

Pressure Sores/Bed Sores /Bed Ulcers:

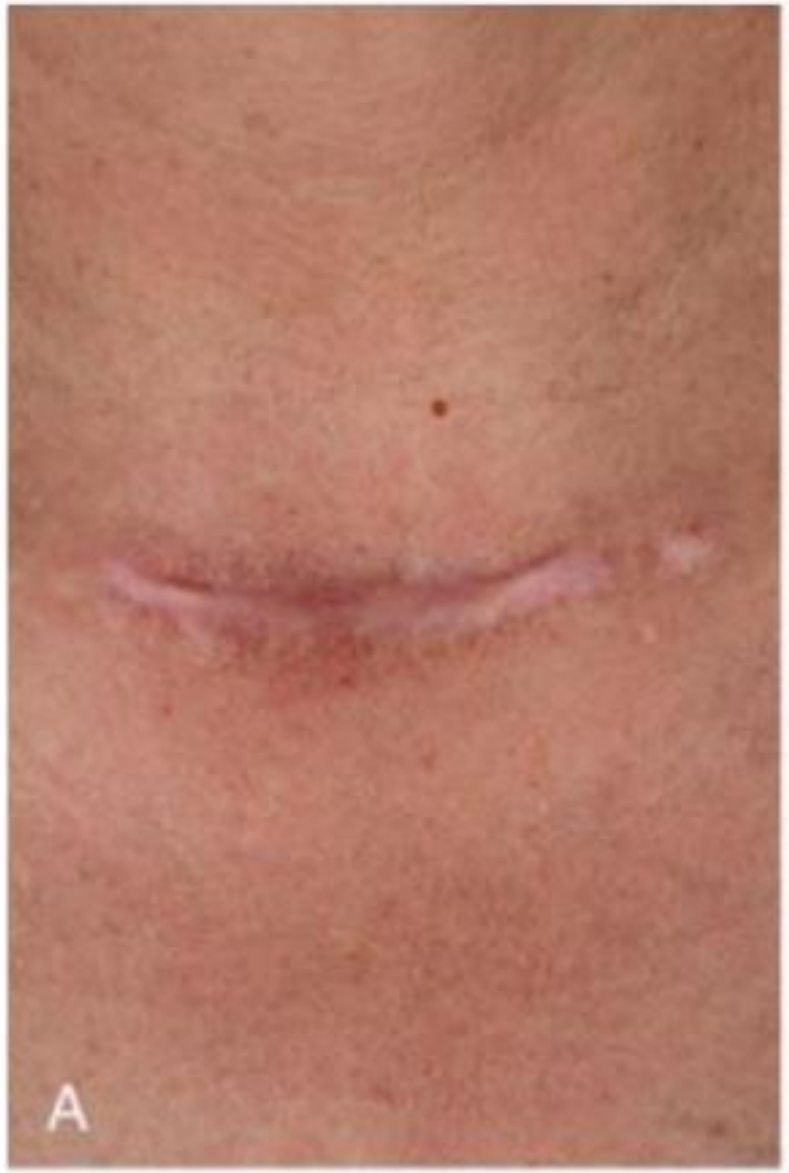
- Commonly found in areas where bone is close to the skin, e.g. Lower back & buttocks.
- Caused by Mechanical Pressure which causes local ischemia and tissue necrosis, leading to an ulcer.
- Stroke patients and Bedridden, immobile elderly individuals
- Poor nursing care (regular patient repositioning is required)



A Discontinuation of Squamous Epithelium
Aka an ulcer



Granulation tissue full with Fibroblasts

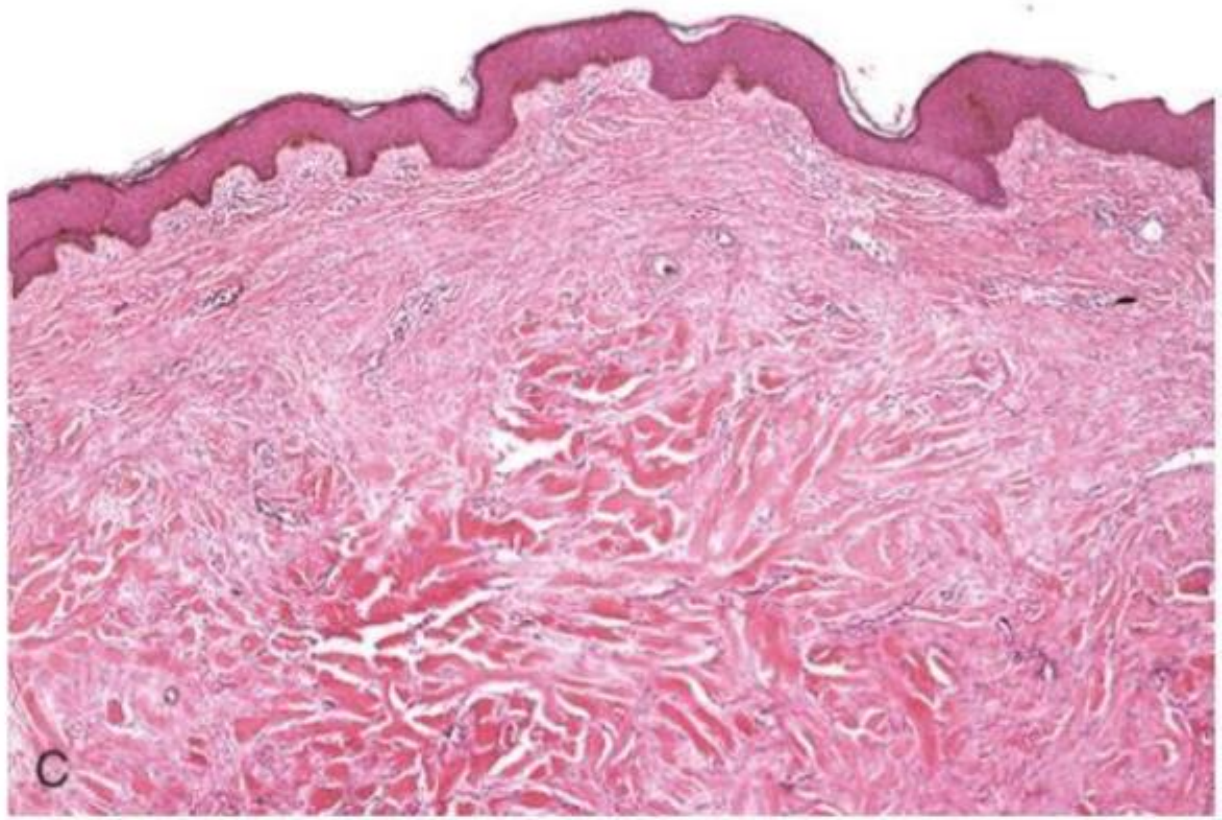


Hypertrophic Scar:

- Thyroid Surgery scar on the Neck
- Result of thyroid surgery (lobectomy/total thyroidectomy)
- Raised and visible, hence hypertrophic.
- Not overly severe but noticable
- Could've been less visible with better surgical techniques

Keloid Scar:

- Raised, Thickened scars that extend beyond the original wound boundaries.
- More common in individuals with darker skin tones (e.g. African Americans)
- Surgeons should be informed if the family has a history of keloids
- Treated by steroid creams or injections, outcomes vary.

