

PATHOLOGY TEAMWORK

MED 444



Classification of Tumors

OBJECTIVES

- 🔍 Define the terms: neoplasm, tumor and oncology.
- 🔍 Classify tumors into benign and malignant.
- 🔍 Understand the concepts governing the classification of tumors and their nomenclature.
- 🔍 Define hamartoma, teratoma, choristoma and heterotropic rest .

Editing file

COLOR INDEX:

MAIN TEXT (BLACK)

FEMALE SLIDES (PINK)

MALE SLIDES (BLUE)

IMPORTANT (RED)

DR'S NOTE (GREEN)

EXTRA INFO (GREY)

Classification of Tumors

Neoplasia

literally means "new growth. A neoplasm often is referred to as a tumor, and the study of tumors is called oncology (from oncos, "tumor," and logos, "study of")

The division of neoplasms into benign and malignant categories is based on their potential clinical behavior.

| Benign | Malignant |
|---|--|
| the microscopic and gross characteristics of the lesion are considered to be relatively innocent. | lesions can invade and destroy adjacent structures and spread to distant sites (metastasize) to cause death. |
| <ul style="list-style-type: none">● Tumors remain localized.● Tumors are amenable to local surgical removal.● Patients generally survive. | |

All tumors, benign and malignant, have two basic components:

1. The parenchyma, made up of transformed or neoplastic cells
2. The supporting, host-derived, non-neoplastic stroma, made up of connective tissue, blood vessels, and host-derived inflammatory cells (macrophages and lymphocytes).

Important of Stroma

- Although the neoplastic cells largely determine a tumor's behavior and pathologic consequences, their growth and evolution is critically dependent on their stroma.
- An adequate stromal blood supply is requisite for the tumor cells to live and divide.

Nomenclature of Tumors

The **nomenclature** of tumors and their **biologic behavior** are based **primarily** on the **parenchymal** component.

Nomenclature of Tumors-malignant :

Malignant neoplasms arising in **mesenchymal** tissues are called **sarcomas**.

Fibrosarcoma: a **malignant** tumor arising in **fibrous** tissue.

Chondrosarcoma: a **malignant** tumor arising in **cartilaginous** tissue.

Osteosarcoma: a **malignant** tumor arising in **bone** tissue.

Nomenclature of Tumors-Benign:

Benign tumors are designated by attaching the suffix - **oma** to the **cell type** from which the **tumor arises**.

-The nomenclature of **mesenchymal** tumors usually apply this rule e.g.

Fibroma: a **benign** tumor arising in **fibrous** tissue.

Chondroma: a **benign** tumor arising in **cartilaginous** tissue.

Osteoma: a **benign** tumor arising in **bone** tissue.

Adenoma is applied to benign epithelial neoplasm derived from glands, although they may not form glandular structure.

1

2

Nomenclature of Tumors – Benign

.The nomenclature of benign epithelial tumors is more complex: cell of origin, microscopic pattern or macroscopic appearance.

-**Adenoma** is generally applied to **benign epithelial neoplasms** producing **gland** patterns and to neoplasms derived from **glands** but **not** necessarily exhibiting **glandular** patterns

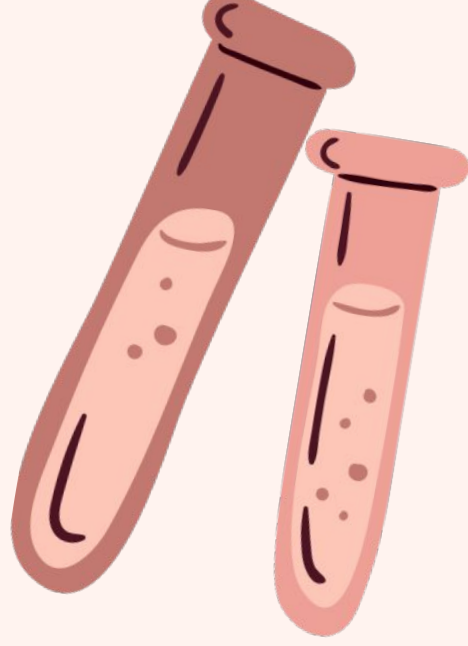
.**Benign epithelial** neoplasms producing microscopically or macroscopically **visible finger-like** or warty projections from epithelial surfaces are referred to as **papillomas**.



