MALIGNANT EPITHELIAL TUMORS (CARCINOMA)

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MALIGNANT TUMORS

- ***Epithelial tumors:***

**Surface epithelium (stratified squamous epithelium and urothelium): cell+ carcinoma.

**Glandular epithelium: cell+ adeno+ carcinoma.

**????? cyst adenocarcinoma.

- ***Mesenchymal tumors:***

**Cell +sarcoma. (leiomyosarcoma, liposarcoma, fibrosarcoma).

MISNOMERS

- Melanoma
- Lymphoma
- Seminoma
- Hepatoma……Hepatocellular carcinoma.
- Hypernephroma…… renal cell carcinoma.
- Osteoclastoma……not from osteoclasts.

MALIGNANT EPITHELIAL TUMORS (CARCINOMA)

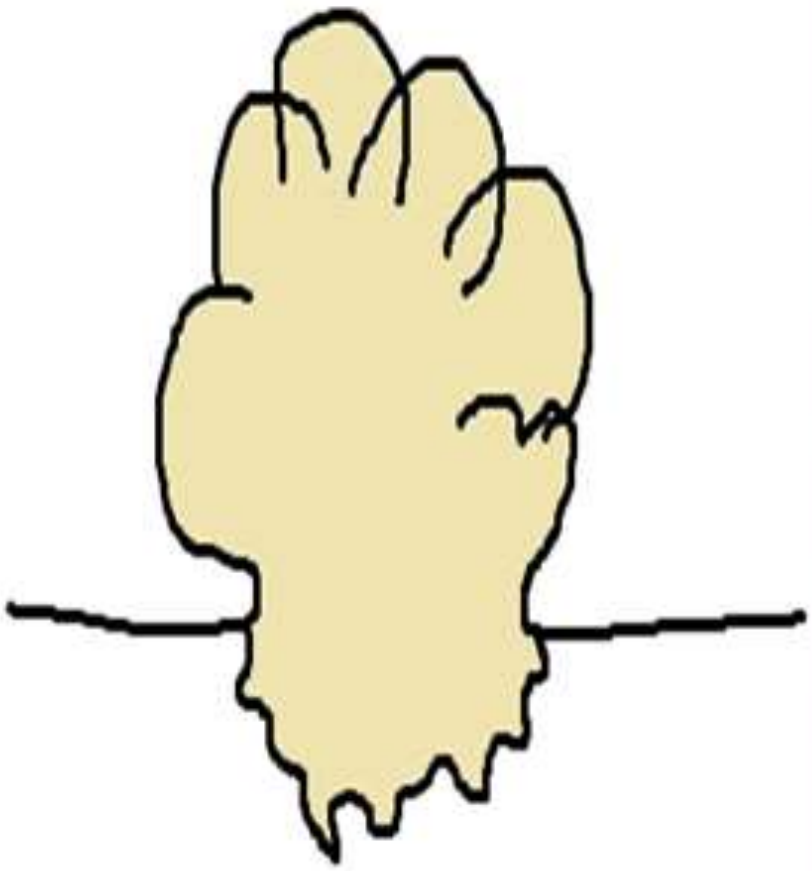
GENERAL CHARACTERS

1. **Incidence:** carcinoma is more common than sarcomas.
2. **Age:** usually affects middle and old age (40-60years old).
3. **Rate of growth:** slower than sarcomas.
4. **Mode of growth:** grows by infiltration.

5- GROSS PICTURE OF CARCINOMAS

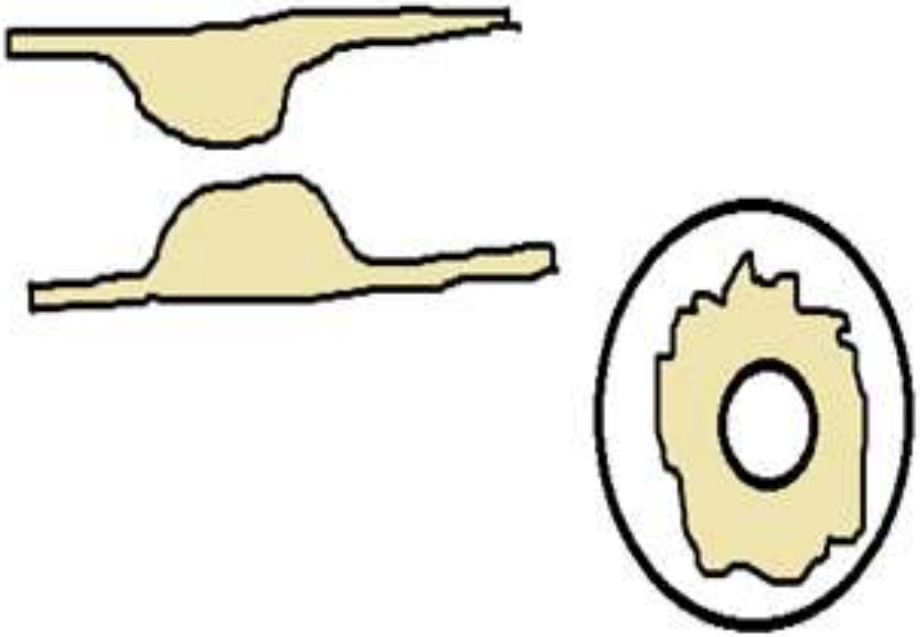
- **The shape** of the tumor maybe;
  - Infiltrating solid mass.
  - Polypoid mass.
  - Malignant ulcer.
  - Annular growth.
- **Cut section** is usually greyish-white with haemorrhage and necrosis.

