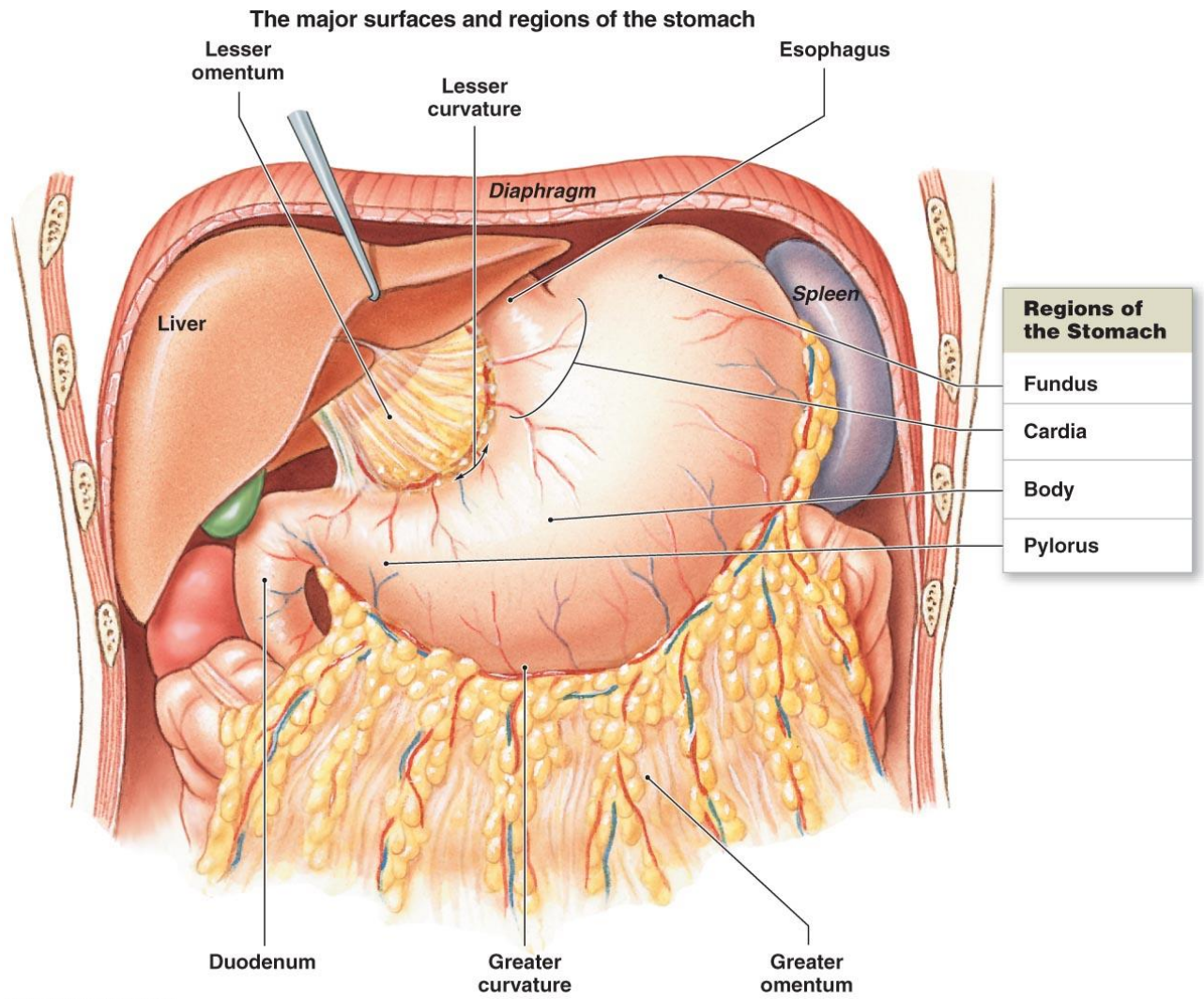


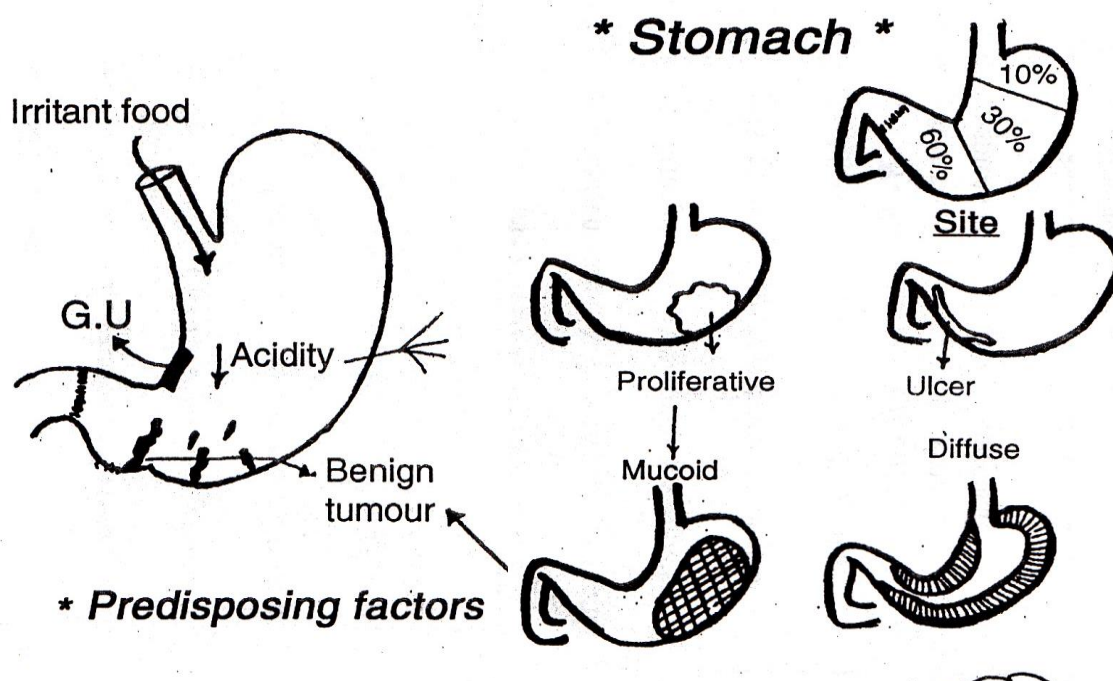
Carcinoma of the stomach



★ **Incidence** : More in **males above 50 years**

★ **Predisposing factors** :

- **Irritant foods** causing gastritis eg. **Smoking** , **spirits** , **sepsis** , **spices** , **excess salt intake (5S)** , **nitrate & N-nitroso compounds** in foods .
- Chronic atrophic or autoimmune **gastritis** especially if associated with **achlorhydria(most important predisposing factor)**.
- Chronic **H.pylori** infection .
- Chronic benign **gastric peptic ulcer** rarely turn malignant (less than 1%)
- **Hereditary** : it may runs in some families specially with blood group A .
- Post-gastrectomy and post-truncal vagotomy stomach (hypoacidity & reflux biliary gastritis).
- Pernicious anaemia .
- Benign tumours especially diffuse polyposis .



