A OF THE JUNCTION

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Morbidity & Mortality Conference
Kings County Hospital
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This is a 69 y/o man who presented to KCH 3/10 w/ CC of worsening dysphagia

- **HPI:**
  - Dysphagia since 12/09
  - 20lb weight loss
  - Diagnosed in 2/10 in St. Lucia w/ gastric adenocarcinoma extending into distal esophagus
  - Denied h/o GERD, melena, hematemesis
CASE PRESENTATION

- PMH: BPH
- PSH: TURP ‘06
- Meds: denies
- All: NKDA
- SH: denies tobacco, alcohol, or drug use, works as electrician, runs 1 mile & swims daily
- FH: noncontributory
PHYSICAL EXAM

- Vitals:
  - T=98.8; BP= 134/80; HR=55; RR=20; 100%
- Gen: healthy, well built
- HEENT: WNL
- CVS: S1S2 RRR
- Chest: CTA B/L
- Abd: soft, NT, ND, +BS, no masses appreciated
- Rectal: no masses appreciated, guaiac neg
- Ext: FROM x4, 2+ x4
- Lymphatic: no lymphadenopathy appreciated
# LABS

- **CBC:** 6.7 / 11.5 / 36 / 436
- **BMP:** 145 / 4.5 / 108 / 28 / 15 / 1 / 95
- **LFTs:** 7.4 / 4.1 / 19 / 18 / 42 / 0.5
- **Coags:** 12.6 / 23.6 / 1
- **RA ABG:** 7.42 / 38.3 / 113 / 27.3 / 98.9 / 3
• CXR WNL

• CT chest abdomen
EGD

- Fungating, ulcerated, friable mass in distal 1/3 of the esophagus through the GE junction into the cardia of the stomach

- EUS probe could not be passed

- Pathology: moderately differentiated adenocarcinoma of GEJ origin
PET
Operative Intervention

- Bronchoscopy, Endoscopy, Laparotomy, Transhiatal esophagectomy with cervical anastomosis

- Operative Findings
  - Endoscopy: near obstructing mass at 40cm
  - Mass ~2cm above and below GEJ
  - Celiac node negative on frozen section
6.5 X 5.5 cm GEJ/cardia adenocarcinoma

Grade III, poorly differentiated

Penetrates adventitia but no adjacent structures

2cm gastric margin

2/14 regional LN positive, celiac node neg, L. cervical node neg

T3N1M0

Chronic H. pylori gastritis
POSTOP COURSE

- **POW #1:**
  - Extubated, Jej feeding, Esophagram: postop edema, no leak

- **POW #2:**
  - Tx to floor from SICU, difficulty w/ PO intake, failed S&S
  - Modified barium swallow: persistent post op edema & near obstruction at anastomosis

- **POW #3:**
  - Chemoport placed, esophageal dilatation performed

- **POW #4:**
  - Persistent difficulty w/ PO intake

- **POW #5:**
  - Rpt modified barium swallow persistent anastomotic obstruction, Rpt esophageal dilatation

- **POW #6:**
  - Rpt esophageal dilatation

- **POW #7:**
  - Rpt esophageal dilatation & stent placement
Management of GEJ Adenocarcinomas
Presentation

- Dysphagia
- Odynophagia
- Wt loss
- Dyspnea
- Cough
- Hoarseness
- Pain
DIAGNOSIS
CXR

- Mediastinal or hilar lymphadenopathy
- Pulmonary infiltrates
- Lung mets
- Pulmonary effusion
ESOPHAGRAM

- mucosal irregularity and shouldering
- narrowing of the lumen, and proximal dilatation
CT Scan

- Detect mets
- Cannot distinguish tumor stage
- Low sensitivity in detecting nodal involvement
- Monitor tumor response to cytoreductive therapy

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Bronchoscopy

- Assess involvement of tracheobronchial tree
  - Widened carina
  - External compression
  - Tumor infiltration
  - Fistulization
Endoscopy

- Bx
- Detect other path

emedicine.medscape.com/article/277930-overview
EUS

- Only imaging that can distinguish the layers of the esophageal wall

- T staging 85% accurate

- N staging 75% accurate
  - Up to 2cm from esophagus

- 1/3 non-traversable stricture

- Less accurate post-therapy
PET

- Detects mets not seen on CT
- No value in T staging
- Better for detecting higher nodes (cervical>thoracic>abdominal)
- Assess response to cytoreduction Tx
Siewert Classification