Infiltrative



polypoid

Malignant Ulcer



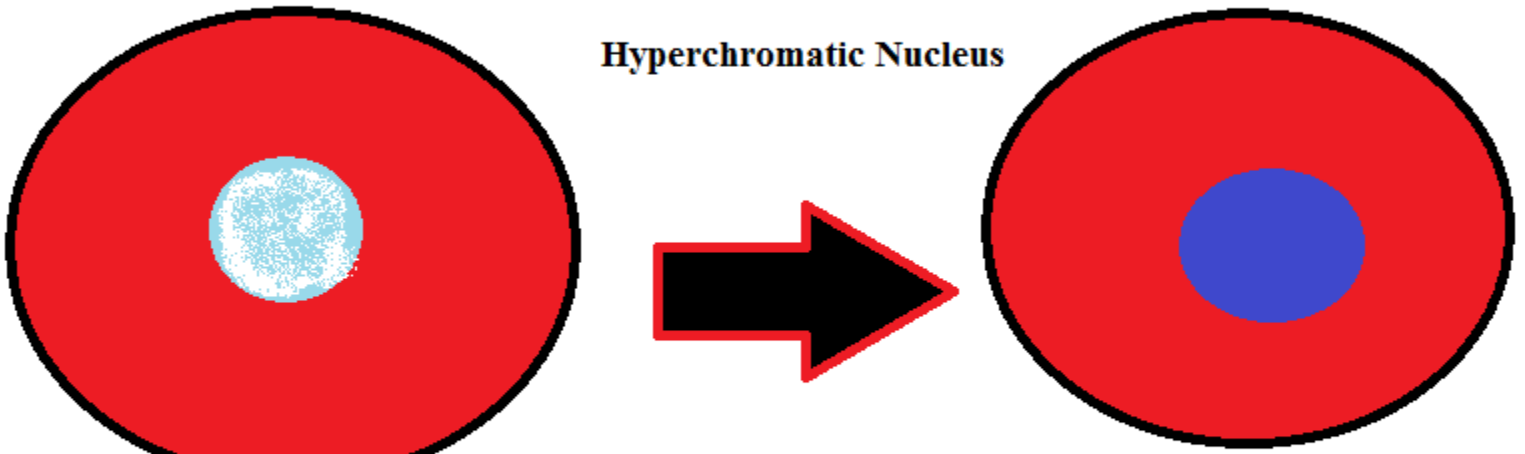
Annular mass

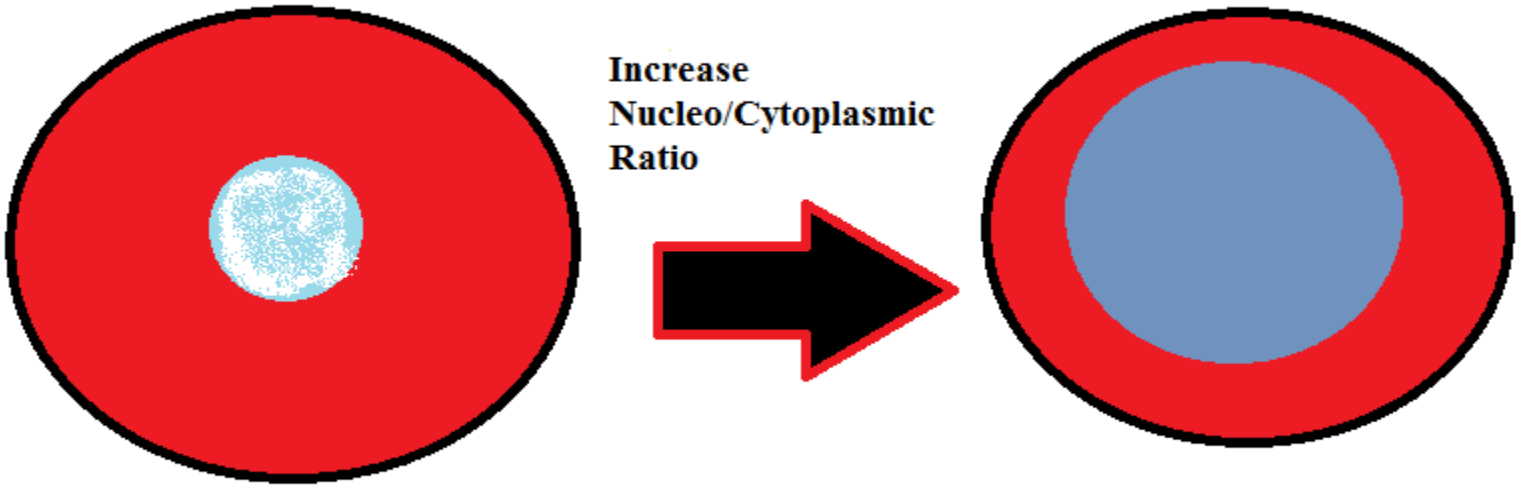
6- MICROSCOPIC PICTURE OF CARCINOMA

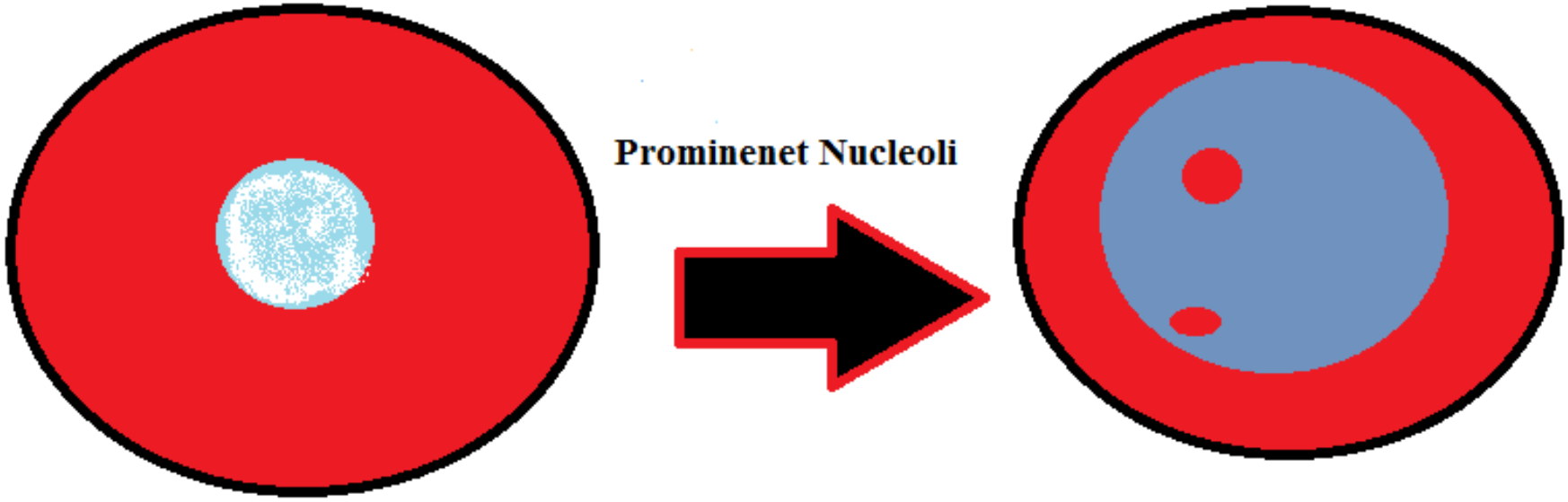
- Carcinoma cells are arranged in groups, masses or columns separated by fibrous stroma. Within each group; the individual cells are in contact with each other with no intercellular substances in between.
- The cells shows all malignant criteria; pleomorphism, hyperchromatism, abnormal mitosis, increased N/C ratio).
- The blood vessels are confined to the stroma. They are less numerous than in sarcoma.

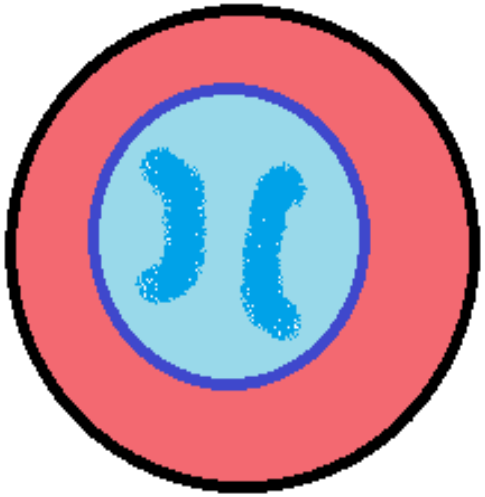
CRITERIA OF MALIGNANCY

- Hyperchromatism.
- Increase nucleo/cytoplasmic ratio.
- Prominent nucleoli.
- Abnormal mitotic figures.
- Pleomorphism.
- Tumor giant cells.