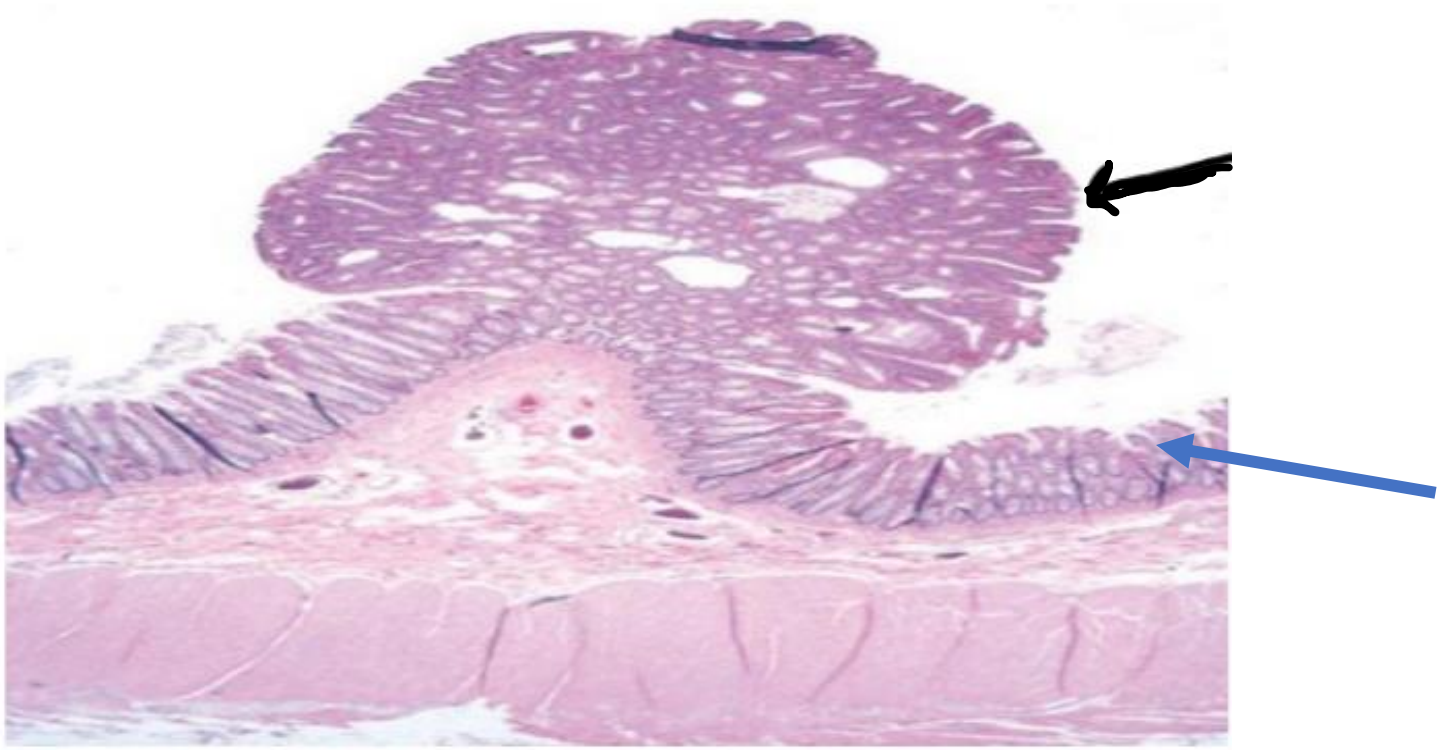


Keloid Scar:

Microscopically,

- Squamous Epithelium is shown in the outer layer.
- Collagen Type I is seen as it's the main structural protein found in the scar tissue.