Benign epithelial neoplasms **forming large cystic masses**, as in the **ovary**, are referred to as **cystadenomas**.

- Some of the latter produce papillary patterns that protrude into cystic spaces and are called **papillary cystadenomas**.

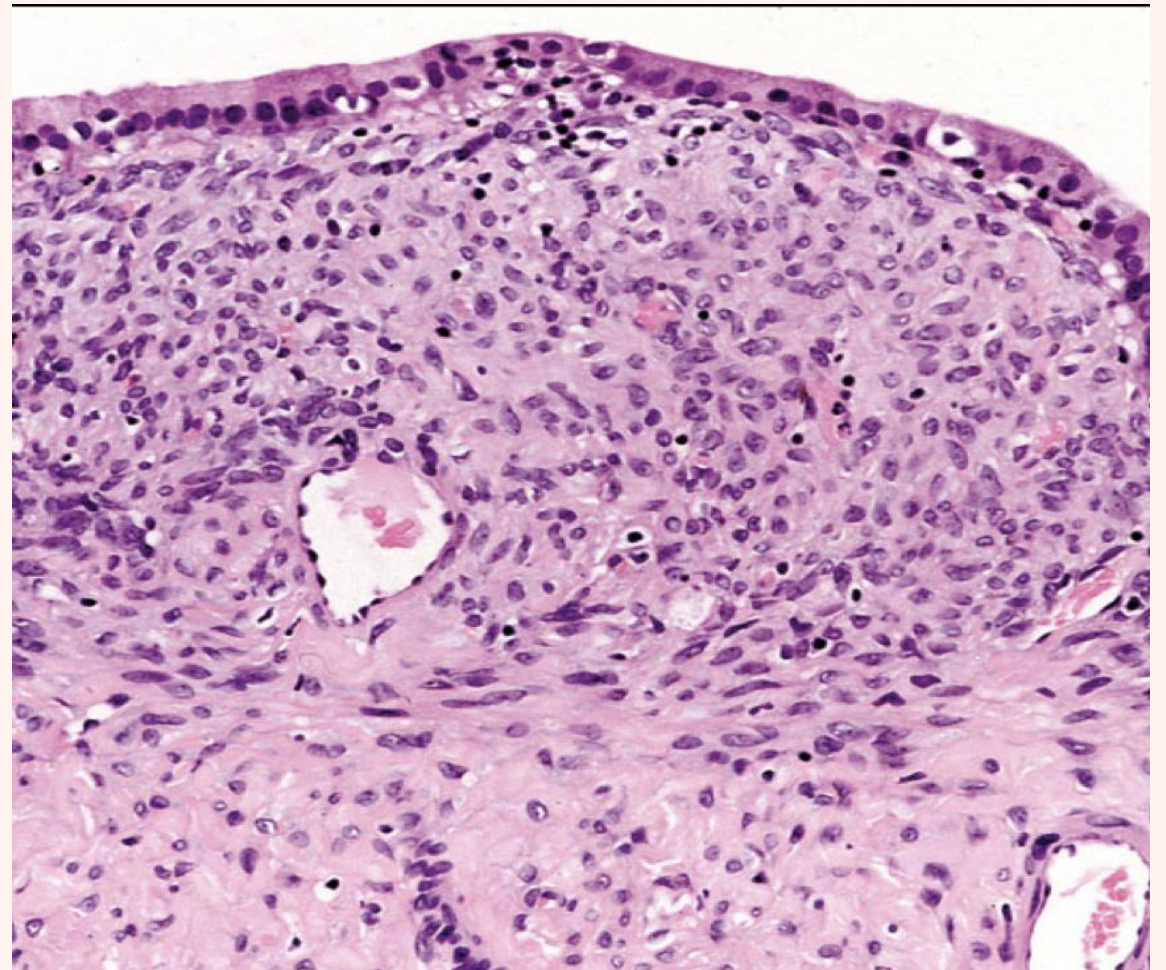
Nomenclature of Tumors - Benign



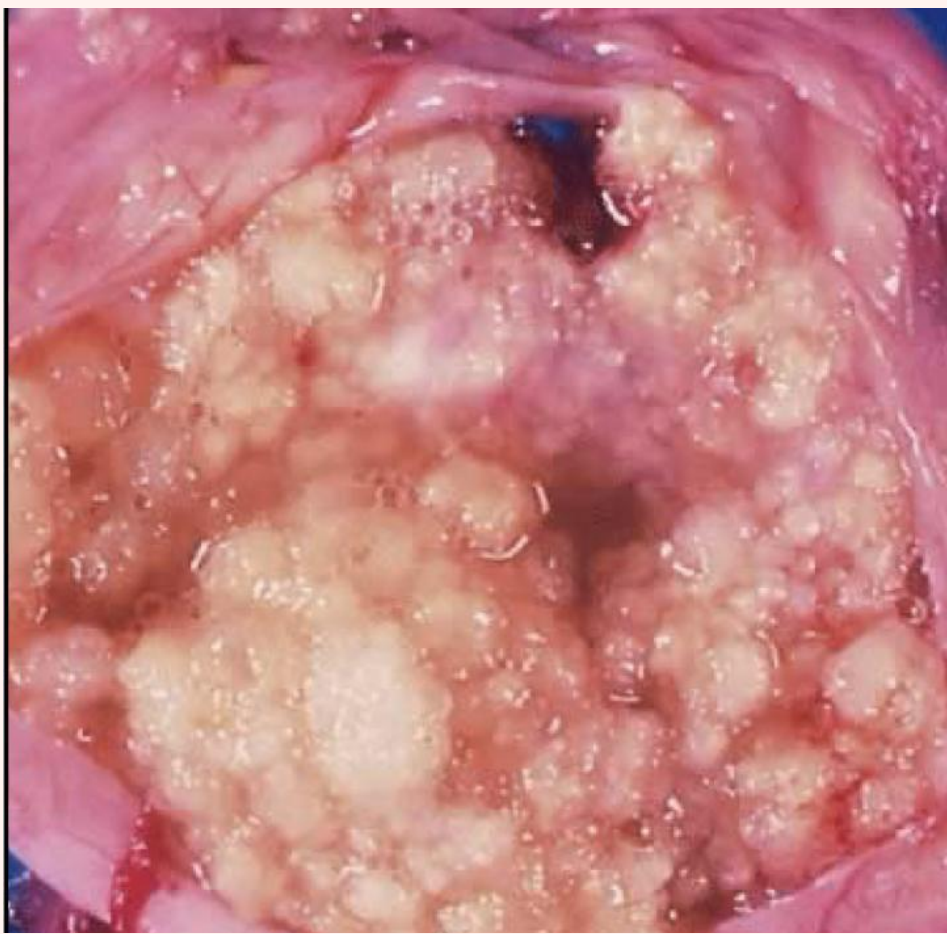
Cystadenoma - Macroscopically