Hyperchromatic Nucleus

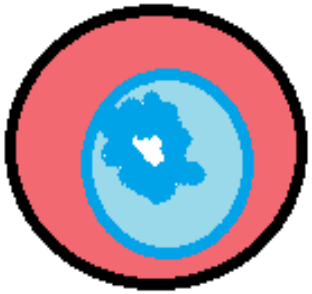

Increase
Nucleo/Cytoplasmic
Ratio


Prominenet Nucleoli



Normal

1

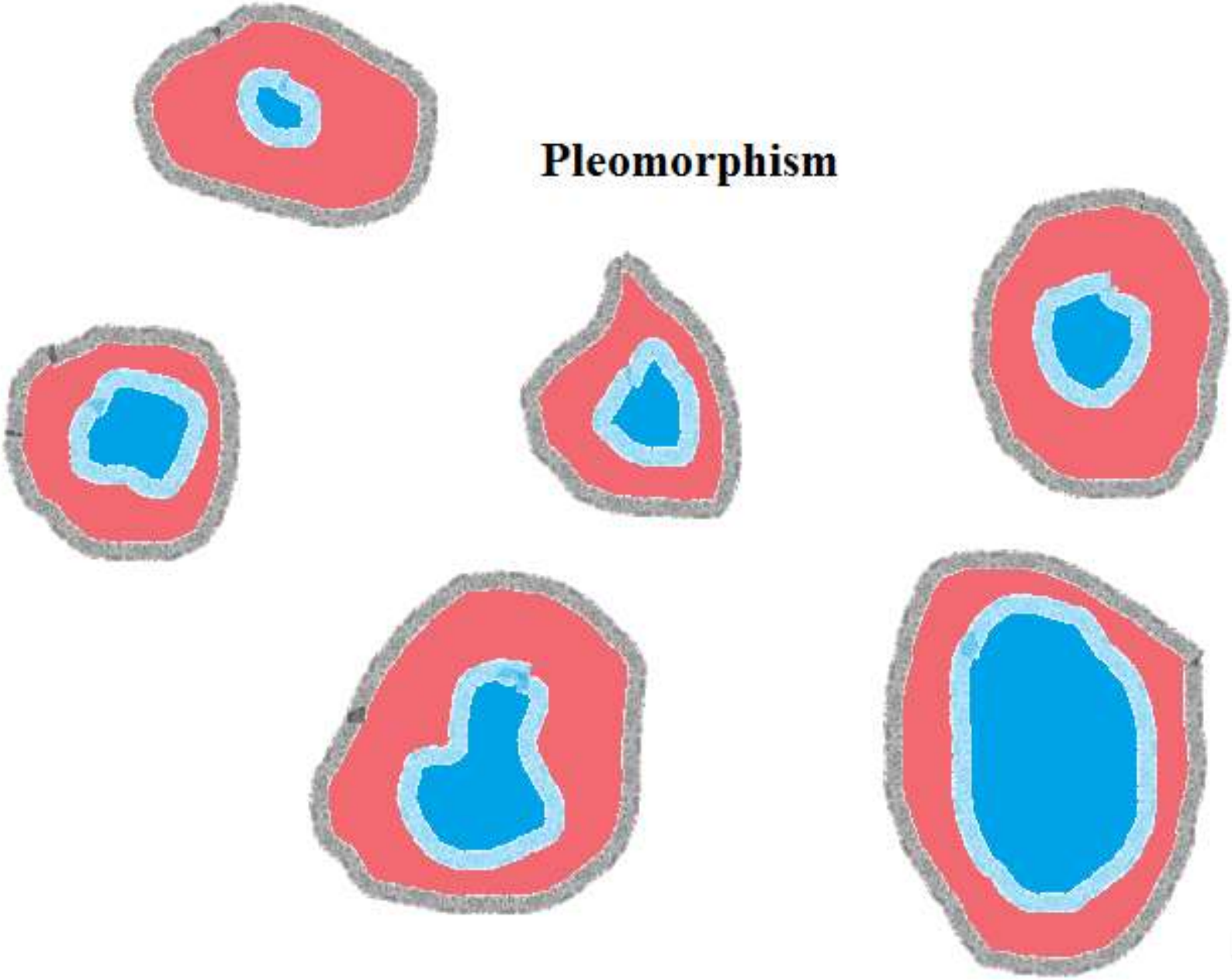


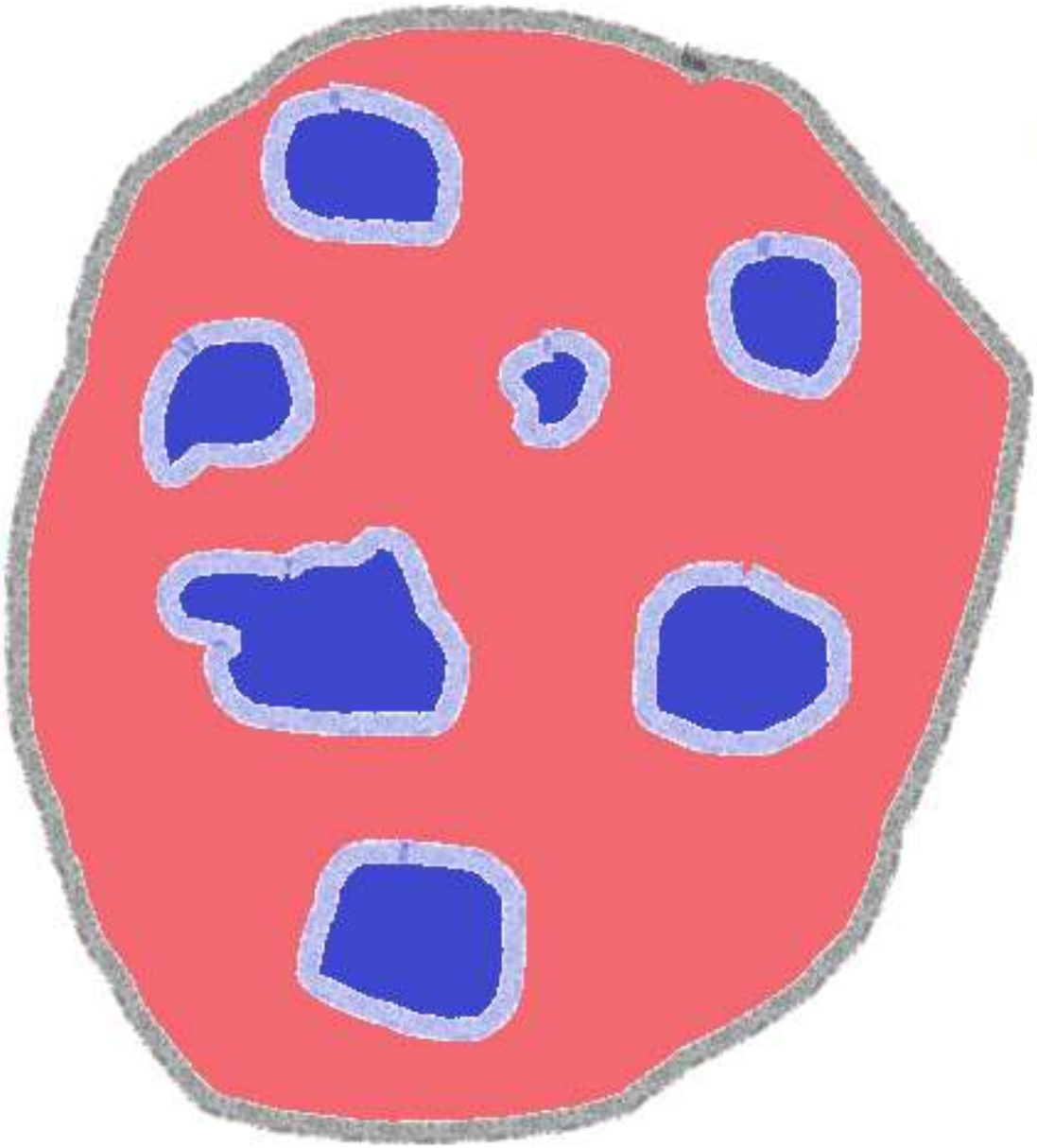
2

1,2,3: Abnormal Forms

3

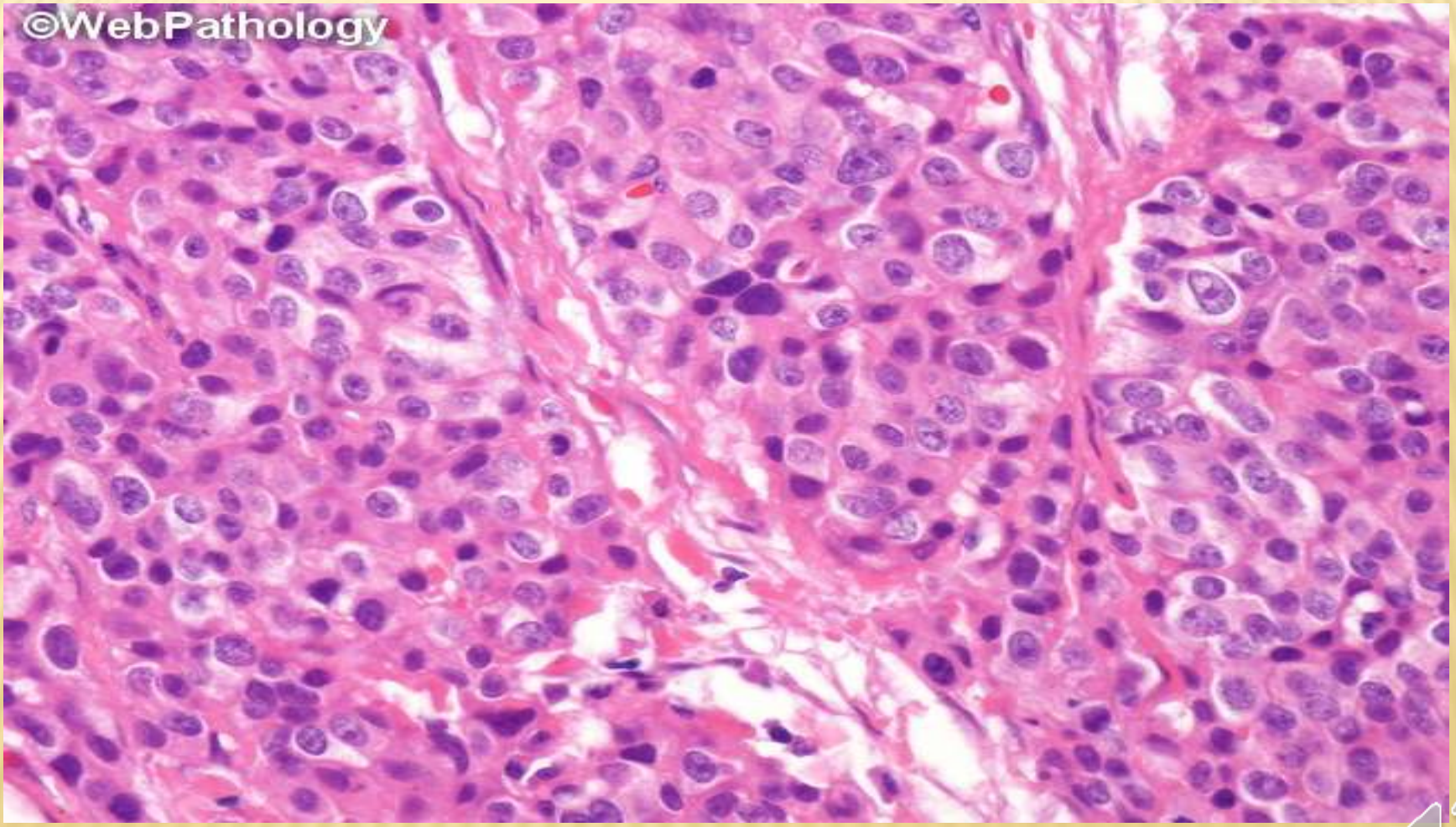
Pleomorphism

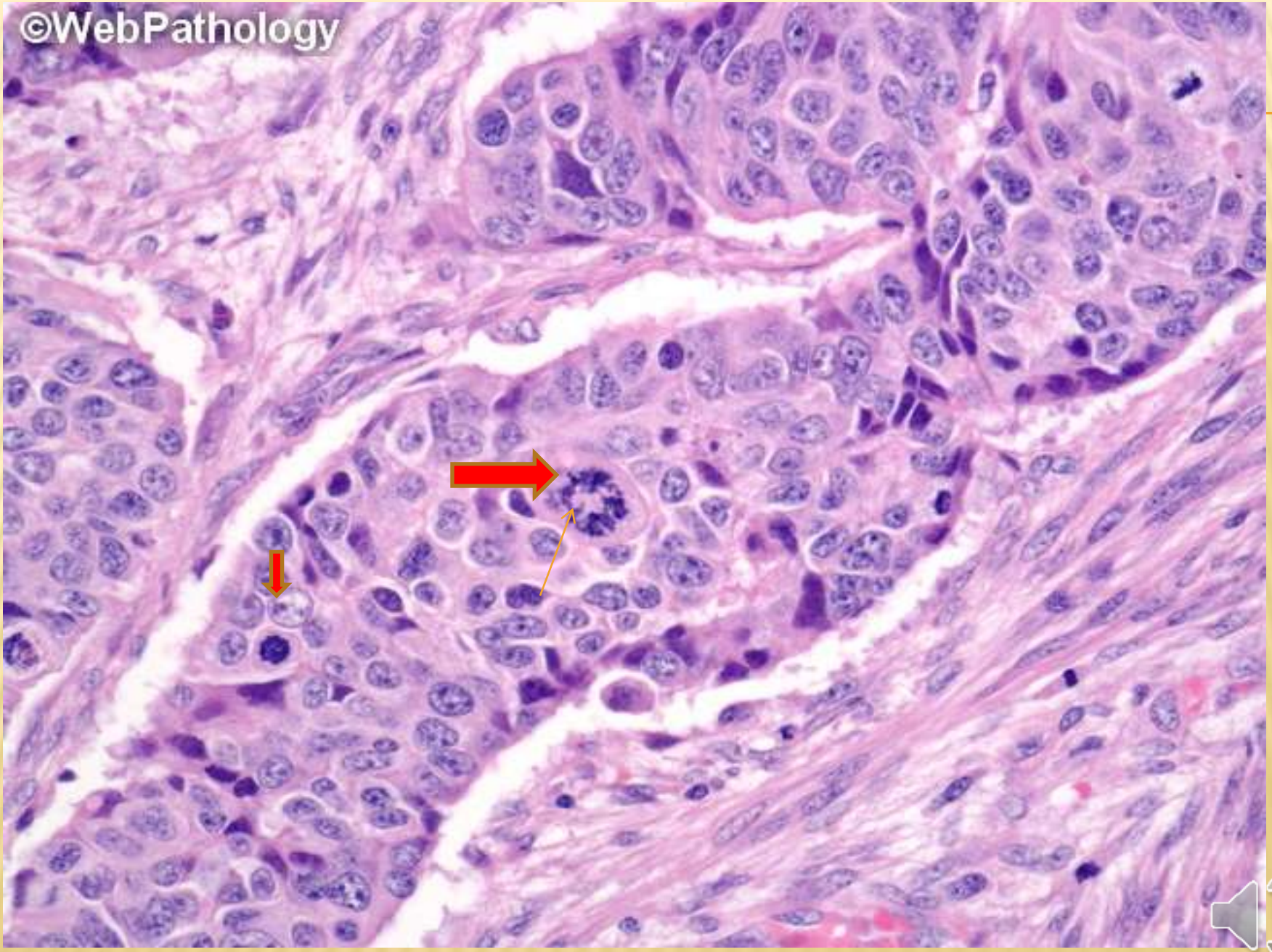




Tumor Giant Cell

CRITERIA OF MALIGNANCY

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- **According to degree of similarity of the carcinoma cells to the tissue of origin;** carcinomas are classified into **well differentiated, moderately differentiated and poorly differentiated**. When the tumor cells don't show any similarity to tissue of origin; the carcinoma is called **undifferentiated or anaplastic.**

7- SPREAD

- Slower than in sarcoma.
- Distant spread is mainly by lymphatics.
- Blood spread is less common than in sarcoma and occurs in late stages. (note, carcinomas arising from thyroid, lung, breast, kidney, prostate and placenta show early blood spread).

TYPES OF CARCINOMA

I- Carcinomas of surface epithelium:

1. Squamous cell carcinoma.
2. Basal cell carcinoma.
3. Transitional cell carcinoma.

II-Glandular carcinomas:

1. Adenocarcinoma.
2. Mucoid carcinoma.
3. Undifferentiated carcinoma.

CARCINOMAS OF SURFACE EPITHELIUM

I- SQUAMOUS CELL CARCINOMA

SQUAMOUS CELL CARCINOMA

- Malignant tumor arising from stratified squamous epithelium as those lining oral cavity, anal canal and vagina,…….. .
- Or those following undergoing squamous metaplasia as urinary bladder, bronchi and gall bladder.