*** N.B: No evidence that prolonged intake of any drug that lower the acidity predispose to gastric cancer .**

★ **Pathology :**

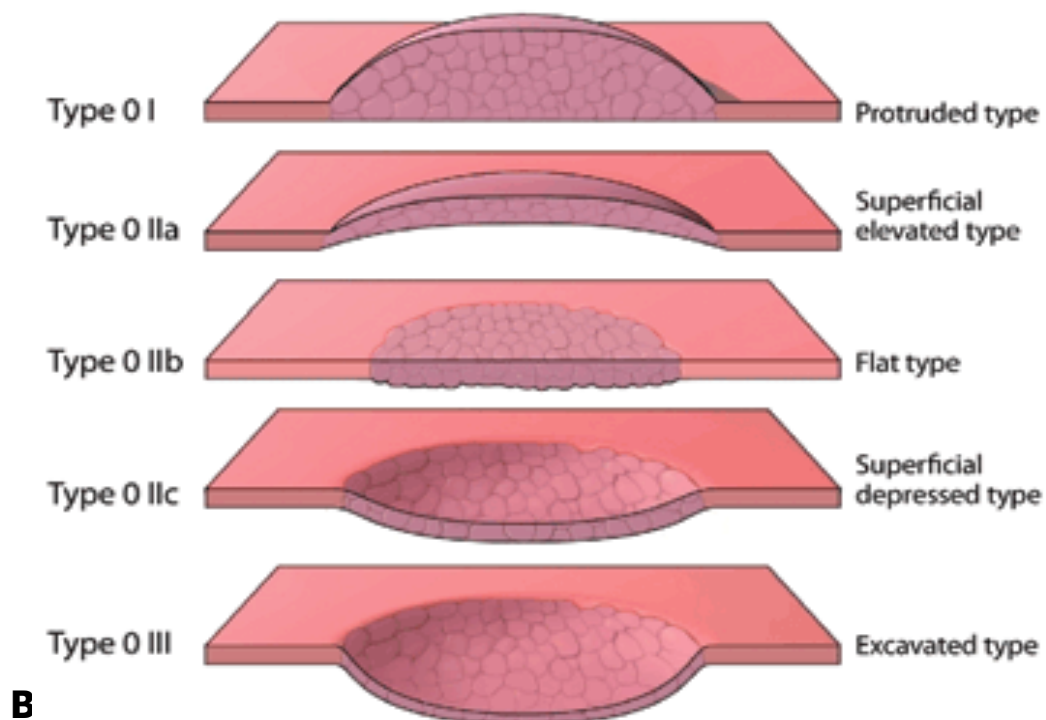
I- Site :

- ◆ **Upper** 1/3 : 50% .
- ◆ **Diffue infiltration of whole stomach** : 10%.
- ◆ **Lower** 1/3 (pyloric region) : 35%

II- Gross picture : Now gastric cancer is classified into 2 types :

A) Early gastric cancer localized to mucosa & submucosa:

- ◆ This type is diagnosed only , if screening program by endoscopy is performed as in Japan .
- ◆ It may be protruding , superficial (elevated , flat or depressed) or excavated .



B

Figure 46.4 Japanese classification system for early gastric cancer.

◆ **This is the usual diagnosed type in clinical practice .**

◆ **It may be one of the following forms :**

a. Proliferative type:

- It form a bulky fungating cauliflower mass with ulceration, necrosis, hge & infection .
- This is commonest in the **body and funds** .