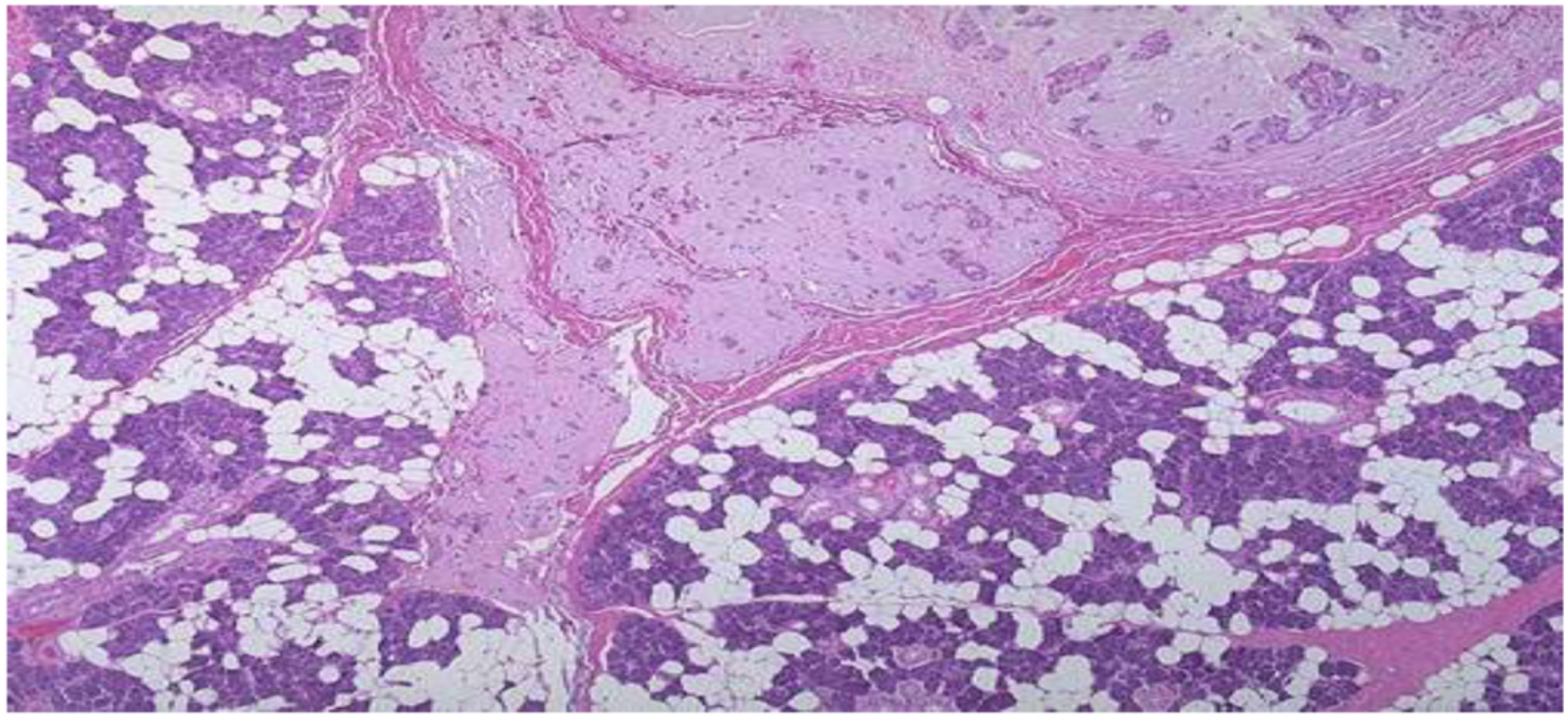
Neoplasia



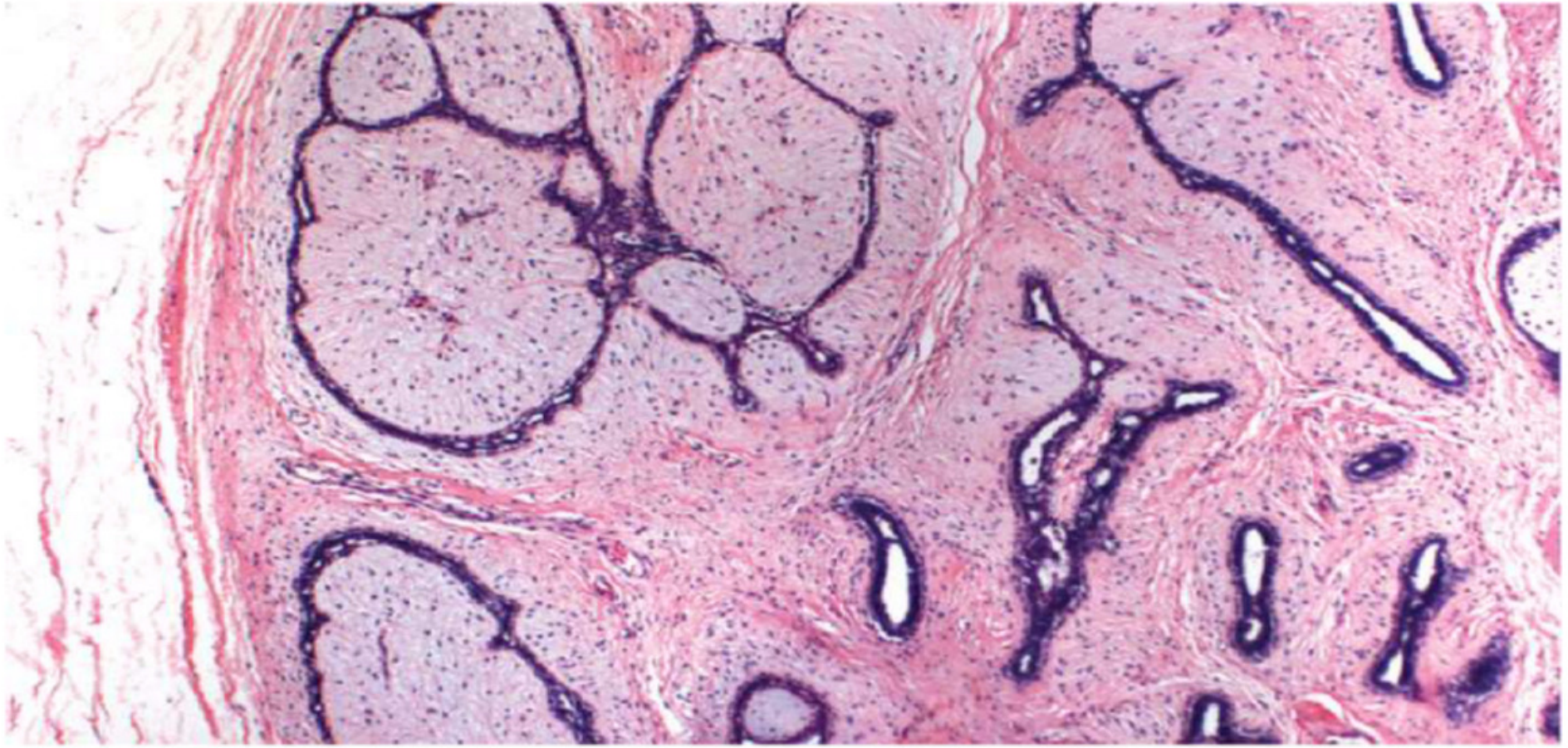
Colonic Polyp:

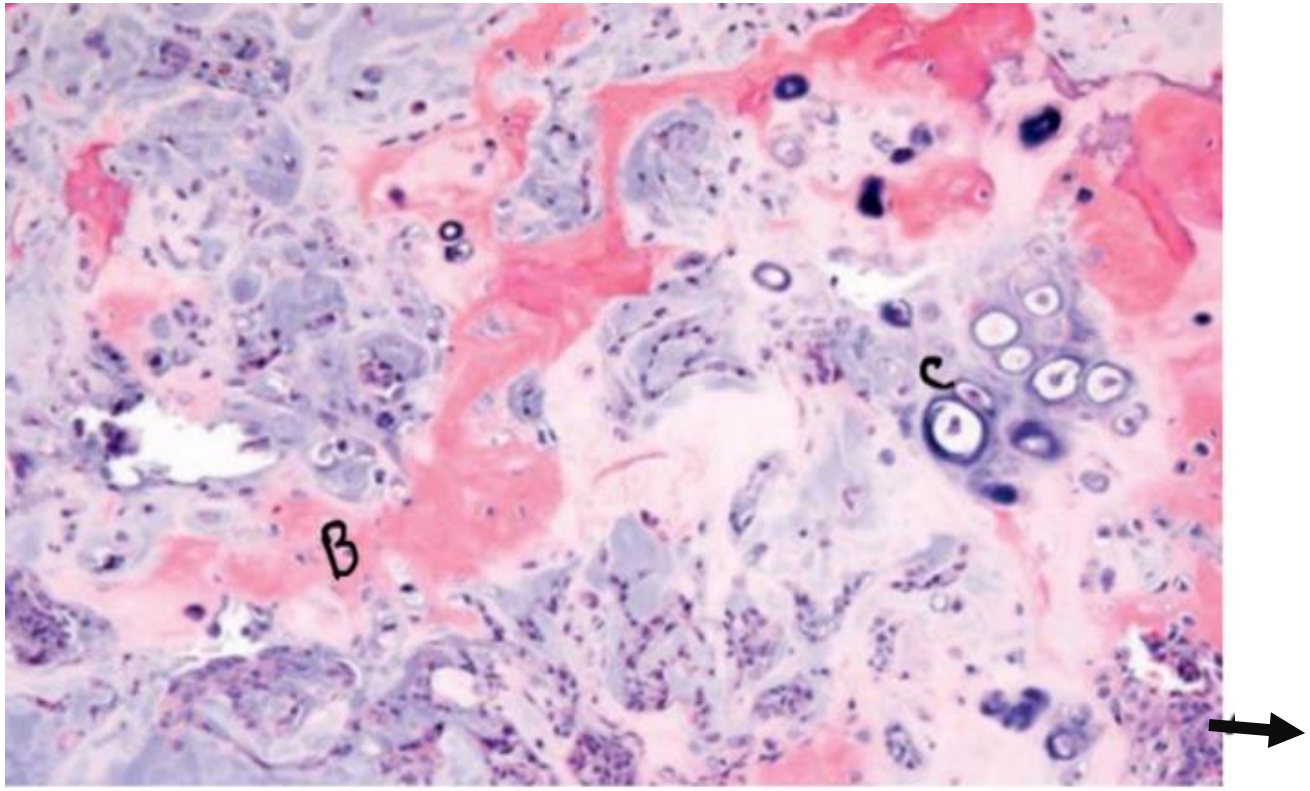
- This glandular tumor is seen projecting into the colonic lumen.
- The polyp is attached to the mucosa by a distinct stalk.
- Normal mucosa is pointed with a blue arrow, and the **polyp mass** formed from glandular structures in the **black arrow**.

