جامعة الملك سعود
King Saud University
1957

Pathology

GI Practical Summary

439

اللهم لا سهل الا ماجعلته سهلا و انت
تجعل الحزن إذا شئت سهلا

DISCLAIMER!!!

This is done by the effort of students and may fall short of what will actually come on the exam. You are expected to have studied the theoretical material and the whole practical file before going into the exam.
This is to be used for revision, it contains what we have deemed important from what the doctor had said.

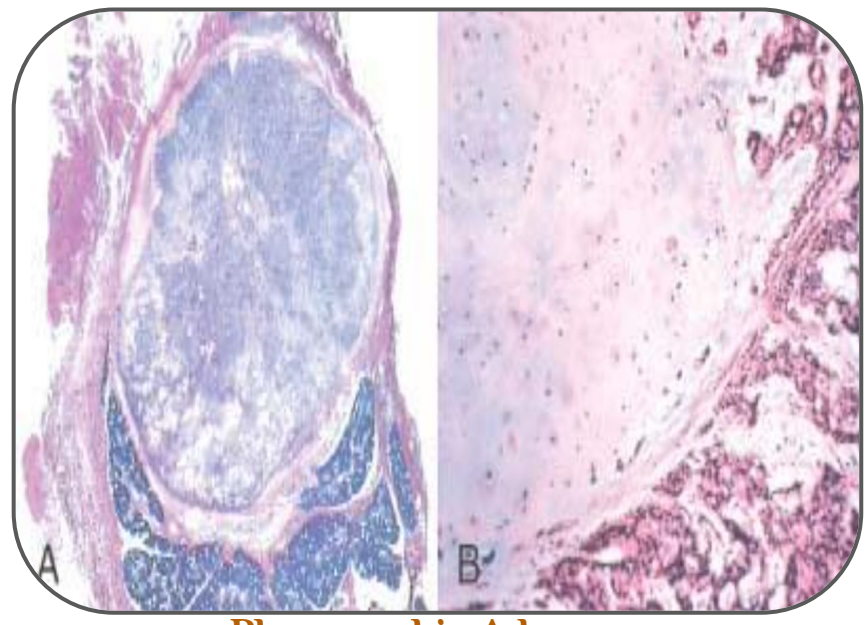
We are not held liable or responsible for any content in the exam out of this file.
Thank you and good luck.

Parotid Gland Adenoma

- The classic place for any visible parotid swelling or tumor is present **between the tip of the ear and the tip (angle) of the mandible**

Parotid Gland Swelling

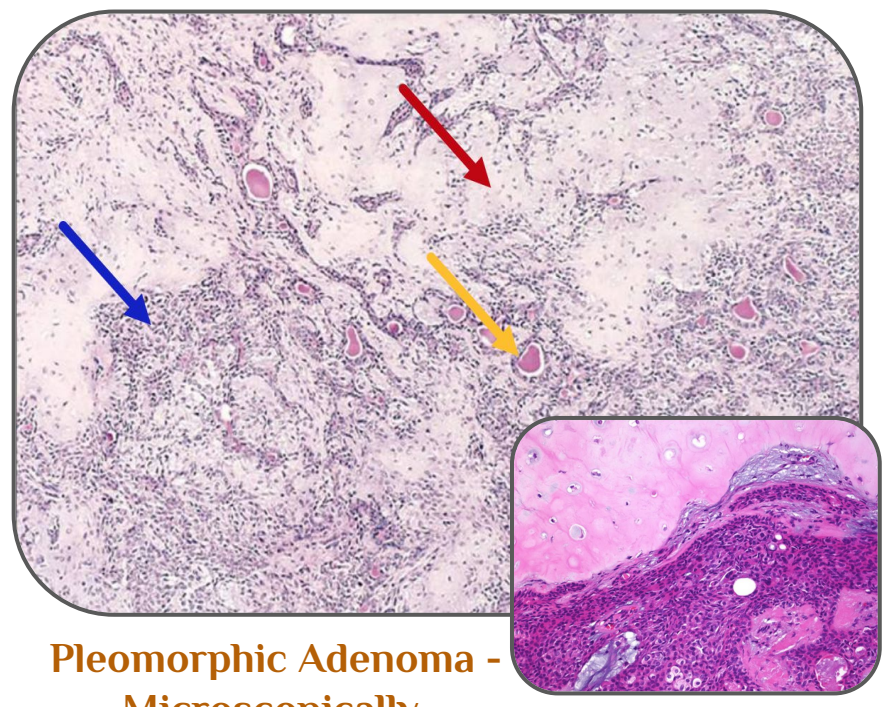
- Mixed tumors are generally benign, have BOTH connective tissue (i.e., usually cartilaginous) components as well as glandular components, hence the name pleomorphic or mixed, they generally look and feel like little round soft cartilage balls.