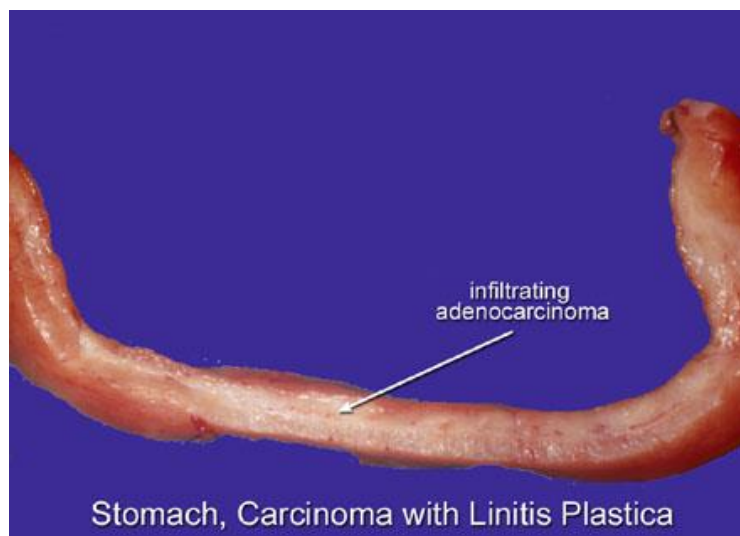
b. Ulcerative type:

- The ulcer show features of malignancy, (describe it).
- This is commonest in the **pyloric region or in the lesser curvature.**



c. Infiltrating type :

- Adenocarcinoma in the pyloric region infiltrates all layers to involve the stomach diffusely → the stomach becomes thickened , narrow , irregular and rigid → ***linitis plastica or leather bottle stomach.***
- ***The mucosa*** may be intact and the lesion may be missed during endoscopy .



d. Colloid type :

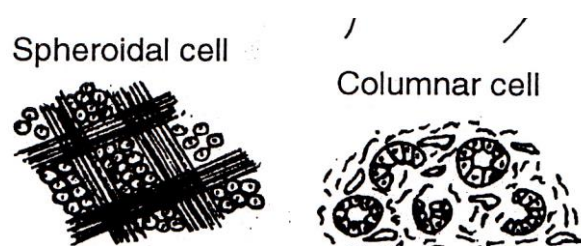
- The wall of the stomach is infiltrated by malignant tissue containing gelatinous substance .

III. Microscopic picture:

A- Adenocarcinoma :

◆ **95%** , usually in the lower 2/3 of the stomach . It is one of the followings types :

- a. **Columnar cell adenocarcinoma:** malignant cells are arranged in complete or incomplete irregular acini.
- b. **Spheroidal cell carcinoma:** groups of spheroidal cells are separated by variable amount of fibrous tissue.
- c. **Colloid or mucoid carcinoma:** it is an adenocarcinoma with excess mucin in the cells, acini and tissue spaces.



*** Microscopic Picture ***

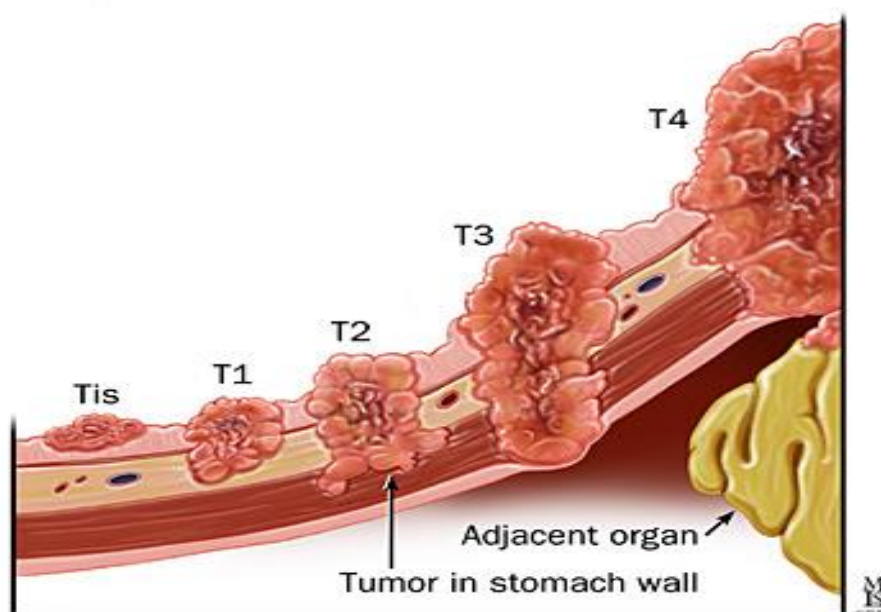
B- Squamous cell carcinoma :

- ◆ 5% , **usually in the** upper 1/3 of the stomach .
- ◆ It may be **spread** from carcinoma of the **oesophagus** or due to squamous **metaplasia** .

IV . Staging : TNM system

➤ **T : Primary tumour**

- **Tis** : Tumor localized to the mucosa above the basement membrane .
- **T1** : Tumor invades the lamina propria , muscularis mucosa , or submucosa .
- **T2** : Tumor invades the muscularis propria
- **T3** : Tumor invades the subserosa .
- **T4** : Tumor invades serosa or adjacent structures .



- **N : regional lymph node metastasis**
 - **N0** : No regional lymph node metastasis
 - **N1** : **1-6** regional lymph node metastasis
 - **N2** : **7-15** regional lymph node metastasis
 - **N3** : **more** than 15 regional lymph node metastasis
- **M : distal metastases .**
 - **M0** : No distal metastases .
 - **M1** : presence of distal metastases .

