Surgical Problems in Proximal GI Cancer Management – Cardia Tumours

car·di·a ... an opening that connects the esophagus and the upper part of the stomach. [1775-85; < NL < Gk kardia a medical term for this opening, lit., heart; perh. so called because the opening is on the same side of the body as the heart]

Michael F. Humer

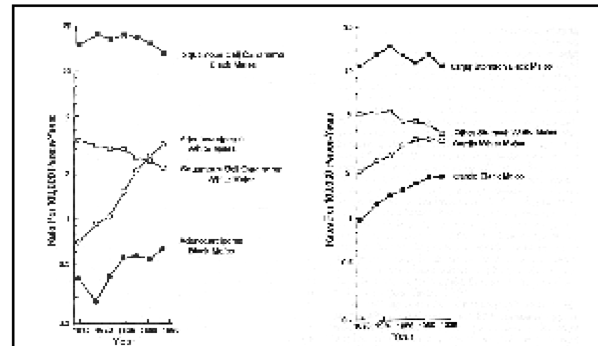
December 3, 2005 Vancouver, BC

Question #1: What are cardia tumours?

Question #2: How are cardia tumours managed?

Case A: Early stage cardia tumour

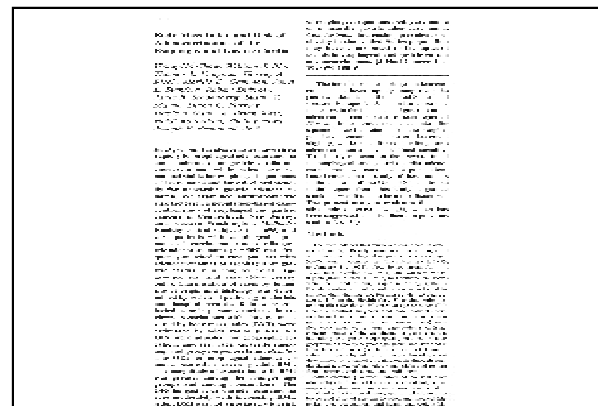
Case B: Locally advanced stage cardia tumour



Devessa SS etal. Cancer 1998; 83: 2049-2053

White males incidence per 100,000 population per year
Devessa – 1998

	ESOPHAGUS		GASTRIC	
	adenocarcinoma	squamous cell	cardia	non-cardia
1974-1976	0.7	3.4	2.1	5.1
1992-1994	3.2 ↑	2.2 ↓	3.3 ↑	3.7 ↓



Chow WH etal. J Natl Cancer Inst 1998

[illegible]

Chow WH, etal. J N Cancer Inst 1998

Carcinoma of the Gastroesophageal Junction

"tumours who have their center within 5 cm oral and aboral of the anatomical gastroesophageal junction"

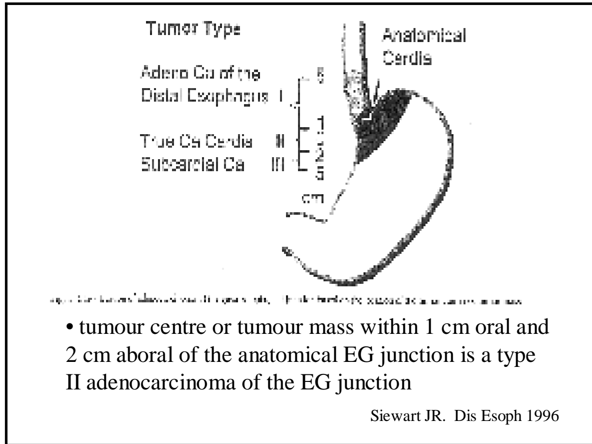
Siewart JR etal. Chirurg 1987

Type I tumors: Adenocarcinoma of the distal esophagus, which usually arises from an area with intestinal metaplasia, i.e. Barrett's esophagus, and may infiltrate the gastroesophageal junction;

Type II tumors: True carcinoma of the cardia arising from the epithelium of the gastroesophageal junction. This entity is also often referred to as 'junctional carcinoma';

Type III tumors: Subcardial gastric carcinoma which infiltrates the gastroesophageal junction and distal esophagus from below.