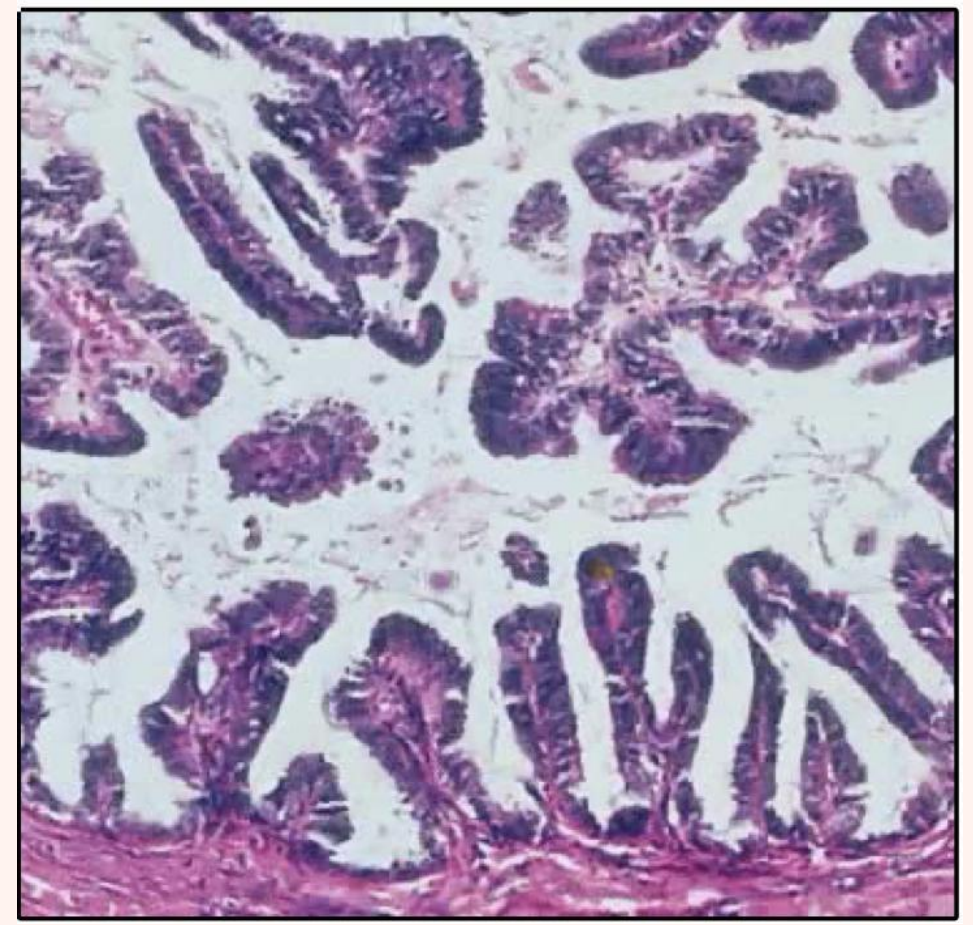
Cystadenoma - Microscopically



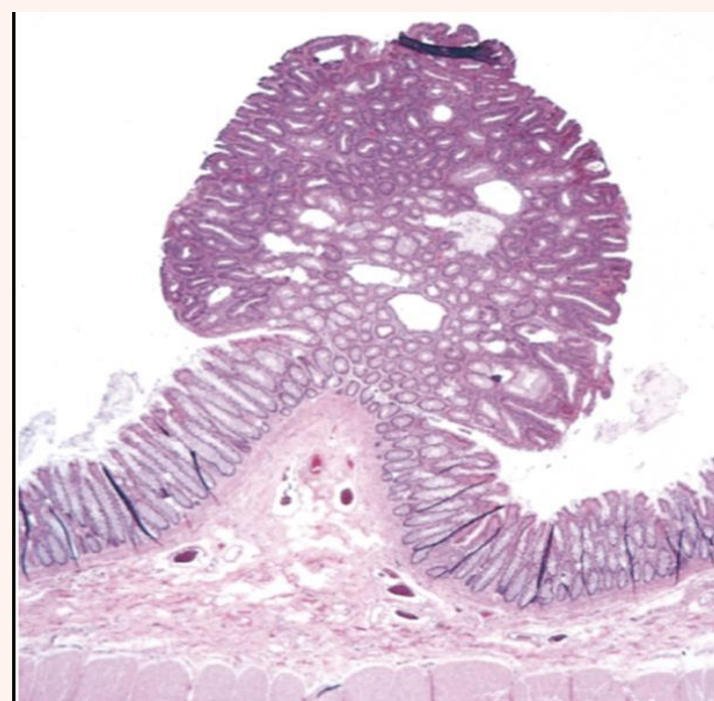
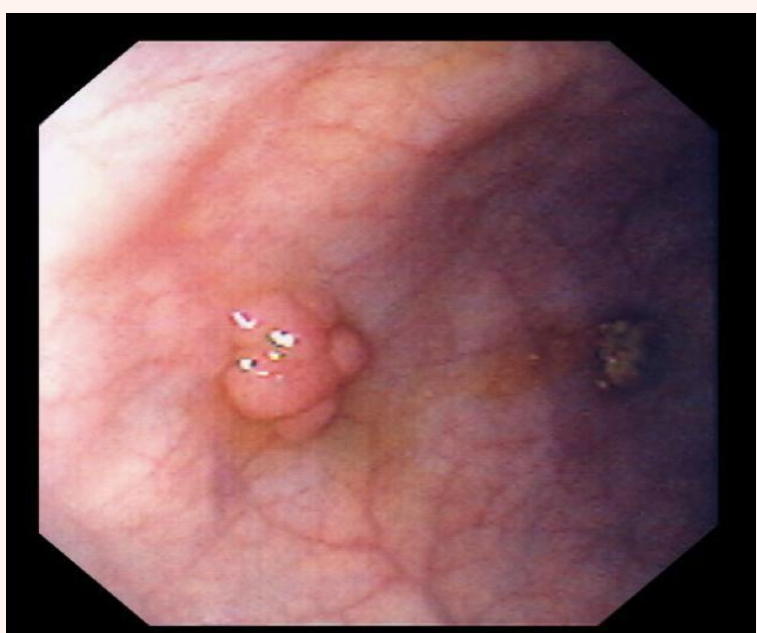
Papillary cystadenoma Macroscopically