★ **Complications :**

I. Spread :

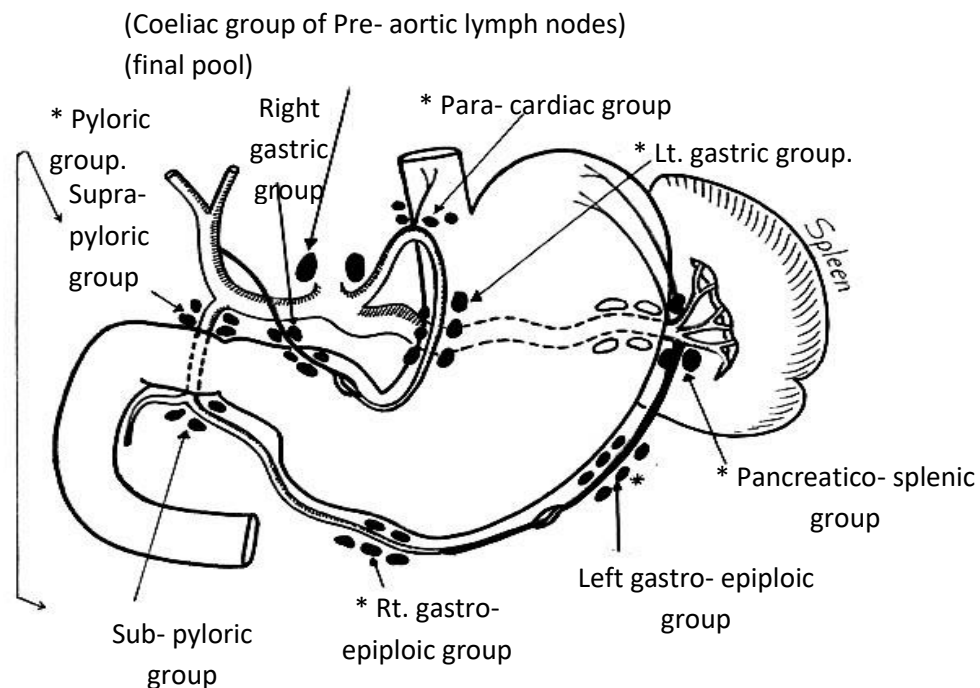
A) Direct spread :

- ◆ ***Intra-mural spread*** : Infiltration of thickness of the wall of the stomach circumferential & longitudinal spread beyond palpable edge of the tumour.
- ◆ ***Extra-mural spread*** : To the surrounding structures (duodenum , oesophagus , liver , spleen , pancreas , diaphragm , colon .. etc.).

B) *Lymphatic spread* : By permeation and embolization to.

- ◆ **Cardia** → para-cardial (para-esophageal) LNs
- ◆ **Proximal 1/2** of stomach → left gastric & splenic L.Ns.
- ◆ **The greater curvature** → right & left gastropyloric and splenic L.Ns.
- ◆ **Lesser curvature** → right & left gastric LNs .
- ◆ **The pyloric region** → right gastric , right gastro-epiploic, sub-pyloric , retro-pyloric and supra-pyloric L.Ns.

- ◆ From the above mentioned L.Ns → **coeliac** L.Ns (rarely to **sup. mesenteric** L.Ns) → to the following :

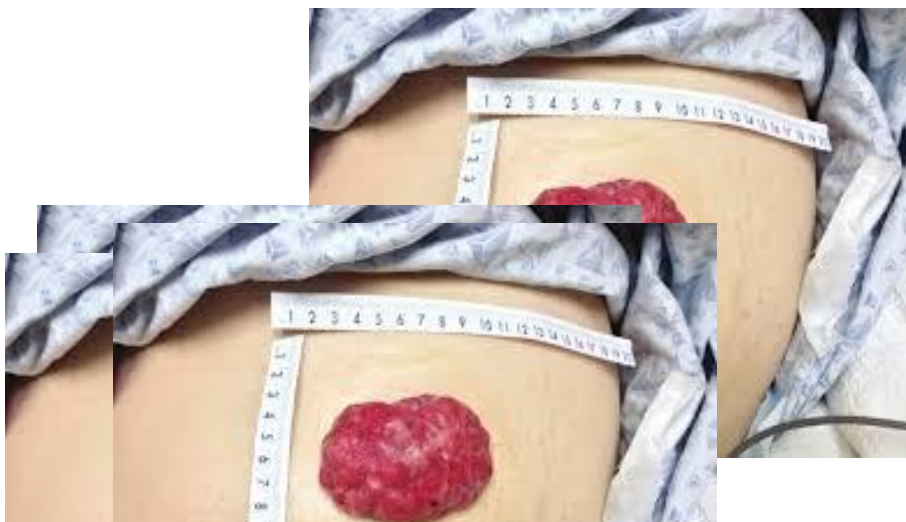
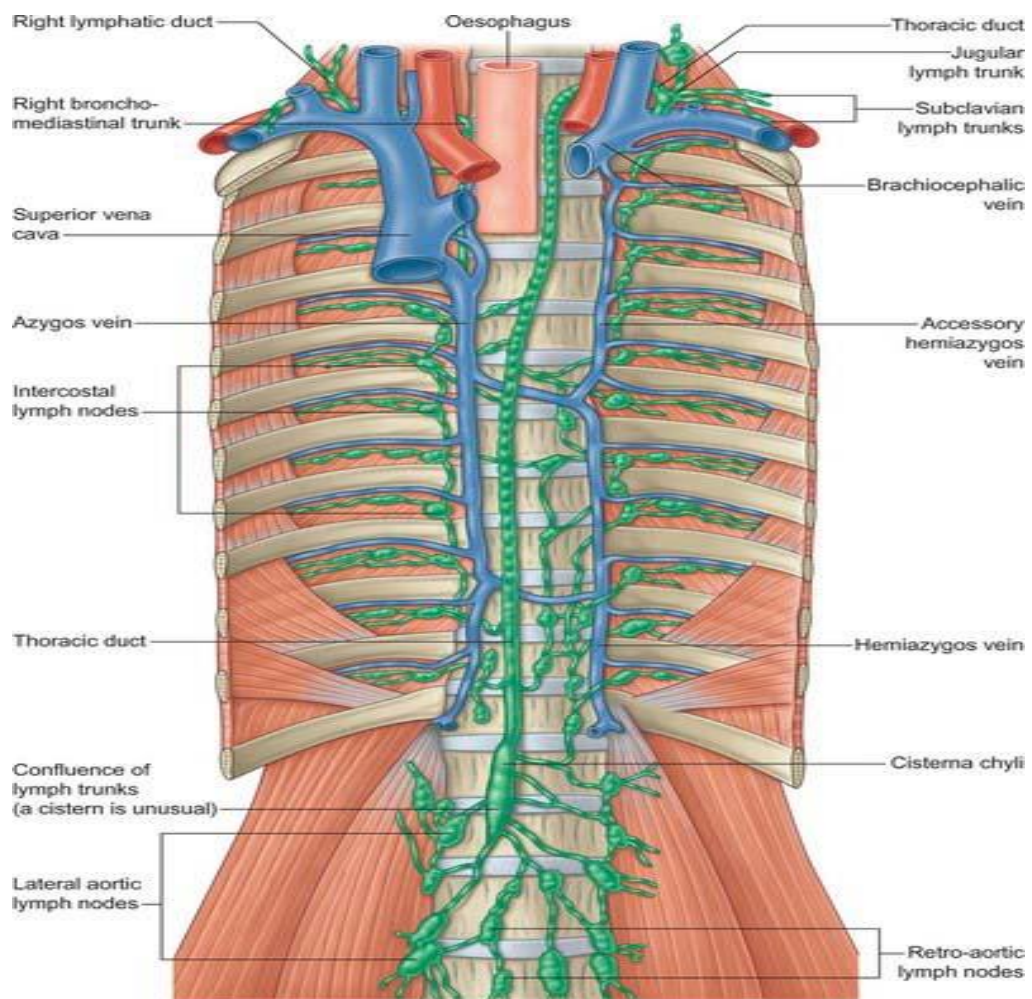


