Lecture 2: Gastric Cancer (Gastric CA)

🔵 **General Characteristics:**

- 9th M/C cancer in males and 8th in females
- 145 new cases yearly
- More common in **Japan and asia**
- Male > Female = 5:3
- **7th decade is the peak incidence**
- Less than 5% are under the age of 55

🔶 **Etiology:**

- There are 2 types of gastric cancers:
    1. **Cardiac** CA: associated with developed or endemic countries
    2. **Non-cardiac** CA: associated with **developing** countries or non-endemic areas like **Japan**
        ➤ **Highly associated with H. pylori**
- **H. pylori**:
    - Most important factor
    - Found in **poor hygiene**, **crowded**, **low socio-economic areas**
    - Increases the risk (**×2**) of **non-cardiac tumors**
    - Risk even higher in **CagA-positive patients**
    - **Chronic atrophic gastritis** caused by H. pylori increases the risk **(×11) of Cardiac cancer** → the **only case** where H. pylori **is associated with cardiac cancer**

🔶 **Cardiac cancer risk factors:**

1. Low fat / protein diet
2. N-nitroso compounds → inc risk for **non cardia** cancer in those with h.pylori infx
3. High salt food (x3)
4. Processed meat (ham, sausage, bacon)
5. Fried or grilled food → **heterocyclic amines**
6. Smoking (x2)
7. nitrosamine
8. Alcohol
9. Obesity (**×2**)
10. Pernicious anemia (**2–3%**)
11. post gastric surgery → especially post-antrectomy (after 15–20 years)

🧪 **Classification:**

1. WHO Morphology: widely used but little in in pt management

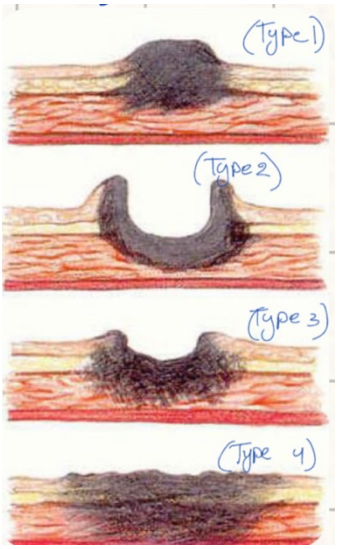
- Squamous cell
- Adenosquamous
- Undifferentiated
- Unclassified
- **Adenocarcinoma** → subclassified into:

- Papillary
- Signet ring
- Mucinous
- Tubular

➤ all depending on **growth pattern (degree of differentiation)**

2. Bormann's classification:

- Based on macroscopic appearance:
  1. Polypoid or fungating lesion
  2. Ulcerated with raised edges
  3. Ulcerated with no edges
  4. Diffuse infiltrating lesion
  5. Doesn't fit any



🔶 **Not very useful** for diagnosis or prognosis // degree of cellular differentiation

- **Broders classification:**

- Based on **cellular differentiation**:
  - Type 1: well differentiated
  - Type 4: anaplastic

3. Lauren's classification:

Intestinal type	Diffuse type
○ Older men ○ Well-differentiated ○ Spreads through **blood** ○ Good prognosis ○ Limited (non-cardiac)	○ Young women ○ Poorly differentiated ○ Spreads?**submucosa+ lymphatics** ○ Poor prognosis ○ **Lacks gland formation** ○ Composed of **signet-ring cells** ○ Associated with blood type A and familial cases

🔻 **Symptoms:**

- **At first**: It's often **asymptomatic**, but you might notice:
  - **Pain** (constant , especially **doesn't relieve by drugs or food**)
  - **Dysphagia**
  - **Weight loss**
  - **Loss of appetite**
  - **Early satiety**
  - **Vomiting**
- On PE: they develop **late**, they are associated with **metastasis signs**:
  1. **Virchow's node** (left supraclavicular node)
  2. **Sister Mary Joseph nodule** (umbilical nodule)
  3. **Palpable epigastric mass**
  4. **Jaundice**
  5. **Ascites**
  6. **Cachexia**

🧪 **Clinical Evaluation and Staging:**

1. flexible upper Endoscopy:

- **First choice** once you suspect **gastric cancer**
- You should take **biopsies** from:
  - **The edge and** not the crater
  - (*Since it may show necrotic debris only*)
- You need at least **7 biopsies** to assess:
  - **Size**
  - **Site**
  - **Morphology**

2. Blood tests:

- Should appear **normal** unless there's a sign of mets :
  - Anemia (check **full blood count**)
  - LFTs for liver mets and advanced disease
  - Coagulation panel→ abnl in advanced disease