Papillary cystadenoma Microscopically




A **polyp** is a mass that projects above a **mucosal** surface, as in the **gut** to form a **macroscopically** visible structure





Nomenclature of Tumors – Malignant



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- Malignant tumors arising from epithelial tissues are called **carcinomas**.
 - Has **no Exceptions**.

Example:

Adenocarcinoma: arising from glandular epithelial cells (with or without forming glands).

Squamous cell carcinoma: arising from squamous cell (some producing Keratin) Example: Skin

Poorly differentiated or undifferentiated carcinoma: that show little to no differentiation

Undifferentiated Malignant Tumors

A tumor that is composed of undifferentiated cells **unknown origin**. (we know it's malignant but we don't know whether It's epithelial or mesenchymal. so we just refer to it as Undifferentiated malignant tumours).

Nomenclature of Tumors

- The transformed cells in a neoplasm, whether benign or malignant, **90%** often resemble each other, as though all had been derived from a single progenitor, **consistent with the monoclonal origin of tumors**.
- In some unusual instances **10%**, however, divergent differentiation of a single neoplastic clone along two lineages occurs (**can generate Epithelial and Mesenchymal cell daughter**) creating the so-called **Mixed Tumors**.
- Example on Mixed Tumors: **Pleomorphic Adenoma of the salivary gland** have obvious epithelia components dispersed throughout a fibromyxoid stroma, sometimes harboring islands of cartilage or bone. All these diverse element derive from a single clone capable of giving rise to Epithelial cells, or Myoepithelial cells, **or both**.