Pleomorphic Adenoma
(MIXED TUMOR)

- Mixed tumor of the parotid gland contains **epithelial cells forming ducts, myoepithelial cells and chondromyxoid stroma**

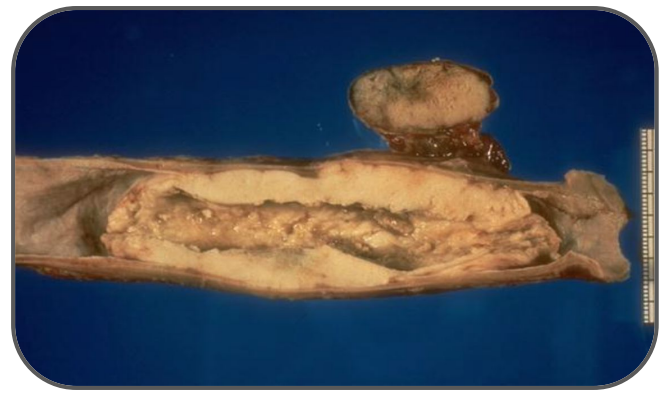
- Tumour shows mixed cellular components like epithelial, myoepithelial, chondriod and myxoid elements. Epithelial areas shows small ducts, acini and strands or sheets of cells. Myxoid areas are formed of loose myxomatous tissue and chondroid areas consist of pale blue matrix.



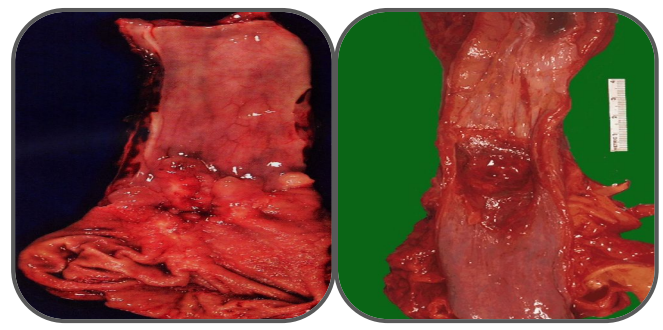
Pleomorphic Adenoma -
Microscopically

Carcinoma of the esophagus

- This gross photograph illustrates a squamous cell carcinoma of the esophagus in a patient who presented with progressive dysphagia. The oval structure adjacent to the esophagus represents metastatic squamous cell carcinoma within a lymph node.

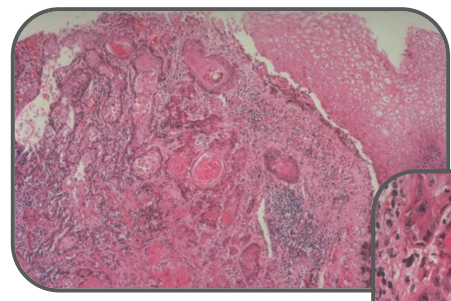


- This irregular reddish, ulcerated exophytic mid-esophageal mass as seen on the mucosal surface is a squamous cell carcinoma. Endoscopic views of an ulcerated mid-esophageal squamous cell carcinoma causing luminal stenosis .