Siewart JR. Dis Esoph 1996; 9: 173-182



- tumour centre or tumour mass within 1 cm oral and 2 cm aboral of the anatomical EG junction is a type II adenocarcinoma of the EG junction

Siewart JR. Dis Esoph 1996

[illegible]

Siewart JR, etal. Br J Surg 1998

Esophageal Carcinoma

DEFINITION OF TNM

[illegible]

AJCC-Cancer Staging Handbook 6th Edition 2002; pg 105

Esophageal Carcinoma

STAGE GROUPING

Stage	T	N	M
Stage 0	Tis	N0	M0
Stage I	T1	N0	M0
Stage IIA	T2	N0	M0
	T3	N0	M0
Stage IIB	T1	N1	M0
	T2	N1	M0
Stage III	T3	N1	M0
	T4	Any N	M0
Stage IV	Any T	Any N	M1
Stage IVA	Any T	Any N	M1a
Stage IVB	Any T	Any N	M1b

AJCC-Cancer Staging Handbook 6th Edition 2002; pg 105

Gastric Carcinoma

AJCC-Cancer Staging Handbook 6th Edition 2002; pg 115

Gastric Carcinoma

STAGE GROUPING

Stage	T	N	M
Stage 0	Tis	N0	M0
Stage IA	T1	N0	M0
Stage IB	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

AJCC-Cancer Staging Handbook 6th Edition 2002; pg 115

Regional Lymph Nodes

Type I (E) -N1 = mediastinal, perigastric (excluding celiac)
-celiac = M1a (IV)

Type II, III (S) -N1 = perigastric
-lesser and greater curve (≤ 3 cm from tumour)
-N2 = left gastric, common hepatic, splenic, celiac (IIIB)
-lesser and greater curve (> 3 cm from tumour)

Wijnhoven BPL, etal. Br J Surg 1999

"controversy exists over how to distinguish proximal gastric cancers involving the EG junction from distal esophageal and EG junction cancers extending inferiorly to involve the gastric cardia"

AJCC-Cancer Staging Handbook 6th Edition 2002; pg 102

"Siewart has proposed classifying EG junction cancers into Type I, II and III depending upon the relative extent of involvement of either the esophagus or the stomach"

AJCC-Cancer Staging Handbook 6th Edition 2002; pg 102

"further validation of this classification is needed to determine whether it is reliable for staging or for prognosis"

AJCC-Cancer Staging Handbook 6th Edition 2002; pg 102

Case A – Siewart Type II

- 41 year old male, life long GERD on PPI
- EG scope -2000 N
  - -2002 CLE/Barrett's
  - -2004 Glandular atypia vs LGD
  - -2005 2 cm Barrett's, 5 mm nodule EG junction
- Bx – intramucosal carcinoma
- CT scan – hiatal hernia, nil else

Case B – Siewart Type II

- 53 year old male, 6 months 15 pound weight loss, postprandial epigastric pain, no long term GI symptoms
- contrast radiography 2005 - x2 normal
- EG scope 2005 - 2 cm CLE, 1 cm cardia ulcer around inflammed heaped mucosa
- Bx adenocarcinoma, diffuse, lymphatic invasion
- CT scan - 7 cm mass at gastric cardia, no mets

Siewart Type II Adenocarcinoma of the EG Junction

Management – role of surgery, chemotherapy and radiotherapy in patients treated with curative intent

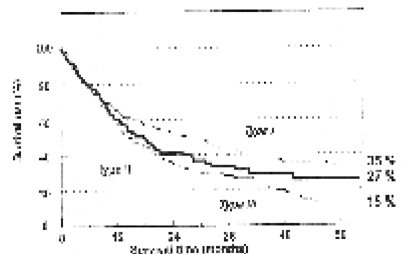
Surgical Goals

- complete removal of the primary tumour and any associated columnar lined esophagus (Barrett's)
- en bloc resection of associated lymphatic drainage
- reconstitution of GI continuity
- acceptable mortality and morbidity

Surgical Management of Adenocarcinoma of the Cardia

Graham AJ, Finley RJ etal. Am J Surg 1998; 175:418-421

5 Year Survival Adenocarcinoma EG Junction



Siewart JR. Dis Esoph 1996

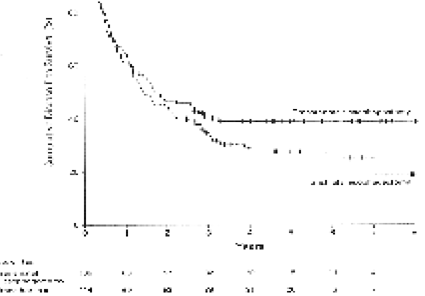
Transthoracic Versus Transhiatal Resection for Carcinoma of the Esophagus: A Meta-Analysis