Critical exceptions

Lymphoma

Melanoma

Mesothelioma

Seminoma

Leukaemia

Malignant tumor from lymphocytes

Malignant tumor from Melanocytes

Malignant tumor from mesothelium cell

Malignant tumor from Testis

Malignant tumor from Blood cells

These Tumors end with **-OMA** but they are **malignant neoplasm NOT benign**

Granuloma

Hamartoma

Choristoma

They are **NOT a neoplastic** process



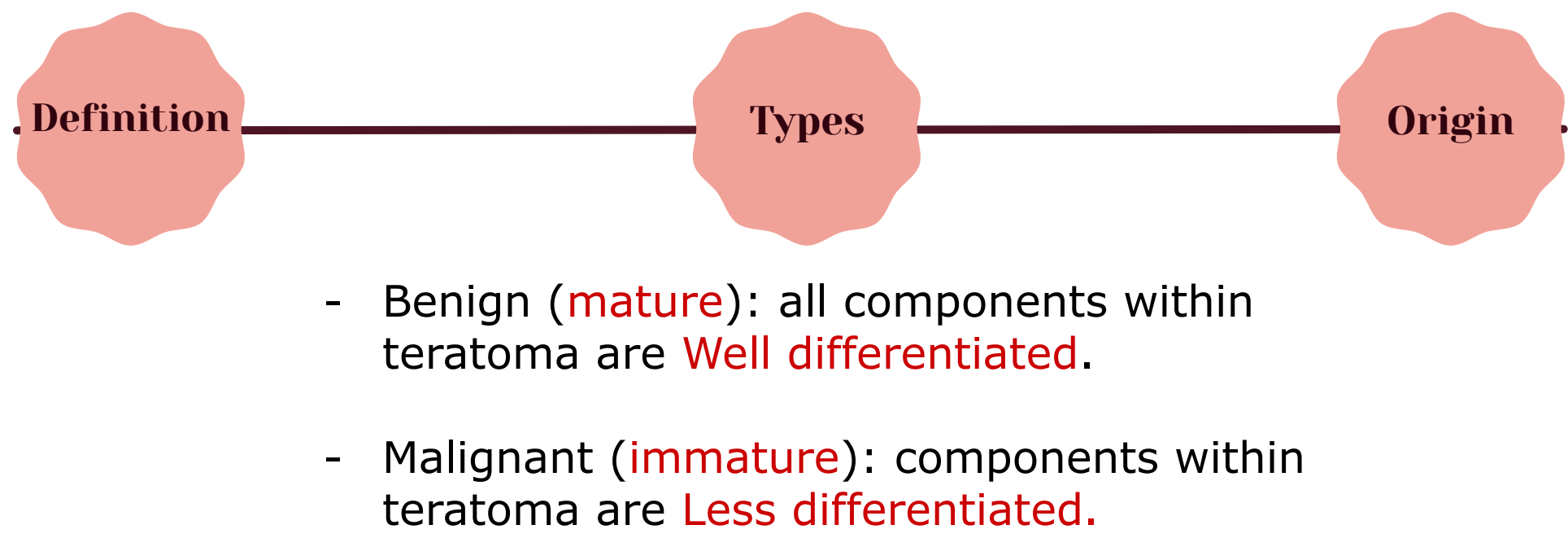
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Teratoma:



Special type of mixed tumors, contains recognizable mature or immature cells or tissues and representative of more than one **germ cell** layer and sometimes three.

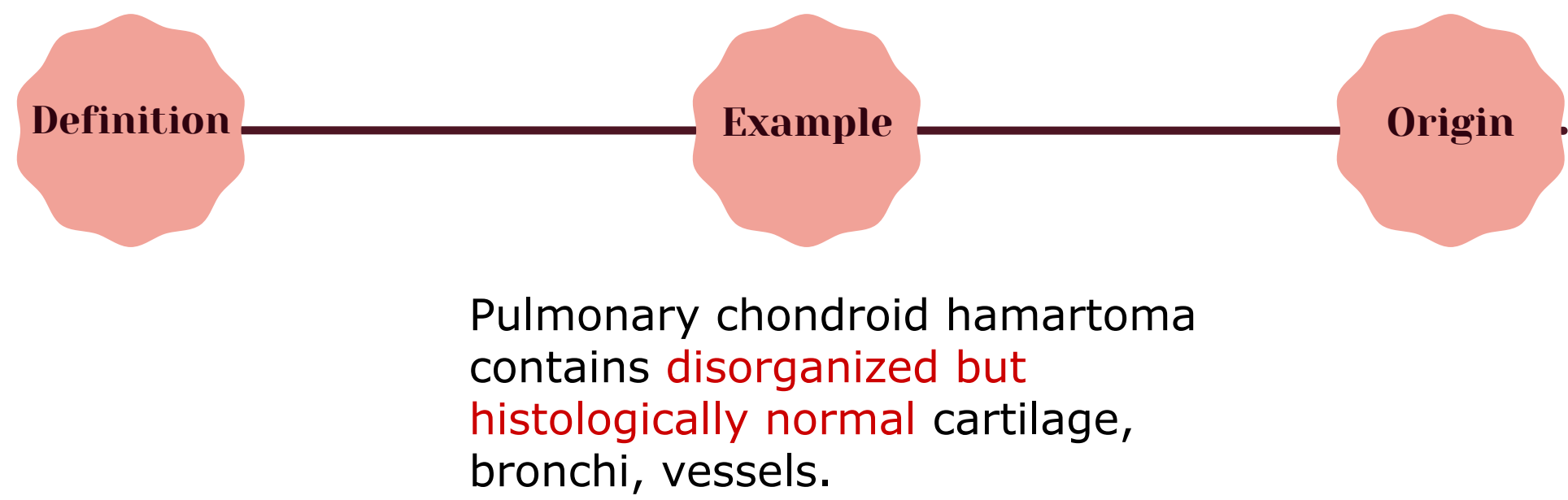
From **Totipotential** (Pluripotent) cells such as those normally present in the **Ovary & Testis**, abnormally present in Sequestered midline embryonic rests These cells **have the capacity to differentiate into any cell type found in adult body.**