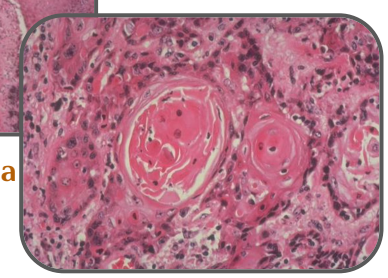


Carcinoma of the Esophagus - Gross

- LPF: Infiltrating nests of neoplastic cells
- HPF: Solid nests of neoplastic cells having abundant pink cytoplasm and distinct cell borders



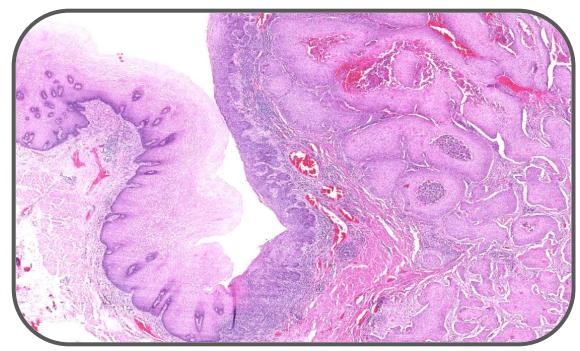
Squamous Cell Carcinoma of the Esophagus - LPF



Squamous Cell Carcinoma of the Esophagus - HPF

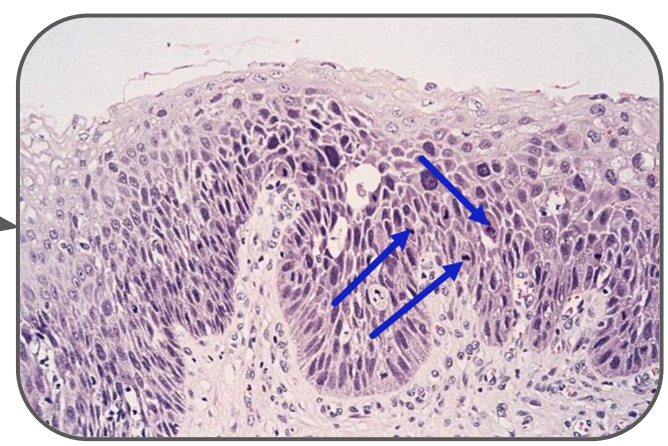
- Esophageal squamous cell carcinoma is associated with **alcohol and tobacco use, poverty, caustic esophageal injury, achalasia, tylosis, and Plummer-Vinson syndrome.**

- There are atypical squamous cells with disorganized architecture and abnormal differentiation within the epithelium. These features are obvious in high grade dysplasia. The nuclei are larger and more hyperchromatic than normal, and there is increased mitotic activity



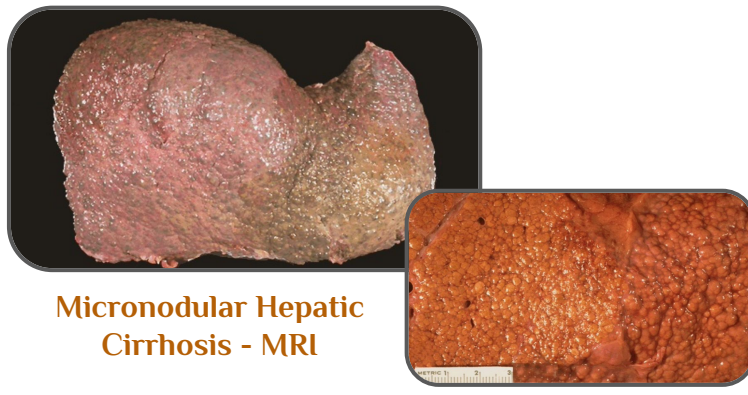
Squamous Dysplasia of the Esophagus - LPF

- **Dysplastic squamous cells with mitosis**



Hepatic cirrhosis

- This is an example of a micronodular cirrhosis.
  The regenerative nodules are quite small, averaging less than 3 mm in size. The most common cause for this is chronic alcoholism. The process of cirrhosis develops over many years.