- ❖ **From coeliac** lymphatic spread can occur to :

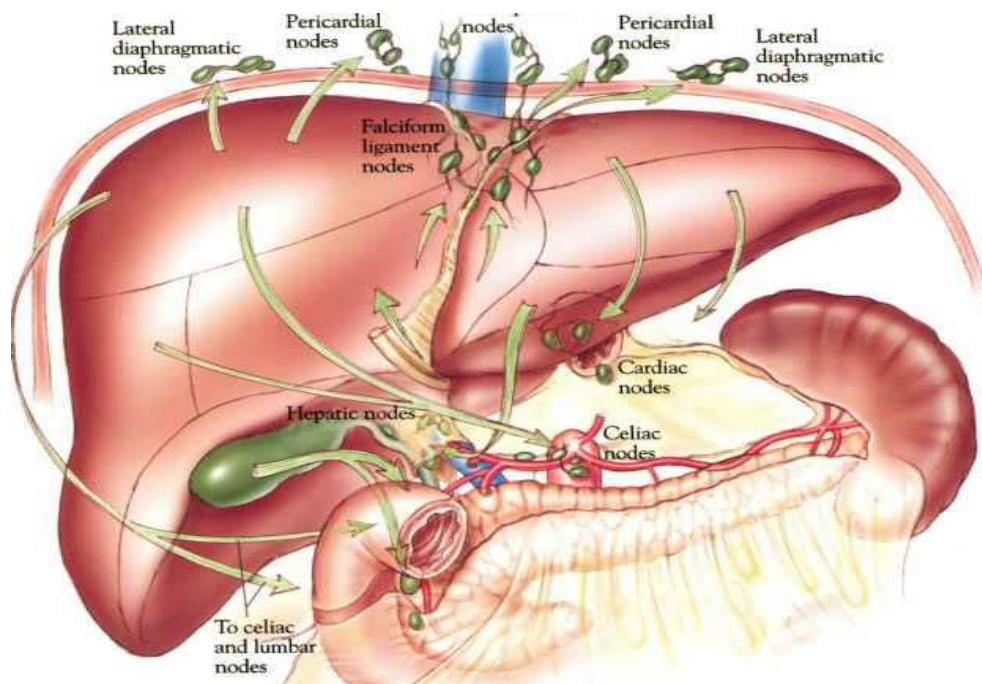
- 1- Gastro-intestinal lymph trunk → Cysterna chyli → thoracic duct → **left supraclavicular** lymph nodes (Virchow's gland) (positive **Tourosie's sign**).
- 2- Retrograde spread in the lymphatics along hepatic artery → L.Ns. in the **porta-hepatis** → lymphatics around ligamentum teres → umbilicus (sister Joseph nodule)