Pleomorphic adenoma



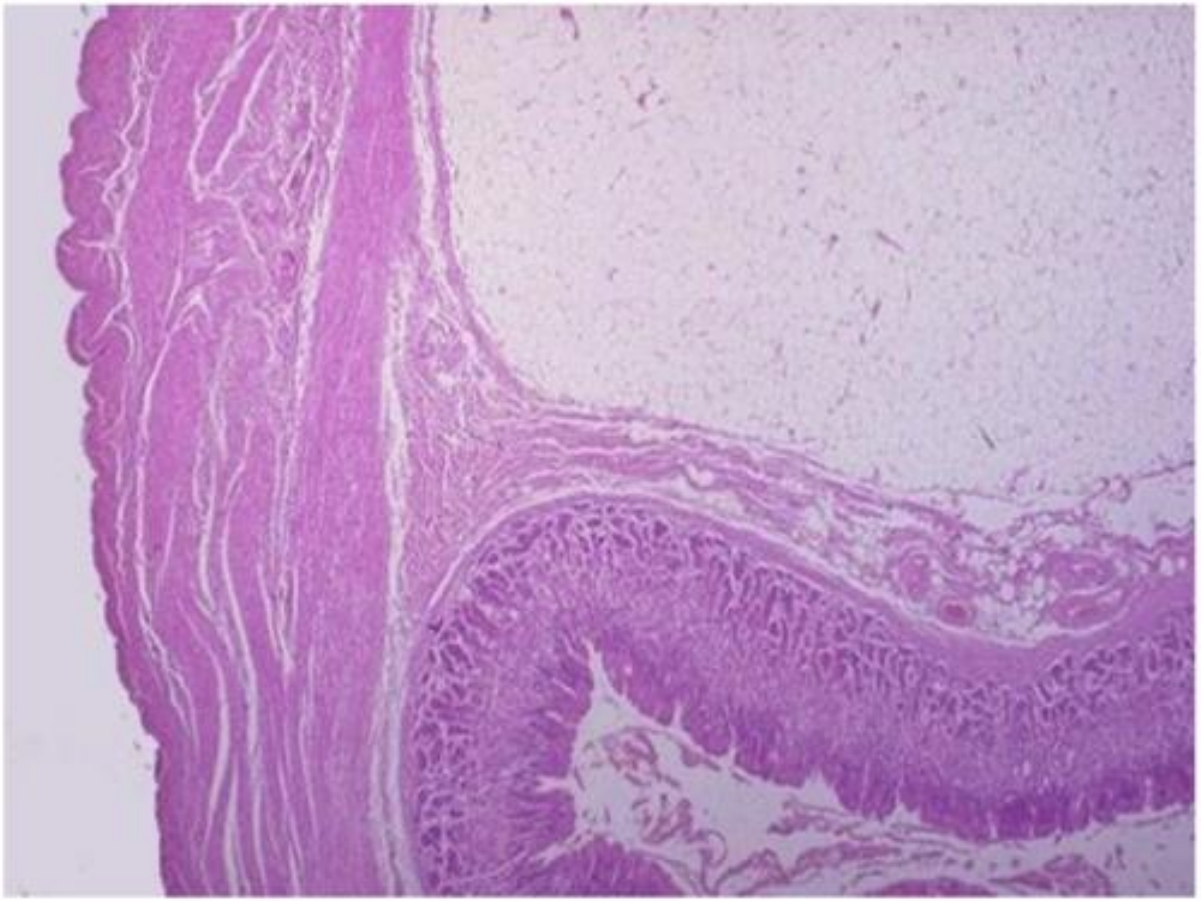
Fibroadenoma





Pleomorphic adenoma of salivary gland:

- Mixed tumor of the parotid gland.
- Small nests of epithelial cells and myxoid stroma forming cartilage and bone (an unusual feature) are present in this field.
- B: Bone, C: Cartilage, Arrow is pointing to Epithelium.



Lipoma:

- Made up of mature fat cells laden with cytoplasmic lipid vacuoles
- —evidence of morphologic and functional differentiation.
- Benign

Lipoma:

- Made up of **mature** fat cells laden with cytoplasmic lipid vacuoles
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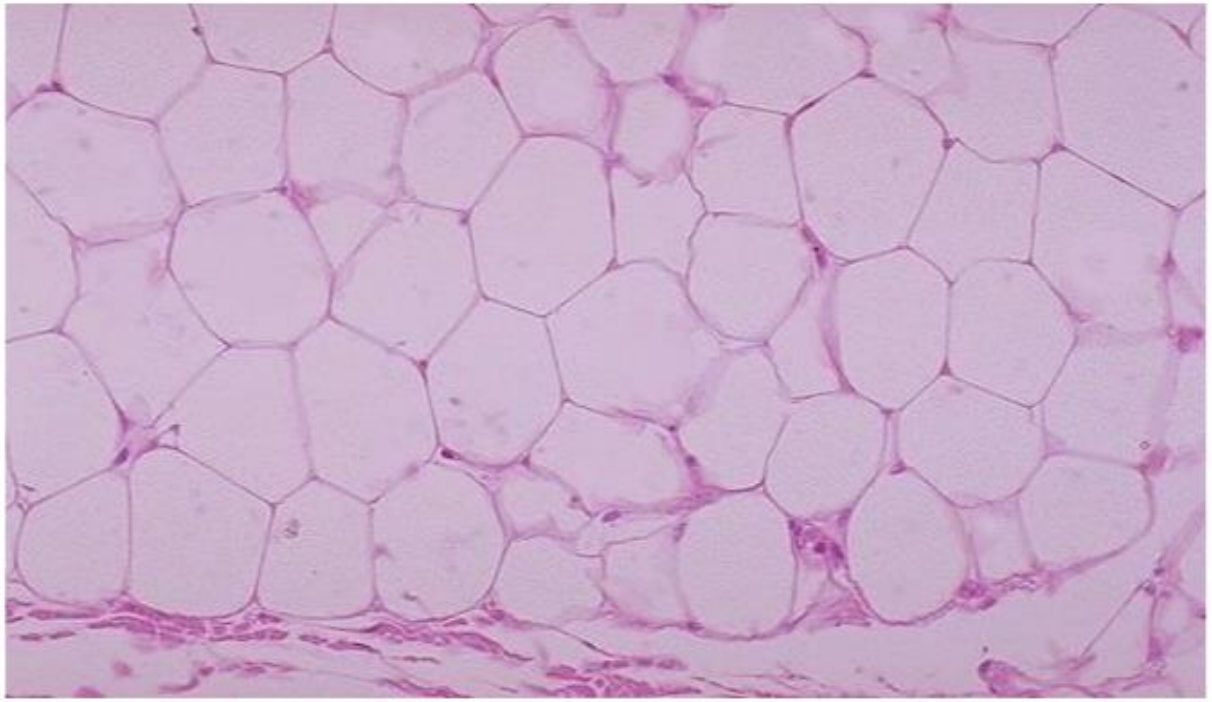
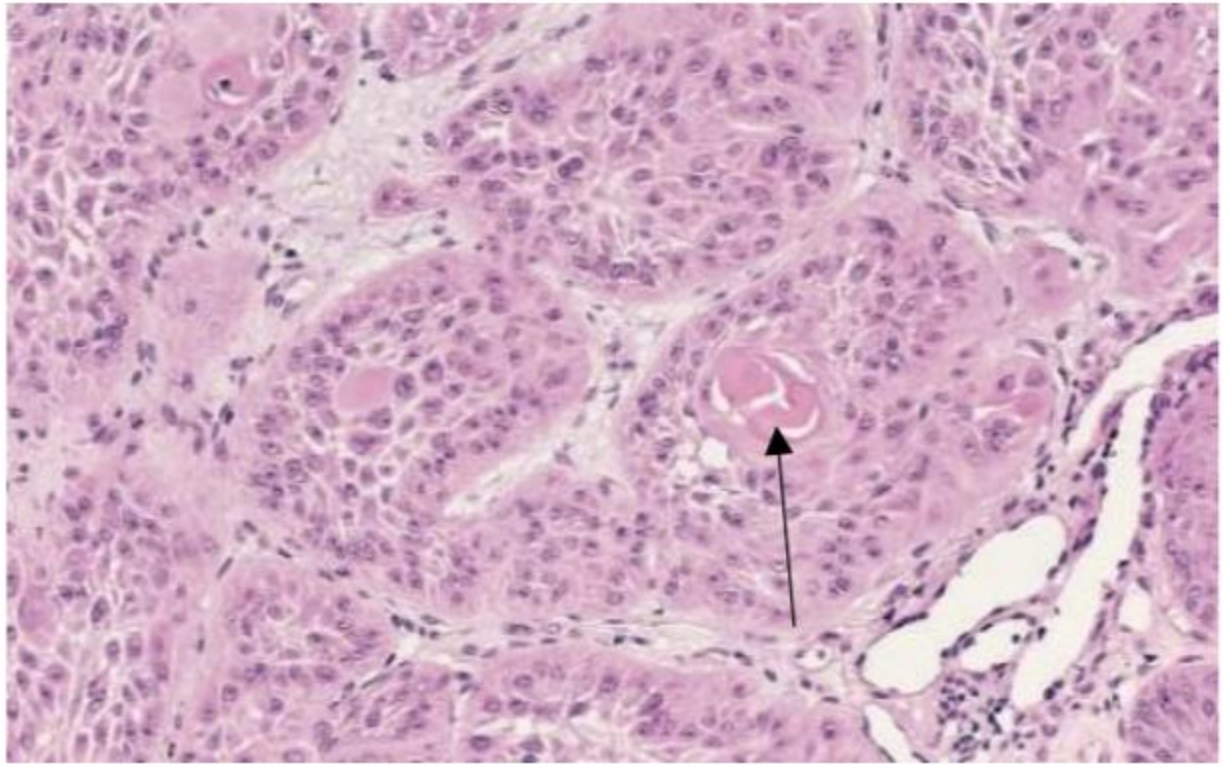
- **Benign**