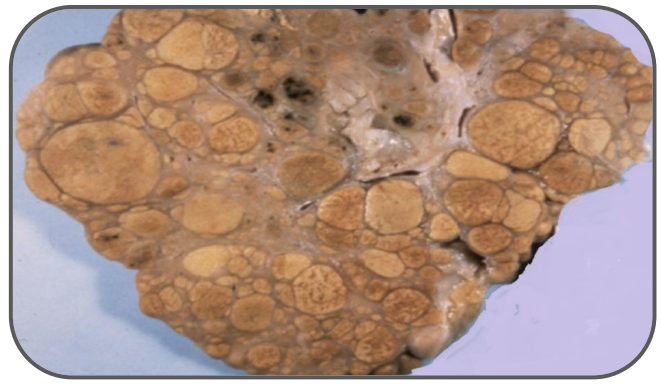


Micronodular Hepatic Cirrhosis - MRI

Micronodular cirrhosis with fatty liver- Gross

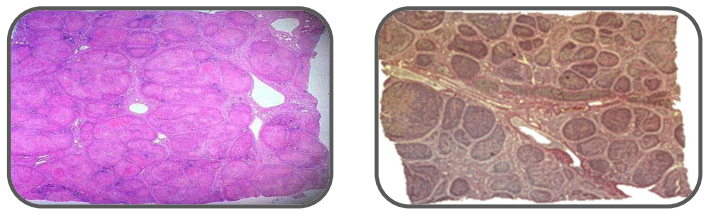
- A close-up view of a micronodular cirrhosis in a liver with fatty change demonstrates the small, yellow nodules. Micronodular cirrhosis may also be seen with Wilson's disease, primary biliary cirrhosis, and hemochromatosis.

- Gross picture shows multiple nodules of variable sizes with fibrosis.
- **Complications:**
  - Carcinoma is the main complication
  - Portal hypertension
  - Oesophageal varices
  - Hepatic failure
  - Liver cell dysplasia and carcinoma
  - Gynaecomastia



Hepatic Macronodular Cirrhosis – Gross

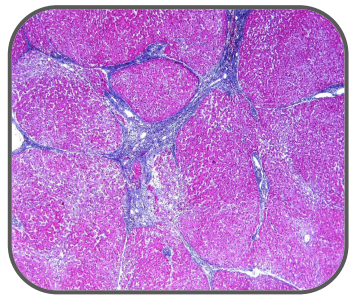
- Left Picture: Irregular nodules separated by Portal to Portal fibrous bands
- Right Picture: The parenchyma shows darker tan nodules of varying sizes. These nodules are composed of hepatocytes. The paler areas in between are collagen.



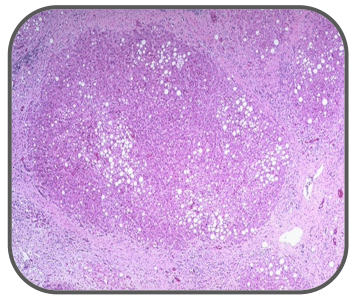
Hepatic cirrhosis – LPF

- Left Picture: Loss of lobular architecture and formation of regenerative hepatic nodules of variable size and shape, surrounded by fibrosis. Each nodules consists of liver cells without any arrangement and with no central vein. Large number of proliferated bile ducts and chronic inflammatory cells are present in fibrous tissue

- Right Picture: Micronodular cirrhosis is seen along with moderate fatty change. Note the regenerative nodule surrounded by fibrous connective tissue extending between portal regions.

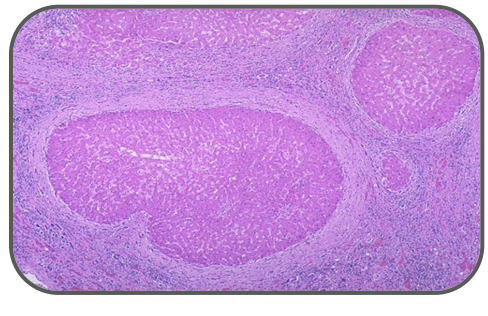


Cirrhosis Masson trichrome stain



Micronodular cirrhosis with fatty liver- LPF

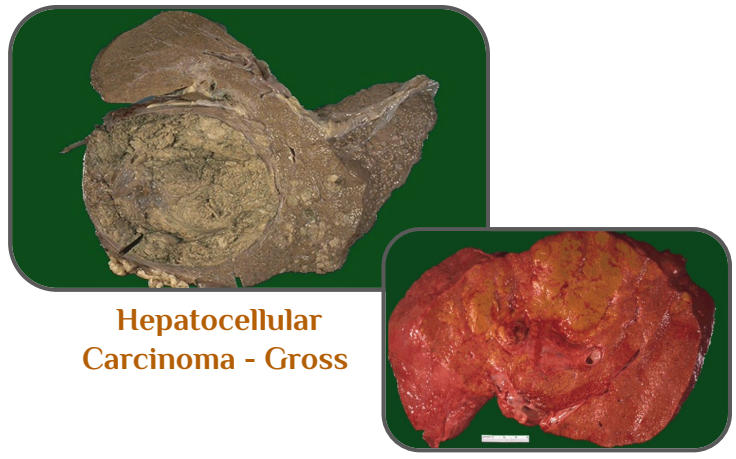
- Microscopically with cirrhosis, the regenerative nodules of hepatocytes are surrounded by fibrous connective tissue that bridges between portal tracts. Within this collagenous tissue are scattered lymphocytes as well as a proliferation of bile ducts