Positive Trousseau's sign



sister Joseph nodule



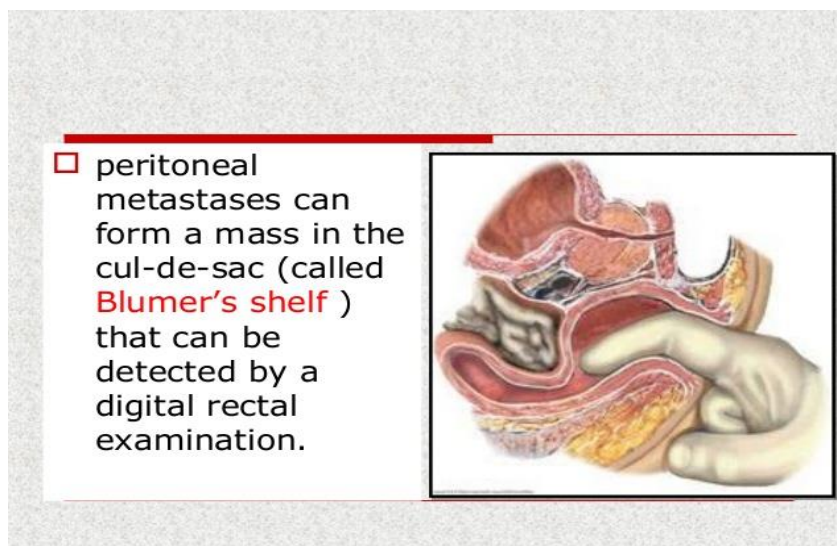
C) *Blood Spread : (2L + 2B or LBLB)*

- ◆ Mainly to the liver via portal circulation, rarely to lungs, bones, brain via systemic circulation



D) Trans-peritoneal Spread :

- ◆ By seeding → malignant ascites, Krukenberg's tumour (malignant cells implanted on the ovaries → bulky tumour), nodules in the Douglas pouch known as **Blumer's shelf** , omentum and parietal peritoneum.



II. Bleeding: haematemesis and melena.

III. Obstruction: of the oesophagus or pyloric region .

IV. Perforation: acute , subacute or chronic .



V. Pulmonary complications , infections , Anaemia , cachexia and death.

★ **Clinical picture :**

I) Symptoms :

1. Dyspepsia: (the commonest).

- ◆ The **early & the commonest** symptoms are **vague** & usually neglected by the patient and not recognized by the physicians .
- ◆ Elderly patient complaining of **recent rapid progressive** dyspepsia , **anorexia & loss of weight.**
- ◆ **Pain** is continuous, not related to meal, not relieved by antacids or vomiting, with no periodicity.
- ◆ **Vomiting** , usually in **advanced** cases , may be **blood stained.**

2. Anaemia cachexia:

- ◆ The patient looks pale, feels tired, weak & unexplained loss of weight with anorexia.
- ◆ **Any old patient with progressive unexplainable anaemia should be suspicious for malignancy.**

3. Manifestations of obstruction:

- ◆ Carcinoma of cardia → dysphagia and carcinoma of pylorus → Symptoms of pyloric obstruction.

4. Abdominal swelling:

- ◆ **Uncommon** , the patient presenting by a mass in the epigastrium or left hypochondrium .

5. Manifestations Complication:

- ◆ **10%** of cases present by features of metastases e.g jaundice malignant ascites, Krukenberg's tumour, **Tourosie's** sign (enlarged left supraclavicular L.Ns.).
- ◆ **Features of metastases:** (mention as cancer esophagus)

II. Examination:

A- General: for jaundice, anaemia, cachexia, Virchow's glands & distal metastases.

B- Abdominal:

1. Abdominal Swelling : In the epigastrium or left

hypochondrium , hard, irregular ill-defined mass. It is at first mobile and later on become fixed.

2. Enlarged, hard, nodular & tender liver. (**liver metastases**)

3. Malignant ascites.

4. Abdominal masses (enlarged L.Ns & peritoneal nodules).

5 . P-R and P-V examination: may show pelvic deposits

★ **DD :** Other causes of **dyspepsia, epigastric mass, pyloric obstruction.**

★ **Investigations :**

I) Laboratory investigations:

1. **Occult blood in stool :** usually positive .

2. **Blood picture :** usually show microcytic or macrocytic anaemia.

3. **Tumor markers :** CEA to evaluate **response** to treatment and **follow up** of the patient .

II) Radiological investigations :

1. **Barium meal:** may show:-

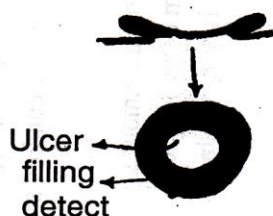
- ◆ **Persistent irregular filling defect.**
- ◆ Large ***ulcer niche*** outside the ulcer bearing area.
- ◆ **Carmen's meniscus sign:** filling defect around the edge of the ulcer.
- ◆ In carcinoma of the fundus, X-ray should be taken in the Trendelenburg's position to see any filling defect.
- ◆ **Pyloric obstruction** with no huge proximal dilatation.
- ◆ **Linitis plastica:** the stomach appear as a narrow irregular tube.



1. Irregular filling Defect



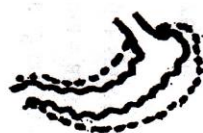
2. Large ulcer niche outside ulcer bearing area



3. Carmen's Meniscus Sign



4. Trendelenburg's position



5. Linitis plastica



6. Pyloric obstruction

*** Ba. Meal ***

Linitis plastica

- Barium meal and follow through single contrast shows tumor invasion of the gastric wall
- diffuse irregular narrowing and rigidity of the stomach



2. ***U/S & endoscopic U/S is very important to*** detect local extent of the tumor and lymph nodes enlargement .
3. ***C.T. scan*** of upper abdomen .
4. **PET scan (positron emission tomography scan)** : show local tumor , nodal & distal metastases for accurate preoperative staging.
5. A PET scan and CT scan may be done at the same time. This is called a **PET-CT** for accurate preoperative staging.