🔷 **3) Double contrast barium swallow**

- We don't use it anymore since it gives **false +ve** or **–ve**
- It's **not helpful** for differentiating benign and malignant tumors
- cost-effective
- accuracy (~90%)

🔷 **4) EUS (Endoscopic Ultrasound)**

- ✅ Used for **staging**
- **Extent of wall invasion and nodal status**
- **Good for evaluating LN / added advantage of FNA**
- Perfect for **T1 and T3 (superior to CT)**
- ❌ Not useful for **T2**, since it **can't reach the muscularis propria**
- ❌ Not suitable for therapy response since it :
  ➤ **Cannot differentiate fibrosis from cancer**
  ➤ Gives ~80% accuracy

🔷 **5) CT scan**

- Useful for **T4**, **nodal enlargement**, **liver mets**
- ❌ Not suitable for T1/T2 tumors (early)<5 mm mets to liver and peritoneum
- If nodal involvement(size) is seen in the **chest**, it's a **poor prognosis**
- **Chest , abdomn , pelvis**
- **PET-CT→ detect distant mets , used to followup (للي عندهم احتمال لتطور المرض)**
- Accuracy: **80–85%**

🔷 **6) Diagnostic laproscopy**

- Used for **locoregional disease**
- Detects **liver and peritoneal mets <5 mm**
- Can detect mets in 30% that were thought resectable in CT or EUS
- 🔴 Once you see tumor cells in **peritoneal fluid** → **(presence of free intraperi. Gastric cells) T4**

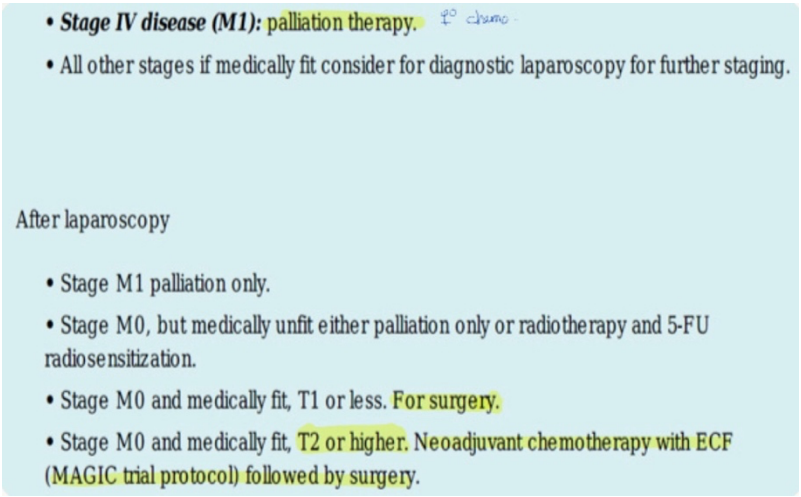
🔷 **L.N. classification: -regional lymph node (N)-**

- Nx ; nodes cant be assessed
- **N0**: No lymph node mets
- **N1**: 1–6 positive nodes
- **N2**: 7–15 positive nodes
- **N3**: >15 positive nodes
- **M1**: Distant metastasis

🟨 Note:

- T1 and T2 are **early-stage gastric cancer even if theres nodal involvement**
- T3/N2 = **advanced stage cancer**

🔴 **Treatment:**


• ***Stage IV disease (M1):*** palliation therapy. 1° chemo

• All other stages if medically fit consider for diagnostic laparoscopy for further staging.

After laparoscopy

• Stage M1 palliation only.

• Stage M0, but medically unfit either palliation only or radiotherapy and 5-FU radiosensitization.

• Stage M0 and medically fit, T1 or less. For surgery.

• Stage M0 and medically fit, T2 or higher. Neoadjuvant chemotherapy with ECF (MAGIC trial protocol) followed by surgery.

🔺 **Surgical Treatment:**

- Fisrt tx of gastric cancer
- <50% at presentation are resectable , extent of resection depends on R0
- 6 cm from edge is required to decrease risk of local recurrence

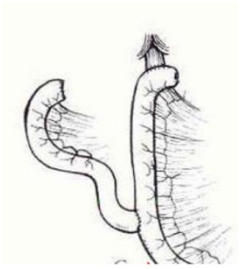
Types:

1. **Proximal tumor (cardiac)** → Total gastrectomy
2. **Distal tumor** → Subtotal gastrectomy