Hepatic cirrhosis – LPF

Hepatocellular Carcinoma

- Left Picture: Here is an hepatocellular carcinoma. Such liver cancers arise in the setting of cirrhosis. Worldwide, viral hepatitis is the most common cause, but in the U.S., chronic alcoholism is the most common cause. The neoplasm is large and bulky and has a greenish cast because it contains bile. To the right of the main mass are smaller satellite nodules.

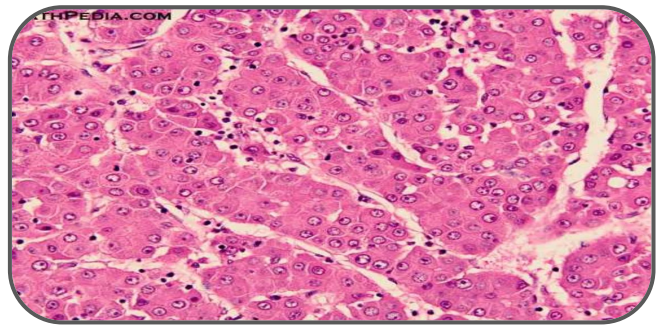


Hepatocellular Carcinoma - Gross

- Right Picture: Here is another hepatocellular carcinoma with a greenish yellow hue. One clue to the presence of such a neoplasm is an elevated serum alpha-fetoprotein. Such masses may also focally obstruct the biliary tract and lead to an elevated alkaline phosphatase

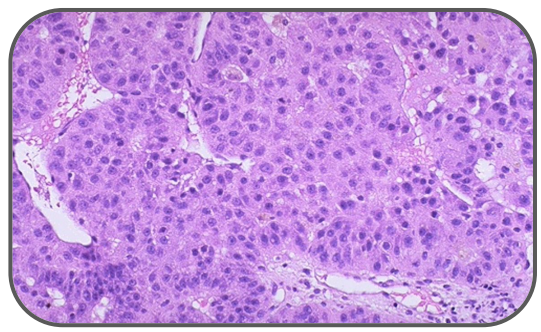
Hepatocellular Carcinoma - Gross

- The key to the identification of HCC is its resemblance to hepatocytes, the **presence of more than 2-3 cell-thick hepatocellular plates/cords, nuclear atypia, and absence of portal tracts.** Note the hepatic plates are separated from each other by **sinusoids**.



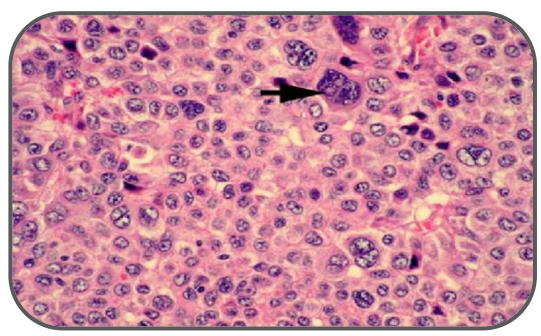
Hepatocellular Carcinoma - MPF

- Note that this hepatocellular carcinoma is composed of liver cords that are much wider than the normal liver plate that is two cells thick. There is no discernable normal lobular architecture, though vascular structures are present.