PREDISPOSING FACTORS:

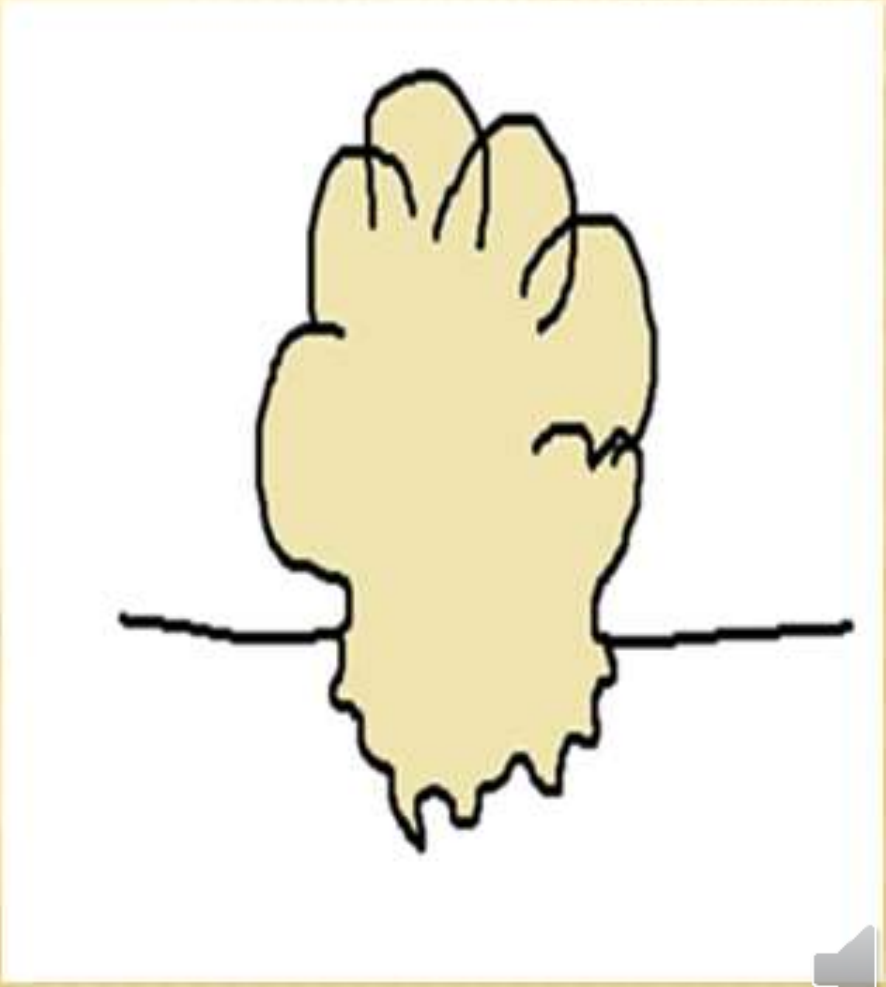
- Exposure to sun light.
- Chronic irritation.
- Occupational exposure to carcinogenic substances.
- Exposure to radiation.

GROSS PICTURE:

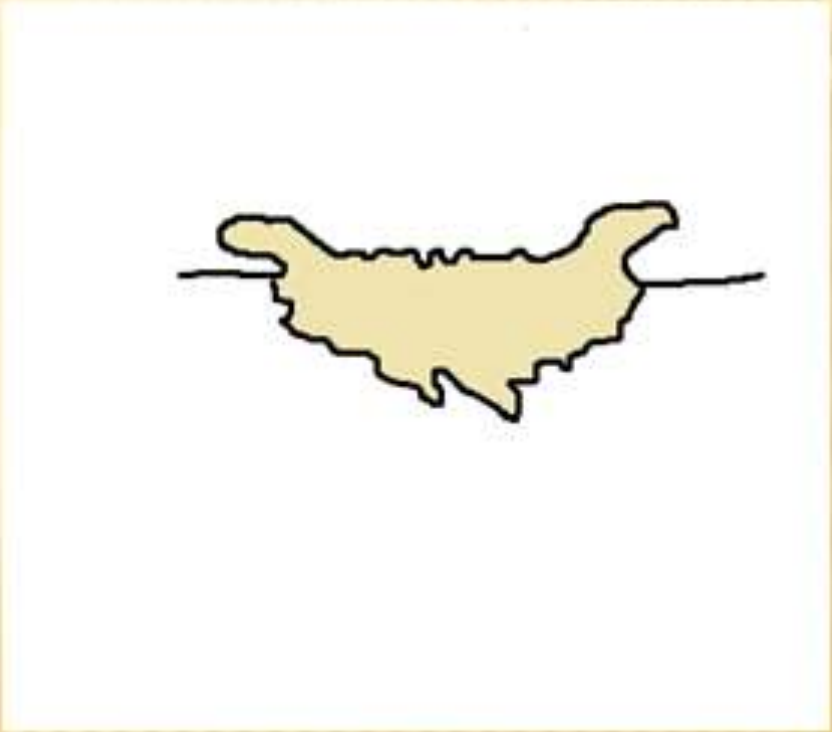
- The tumor starts as a hard nodule in the epithelium which grows and infiltrates the surrounding tissue and takes one of the following shapes:

GROSS PICTURE OF SQUAMOUS CELL CARCINOMA

- 1) polypoid or fungating carcinoma:



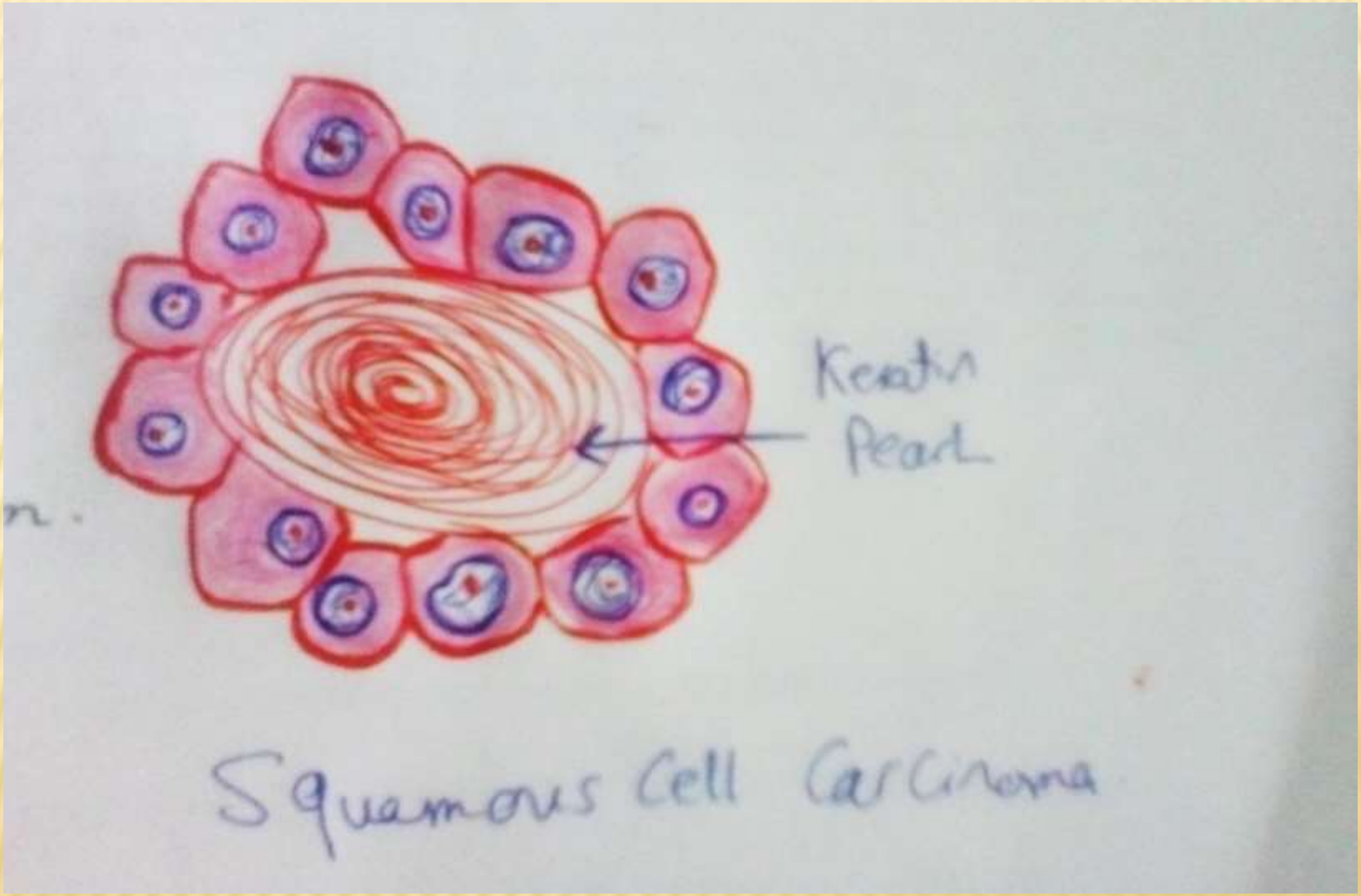
- 2) ulcerative carcinoma: it is the commonest type. The malignant ulcer has a raised, everted edges, necrotic floor and fixed indurated base.



- 3) infiltrative carcinoma: the malignant tissue infiltrates more in the underlying deeper structures with little surface ulceration.

MICROSCOPIC PICTURE:

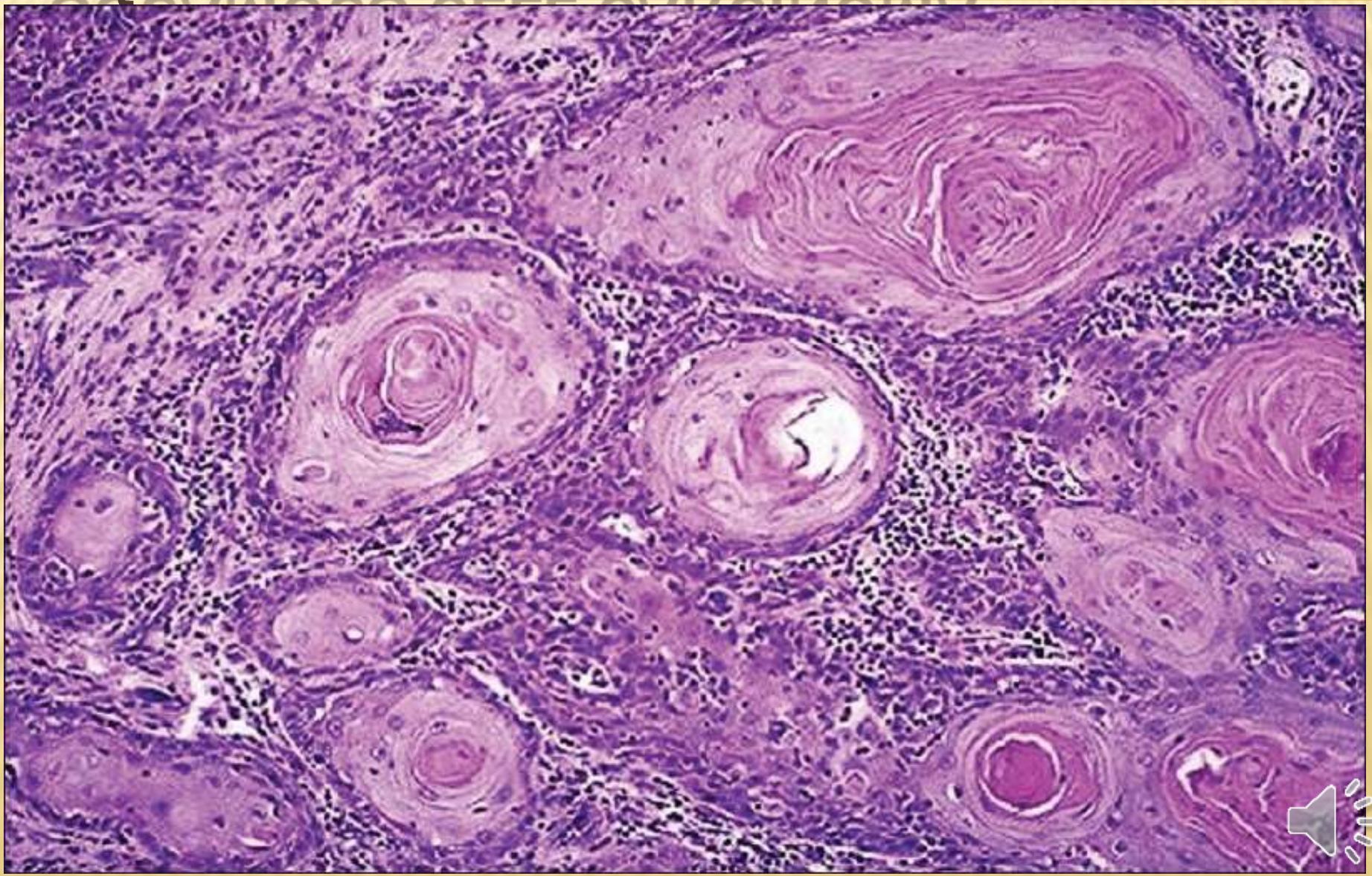
- The tumor arising from surface epithelium and infiltrates the sub epithelial tissue in the form of variable sized masses and sheets of neoplastic epithelial cells of squamous morphology (large polyhedral cells with abundant glassy esionphilic cytoplasm, large central vesicular nuclei with easily detected nucleoli and frequent abnormal mitotic figures). In the more differentiated Squamous cell carcinomas; the central portion of these nests and sheets contains central keratin and are called cell nests or epithelial pearls.