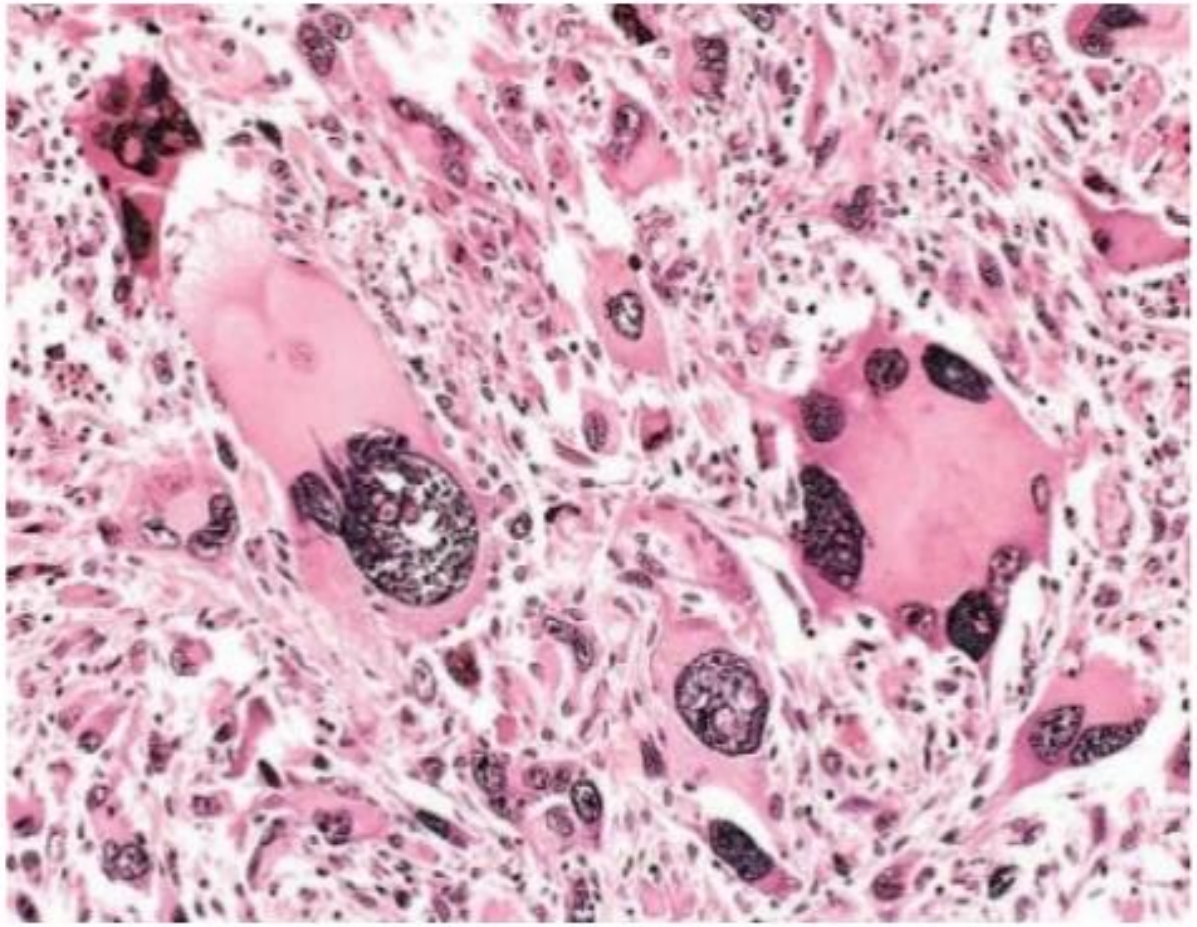
Mature Adipose Tissue (Lipoma):

- Made up of mature fat cells laden with cytoplasmic lipid vacuoles
- —evidence of morphologic and functional differentiation.
- Benign



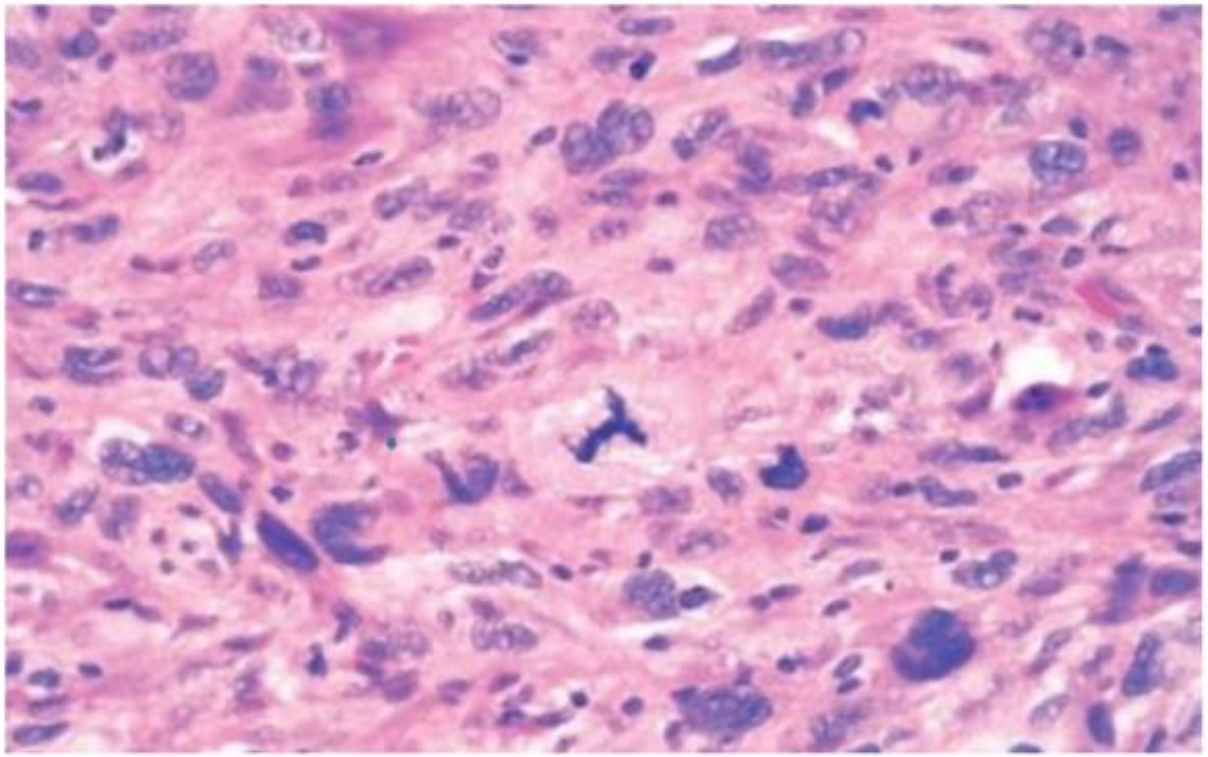
Well-Differentiated Squamous Cell Carcinoma:

- Well-differentiated (to do normal functions) squamous cell carcinoma
- the tumor cells are strikingly similar to normal squamous epithelial cells, with intercellular bridges and nests of keratin (arrow)