Hepatocellular Carcinoma - MPF

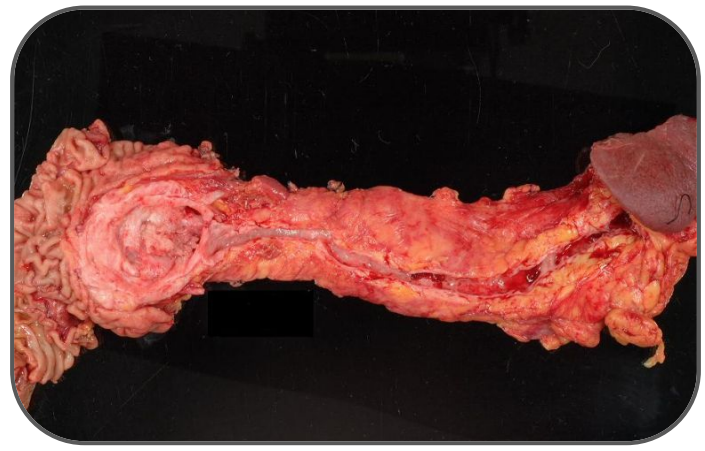
- Anaplastic tumor giant cells can be seen in poorly differentiated HCC (arrow). Mitoses are numerous. Malignant liver cells are pleomorphic, binucleated or forming giant cells with hyperchromatic nuclei.



Hepatocellular Carcinoma - Microscopic

Pancreatic adenocarcinoma

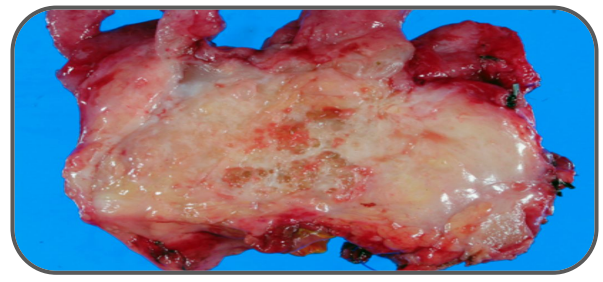
- Horizontal section of pancreas showing a well circumscribed tumor nodule at the head of pancreas. Note the presence of a dilated main pancreatic duct. Part of the duodenum is seen on the left and the spleen on the right side



Pancreatic Adenocarcinoma- Gross

- **Predispose to PANCREATIC ADENOCARCINOMA:**
  - Chronic pancreatitis
  - Diabetic mellitus
  - Smoking
  - Germline mutation in BRCA2

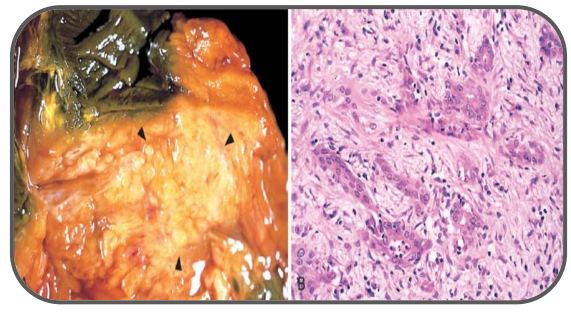
- Gross appearance of large duct type ductal adenocarcinoma. A microcystic pattern with cysts measuring from millimeters up to 1 cm



Pancreatic Adenocarcinoma- Cut Surface

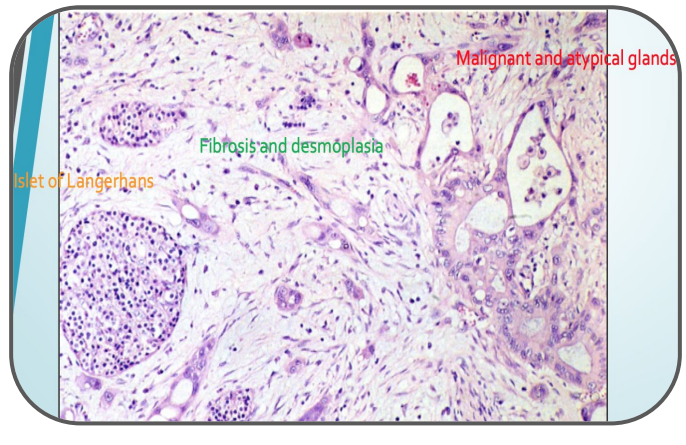
- **Genes that are involved in pancreatic carcinoma:**
  - KRAS
  - CDKNA2A/p16
  - SMAD4
  - TP53

- Gross picture shows ill defined pale and firm pancreatic mass (left). Microscopic picture shows malignant glands or acini surrounded by desmoplastic fibrous stroma (right) .