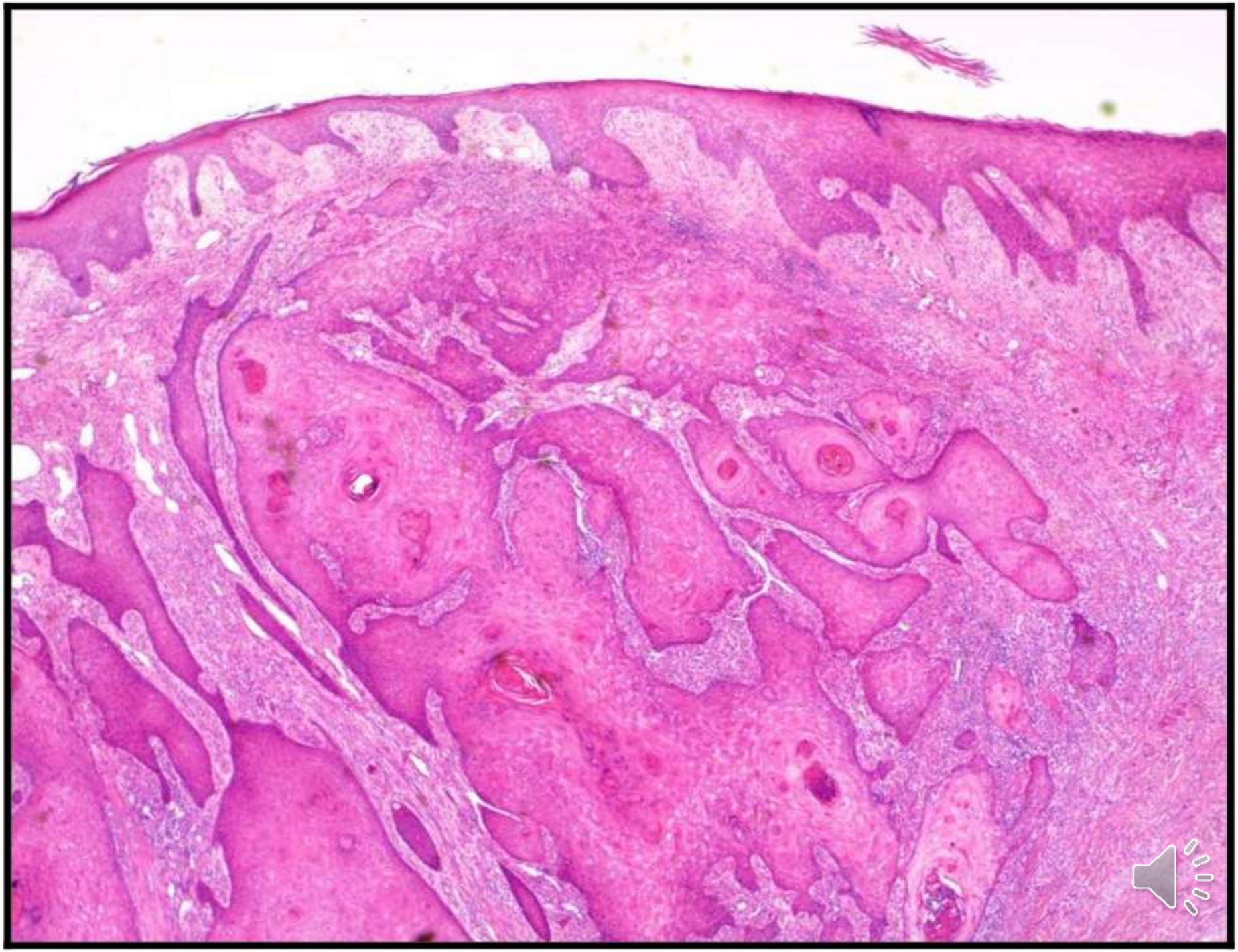

Keratin
Pearl
Squamous Cell Carcinoma

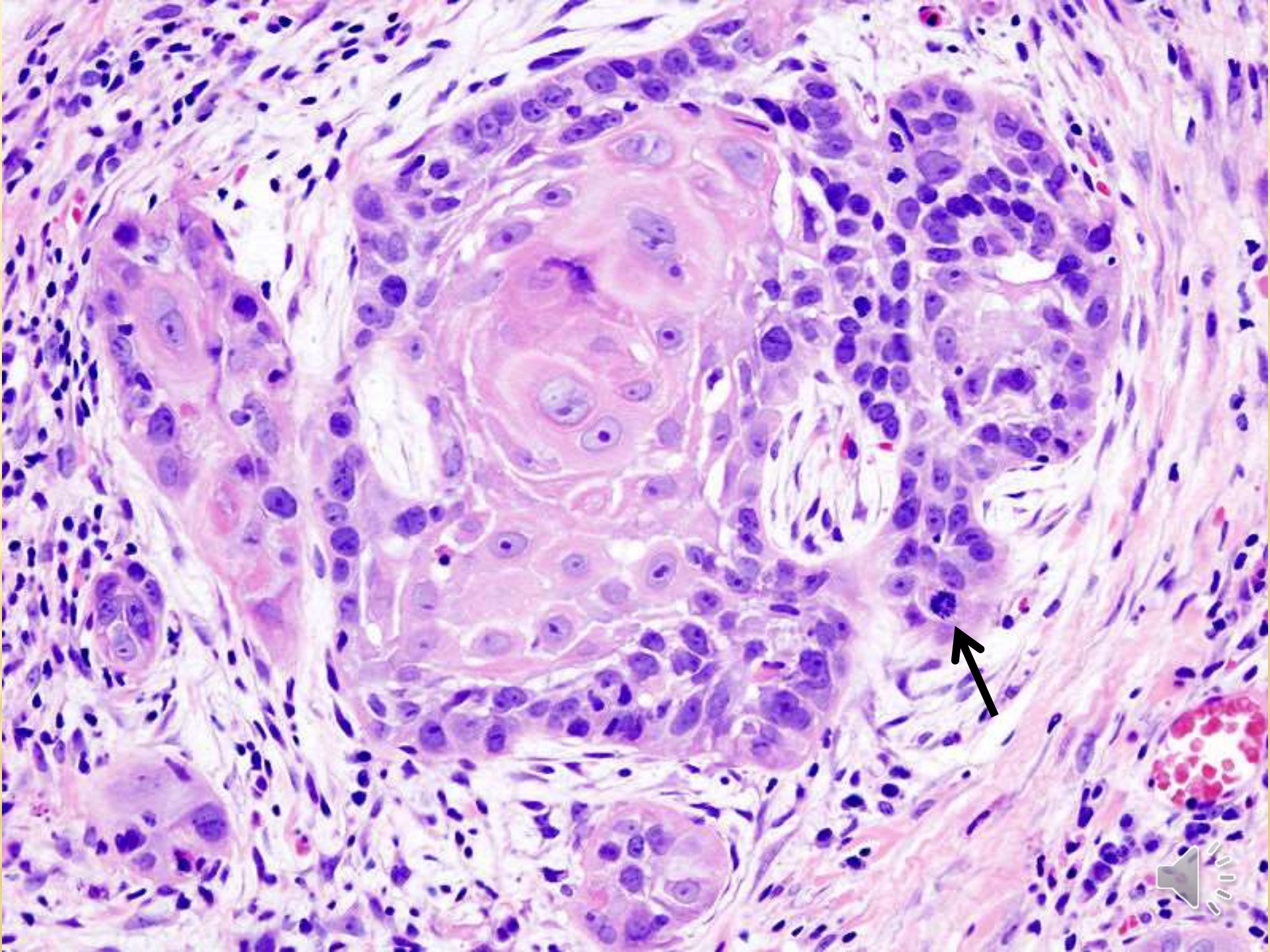
It is divided into four grades according to proportion of keratinized groups:

- Grade I: 75-100% keratinized groups.
- Grade II: 50-75% keratinized groups.
- Grade III: 25-50% keratinized groups.
- Grade IV: 0-25% keratinized groups.

SQUAMOUS CELL CARCINOMA







SPREAD OF SQUAMOUS CELL CARCINOMA

- This tumor has a relatively slow rate of growth and spreads by

1) local invasion.

2) By lymphatics to regional lymph nodes.

3) Blood spread, although delayed.

II- BASAL CELL CARCINOMA (RODENT ULCER).

It is a locally malignant tumor arising from the basal cells of the skin.

Sites: most cases arise in the face, usually above a line drawn from the lobule of the ear to the angle of the mouth (on eye lids, forehead and scalp).

Predisposing factors: exposure to sun lights.