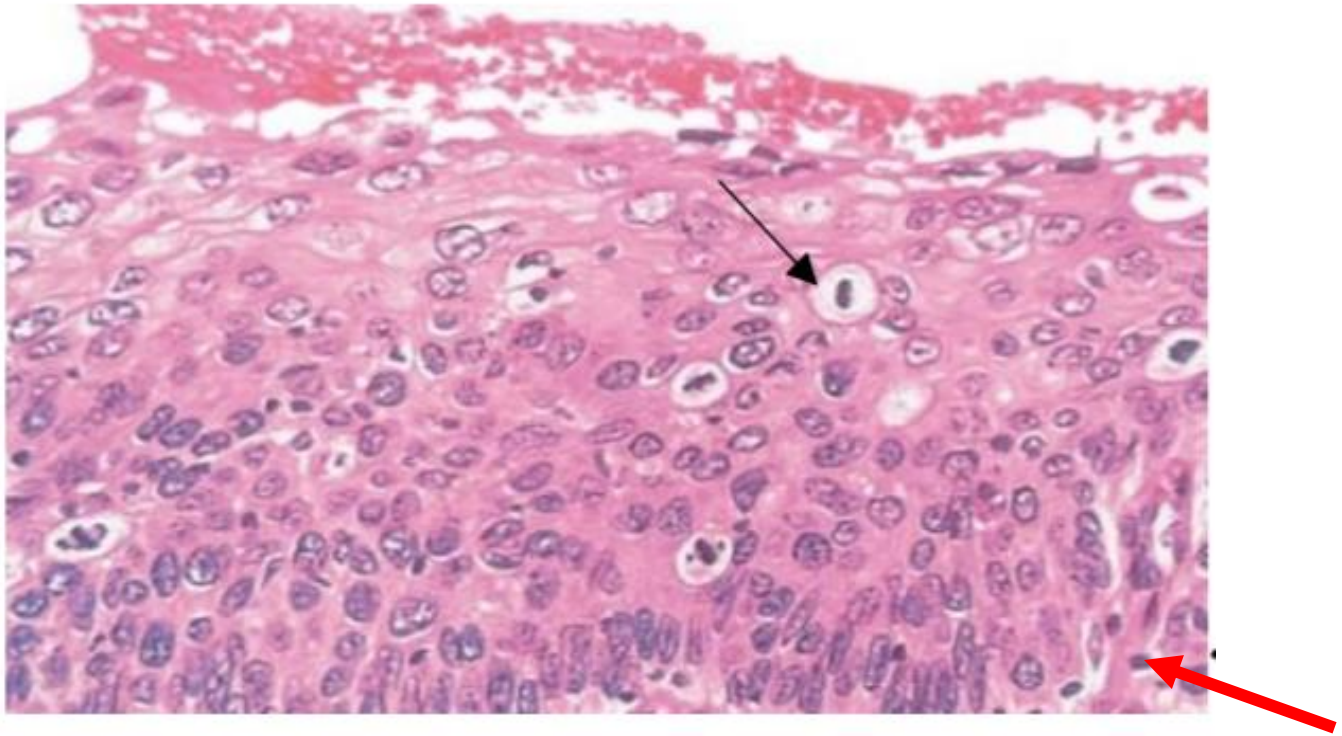
Anaplasia:

- Pleomorphic malignant tumor (rhabdomyosarcoma).
- Observe:
- The marked variation in cell and nuclear sizes
- The hyperchromatic nuclei
- The presence of tumor giant cells.



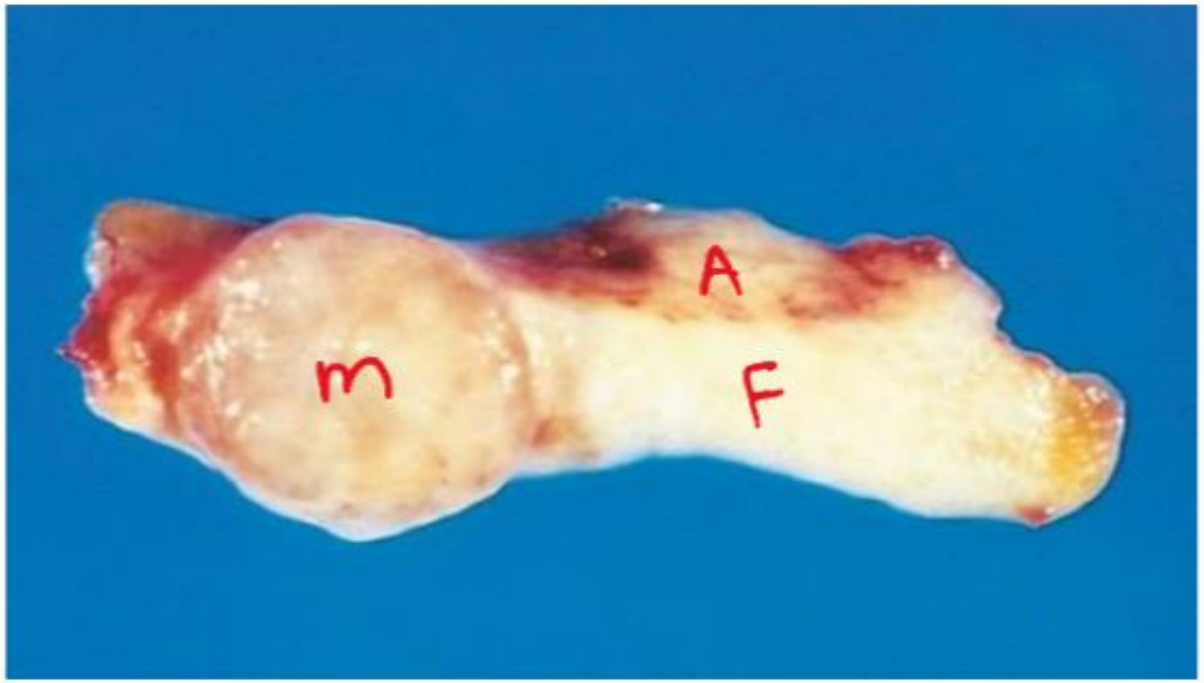
Abnormal Mitosis:

- High-power detailed view of anaplastic tumor cells
- Shows cellular and nuclear variation in size and shape.
- The prominent cell in the center field has an abnormal tripolar spindle



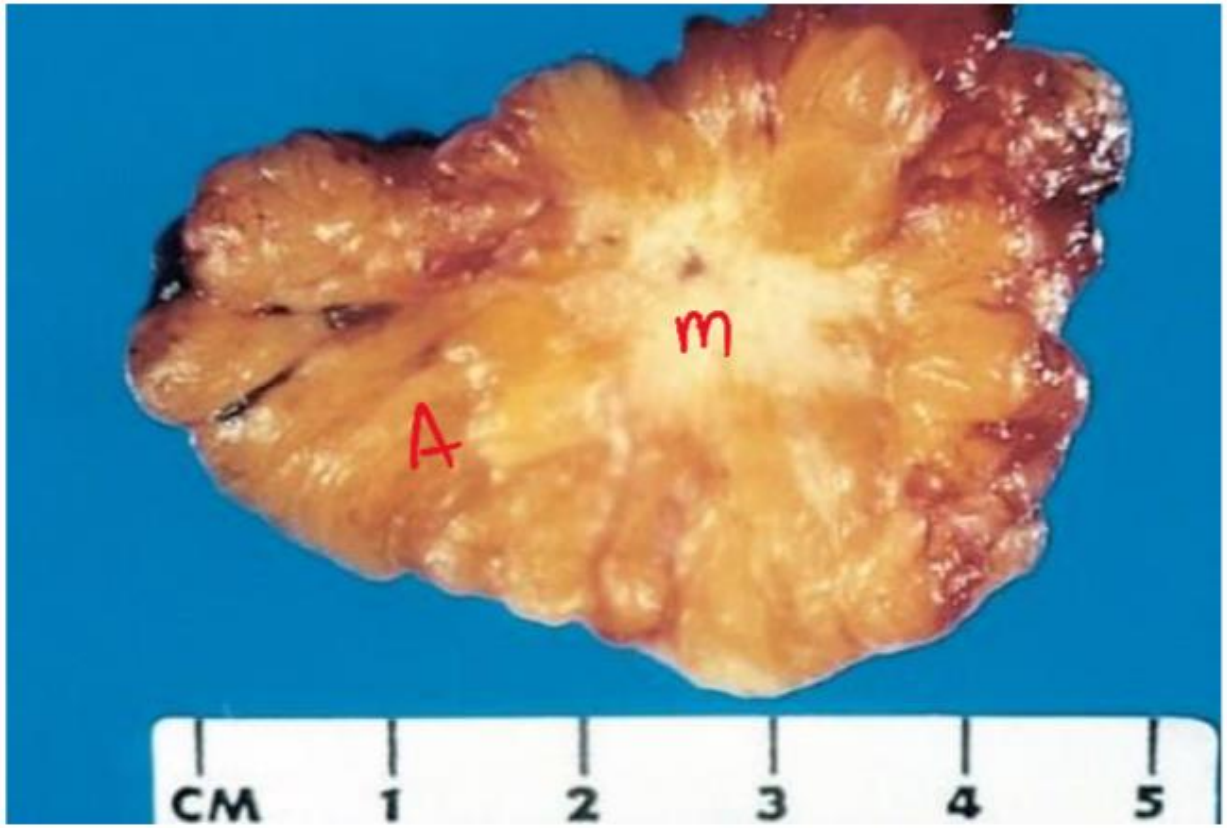
"Dysplasia":

