Tumors of the Stomach, Duodenum and Small Bowel

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Gastric Adenocarcinoma
Epidemiology

- Incidence exhibits geographic variability
- Japan and China = most common
- 2nd leading cause of cancer death worldwide
- More common in males (1.5 – 2.5x)
Epidemiology

- Rarely diagnosed < 40
- Incidence peaks in seventh decade of life
- Blacks, hispanics and native Americans 2x more likely
US Trends

- Incidence has fallen substantially over past 70 years
- 13th leading cause of cancer-related death
- No improvement in 5-year survival
Changing Trends

- Shift in distribution of primary lesion sites
- First quarter of 20th century – 2/3 within antrum and prepyloric area
- Since 1970s – proximal lesions have become increasingly more common
Classification
Histologic Subtypes

- Intestinal or glandular
- Diffuse
Subtypes

• **Intestinal**
  - Arises in distal stomach after long precancerous phase
  - More common in elderly
  - Atrophic gastritis and diets high in nitrates

• **Diffuse**
  - Younger patients
  - No identifiable precursor lesion
  - Predilection for the cardia
  - Worse prognosis
Risk Factors

- Atrophic gastritis → intestinal metaplasia → gastric cancer
- Nitrates and nitroso compounds present in salted, smoked or pickled foods
- Chronic infection with *H. pylori*
Clinical Evaluation
Symptoms

- Superficial = no Sx
- Vague non-specific Sx as it progresses
- Anorexia, fatigue, weight loss, epigastric discomfort, dysphagia, early satiety, heamtemesis
- No physical findings
Investigative Studies

- **UGIS**
  - 25% false negative rate
  - Small lesions

- **Endoscopy with biopsy**
  - 95% accuracy
  - False negative with inadequate biopsies
  - At least 4 biopsy specimens
Staging

- AJCC/UICC
- Depth to which primary tumors penetrates gastric wall
- Extent of LN involvement
- Presence or absence of distant mets
Staging

• Primary goal is to stratify into 2 clinical stage groups

• Ensure that pts with met disease are not treated with nontherapeutic laparotomy or other local therapies

• Locoregional disease – AJCC I to III

• Systemic disease – AJCC IV
Staging

- **EUS**
  - Assesses tumor penetration into gastric wall
  - Regional and/or mediastinal and paraaortic LN involvement – rounded shape, hypoechoic, >1cm

- **Laparoscopy**
  - Can detect small volume metastatic disease
Patient has biopsy-proven gastric adenocarcinoma

- Perform helical CT of abdomen and pelvis with oral and I.V. contrast.
- Perform EUS.

Tumor is resectable
- Assess severity of symptoms.

Tumor is not resectable
- Evidence of widely metastatic disease or the presence of locally advanced unresectable disease is a contraindication to resection.
- Provide supportive care.
- Consider palliative chemotherapy, endoluminal stenting, or entry into advanced disease clinical trials.

Symptoms are severe (e.g., bleeding or obstruction)
- Perform exploratory laparotomy.
- Resect tumor.

Symptoms are mild or absent
- Stage tumor with laparoscopy.

Exploration reveals M1 disease
- Resection is palliative in intent.

Exploration reveals no evidence of M1 disease
- Resection is curative in intent.

Laparoscopic staging reveals no evidence of M1 disease
- Resect tumor.
- Consider neoadjuvant therapy in a clinical trial setting.

Laparoscopic staging reveals M1 disease
- Provide supportive care.
- Consider palliative chemotherapy, endoluminal stenting, or entry into advanced disease clinical trials.

Potentially curative resection involves:
- Clear surgical margins
- Complete nodal dissection
- Adjuvant 5-FU-based chemoradiation therapy

Tumor is in distal stomach
- Perform subtotal gastrectomy with D2 dissection and Billroth II reconstruction.

Tumor is in fundus or proximal stomach
- Perform total gastrectomy with D2 dissection and esophagejejunostomy reconstruction.

Tumor is in distal esophagus, esophagogastric junction, or cardia
- Perform transthoracic or transhiatal esophagogastrectomy with D2 dissection.

To watch for disease recurrence after resection, obtain complete history and physical examination every 4 mo for 1 yr, then every 6 mo for 1 yr, then yearly thereafter. Order CBC and comprehensive chemistry panel. If new symptoms arise, consider diagnostic imaging (e.g., CT or endoscopy).
Surgical Therapy

- Resection remains the only potentially curative therapy for localized gastric CA.

- Requires removal of all gross and microscopic disease – margin negative.

- R0 resection = WLE of the primary tumor with en bloc removal of all associated lymphatic vessels and any local or regional disease extension.
Extent of Resection

- R0 resection has been shown to have a clear impact on overall survival

- Proximal margins of 5 – 6 cm

- Clinical trials – total gastrectomy no improvement in survival
Subtotal gastrectomy should be procedure of choice for CA of distal half of stomach provided an adequate negative margin could be achieved.
Extent of Lymphadenectomy

• N1 = perigastric

• N2 = along splenic and left gastric arteries + celiac axis

• N3 = hepatoduodenal ligament + root of mesentery

• N4 = para-aortic + middle colic
Extent of Lymphadenectomy

- D0 = incomplete dissection of N1 nodes
- D1 = complete resection of N1 nodes
- D2 = complete resection of both N1 and N2 nodes
Is More Better?