GROSS PICTURE:

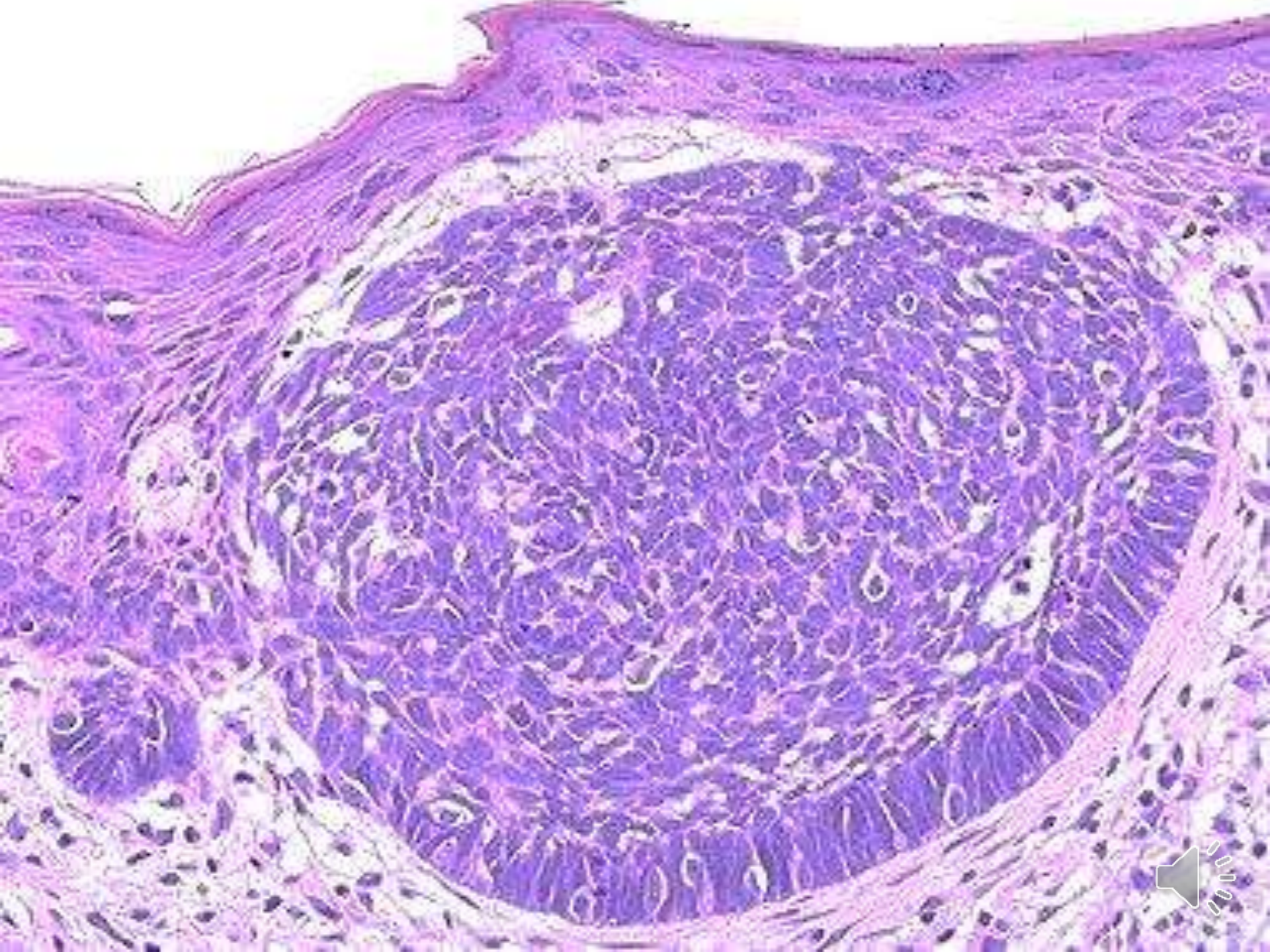
- The tumor appears as firm, red papule which ulcerate. The ulcer has rolled, beaded edges, fixed indurated base and necrotic floor.

Inverted edges

Beaded edges

MICROSCOPIC PICTURE:

- The tumor (BCC) infiltrating the dermis in the form of nests and sheets. The cells of the outer layer are columnar and parallel (palisading arrangement).



SPREAD:

- Basal cell carcinoma is a locally malignant tumor. So, it spreads only locally by infiltration; destroying the surrounding structures. There is no distant metastasis.
- The tumor may change to squamous cell carcinoma.

III- TRANSITIONAL (UROTHELIAL) CARCINOMA:

- It is a malignant tumor arising from transitional epithelium (urothelium), mainly of the urinary bladder.

GLANDULAR CARCINOMAS

GLANDULAR CARCINOMA

- it is a malignant tumor of glandular epithelium.

Sites: breast, large intestine, stomach, liver, pancreas, gall bladder, uterus, ovary,….. .

Types: 1) Adenocarcinoma.

2) Mucoid carcinoma.

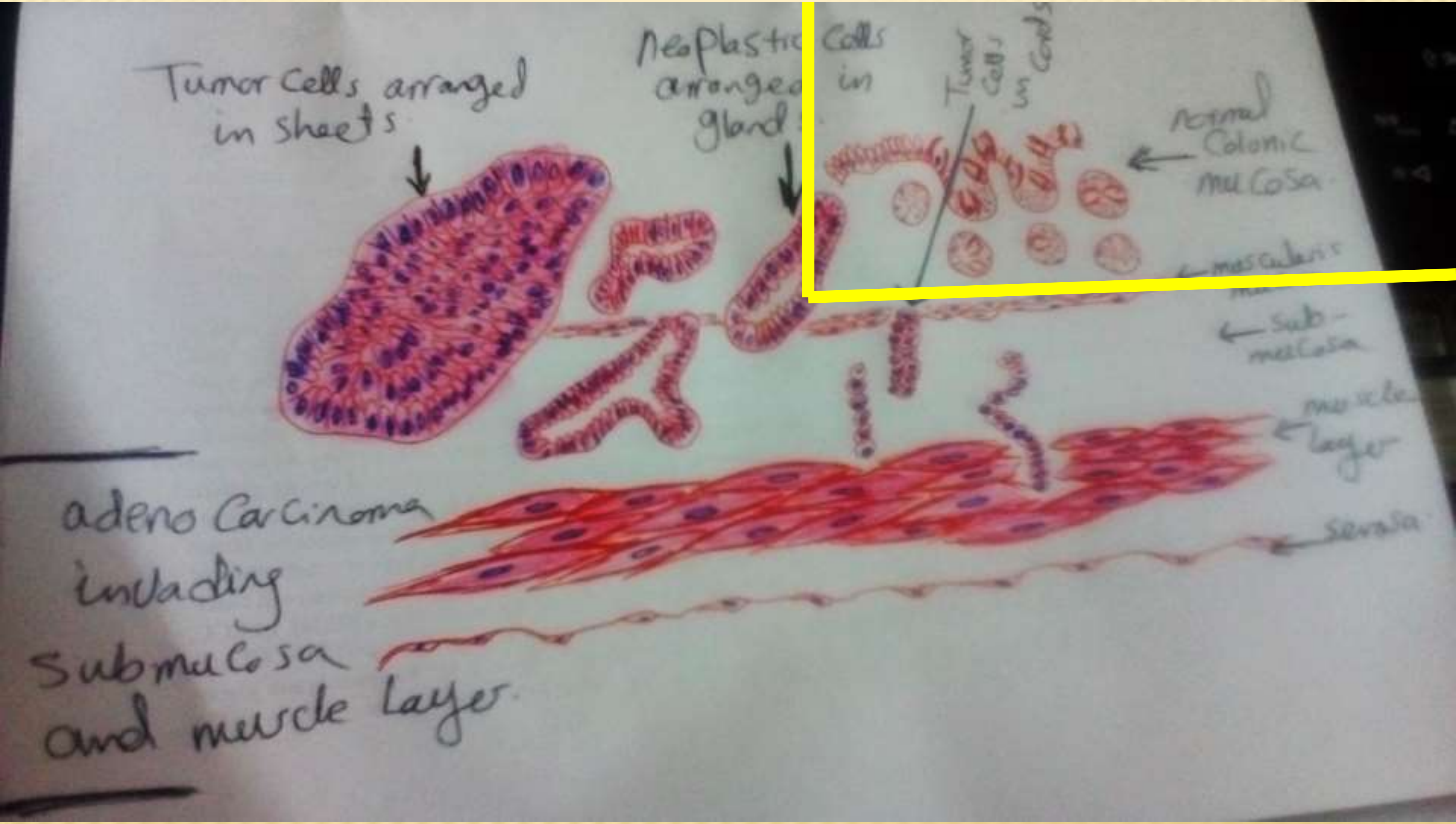
3) Undifferentiated carcinoma.

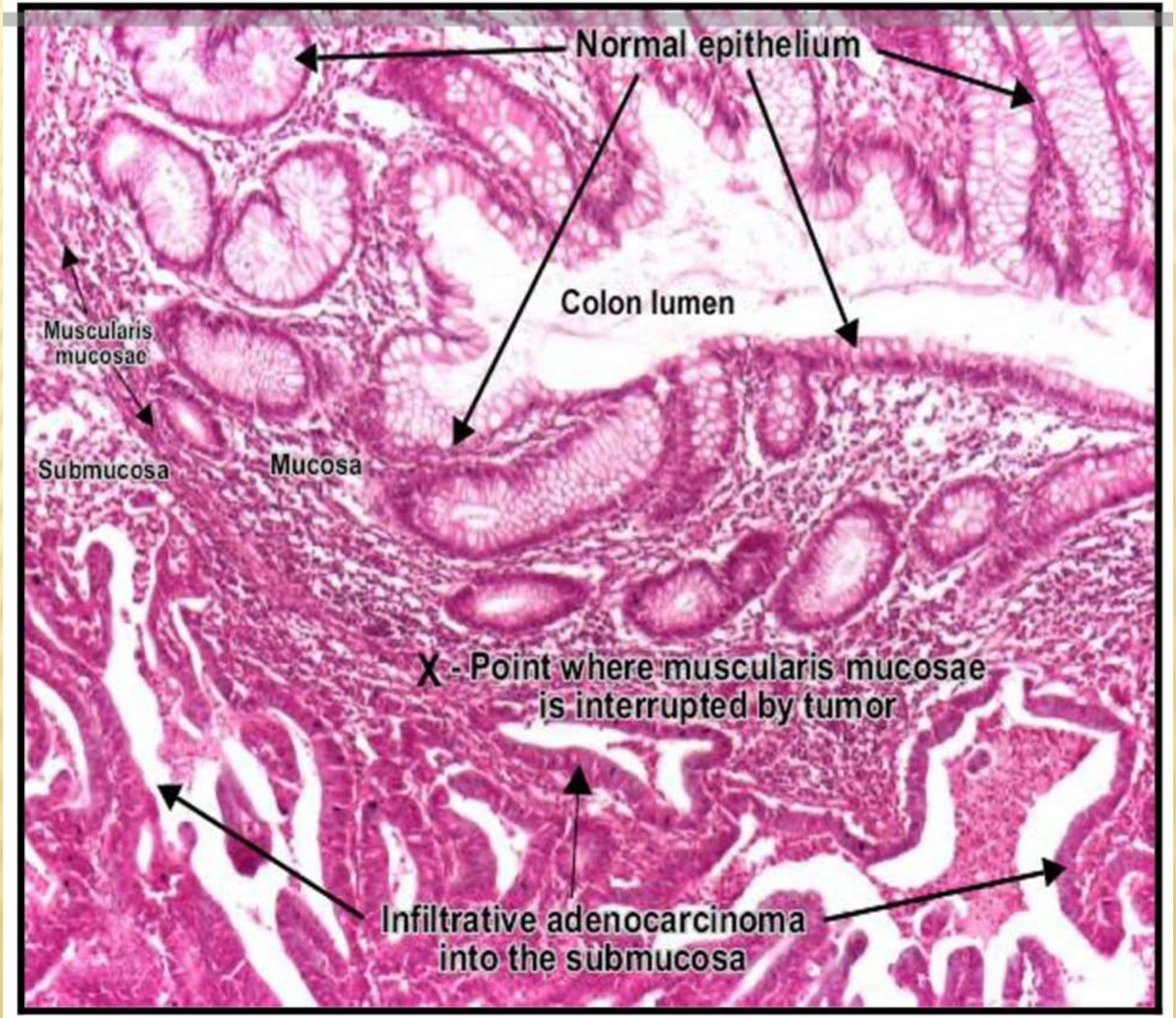
A) ADENOCARCINOMA:

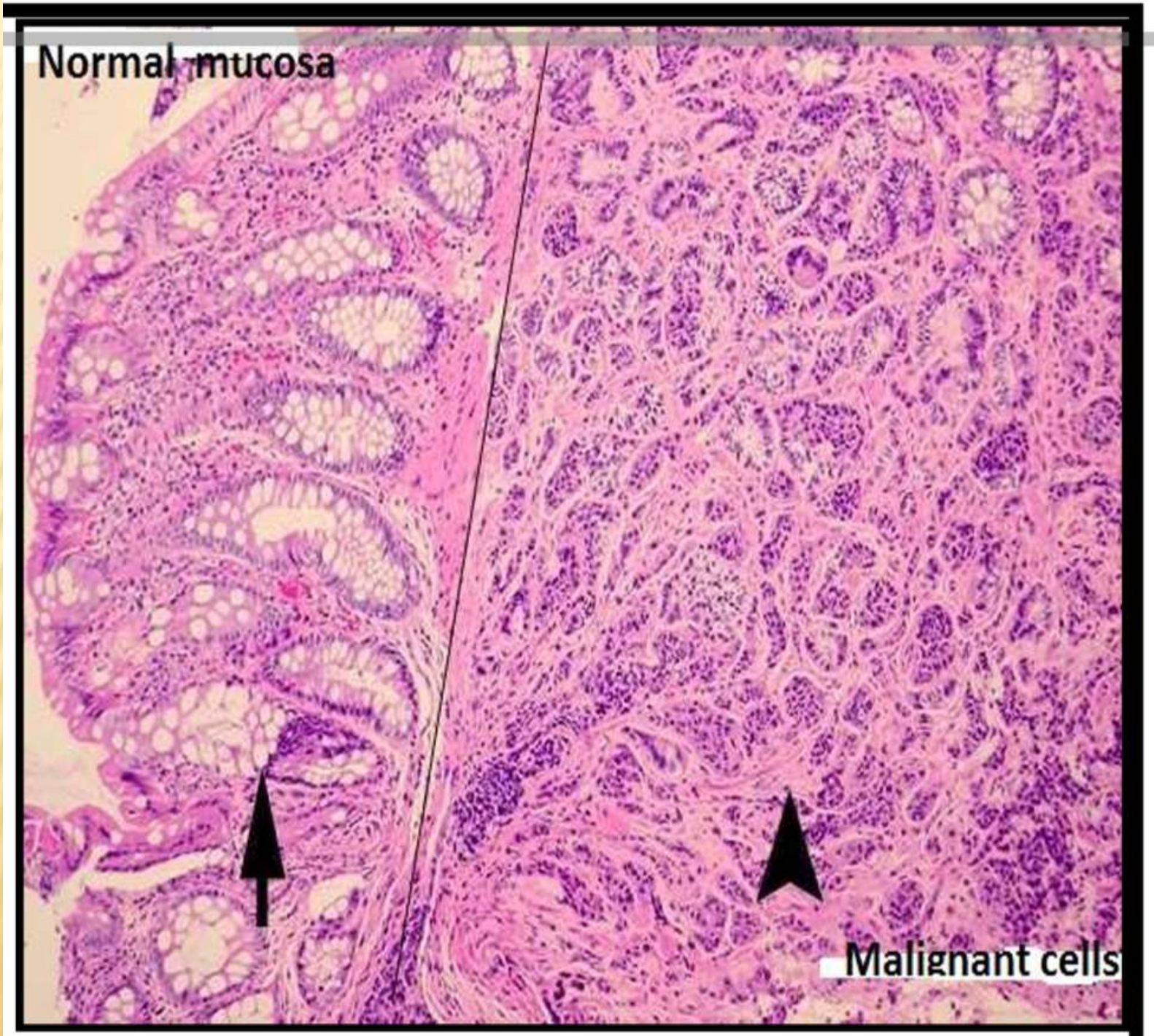
- It is a malignant tumor of the glandular epithelium in which the malignant cells are arranged in glands/ acini.
- Common sites are colon, stomach, pancreas, endometrium, ovary and prostate.
- **Gross picture:** malignant ulcer is the commonest type. However, it may be polypoid or infiltrative mass.

MICROSCOPIC PICTURE:

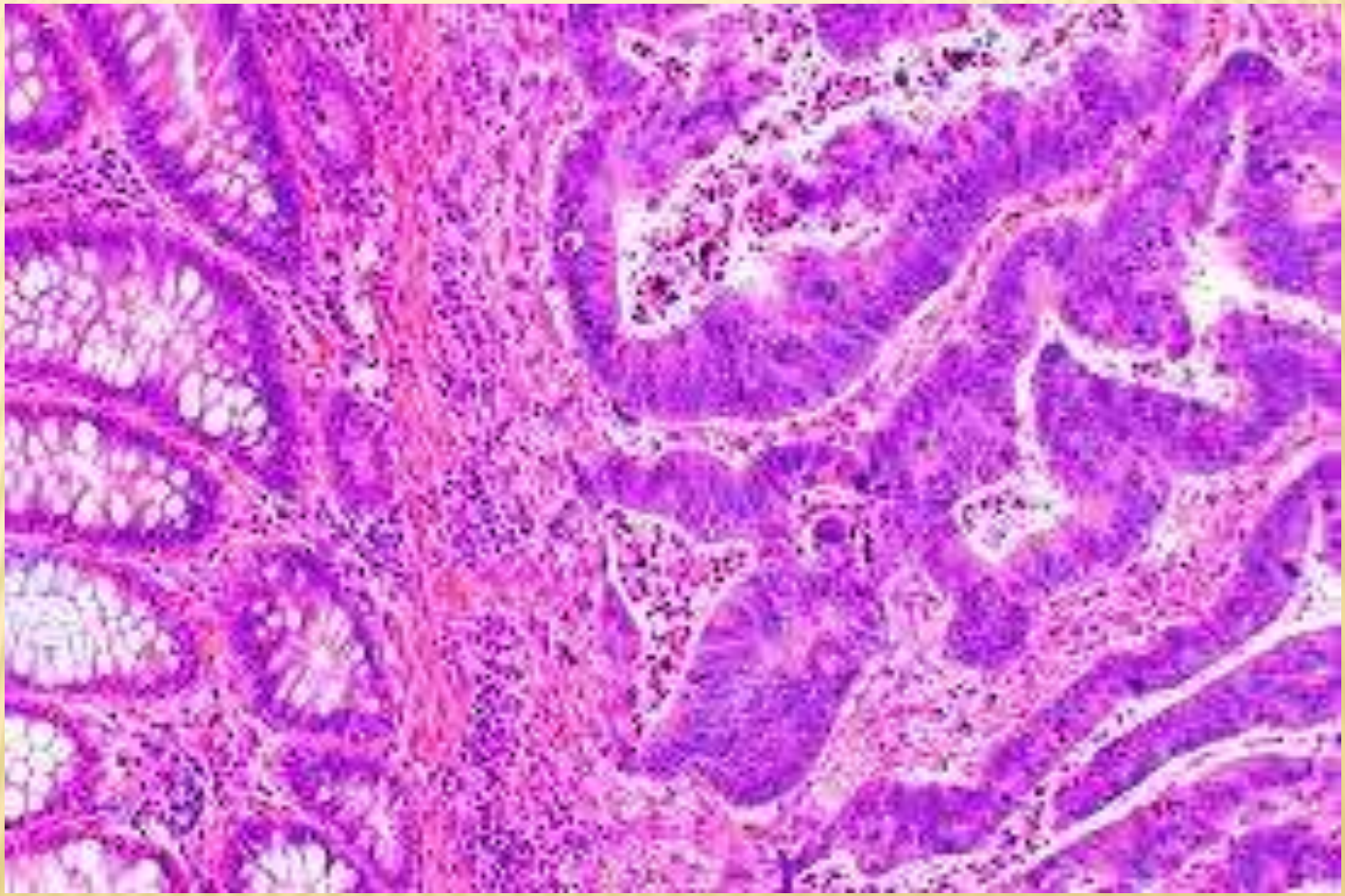
- Infiltrating malignant acini variable in size and shape. The lumen is central, eccentric, irregular or absent. The lining neoplastic cells are arranged in one or multiple layers. The cells showing malignant criteria (pleomorphism, hyperchromatism, increases nucleo/cytoplasmic ratio and abnormal mitotic figures).
- The glands may distend with intraluminal secretions forming cysts (cystadenocarcinoma), and may show papillary projections inside these dilated glands (papillary cystadenocarcinoma) as in the ovary.


Tumor Cells arranged in sheets
neoplastic Cells arranged in glands
Tumor Cells in Glands
normal Colonic mucosa
muscularis mucosa
sub-mucosa
muscle layer
serosa
adeno Carcinoma invading submucosa and muscle layer.