III) Endoscopy and biopsy are the **most important** investigations.

IV) Diagnostic laparoscopy with biopsy

V) Investigations to detect metastasis. (Mention in any malignancy)

1. Plain x-ray : chest & bone to detect lung & bone metastases .
2. U/S of lung & abdomen .
3. CT & MRI for brain , bone , chest & abdomen .
4. Radioactive isotopic scan of lung , liver , bone & brain .
5. **PET scan or PET-CT**
6. **Diagnostic laparoscopy with biopsy .**

★ **Prognosis :**

- **Depends on** degree of differentiation , depth of infiltration , presence of lymph node metastases , infiltration of surrounding structures or distal metastases .**5 year survival is 10-20 %**

★ Treatment :

I) Operable case : (potentially curable) (40% of cases)

◆ Features:-

1. **Clinically & investigations:** localized mobile tumour, no peritoneal nodules, no malignant ascites, no distal metastasis and the patient is fit for surgery.
2. **At laparotomy:** the first step in the operation is to assess the operability. The tumour is operable if it is localized to the organ with no invasion of important surrounding structures, no ascites or or peritoneal nodules and no liver metastasis.

- ◆ **Aim : Radical** resection of the tumor with 5 cm safety margin on either sides with restoration of the continuity of the GIT and lymphadenectomy of the draining lymph nodes (therefore the greater & lesser omenta + spleen & tail of pancreas should be removed).

◆Method :

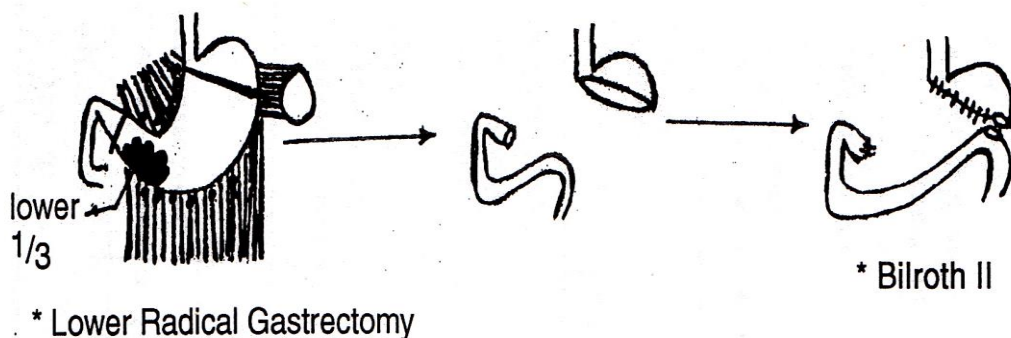
- The operation can be approached **laparoscopically (best and popular nowadays)** , open or robotically (not available)
- According to the site of the tumour, the extent of resection will be :

	* Operation *	* After Operation *
▪ Lower 1/3 of	▪ Lower radical partial gastrectomy (remove lower	▪ Anastomosis of the remaining part of stomach

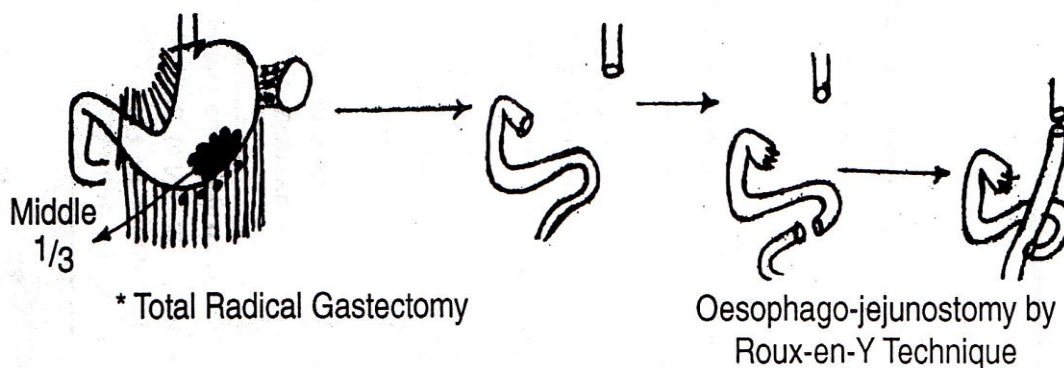
stomach	2/3 of stomach).	to the jejunum.
▪ Middle 1/3 of stomach	▪ Total radical gastrectomy.	▪ Oesophago-jejunostomy by Roux en Y technique.
▪ Upper 1/3 of stomach	▪ Oesophagogastrectomy (remove upper 2/3 of stomach & lower 10 cm of oesophagus).	▪ Oesophago-jejunostomy by Roux en Y technique.

- **Adjuvant post-operative radiotherapy & chemotherapy**
: if + ve nodes or + ve margins.