Hamartoma:

Mass of disorganized benign-looking tissue to **indigenous** to the particular site. It's **benign disorganized but correct location.**

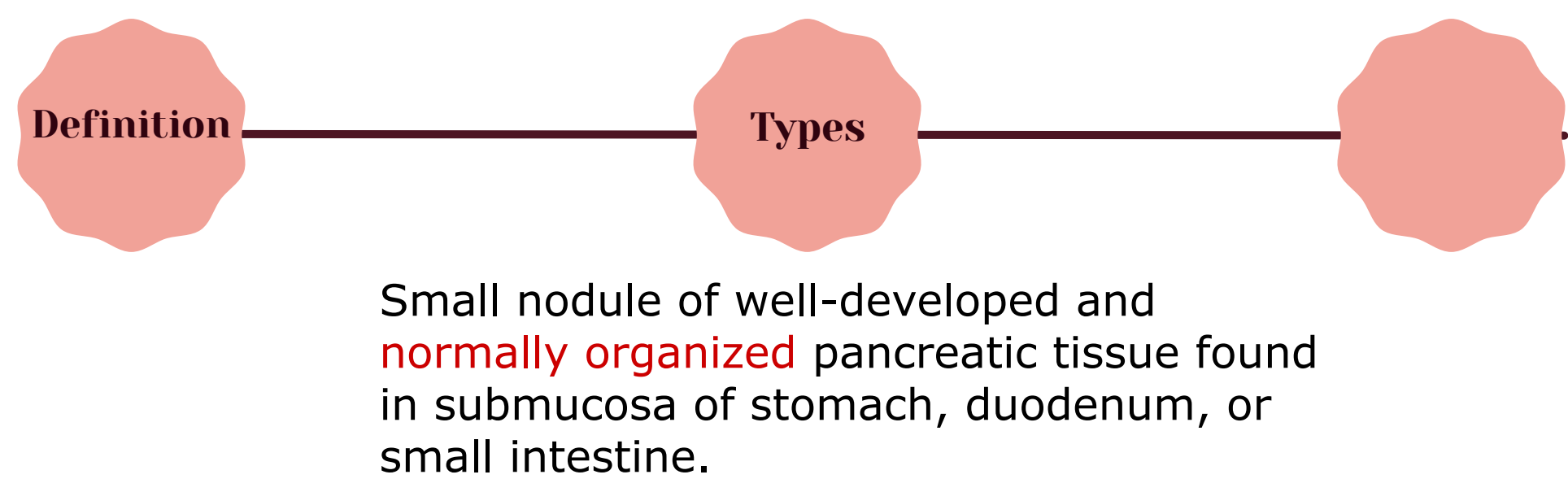
Could be developmental malformations, or acquired translocation suggesting a neoplastic origin.



Choristoma:

Congenital anomaly of **heterotopic** rest of cells. It's **benign, organized but wrong location.**

Choristoma has trivial significance.