Pancreatic Adenocarcinoma- Gross & LPF

- Deeply **infiltrative growth pattern with irregular shape and distribution , Desmoplasia , Marked nuclear pleomorphism with nucleoli, Loss of polarity and Mitotic figures**



Pancreatic Adenocarcinoma- LPF

QUIZ!

Case 1

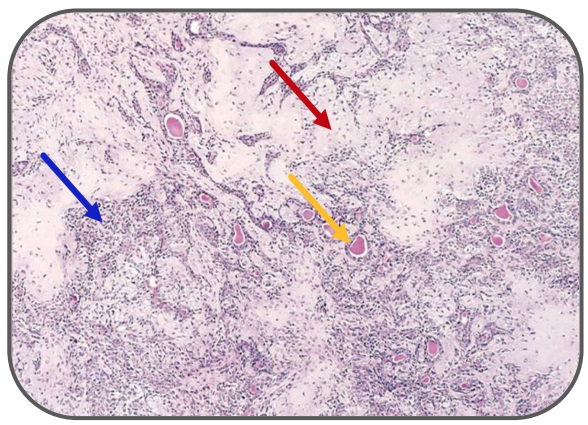
A 53-year-old woman presents with painless swelling below the right ear that has been growing slowly for about a year. A biopsy of the mass is shown in the below.

1. What is the Diagnosis ?

Mixed tumor of the parotid gland, pleomorphic adenoma

2. Describe the Picture.

Parotid swelling or tumor is present between the tip of the ear and the tip (angle) of the mandible



3. Is there any skin changes ? Explain.

No skin changes, because it is benign (it did not infiltrate the skin and the nerves)

4. Describe the microscopic features:

Mesenchymal component:

Red Arrow; chondromyxoid stroma

Epithelial component:

Yellow Arrow; epithelial cells forming ducts

Blue Arrow; myoepithelial cells

5. What's the Prognosis ?

Prognosis is good after the removal of the tumor

Case 2

A 60-year-old man presents with a 5-week history of difficulty swallowing. Physical examination is unremarkable. Upper endoscopy shows a large mass in the upper third of the esophagus. A biopsy is shown in the image.

1. What is the Diagnosis ?

Squamous Dysplasia of the esophagus

2. Mention a major Complication

Squamous cell carcinoma of the esophagus

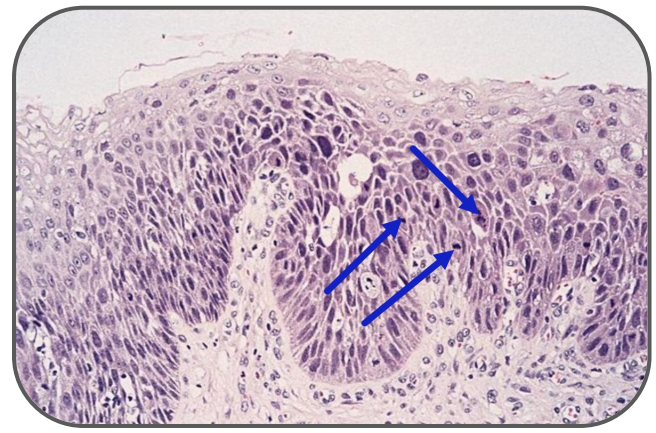
3. What are the risk factors for dysplasia and carcinoma?

1. Alcohol
2. Tobacco use
3. Poverty
4. Caustic esophageal injury

- Achalasia
- Tylosis
- Plummer-Vinson syndrom

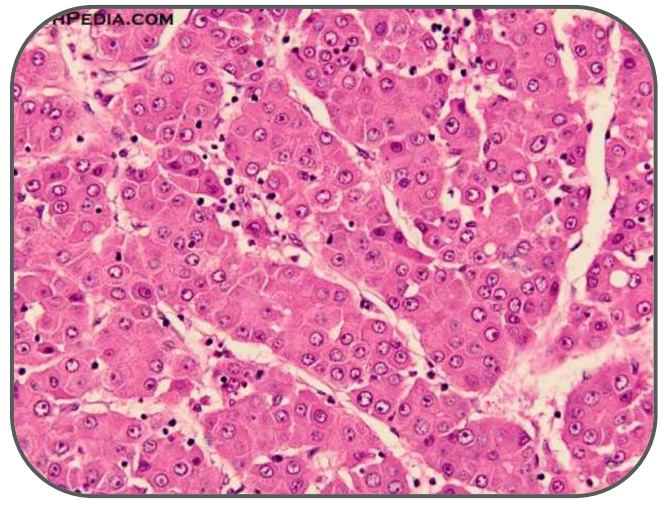
4. Describe the microscopic picture.