- High-power view of another region
- Shows failure of normal differentiation
- Marked nuclear and cellular pleomorphism
- Numerous mitotic figures extending toward the surface
- Red Arrow indicates Dividing Cells



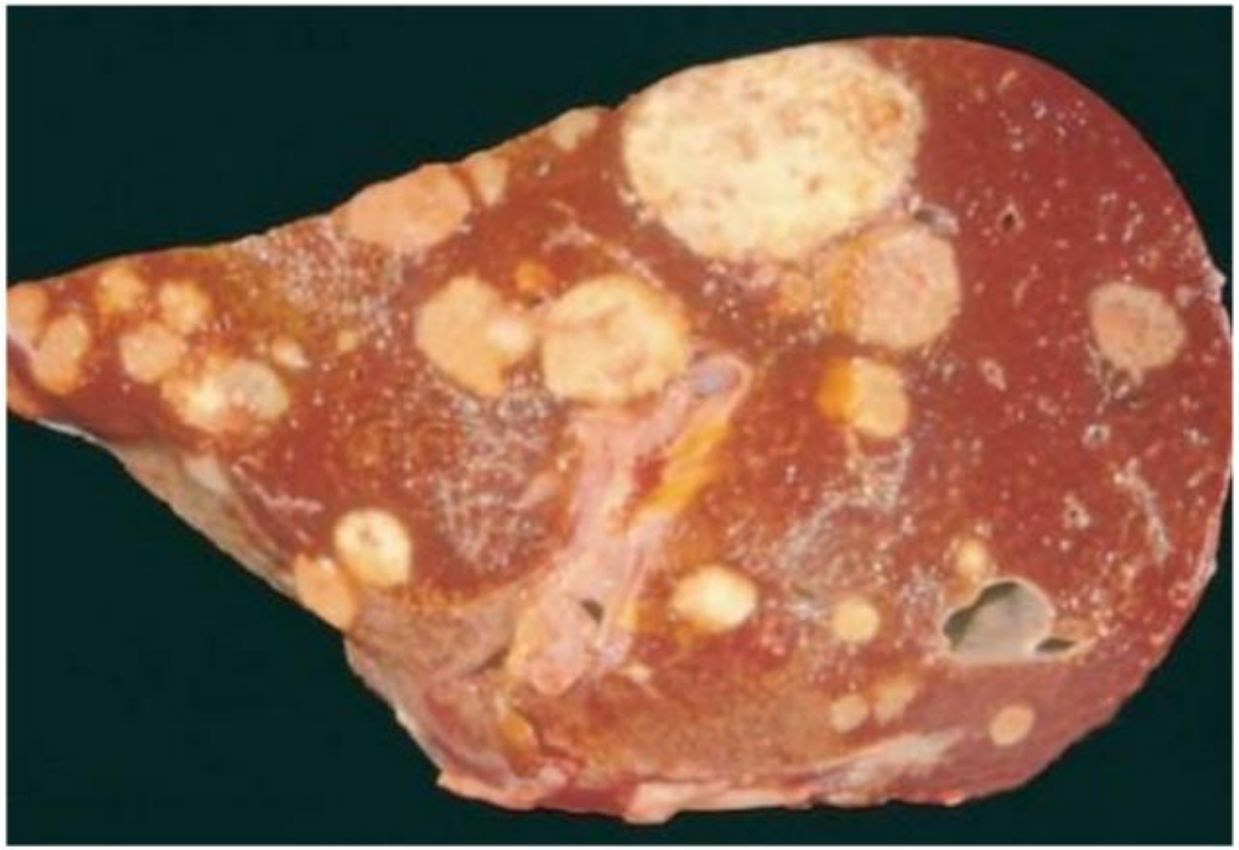
Fibroadenoma of the Breast:

- The tan-colored, encapsulated small tumor is sharply demarcated from the whiter breast tissue
- M: mass(tumor), A: Adipose Tissue, F: Fibrous Tissue



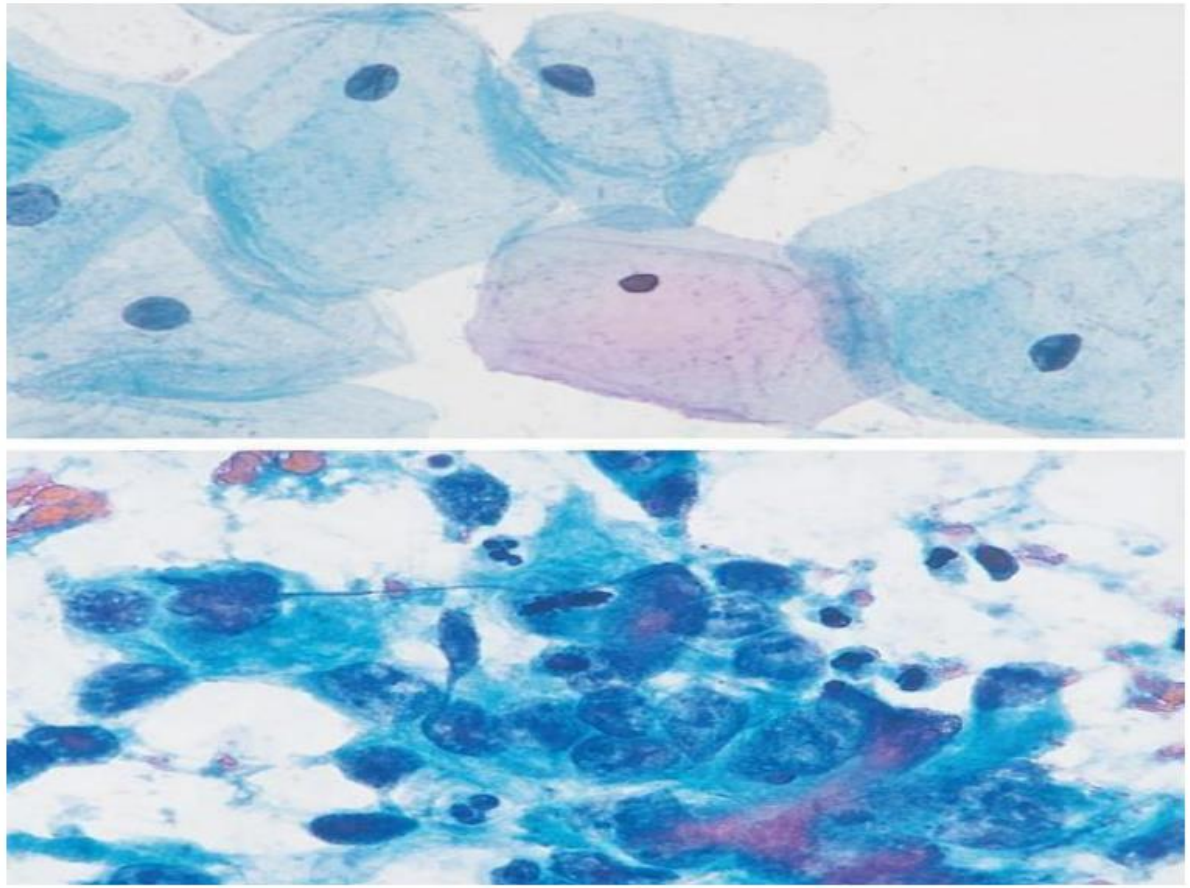
Invasive Ductal Carcinoma of the Breast:

- Cut section
- The lesion is retracted infiltrating the surrounding breast substance.
- Not well demarcated.
- M: mass, A: Adipose Tissue