Summary

اللي تحتها خط تكلم عنها في المراجعة

Table 6.1 Nomenclature of Tumors

| Tissue of Origin | Benign | Malignant |
|---|---|---|
| One Parenchymal Cell Type | | |
| Connective tissue and derivatives | Fibroma Lipoma Chondroma Osteoma | Fibrosarcoma Liposarcoma Chondrosarcoma Osteogenic sarcoma |
| Endothelium and related cell types | | |
| Blood vessels | Hemangioma | Angiosarcoma |
| Lymph vessels | Lymphangioma | Lymphangiosarcoma |
| Mesothelium | | Mesothelioma |
| Brain coverings | Meningioma | Invasive meningioma |
| Blood cells and related cell types | | |
| Hematopoietic cells | | Leukemias |
| Lymphoid tissue | | Lymphomas |
| Muscle | | |
| Smooth | Leiomyoma | Leiomyosarcoma |
| Striated | Rhabdomyoma | Rhabdomyosarcoma |
| Skin | | |
| Stratified squamous | Squamous cell papilloma | Squamous cell or epidermoid carcinoma |
| Basal cells of skin or adnexa | | Basal cell carcinoma |
| Tumors of melanocytes | Nevus | Malignant melanoma |
| Epithelial lining of glands or ducts | Adenoma Papilloma Cystadenoma | Adenocarcinoma Papillary carcinomas Cystadenocarcinoma |
| Lung | Bronchial adenoma | Bronchogenic carcinoma |
| Kidney | Renal tubular adenoma | Renal cell carcinoma |
| Liver | Liver cell adenoma | Hepatocellular carcinoma |
| Bladder | Urothelial papilloma | Urothelial carcinoma |
| Placenta | Hydatidiform mole | Choriocarcinoma |
| Testicle | | Seminoma Embryonal carcinoma |
| More Than One Neoplastic Cell Type—Mixed Tumors, Usually Derived From One Germ Cell Layer | | |
| Salivary glands | Pleomorphic adenoma (mixed tumor of salivary gland) | Malignant mixed tumor of salivary gland |
| Renal anlage | | Wilms tumor |
| More Than One Neoplastic Cell Type Derived From More Than One Germ Cell Layer—Teratogenous | | |
| Totipotential cells in gonads or in embryonic rests | Mature teratoma, dermoid cyst | Immature teratoma, teratocarcinoma |

1- 5 years old boy with a mass in his testis. Histopathology shows tumor consisting of more than one neoplastic cell type derived from more than one germ cell layer. What is the name of this tumor?

A) chondroma

B) Hamartoma

C) meningioma

D) Teratoma

2- Which of the following is a malignant neoplasm?

A) Melanoma

B) Adenoma

C) Papiloma

D) Lipoma

3- A 59 years old lady had a gastric biopsy done because of her history of upper abdominal pain. In addition of gastritis, the biopsy shows a normal organized pancreatic within gastric submucosal layer, what do you think this is?

A) Hamartoma

B) Choristoma

C) Teratoma

D) Papiloma

4- 14y/o history bilateral neck masses. The patient is experiencing weight loss and the doctor noticed it and thought of its malignant neoplasm. What is the best diagnosis?

A) Adenoma

B) Papiloma

C) Lymphoma

D) Cystadenoma

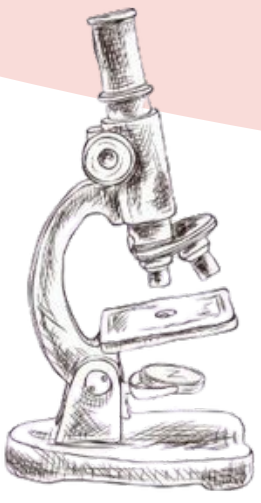
5- A 69-year-old woman was presented with a large section in her intestine, after biopsy it was discovered that it was malignant smooth muscle tumor. What is the classification of the tumor?

A) Gastrointestinal sarcoma tumor

B) Rhabdomyosarcoma

C) Rhabdomyoma

D) Leiomyosarcoma



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Ritaj Alsubaie

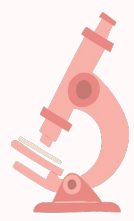
LEADER

Manar Alqahtani

LEADER

Abdulaziz Essam

LEADER



Shaden Alotaibi



Rahaf Al turki



Layal Alkhalifah



Norah Alnoshan



Noor Altalag



Aram Alzahrani



Nisreen Alotaibi



Lana Alfouzan



Seeta bin aqeel



Lujain Darraj



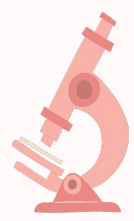
Hessa Alamer



Sahar Alfallaj



Nora Albahily



Abdulmalik Aldafs



Abdumohsen Alrahaimi



Ibrahim Abdallah



Ibrahim Al Bin Ali



Lubna Alamri



Fahad Albalawi



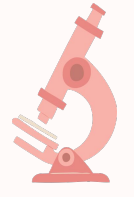
Jana Alrumaihi



Hmood Alsehali



Osama Alotaibi



Ziyad BuKhari



Abdullah Alzoom



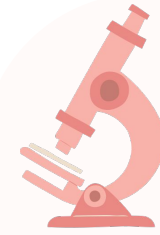
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