Dysplastic squamous cells with mitosis + Irregularity



Case 3

A 68-year-old man complains of vague abdominal pain, intermittent fever, and a 9-kg weight loss over the past 6 months. For the past 12 years, he has suffered from chronic hepatitis B. On physical examination, the patient shows diffuse abdominal tenderness, hepatomegaly, and mild jaundice. A CT scan of the abdomen reveals a diffusely nodular liver, with a dominant mass measuring 3 cm in diameter. A needle biopsy is shown in the image.



1. What is the Diagnosis ?

Hepatocellular carcinoma

2. Describe the microscopic feature. .

Well differentiated HCC, with Presence of more than 2-3 cell-thick hepatocellular plates/cords, nuclear atypia, and absence of portal tracts. Note the hepatic plates are separated from each other by **sinusoids**

3. What are the predisposing factors of HCC ?

- The main factor is **Liver cirrhosis**

4. Question 3 could come as : List the Complication of Liver Cirrhosis.

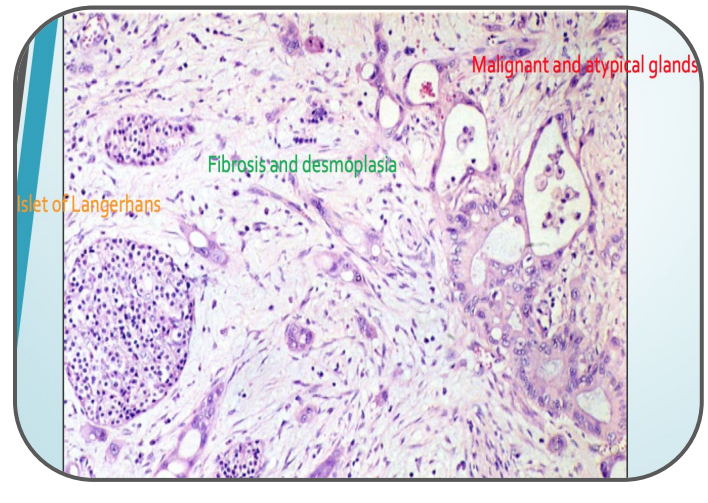
- **Carcinoma is the main complication**
- Portal hypertension
- Esophageal varices
- Hepatic failure
- Liver cell dysplasia and carcinoma
- Gynaecomastia

Case 4

A 60-year-old man presents with a 3-week history of weight loss, vague abdominal pain, and progressive yellowing of his skin and sclerae. He also reports the recent onset of intermittent pain in the upper and lower extremities. Laboratory studies show a serum bilirubin level of 15 mg/dL, mostly in the conjugated form. The patient later expires due to pulmonary thromboembolism. Autopsy and microscopy of the pancreas are shown below.

1. Describe the Gross features.

Pancreas showing a well circumscribed **tumor nodule at the head of pancreas**. Main pancreatic duct is dilated. Part of the duodenum is seen on the left and the spleen on the right side.



2. What are the genes that are involved in pancreatic carcinoma ?

- KRAS
- CDKNA2A/p16
- SMAD4
- TP53

3. List the predisposing factors for Pancreatic Adenocarcinoma.

- **Chronic pancreatitis**
- Diabetic mellitus
- Smoking
- Germline mutation in BRCA2.

4. Describe the microscopic features.

Deeply infiltrative growth pattern with irregular shape and distribution , **Desmoplasia** , Marked nuclear pleomorphism with nucleoli, Loss of polarity and Mitotic figures, Malignant atypical glands, Islets of langerhans,

5. How to differentiate between Chronic pancreatitis and Pancreatic Adenocarcinoma microscopically ?

In Adenocarcinoma the gland itself is dysplastic . Both Adenocarcinoma and chronic pancreatitis have inflammatory cells and fibrosis , but in Adenocarcinoma, we call it desmoplastic response and in chronic pancreatitis it is only inflammation and fibrosis.

Good Luck !