❓ **Do you need to remove lymph nodes?**

- Controversial
- You can only remove **group 1 LN** (found on lesser & greater curvature)
- ❌ Group 2 (found on common hepatic, left gastric, coeliac , splenic) can't be removed
- Group 3 (para – aortic)

❗ **D1 vs D2 surgery:**



- D2 = higher morbidity & mortality
- BUT no difference in **overall survival**

Type of surgery :

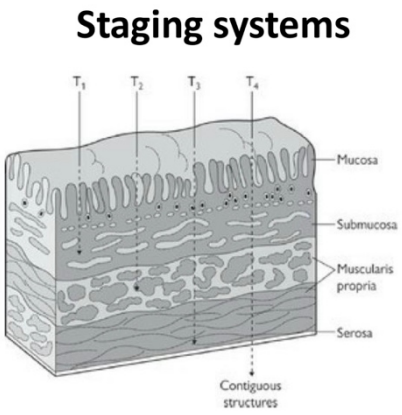
- **Roux-en-Y** reconstruction⟶ connects esophagus to jejunum after total gastrectomy

---

⚠️ **Complications of Gastric Surgery:**

- **Early:**
  - Anastomotic leak
  - bleeding
  - infx
- **general:**
  - DVT
  - PE
  - Cardiorespiratory complications
- Late complications:
  - Early dumping →20-30min after ingestion of a meal (Acute destruction of the howel) // Autonomic response // serotonin, bradykinin-like ,substances, neurotensin, and enteroglucagon
  - Gl symptoms→ nausea and vomiting, sense of fullness, belching, abdominal cramps, and explosive diarrhoea.
  - Cardiac symptoms→ palpitations, tachycardia, sweating, fainting, dizziness, flushing, and visual disturbance // Symptoms usually subside with time
  - Late dumping →2-3h after ingestion of a meal // large amount of carbohydrates to the proximal small intestine (quickly absorbed ,sudden hyperglycaemia ,large amount of insulin, profound hypoglycaemia , catecholamines from the adrenal gland , tachycardia, sweating, confusion, and dizziness
  - Symptoms similar to hypoglycaemic shock
  - Also reduces with time

Stage 0	Tis, N0, M0
Stage 1A	T1, N0, M0
Stage 1B	T1, N1, M0 T2a/b, N0, M0
Stage II	T1, N2, M0 T2a/b, N1, M0 T3, N0, M0
Stage IIIA	T2a/b, N2, M0 T3, N1, M0 T4, N0, M0
Stage IIIB	T3, N2, M0
Stage IV	T4, N1–3, M0 T1–3, N3, M0 Any T, any N, M1



Adjuvant Therapy:

M1	Palliative therapy
R0 resection and T1, NO	Observe
R0 and T2 and higher	ECF chemotherapy
R1 resection	Radiotherapy plus concurrent 5-FU sensitization followed up by ECF chemotherapy if T2 and higher Radio then chemo
R2 resection	5-FU based radiosensitization or ECF chemotherapy or best supportive care if unfit Radia and chemo.
Primary palliative chemotherapy	Reassess and if good response consider surgery

---

Follow-up:

Follow ups ?

Surveillance

- First 3 years follow-up should be intensive, since recurrence is most common at this stage
- Follow-up should be 4–6 months for first 3 years, thereafter annually
- History, physical examination, and routine blood profile should be conducted at each followup visit
- CT scan should be performed yearly for first 3 years or sooner if suspicious
- Yearly gastroscopy on patients who have undergone subtotal gastrectomy

→ In General:
1) Total → use CT
2) Subtotal → use endoscopy

Endoscopic mucosal resection (EMR)

Most experience with EMR is in Japan where there is higher incidence of early gastric cancer and an active screening programm.

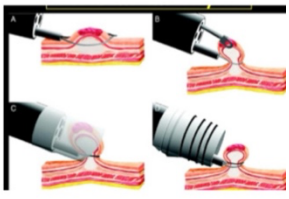
Indications for EMR

well or moderately differentiated

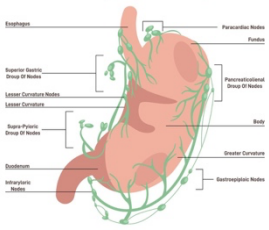
tumour size less than 30mm

absence of ulceration

no evidence of invasive findings



Stomach Lymphatic System



Anatomy ?

Gross anatomy

- Relations of the stomach:
- anteriorly – left lobe of the liver;
- superiorly – the diaphragm;
- medially – the liver;
- laterally – spleen;
- inferiorly – transverse mesocolon, caudate lobe of liver, crura of the diaphragm, and retroperitoneal nerves and vessels.