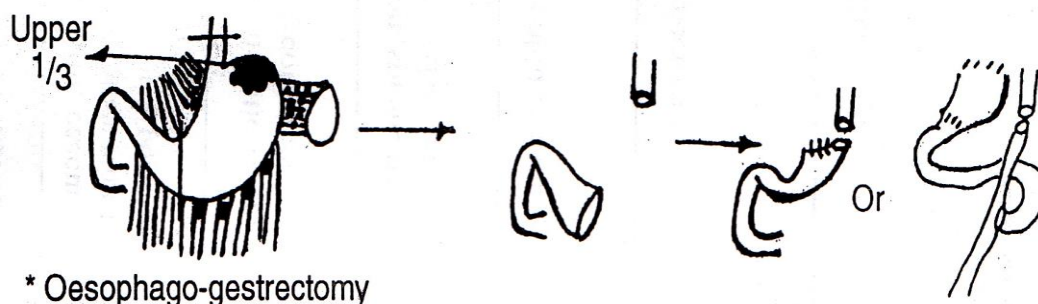
*** ttt of Carcinoma of Stomach ***



* Lower Radical Gastrectomy



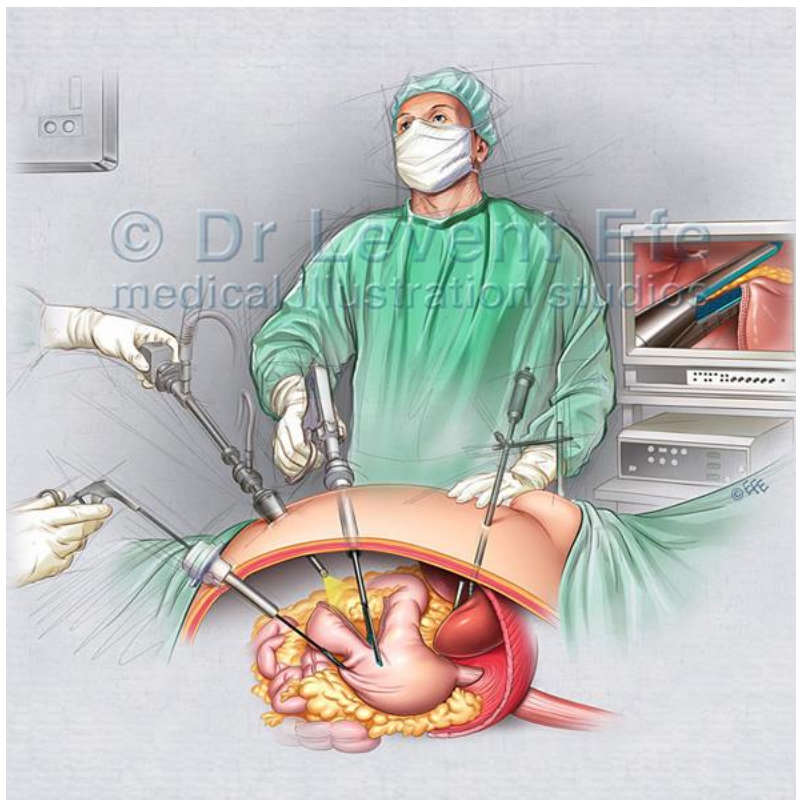
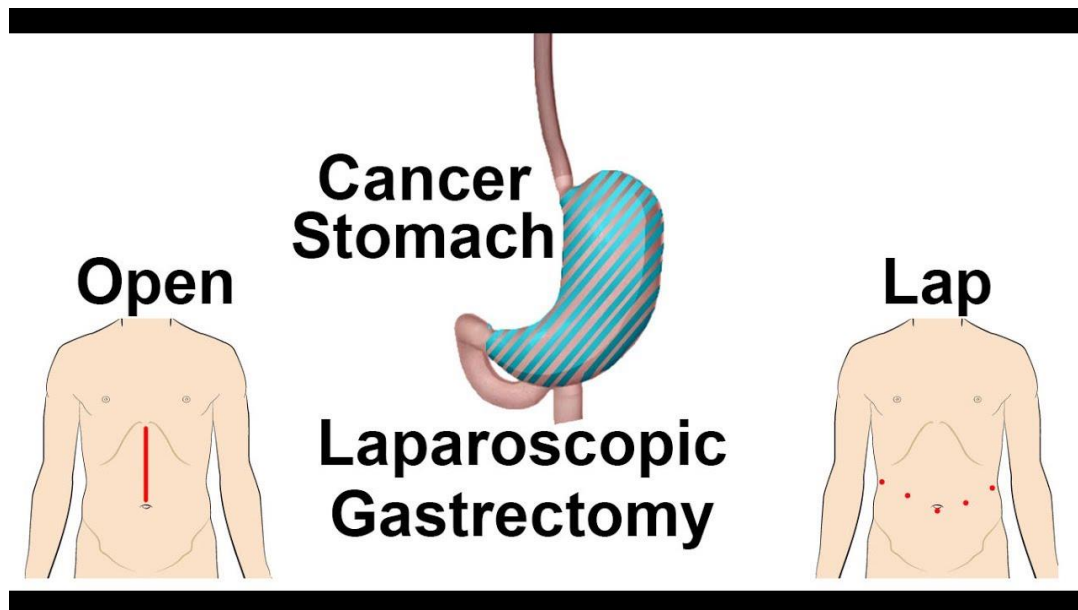
* Total Radical Gastrectomy



* Oesophago-gastrectomy

* Inoperable:





II) Inoperable cases:

- ◆ **Features:-** (The reverse of operable cases)
- ◆ **Aim :** Palliative measures to relieve symptoms .
- ◆ **Methods :**

- 1) **Obstruction of cardia** :Through an oesophagoscope a rigid tube or stent is inserted into the tumor to keep the lumen patent to relieve dysphagia *is the best*.
- 2) ***Pyloric Obstruction*** : gastrojejunostomy .
- 3) ***Palliative gastrectomy*** .
- 4) ***Palliative radiotherapy and chemotherapy***.