Tumors of GEJ = tumors w/ centers w/in 5cm proximal or distal to the cardia

- Type I
  - Distal esophagus

- Type II
  - True Ca of the cardia

- Type III
  - Subcardial gastric Ca

Stein et al 2000
Etiology & Pathology

- Male predominance, 1.5 : 1 – 8:1, >Type I

- Type I: more likely to have long standing GERD, or esophageal hernia

- Higher incidence of H. pylori w/ Types II & III

- Lymphatic spread w/ Type I → mediastinum & celiac axis

- Lymphatic spread w/ Types II & III → celiac axis preferentially, also splenic hilus, & paraaortic

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Staging of esophagus & GEJ Ca

Rvw of 4600 esophagectomy pts (13 institutions, 5 countries: Worldwide Esophageal Cancer Collaboration)

7th edition of the AJCC Cancer Staging Manual 2009
TNM Classification

- **T classification**
  - **Tis** High-grade dysplasia
  - **T1**: invades lamina propria/submucosa but not beyond
  - **T2**: invading into but not beyond muscularis propria
  - **T3**: invades adventia but not adjacent structures
  - **T4a**: Resectable cancer invades adjacent structures such as pleura, pericardium, diaphragm
  - **T4b**: Unresectable cancer invades adjacent structures such as aorta, vertebral body, trachea

- **N classification**
  - Any periesophageal lymph node from cervical nodes to celiac nodes
  - **N0**: No regional lymph node metastases
  - **N1**: 1 to 2 positive regional lymph nodes
  - **N2**: 3 to 6 positive regional lymph nodes
  - **N3**: >7 positive regional lymph nodes

- **M classification**
  - **Mo**: No distant metastases
  - **M1**: Distant metastases

7th edition of the AJCC Cancer Staging Manual 2009
Maingot 2007
TABLE 2 Adenocarcinoma stage groupings

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FIG. 1 Risk-adjusted survival for adenocarcinoma according to the American Joint Committee on Cancer Cancer Staging Manual, 7th edition, stage groups.
Surgical Approach - PreOp

- Consider age – typically not done if >80 y/o
- Cardiopulmonary reserve
  - FEV-1: >2L is ideal; >1.25 for thoracotomy
  - Clinical eval, EKG, echo
- Nutritional status
  - Most predictive of postop complications (wt loss >20lb, albumin <3.5)
- Clinical staging
  - Paralysis of diaphragm
  - Bronchiotracheal involvement
  - Malignant pleural effusion

Schwartz 2010

downstatesurgery.org
Different Surgical Approaches

- **Ivor Lewis**
  - Abdominal/thoracic dissection
  - Thoracic esophagogastrostomy

- **Left Thoracoabdominal**

- **Transhiatal**
  - Cervical and upper midline incisions
  - Blind chest dissection
  - Cervical esophagogastrostomy

- Feeding jejunostomy
Abdominal Dissection
Esophageal Dissection
Ivor Lewis

- Abdominal/thoracic dissection
- Direct visualization
- Leak rate ~5%
  - Difficult to manage ➔ empyema
Left Thoracoabdominal

- Indicated for GEJ, distal esophageal, proximal stomach tumors
  - especially if using intestinal conduit
  - obese

- Thoracic esophagogastrostomy
Transhiatal
Reconstruction

- Tubularized or whole stomach
  - Preferred b/c blood supply
  - Proximity
  - Single anastomosis

- Colon
  - Stomach can’t be used
    - Prior Sx, PUD scarring, tumor involvement
  - L colon preferred b/c
    - Diameter closer to that of esophagus, more length, less variation of blood supply
  - Problems w/ L. colon
    - most affected by diverticular Dz, IMA most affected by atherosclerosis

- Jejunum
  - Cannot replace entire esophagus
  - Free graft, pedicled graft, or Roux-en-Y

Maingot 2007
Creating the Gastric Tube

- Don’t forget pyloromyotomy/pyloroplasty
Pitfalls in Surgical Management

• Retrospective analysis of 117 pts w adenoCa of proximal 1/3 of the stomach 1961-1970

• Esophagitis, hiatal hernia, achalasia should not delay suspicion of Ca

• Avoid microscopic tumor extension at the esophageal margin (suture line dehiscence → 5/7 deaths) => frozen section? & 6cm esophageal margin

Alfonso et al 1977
Surgical Approach - Which way do I go?