- LN dissection
  - D1 vs D2
  - Four randomized controlled trials have failed to show any significant benefit from extended dissection
  - 15 nodes
Role of Splenectomy

- Routine splenectomy does not increase survival
- Should be reserved for situations in which the gastric tumor directly invades the hilum
- Cases in which there is evidence of gross nodal metastases along the splenic artery
Nonsurgical Therapy
Adjuvant Therapy

- Single agent – relatively ineffective
- Combination radiation + chemotherapy – mixed reviews
- Benefit may reflect compensation from inadequate initial resection
Neoadjuvant

- Theoretical benefits
  - Tumor down-staging – enhance resectability
  - Early administration of systemic therapy – allows almost all to receive and complete prescribed treatment

- Assess response
  - Continue in those likely to benefit
  - Identify those with rapidly progressive disease
Recurrent Disease

- Even after R0 resection, recurrence is common
- Spreads via direct extension, lymph channels to regional and distant nodes or blood to distant sites
- Routine follow-up after resection
Follow-up

- Complete H&P q 4 months X 1 year, then q 6 months X 1 year, then yearly
- CBC, lytes and LFTs should be considered
- Imaging studies as indicated
- Vitamin B$_{12}$
Other Gastric Malignancies
Lymphoma

- 2nd most common gastric malignancy
- 2 to 9% of gastric tumors in US
- Non-Hodgkin type
- Approximately 45% are low-grade mucosa-associated lymphoid tissue (MALT) lymphomas
Clinical Evaluation

- Nonspecific Sx – anorexia, weight loss, emesis and bleeding
- Overt clinical Sx are rare
- Risk fcts = *H. pylori*, immunosuppression, IBD, HIV
- Endoscopy with biopsy
Stage I and II = confined to the stomach and perigastric nodes

Stage III = involves other intraabdominal nodes and organs

Stage IV = extends outside the abdomen
Nonsurgical

- Low-grade MALT usually present as stage I or II – indolent course
- Anti *H. pylori* therapy – remission 50 – 100%
- More advanced low-grade or those that do not regress may require radiation (± chemo)
- High grade – chemo + radiation
Surgical Therapy

• Resection
  - Once thought to be essential for diagnosis, staging and treatment of early-stage gastric lymphoma
  - Reserved for patients who experience bleeding or perforation
GIST

- Most common sarcoma of the GI tract
- 6000 cases per year
- Stomach = most common site (60 to 70%)
- Most were classified as leiomyosarcomas
- Required extended resections
GIST

- Contains both smooth muscle and neural elements
- Cell of origin = interstitial cell of Cajal = intestinal pacemaker cell
- Diagnosis confirmed by immunohistochemical staining for tyrosine kinase receptor
Clinical Evaluation

- 63 years = median age of incidence
- Mass-related Sx – pain, bloating, early satiety
- Melena or anemia
- Incidental findings
Tumor size and mitotic rate
- < 2 cm + < 5/HPF = low risk
- > 10 cm or > 5 cm + > 5/HPF = high risk
- All others = intermediate
Surgical Therapy

- Resection
  - Grossly negative margins + intact pseudocapsule
  - LN involvement is rare
  - Formal gastric resection is rarely required
Nonsurgical

- Metastatic disease
- Locally advanced
- Gleevec
Gastric Carcinoid

- Rare
- < 1% of all gastric tumors
- 11 to 30% of all GI carcinoids
- Median age at diagnosis is 62
- Equal distribution – men and women
Clinical Evaluation

- Often discovered during evaluation for chronic abdominal pain
- Rarely associated with Sx of carcinoid syndrome
- Endoscopy with biopsy
- EUS
Types

- Type I
  - Chronic atrophic gastritis
  - Small (< 1 cm)
  - Multiple
  - Slow growing
  - Rarely metastasize
  - Endoscopic polypectomy or local excision
Types

- **Type II**
  - ZE syndrome and MEN I
  - < 1 cm
  - Multiple
  - Slow growing
  - More likely to metastasize
  - Similar to Type I – extent of resection determined by size and number of lesions
Types

- Type III
  - Sporadic
  - Most biologically aggressive
  - Often larger (> 1 cm)
  - Metastasize to regional LN (54%) or liver (24%)
  - Either distal or total gastrectomy with ELND
Small Bowel Malignancies
Epidemiology

- Rare
- < 5% of all GI tract tumors
- Adenocarcinomas, lymphomas or carcinoids
- Increasing number of GISTs
Adenocarcinoma

• 46 to 55% occur in duodenum
• Present with nausea, emesis, pain, weight loss, bleeding, SBO
• EGD, push enteroscopy (first 100 cm)
• Enteroclysis
Adenocarcinoma

- Aggressive surgical resection
- Whipple
- Segmental resection with a wide mesenteric resection
- Contiguous organs are resected en bloc as necessary
- Diagnosis is often delayed