Normal epithelium
Colon lumen
Muscularis mucosae
Submucosa
Mucosa
X - Point where muscularis mucosae is interrupted by tumor
Infiltrative adenocarcinoma into the submucosa

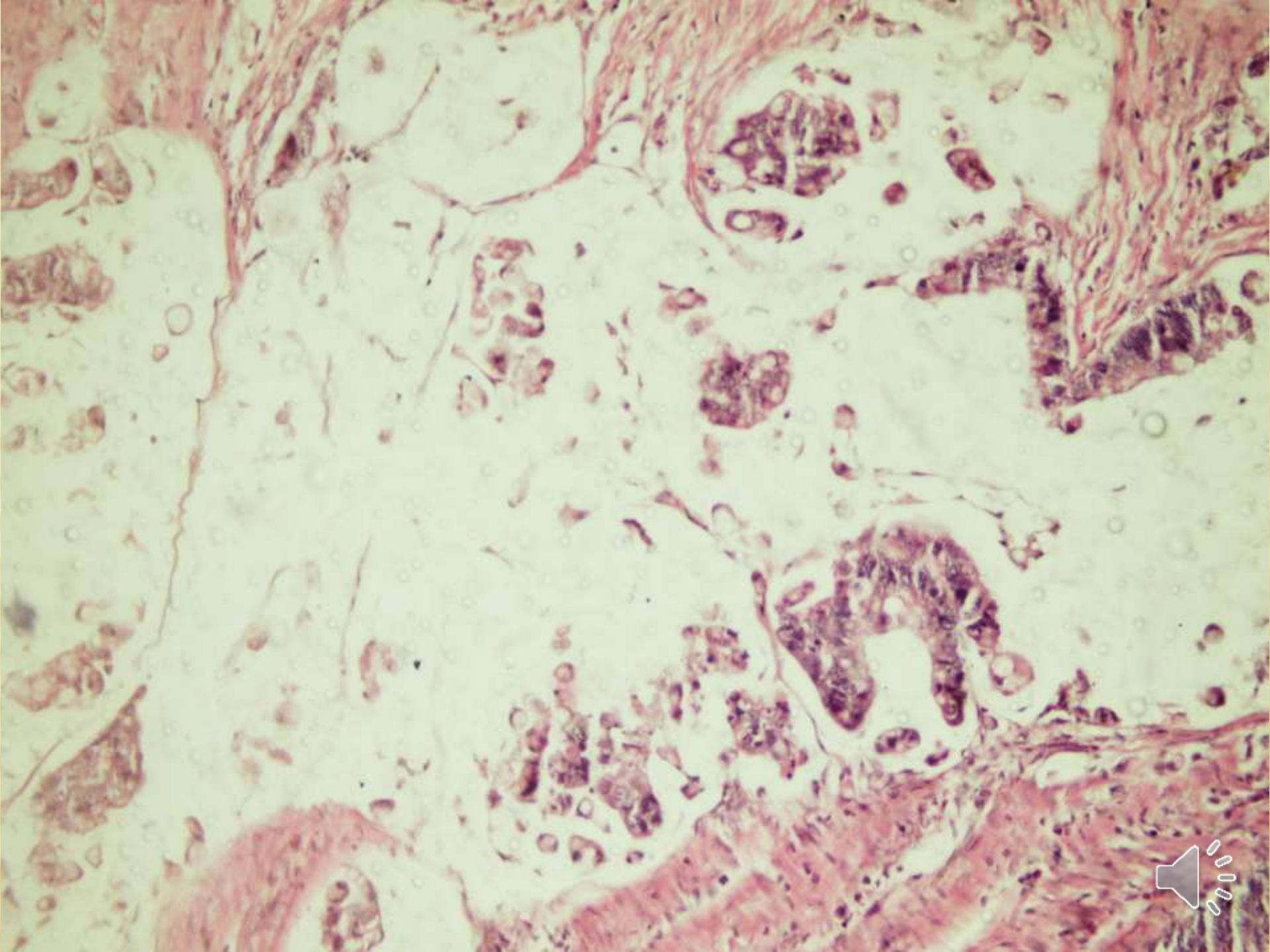

Normal mucosa
Malignant cells

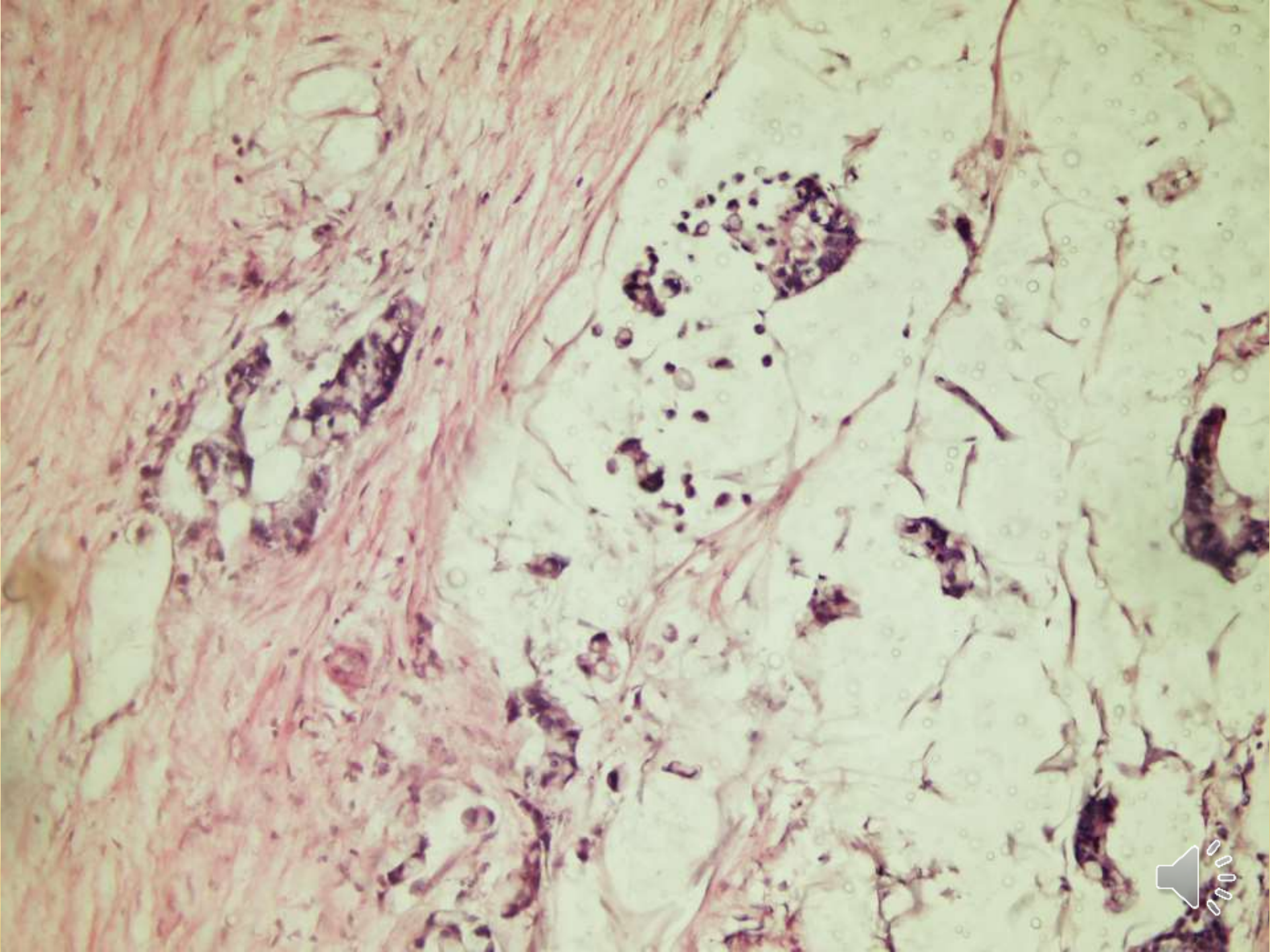
ADENOCARCINOMA

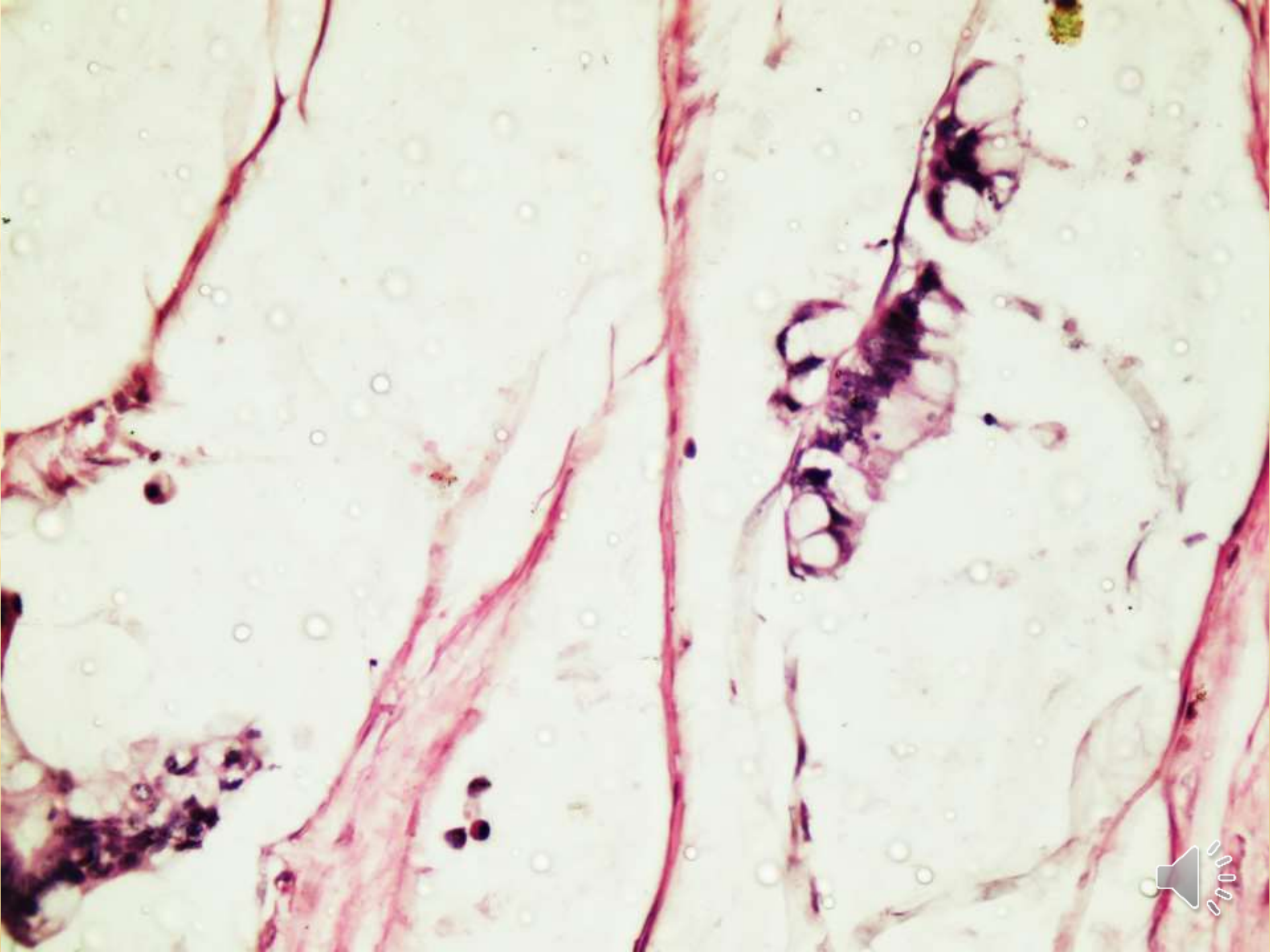


B) MUCOID CARCINOMA:

- It is adenocarcinoma with excess mucin production; more than 50% of the tumor size.







UNDIFFERENTIATED CARCINOMA

- It is a malignant tumor of glandular epithelium. But the malignant cells fail to form glands and arranged in solid groups or individual cells.


THANK YOU