Hulscher JBF. Ann Thor Surg 2001

Hulscher JBF. N Engl J Med 2002

Hulscher JBF. N Engl J Med 2002

Disease Free Survival



Hulscher JBF. N Engl J Med 2002

Adenocarcinoma of the EG Junction

Surgical Therapy
- -Type Specific (I, II, III)
- -Stage Specific

Lymph Node Metastases

Tumor Type	I	II	III
Location of Positive Nodes:			
[illegible] Subcarinal	[illegible]	0%	[illegible]
Para-esophageal	[illegible]	20%	[illegible]
Paracardial	[illegible]	[illegible]	[illegible]
Compartment II	[illegible]	[illegible]	[illegible]
Compartment III	12%	7%	[illegible]

Siewart JR. Dis Esoph 1996

Surgical Resection – EG Junction

Type I

• Esophagectomy with resection of proximal stomach, en bloc lymphadenectomy of lower posterior mediastinum and celiac axis (2 field)

• Eg

Surgical Resection – EG Junction

Type III

• Total gastrectomy with transhiatal or transthoracic resection of the distal esophagus with appropriate en bloc lymphadenectomy

• D2 (extended) no difference in survival than D1 (limited) (McCulloch P. BJ Surg 2005)

• eG

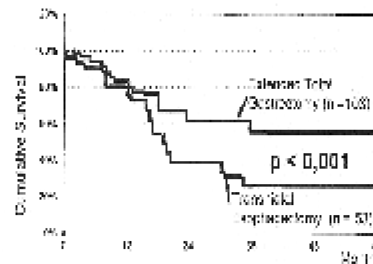
Modes of Resection EG Junction Adenocarcinoma

Table 7 Modes of resection employed in patients with adenocarcinoma of the gastroesophageal junction

	Type I	Type II	Type III
Transthoracic en bloc esophagectomy ($n = 43$)	38	5	0
Radical transhiatal esophagectomy ($n = 207$)	148	53	6
Extended total gastrectomy ($n = 263$)	0	103	160
Total	186	161	166

Siewart JR. Dis Esoph 1996

Type II Adenocarcinoma Post Resection Survival



Siewart JR. Dis Esoph 1996

Surgical Resection – EG Junction

Type II – Esophagectomy (Eg) vs Gastrectomy (eG)

- en bloc lymphatic dissection
- the margins proximal vs distal

? Is it more like a I or a III

Stage Specific Treatment – Esophageal Carcinoma

N Status Related to T (Rice 199

T Status	Total n	N1(%)
Tis	29	0 (0.0)
T1	65	7 (10.8)
T1-intramucosal	38	1 (2.6)
T1-submucosal	27	6 (22.2)
T2	37	16 (43.2)
T3	219	169 (77.2)
T4	9	6 (66.7)

Rice TW. Ann Thor Surg 1998

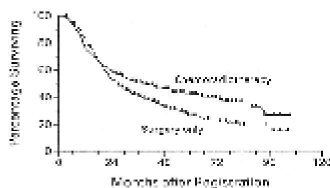
Role of Chemotherapy and Radiotherapy – Esophageal Carcinoma

- no recommended role for CT and/or RT in either preoperative or postoperative setting

Malthaner RA. April 2005; www.cancercare.on.ca/access PEBC.htm

MacDonald JS. N Engl J Med 2001

Overall Survival



MacDonald JS. N Engl J Med

Type II Adenocarcinom

Case A: T1 N0 M0 – IA
-Transhiatal esophagectomy

Type II Adenocarcinoma

Case B: T3 N1 M0 – IIIA

-L. thoracoabdominal gastrectomy, partial esophagectomy, splenectomy, Roux-en-Y esophagojejunostomy

-Adjuvant CT/RT (MacDonald)

Question #1: What are cardia tumours?

Answer:

- Siewart type II adenocarcinoma of the EG junction
- currently use gastric TNM classification

Question #2: How are cardia tumours managed?

Answer:

- Eg or eG depending upon extent of disease (I or III)
- stage IB-IV M0 adjuvant CT/RT