A Liver with Metastatic Cancer:

- Doesn’t look normal



Cytologic Smear (Papanicolaou):

- Morphologic Method of Laboratory Diagnosis of Cancer
- Extra: Top is Normal Epithelial Cells, bottom is Abnormal/ Cancerous Cells

Neoplasia Tables

Agents or Groups of Agents	Human Cancers for Which Reasonable Evidence Is Available	Typical Use or Occurrence
Arsenic and arsenic compounds	Lung carcinoma, skin carcinoma	By-product of metal smelting; component of alloys, electrical and semiconductor devices, medications and herbicides, fungicides, and animal dips
Asbestos	Lung, esophageal, gastric, and colon carcinoma; mesothelioma	Formerly used for many applications because of fire, heat, and friction resistance; still found in existing construction as well as fire-resistant textiles, friction materials (i.e., brake linings), underlayment and roofing papers, and floor tiles
Benzene	Acute myeloid leukemia	Principal component of light oil; despite known risk, many applications exist in printing and lithography, paint, rubber, dry cleaning, adhesives and coatings, and detergents; formerly widely used as solvent and fumigant
Beryllium and beryllium compounds	Lung carcinoma	Missile fuel and space vehicles; hardener for lightweight metal alloys, particularly in aerospace applications and nuclear reactors
Cadmium and cadmium compounds	Prostate carcinoma	Uses include yellow pigments and phosphors; found in solders; used in batteries and as alloy and in metal platings and coatings
Chromium compounds	Lung carcinoma	Component of metal alloys, paints, pigments, and preservatives
Nickel compounds	Lung and oropharyngeal carcinoma	Nickel plating; component of ferrous alloys, ceramics, and batteries; by-product of stainless-steel arc welding
Radon and its decay products	Lung carcinoma	From decay of minerals containing uranium; potentially serious hazard in quarries and underground mines
Vinyl chloride	Hepatic angiosarcoma	Refrigerant; monomer for vinyl polymers; adhesive for plastics; formerly inert aerosol propellant in pressurized containers

Pathologic Condition	Associated Neoplasm(s)	Etiologic Agent
Asbestosis, silicosis	Mesothelioma, lung carcinoma	Asbestos fibers, silica particles
Inflammatory bowel disease	Colorectal carcinoma	
Lichen sclerosis	Vulvar squamous cell carcinoma	
Pancreatitis	Pancreatic carcinoma	Alcoholism, germ line mutations (e.g., in the trypsinogen gene)
Chronic cholecystitis	Gallbladder cancer	Bile acids, bacteria, gallbladder stones
Reflux esophagitis, Barrett esophagus	Esophageal carcinoma	Gastric acid
Sjögren syndrome, Hashimoto thyroiditis	MALT lymphoma	
Opisthorchis, cholangitis	Cholangiocarcinoma, colon carcinoma	Liver flukes *(Opisthorchis viverrini)*
Gastritis/ulcers	Gastric adenocarcinoma, MALT lymphoma	*Helicobacter pylori*
Hepatitis	Hepatocellular carcinoma	Hepatitis B and/or C virus
Osteomyelitis	Carcinoma in draining sinuses	Bacterial infection
Chronic cervicitis	Cervical carcinoma	Human papillomavirus

Table 7.4 Chronic Inflammatory States and Cancer

Pathologic Condition	Associated Neoplasm(s)	Etiologic Agent(s)
Asbestosis, silicosis	Mesothelioma, lung carcinoma	Asbestos fibers, silica particles
Inflammatory bowel disease	Colorectal carcinoma	
Lichen sclerosis	Vulvar squamous cell carcinoma	
Pancreatitis	Pancreatic carcinoma	Alcoholism, germline mutations (e.g., in the trypsinogen gene)
Chronic cholecystitis	Gallbladder cancer	Bile acids, bacteria, gallbladder stones
Reflux esophagitis, Barrett esophagus	Esophageal carcinoma	Gastric acid
Sjögren syndrome, Hashimoto thyroiditis	MALT lymphoma	
Opisthorchis, cholangitis	Cholangiocarcinoma, colon carcinoma	Liver flukes (*Opisthorchis viverrini*)
Gastritis/ulcers	Gastric adenocarcinoma, MALT lymphoma	*Helicobacter pylori*
Hepatitis	Hepatocellular carcinoma	Hepatitis B and/or C virus
Osteomyelitis	Carcinoma in draining sinuses	Bacterial infection
Chronic cervicitis	Cervical carcinoma	Human papillomavirus
Chronic cystitis	Bladder carcinoma	Schistosomiasis

Table 6.4 Inherited Predisposition to Cancer

Inherited Predisposition	Gene(s)
Autosomal Dominant Cancer Syndromes	
Retinoblastoma	*RB*
Li-Fraumeni syndrome (various tumors)	*TP53*
Melanoma	*CDKN2A*
Familial adenomatous polyposis/colon cancer	*APC*
Neurofibromatosis 1 and 2	*NF1, NF2*
Breast and ovarian tumors	*BRCA1, BRCA2*
Multiple endocrine neoplasia 1 and 2	*MEN1, RET*
Hereditary nonpolyposis colon cancer	*MSH2, MLH1, MSH6*
Nevoid basal cell carcinoma syndrome	*PTCH1*
Autosomal Recessive Syndromes of Defective DNA Repair	
Xeroderma pigmentosum	Diverse genes involved in nucleotide excision repair
Ataxia-telangiectasia	*ATM*
Bloom syndrome	*BLM*
Fanconi anemia	Diverse genes involved in repair of DNA cross-links

Direct- acting carcinogens	Type of cancer	
Alkylating Agents	leukemia	
β- Propiolactone	lymphoma	
Dimethyl sulfate	Hodgkins lymphoma	
Diepoxybutane		
Anticancer drugs (cyclophosphamide, chlorambucil, nitrosoureas, and others)	Ovarian tumors	
Acylating agents		
1-Acetyl-imidazole		
Dimethylcarbamyl chloride		

Indirectly-acting agents	source	Type & site of cancer
Polycyclic and hetercyclic armotic hydrocarbons	Smoked meats & fish	
Benz(a)anthracene		
Benzo(a)pyrene	Combustion of tobacco	Lung cancer
Dibenzanthracene		
3-Methylcholanthrene		
dimethylbenz(a)anthracene		
Aromatic amines, amides, amides, azo dyes		
2- Napththylamine (β-naphthylamine) Benzidine	Aniline dye Rubber industry	Bladder cancer
2- Acetylaminofluorene		
Dimethylaminoazobenzene (butter yellow)		

	source	Type & site of cancer
Aflatoxin B1	Aspergillus	Hepatocellular carcinoma
Betel nuts	chewing	Oral carcinoma
benzene	Paint,rubber,dry cleaning	Leukemia,lymphoma
Arsenic compounds	Electrical devices,herbicides,fungicides	Lung,skin angiosarcoma
asbestos	Floor tiles,roofing paper,brakes lining	Mesothelioma Lung carcinoma
Cadmium compounds	Batteries,metal coating	Prostate cancer
Nitrosamine and amides	Food preservatives	
Vinyl chloride nickel Chromium compounds	Adhesive for plastics Nickelplating,ceramics, Batteries Paints,preservatives, pigments	Liver angiosarcoma Nose & lung cancer Lung cancer
Insecticides, fungicides		

لَا إِلَهَ إِلَّا أَنْتَ سُبْحَانَكَ إِنِّي كُنْتُ مِنَ الظَّالِمِينَ

اللَّهمَّ إِنِّي أسألكَ من خيرِ ما سألكَ عبدكَ ونبيكَ، وأعوذ بكَ من شرِّ ما عاذَ منه عبدكَ ونبيكَ، ربي إِنِّي أسألكَ الجنَّةَ وما قرَّبَ إليها من قولٍ وعملٍ، وأعوذ بكَ منَ النَّارِ وما قرَّبَ إليها من قولٍ أو عملٍ، كما أسألكَ أن تجعلَ كلَّ قضاءٍ قضيتَه لي خيرًا