- Transhiatal esophagectomy (THE) is may be safer
  - One major incision instead of 2
  - Shorter OR time

- Transthoracic esophagectomy (TTE) may be a better oncological procedure
  - Extended lymph node dissection in the posterior mediastinum
  - Better for tumors close to tracheobronchial tree & after neoadjuvant Tx especially mid & upper esophagus

Maingot 2007
Outcomes after Transhiatal & Transthoracic Esophagectomy

Outcomes after Transhiatal & Transthoracic Esophagectomy

Pts s/p THE had:

- Lower operative mortality (30 days)
  - 6.7% vs 13.1%, p = 0.009

- Trend towards higher 5-yr survival
  - No statistically significant difference

- More likely to require endoscopic dilatation w/in 6 months
  - 43.1% vs 34.5%, p = 0.02

Extended TTE vs Limited THE for AdenoCa of the mid/distal Esophagus

- 1994-2000; randomly assigned 220 pts w/ THE (n=95) or TTE (n=110); 15 pts excluded b/c unresectable
- 5-yr survival THE 34% vs TTE 36%, p = 0.71
- Survival benefit 14% in Type I tumor w/ TTE (51% vs 37%, p = 0.33)
  - Not seen in pts w/ Type II tumor, no positive nodes, or >8 + nodes
- TTE higher perioperative morbidity but no difference in mortality

Neoadjuvant Chemo or ChemoRT

- Potential benefit of downstaging

- Toxicity may → delay or cancellation of resection
Neoadjuvant Chemo or ChemoRT

• Kelsen et al ‘98
  ▫ American multi-institutional trial
  ▫ Randomized 440pts Sx alone vs neoadjuvant chemo followed by Sx
  ▫ 3 cycles 5-FU and cisplatin; Sx 2-4 wks later; 2 cycles postop
  ▫ No difference in morbidity, mortality, or survival

• Urba et al 2001
  ▫ 100 patients randomized to preoperative chemoradiation or surgery alone
  ▫ Median survival was about 18 months in both groups, although there was a trend toward improved survival at 3 years (30% versus 16%; not statistically significant).
Neoadjuvant Chemo or ChemoRT

- 10 randomized trials 1983-2006
  - 1209 pts compared neoadjuvant chemoradiation (chemoRT) vs surgery (Sx) alone
  - 6 studies SCC only, 1 adenocarcinoma (adenoCa) only, 3 both
- 8 randomized trials 1982-1992
  - 1724 pts neoadjuvant chemotherapy vs Sx alone
  - 7 SCC only, 2 SCC & adenoCa

Gebski et al. Lancet Oncology. 2007; 8:226-34
The hazard ratio for all-cause mortality is 0.90 (0.81–1.00) for patients receiving chemotherapy and 0.81 (0.70–0.93) for patients receiving neoadjuvant chemoradiotherapy.

Gebski et al. Lancet Oncology. 2007
Adjuvant Chemo & ChemoRT

- Better local regional control
- Poorly studied
- No statistically significant change in 5-year survival
Follow-Up

- Look for locoregional recurrence and metastatic disease.

- First 3 years f/u every 3 months then subsequently every 4 to 6 months

- Each visit should include:
  - history and physical
  - complete blood count and liver panel
  - computed tomography of the chest and abdomen
  - Radiographic evidence of possible recurrence warrants biopsy to confirm diagnosis
SUMMARY

• Goal of surgery is R0 resection

• No proven significant difference in 5 yr survival with transthoracic vs transhiatal approach

• No proven significant difference in 5 yr survival with neoadjuvant or adjuvant therapy
  ▫ But there may be some benefit?
References

• ACS Surgery: Principles & Practice 2009
• Sabiston Textbook of Surgery, 18th ed. 2007
• Cameron: Current Surgical Therapy, 9th ed. 2008
THANK YOU